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BIBLIOGRAPHY
OF
NORTH AMERICAN GEOLOGY
1929-1939

BY
EMMA MERTINS THOM

Part 1. BIBLIOGRAPHY



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CONTENTS

	Page
Introduction.....	1
Abbreviations.....	3
Serials examined.....	7
Bibliography.....	19
Index.....	1065

BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY

1929-1939

By EMMA MERTINS THOM

INTRODUCTION

The bibliography of North American geology, including paleontology, petrology, and mineralogy, for the years 1929-1939, lists publications on the geology of the Continent of North America and adjacent islands and on Panama, the Hawaiian Islands, and the Island of Guam. It includes textbooks and papers of a general character by American authors, but not papers by foreign authors, except those that appear in American publications.

The papers, with full title and medium of publication, are listed under the names of their authors, which are arranged in alphabetic order. The author list is followed by an index to the literature cited.

The bibliography of North American geology to the end of 1928 is contained in the following bulletins of the United States Geological Survey: 746 and 747 (1785-1918) and 823 (1919-28), by John M. Nickles. In this volume have been cumulated Bulletins 834 (1929-30) and 858 (1931-32), by John M. Nickles, and 869 (1933-34) and 892 (1935-36), by Emma Mertins Thom.

The bibliography for 1937, 1938, and 1939, which is included in the present bulletin, will not be published separately.

For valued help in preparing the matter for the press, the compiler is indebted to Miss Helen M. Duncan and Miss Barbara P. Gordon.

ABBREVIATIONS

A. A. A. S.	American Association for the Advancement of Science	Bull.	Bulletin
A. I. M. E.	American Institute of Mining and Metal- lurgical Engineers	Bur.	Bureau
Aardrijksk.	Aardrijkskundig	Camb.	Cambrian
aarg.	aargang	Carb.	Carboniferous
Abh.	Abhandlung	Cat.	Catalog
Abt.	Abteilung	cent.	central
Acad.	Academy, etc.	Centralbl.	Centralblatt
Accad.	Accademia	cf.	compare with
Adm.	Administration	Chap.	Chapter
ads.	advertisements	Chem.	Chemical, etc.
Adv.	Advancement	chim.	chimique
Afd.	Afdeeling, Afdeling	Cienc.	Ciencia, Ciencias
Afl.	Aflevering	cient.	cientifica
Agr.	Agricultural, Agricul- ture	Circ.	Circular
Akad.	Akademie	Cl.	Classe
allg.	allgemeine	classn.	classification
Am.	American	Co.	Company, County
Anal.	Analytic, etc.	Coll.	Collections
angew.	angewandte	Comm.	Committee
Ann.	Annual	Commun.	Communications
anorg.	anorganisch, etc.	Comp.	Comparative
Anthropol.	Anthropological, etc.	con.	consolidated
Anz.	Anzeiger	Conf.	Conference
App.	Appendix	Cong.	Congress, etc.
appl.	applique	conglom.	conglomerate
approx.	approximately	Conserv.	Conservation
Arb.	Arbeiten	Contr.	Contributions
Ärb.	Ärbok	Coop.	Cooperative
Archeol.	Archeological, etc.	correl.	correlation
Ärg.	Ärgång	Coun.	Council
Ärssk.	Ärsskrift	Cret.	Cretaceous
art.	article	Denkschr.	Denkschrift
Assoc.	Association	Dept.	Department, etc.
Astron.	Astronomical, etc.	Dev.	Devonian
Auth.	Authority	devel.	development
Av.	Avancement	diagr.	diagram
Avd.	Avdelningen	Direc.	Dirección
Bd.	Board	Dissert.	Dissertation
Beitr.	Beitrag, etc.	dist.	district
Ber.	Bericht, etc.	distrib.	distribution
Bibl.	Bibliographic, etc.	Div.	division
Bienn.	Biennial	Doc.	Doctoral, Document
Biog.	Biographic, etc.	Doc. Dissert.	Doctoral Dissertation
Biol.	Biologic, etc.	dol.	dolomite
Bldg.	Building	E.	east
Bol.	Boletim, Boletín	Ecol.	Ecological, etc.
Boll.	Bollettino	Econ.	Economic
Bot.	Botanic, etc.	ed.	edition
Br.	Branch	Educ.	Education, Educational
		Elec.	Electric, etc.
		Eng.	Engineering, Engineers
		Entomol.	Entomological, etc.
		equiv.	equivalent

Erläut.....	Erläuterungen	Irr.....	Irrigation
ex.....	except	Is.....	Island, Islands
exam.....	examination	Ist.....	Istituto
Exper.....	Experiment, Experi- mental	Izv.....	Izvestiya
expl.....	explanation, explana- tory	Jaarb.....	Jaarboek
explor.....	exploration, etc.	Jaarg.....	Jaargang
extr.....	extract, extracted	Jahrb.....	Jahrbuch
		Jahresber.....	Jahresbericht
Fac.....	Faculty	Jahresh.....	Jahresheft
facsim.....	facsimile	Jahresvers.....	Jahresversammlung
fasc.....	fascicle	Jahrg.....	Jahrgang
fig.....	figure	Jour.....	Journal
fm.....	formation	Juras.....	Jurassic
Fören.....	Förening		
Förh.....	Förhandlingar	K.....	Kaiserlich, Königlich, etc.
Fortschr.....	Fortschritte	Kl.....	Klasse
franç.....	français		
front.....	frontispiece	Lab.....	Laboratory
Ft.....	Fort	Lief.....	Lieferung
fysiog.....	fysiografiska	Lit.....	Literary, Literature
		livr.....	livraison
g.....	geologic	lms.....	limestone
G. S.....	Geological Survey	loc.....	locality
G. Soc.....	Geological Society	lvs.....	leaves
Gazz.....	Gazzetta		
Gen.....	General	Mag.....	Magazine
gén.....	générale	Math.....	Mathematical, etc.
Geneesk.....	Geneeskunde	mbr.....	member
Geochem.....	Geochemical, etc.	Mech.....	Mechanical, etc.
Geod.....	Geodetic	Med.....	Medical
géod.....	géodétique	Medd.....	Meddelanden
Geog.....	Geographic, etc.	Meddel.....	Meddelelser
géog.....	géographique	Mededeel.....	Mededeelingen
Geol.....	Geologic, etc.	Mem.....	Memoir, Memoria
géol.....	géologique	Mém.....	Mémoire
Geophys.....	Geophysical, etc.	Memo.....	Memorandum
géophys.....	géophysique	Met.....	Metallurgical, etc.
Gesell.....	Gesellschaft	metam.....	metamorphic, metamor- phosed
Gior.....	Giornale	Meteorol.....	Meteorological, etc.
Govt.....	Government	micr.....	microscopic, etc.
Grad.....	Graduate	Mimeo.....	Mimeographed
		Min.....	Mineral, Mining
Handl.....	Handlingar	min. res.....	mineral resources
hist.....	historic, etc.	Mineralog.....	Mineralogic, etc.
hüttenm.....	hüttenmannisch	Misc.....	Miscellaneous
Hydrog.....	Hydrographic, etc.	Missn.....	Mississippian
Hydrol.....	Hydrologic, etc.	Mitt.....	Mitteilungen
		Mon.....	Monograph, etc.
ig.....	igneous	Monatsber.....	Monatsbericht
illus.....	illustrated, illustration, illustrations	Monatsh.....	Monatsheft
Imp.....	Imperial	Monatsschr.....	Monatsschrift
Inc.....	Incorporated	ms.....	manuscript
incl.....	including	Mt.....	Mount
Indust.....	Industrial	Mtg.....	Meeting
Inf.....	Information	Mtn.....	Mountain
Ing.....	Ingenieros, Ingenieurs	Mts.....	Mountains
Inst.....	Institute, Institution, etc.	Mus.....	Museo, Museum, etc.
internac.....	internacional		
Internat.....	International, etc.	n.....	new
intro.....	introduction	N.....	north
intrus.....	intrusive	N. Am.....	North America
Inv.....	Investigation, Investi- gations.	n. d.....	no date
		n. s.....	new series
		nac.....	nacional

Nachr.....	Nachrichten	Rec.....	Record, Records, Recu- eil
Nat.....	National, Natural	reconn.....	reconnaissance
naturf.....	naturforscher, naturfor- schende	Rend.....	Rendiconti
naturh.....	naturhistorisch	Rept.....	Report
naturwiss.....	naturwissenschaftlich	Res.....	Resources
natuurk.....	natuurkundig	Rev.....	Review, Revista, Revue
NE.....	northeast	Riv.....	Rivista
no.....	number	Ry.....	Railway
nos.....	numbers	s.....	series
nouv.....	nouveau, etc.	S.....	south, Survey
Nr.....	Number	Sällsk.....	Sällskapets
NW.....	northwest	Schr.....	Schrift
Occ.....	Occasional	schweizer.....	schweizerisch
Ord.....	Ordovician	Sci.....	Science, Sciences, Scientific
p.....	page	SE.....	southeast
palaeont.....	palaeontologisch	Sec.....	Section
Paleocol.....	Paleocological, etc.	Sed.....	Sedimentary
Paleogeog.....	Paleogeographic, etc.	Seismog.....	Seismographic, etc.
Paleont.....	Paleontologic, etc.	Seismol.....	Seismologic, etc.
Pamph.....	Pamphlet	séismol.....	séismologique
Pan-Am.....	Pan-American	Selsk.....	Selskab
Pen.....	Peninsula	ser.....	series
Penn.....	Pennsylvanian	Serv.....	Service
Perm.....	Permian	Sess.....	Session
Petrog.....	Petrographic, etc.	sh.....	shale
Petrol.....	Petrologic, etc.	Sil.....	Silurian
Philos.....	Philosophical, etc.	Sitzungsber.....	Sitzungsbericht
photo.....	photograph	Skr.....	Skrift
photog.....	photographic	Soc.....	Société, Society
Phys.....	Physical, etc.	sp.....	species
physikal.....	physikalisch	Spec.....	Special
Physiog.....	Physiographic, etc.	ss.....	sandstone
Pk.....	Peak	St.....	Saint
pl.....	plate	Sta.....	Station
Plann.....	Planning	Ste.....	Sainte
Pleist.....	Pleistocene	Strat.....	Stratigraphic, etc., Stra- tigraphy
pls.....	plates	Summ.....	Summaries, Summa- rized, Summary
Polytech.....	Polytechnic, etc.	Supp.....	Supplement, Supple- mentary
Pop.....	Popular	SW.....	southwest
port.....	portrait	syn.....	synonym
ports.....	portraits	TVA.....	Tennessee Valley Au- thority
poss.....	possibility, possibilities	tab.....	table
pp.....	pages	Tech.....	Technical, etc.
prakt.....	praktisch	Technol.....	Technological, etc.
pre-Camb.....	pre-Cambrian	temp.....	temporary
Prelim.....	Preliminary	Terr.....	Territory, Territories, Territorial
Proc.....	Proceedings	Tert.....	Tertiary
Prof.....	Professional	Tidskr.....	Tidskrift
Prog.....	Progress	Tidsskr.....	Tidsskrift
Proj.....	Project	Tijdschr.....	Tijdschrift
prosp.....	prospecting	Topog.....	Topographic, etc.
Prov.....	Province	Tp.....	Township
Pt.....	Part, Point	Tps.....	Townships
Pts.....	Parts	Trans.....	Transactions
Pub.....	Publication, Publica- tions, published	transl.....	translate, translation
quad.....	quadrangle	transp.....	transportation
Quart.....	Quarterly	Trav.....	Travaux
Quat.....	Quaternary	Trias.....	Triassic
R.....	Reale		
R. R.....	Railroad		
Rap.....	Rapport		

U. S.-----	United States	Vidensk-----	Videnskabernes, Viden-
uncon-----	unconformity, etc.	skaps	
undet-----	undetermined	vol-----	volume
Univ-----	University	vs-----	versus
veg-----	vegetation	W-----	west
Ver-----	Verein	Wetensch-----	Wetenschappen
Verh-----	Verhandlungen, Ver-	Wiss-----	Wissenschaft
	handlung, etc.	Wochenschr--	Wochenschrift
Vers-----	Versammlung	Zeitschr-----	Zeitschrift
Vetensk-----	Vetenskaps	Zentralb-----	Zentralblatt
Vetenskaps-		Zhur-----	Zhurnal
akad-----	Vetenskapsakademiens	Zool-----	Zoological, etc.

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- Canmore area, north portion, Alberta. Geology by Bertram Reid MacKay, 1934. Map 322A. Scale 1:9,600, or 1 inch to 800 feet. Pub. 2382, 1935. Sections supplementing Map 322A, geology by Bertram Reid MacKay, 1934. Pub. 2384, 1935.
- Canmore area, south portion, Alberta. Geology by Bertram Reid MacKay, 1934. Map 323A. Scale 1:9,600, or 1 inch to 800 feet. Pub. 2383, 1935. Sections supplementing Map 323A, geology by Bertram Reid MacKay, 1934. Pub. 2385, 1935.
- Carmacks sheet, Yukon Territory. Geology by Hugh Samuel Bostock, 1932-34. Map 340A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Carroll Lake sheet, west half, Manitoba-Ontario. Geology by Ashton William Johnston, 1936. Map 428A. Scale, 1:253,440, or 1 inch to 4 miles. 1939.
- Chaleur Bay area, Quebec and New Brunswick. Map 330A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Chibougamau sheet, Abitibi County, Quebec. Geology by James Buckland Mawdsley, 1930, and George William Hallet Norman, 1934. Map 304A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2356, 1935.
- Chibougamau sheet, east half, Abitibi Territory, Quebec. Geology by James Buckland Mawdsley and George William Hallet Norman, 1935. Map 397A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Chibougamau sheet, west half, Abitibi Territory, Quebec. Geology by Joseph Arlington Retty and George William Hallet Norman, 1935. Map 398A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Copper Cliff sheet, Sudbury district, Ontario. Geology by William Henry Collins, and others, 1916-17, 1928, 1930, 1931-34; Elwood S. Moore, 1929, Bruce Clark Freeman, 1931. Map 292A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Cow River area, Sudbury and Algoma districts, Ontario. Geology by Norman B. Keevil, 1935. Map 366A. Scale 1:126,720, or 1 inch to 2 miles. 1936.
- Cranbrook sheet, Kootenay district, British Columbia. Geology by Clive Elmore Cairnes, 1932, and Harrington Molesworth Anthony Rice, 1935. Map 396A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Deer Lake sheet, west half, Manitoba-Ontario. Geology by Ashton William Johnston, 1936. Map 425A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Desbouches sheet (east half), Abitibi County, Quebec. Geology by F. T. Denis, 1935. Map 353A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Desbouches sheet (west half), Abitibi County, Quebec. Geology by F. T. Denis, 1935. Map 352A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Desmeloizes sheet, Abitibi County, Quebec. Geology by James Buckland Mawdsley. Map 284A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2310, 1933.
- Dufault area, Dufresnoy and Rouyn townships. Abitibi and Témiscamingue Counties, Quebec. Geology by Morley Evans Wilson, 1934. Map 457A. Scale, 1:9,600, or 1 inch to 800 feet. 1939.
- Duparquet sheet, Abitibi and Témiscamingue Counties, Quebec. Map 281A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2295, 1933.
- Duvernay (east half), Abitibi County, Quebec. Geology by Ludlow J. Weeks, 1936-37. Map 529A. Scale 1:63,360, or 1 inch to 1 mile. 1930.
- Duvernay (west half), Abitibi County, Quebec. Geology by Ludlow J. Weeks, 1936-37. Map 530A. Scale 1:63,360, or 1 inch to 1 mile. 1939.
- Eagle-McDame area, Cassiar district, British Columbia. Geology by Forrest Alexander Kerr, 1935, and George Hanson and Duncan Anderson McNaughton, 1935. Map 381A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Edmonton, Alberta. Geology by Ralph Leslie Rutherford, 1935 and 1936. Map 506A. Scale, 1:253,440, or 1 inch to 4 miles. 1939.
- Elbow-Morton area, Manitoba. Geology by Clifford Howard Stockwell, 1934. Map 321A. Scale, 1:126,720, or 1 inch to 2 miles. Pub. 2381, 1935.
- Escuminac sheet, Bonaventure County, Quebec. Geology by Waldorf Vivian Howard, 1924-25; Edward Martin Kindle, 1925; Frederick James Alcock, 1928-29. Map 266A. Scale 1:63,360, or 1 inch to 1 mile. 1936.
- Espanola sheet, Sudbury district, Ontario. Geology by William Henry Collins, 1916-17, 1925-28, Terence Thomas Quirk, 1915. Map 291A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Fallentimber sheet (east half), west of fifth meridian, Alberta. Map 405A. Scale, 1:63,360, or 1 inch to 1 mile. 1937.
- Fallentimber (east half), west of fifth meridian, Alberta. Geology by Bertram Reid MacKay, 1937. Map 548A. Scale, 1:63,360, or 1 inch to 1 mile. 1939.
- Fallentimber sheet (west half), west of fifth meridian, Alberta. Map 406A. Scale 1:63,360, or 1 inch to 1 mile. 1937.
- Fallentimber (west half), west of fifth meridian, Alberta. Geology by Bertram Reid MacKay, 1937. Map 549A. Scale, 1:63,360, or 1 inch to 1 mile. 1939.
- Fond-Du-Lac sheet, northern Saskatchewan. Geology by Frederick James Alcock, 1935. Map 364A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Fort Pitt sheet (east half), Saskatchewan. Map. 489A. Scale 1:253,440, or 1 inch to 4 miles. 1939.

Canada Geological Survey—Continued.

1. Geological maps as follows—Continued.

- Fort Pitt sheet (west half), Saskatchewan. Map 490A. Scale 1:253,440, or 1 inch to 1 mile. 1939.
- Foster Lake sheet (east half), northern Saskatchewan. Geology by Robert Connell McMurchy. Map 433A. Scale, 1:253,440, or 1 inch to 4 miles. 1938.
- Foster Lake sheet (west half), northern Saskatchewan. Geology by Robert Connell McMurchy. Map 434A. Scale, 1:253,440, or 1 inch to 4 miles. 1938.
- Glace Bay sheet, Cape Breton County, Nova Scotia. Geology by Albert Orion Hayes, 1917-19; Walter Andrew Bell, 1921, 1930; and Edwin Alexander Goranson, 1930, 1931. Map 362A. Scale, 1:63,360, or 1 inch to 1 mile. 1938.
- Goldfields area, northern Saskatchewan. Geology by Frederick James Alcock, 1935. Map 339A. Scale 1:63,360, or 1 inch to 1 mile. 1936.
- Granville Lake sheet, east half, Manitoba. Geology by James Fenwick Henderson, 1932; George William Hallel Norman, 1933; D. L. Downie, 1935. Map 344A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Granville Lake sheet, west half, Manitoba. Geology by D. L. Downie, 1935. Maps 343A, 344A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Great Bear Lake (McTavish Arm), between Richardson Island and Hornby Bay, District of Mackenzie, Northwest Territories. Geology by Desmond Fife Kidd. Map 296A. Scale 1:253,440, or 1 inch to 4 miles. Pub. 2328, 1933.
- Great Slave Lake, eastern portion, district of Mackenzie, Northwest Territories. Geology by Clifford Howard Stockwell, 1929, 1930, 1931. Maps 377A, 378A. Scale 1:253,440, or 1 inch to 4 miles. 1936; reviewed in Canadian Min. Jour., vol. 58, no. 4, p. 206, April 1937.
- Guliel Lake sheet, Témiscamingue County, Quebec. Maps 385A, 386A. Scale 1:63,360, or 1 inch to 1 mile. 1936.
- Guliel Lake sheet, east half, Témiscamingue County, Quebec. Geology by James Fenwick Henderson, 1935. Map 390A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Guliel Lake sheet, west half, Témiscamingue County, Quebec. Geology by James Fenwick Henderson, 1935. Map 389A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Gun Lake area, Bridge River, Lillooet district, British Columbia. Map 348A. Scale 1:31,680, or 1 inch to $\frac{1}{4}$ mile. 1936.
- Hardisty, Alberta. Geology by Percival Sidney Warren and George Sherwood Hume, 1935 and 1936. Map 502A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Hearst-Kapuskasing area, east sheet, Cochrane and Algoma districts, Ontario. Geology by Ludlow J. Weeks, 1935, 1936. Map 411A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Hearst-Kapuskasing area, west sheet, Cochrane and Algoma districts, Ontario. Geology by Ludlow J. Weeks, 1935, 1936. Map 412A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Hecia sheet, east half, Manitoba. Geology by Ashton William Johnston, 1936. Map 429A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Herb Lake area, centre, north and south sheets, Manitoba. Geology by Clifford Howard Stockwell, 1935. Maps 374A, 375A, 376A. Scale 1:12,000, or 1 inch to 1,000 feet. 1936; reviewed in Canadian Min. Jour., vol. 58, no. 7, pp. 376-377, July 1937.
- Kejlmikujik Lake sheet, east half, Annapolis and Queens Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, and James Tinley Wilson, 1936. Map 437A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Kejlmikujik Lake sheet, west half, Digby, Annapolis, and Queens Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, James Tinley Wilson, 1936. Map 438A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Kettle River sheet, west half, Similkameen and Osoyoos districts, British Columbia. Map 420-A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Kinojevis sheet, Témiscamingue and Abitibi Counties, Quebec. Geology by William Fleming James, James Buckland Mawdsley, and Arthur Hamilton Lang. Map 306A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2359, 1935.
- Laberge sheet, Yukon Territory. Geology by William Egbert Cockfield (in charge), 1929-30; Everett John Lees, 1929-31; and Hugh Samuel Bostock, 1934. Map 372A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Lac La-Ronge sheet, east and west halves, Saskatchewan. Geology by D. M. E. McLarty, 1935. Maps 357A, 358A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Lake Ainslie sheet, Inverness County, Nova Scotia. Geology by George William Hallel Norman. Map 282A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2302, 1933.
- Lake Etchemin area, Dorchester and Beauce Counties, Quebec. Geology by Carl Tolman. Map 395A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Lake Huron sheet, Ontario. Geological compilation by William Henry Collins. Map 155A (3d ed.). Scale 1:506,880, or 1 inch to 8 miles. Pub. 1553, 1933.
- Lake Nipigon sheet, Ontario. Map 308A. Scale 1:506,880, or 1 inch to 8 miles. Pub. 3264, 1935.
- Little Long Lac area, Thunder Bay District, Ontario. Geology by Thomas Leslie Tanton. Map 313A. Scale 1:126,720, or 1 inch to 2 miles. Pub. 2369, 1934.
- Liverpool sheet, east half, Queens and Lunenburg Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, and James Tinley Wilson, 1936. Map 439A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Liverpool sheet, west half, Queens County, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, and James Tinley Wilson, 1936. Map 440A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Macamic sheet, Abitibi County, Quebec. Geology by O. L. Backman. Map 298A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2336, 1934.
- Malaga Lake sheet, east half, Queens and Lunenburg Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, and James Tinley Wilson, 1936. Map 435A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Malaga Lake sheet, west half, Queens and Lunenburg Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, and James Tinley Wilson, 1936. Map 436A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Manitoulin Island, Manitoulin district, Ontario. Geology by Merton Yarwood Williams, 1935. Map 351A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Megantio sheet (west half), Frontenac County, Quebec. Geology by Clifford Symington Lord, 1935. Map 379A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Mine Center area, Rainy River district, Ontario. Geology by Thomas Leslie Tanton. Map 334A. Scale 1:31,680, or 1 inch to $\frac{1}{4}$ mile. 1936.

Canada Geological Survey—Continued.

1. Geological maps as follows—Continued.

- Mudjatik Haultain area, northeast quarter, Saskatchewan. Geology by Frederick James Alcock, 1934. Map 318A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2378, 1935.
- Mudjatik-Haultain area, northwest quarter, Saskatchewan. Geology by Frederick James Alcock, 1934. Map 317A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2377, 1935.
- Mudjatik-Haultain area, southeast quarter, Saskatchewan. Geology by Frederick James Alcock, 1934. Map 320A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2380, 1935.
- Mudjatik-Haultain area, southwest quarter, Saskatchewan. Geology by Frederick James Alcock, 1934. Map 319A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2379, 1935.
- Newbec area, Dufresnoy township, Abitibi County, Quebec. Geology by Morley Evans Wilson, 1932, 1933. Map 456A. Scale 1:9,600, or 1 inch to 800 feet. 1939.
- Nonacho Lake, District of Mackenzie, Northwest Territories. Geology by James Fenwick Henderson, 1936. Map 526A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Norway House sheet, east half, Manitoba. Geology by Ashton William Johnston, 1936. Map 423A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Norway House sheet, west half, Manitoba. Geology by Ashton William Johnston. 1936. Map 424A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Nova Scotia sheet. Map 39A (2d ed.). Scale 1:506,880, or 1 inch to 8 miles. Pub. 1185, 1927.
- Ogilvie sheet, Yukon Territory. Map 373A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Oliver Lake, northern Saskatchewan. Geology by Frederick James Alcock, 1937. Map 528A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Opemisca sheet, east half, Abitibi Territory, Quebec. Geology by George William Hallet Norman, 1936. Map 401A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Ottawa sheet, east half, Carleton and Hull Counties, Ontario and Quebec. Geology by Alice Evelyn Wilson, 1935. Map 413A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Ottawa sheet, west half, Carleton and Hull Counties, Ontario and Quebec. Geology by Alice Evelyn Wilson, 1935. Map 414A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Oxford House sheet, Manitoba. Geology by John Frank Wright. Map 305A (provisional ed.). Scale 1:253,440, or 1 inch to 4 miles. Pub. 2357, 1934.
- Oxford sheet, east half, Cumberland and Colchester Counties, Nova Scotia. Geology by George William Hallet Norman, 1932, and Walter Andrew Bell, 1934. Map 409A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Oxford sheet, west half, Cumberland and Colchester Counties, Nova Scotia. Geology by George William Hallet Norman, 1932, and Walter Andrew Bell, 1934. Map 410A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Palmarolle sheet, Abitibi County, Quebec. Geology by Basil Scott Whyte Buffam, 1925, 1926, revised by Arthur Hamilton Lang, 1932. Map 293A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2325, 1934.
- Papaonga area, Kenora district, Patricia portion, Ontario. Geology by Willis Isaac Wright and the Ontario Department of Mines. Map 347A. Scale 1:126,720, or 1 inch to 2 miles. 1936.
- The Pas sheet, Manitoba and Saskatchewan. Geology by John Frank Wright. Map 268A. Scale 1:506,880, or 1 inch to 8 miles. Pub. 2272, 1934.
- Pekisko Hills area, Alberta. Canada Geol. Survey Paper 37-12, geol. map, no text, 1937.
- Pigeon River area, Thunder Bay district, Ontario. Geology by Thomas Leslie Tanton, 1935. Maps 354A, 355A, 356A. Scale 1:63,360, or 1 inch to 1 mile. 1936; reviewed in Canadian Min. Jour., vol. 58, no. 4, p. 204, April 1937.
- Plaster Rock sheets, Victoria County, New Brunswick. Maps 391A, 392A. Scale 1:63,360 or 1 inch to 1 mile. 1936.
- Portland Canal area, Cassiar district, British Columbia. Geology by Richard George McConnell, John Johnston O'Neill, Stuart James Schofield and G. George Hanson. Map 307A. Scale 1:253,440, or 1 inch to 4 miles. Pub. 2362, 1935.
- Prince Rupert sheet, British Columbia. Map 278A. Scale 1:506,880, or 1 inch to 8 miles. Pub. 2286, 1933.
- Quesnel Forks sheet. Cariboo District, British Columbia. Geology by John Fortune Walker and William Egbert Cockfield. Map 294A (provisional ed.). Scale 1:63,360, or 1 inch to 1 mile. Pub. 2326, 1933.
- Quetico sheet, east half, Thunder Bay and Rainy River districts, Ontario. Geology by Thomas Leslie Tanton, 1928-29, 1931, 1936. Map 432A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Rae-Great Bear Lake area, between Faber Lake and Hottah Lake, District of Mackenzie, Northwest Territories. Geology by Desmond Fife Kidd, 1934. Map 332A, center sheet. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Rae-Great Bear Lake area, between Hottah Lake and Richardson Island, District of Mackenzie, Northwest Territories. Geology by Desmond Fife Kidd, 1934. Map 333A, north sheet. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Rae-Great Bear Lake area, between Rae and Faber Lake, District of Mackenzie, Northwest Territories. Geology by Desmond Fife Kidd, 1934. Map 331A, south sheet. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Red Deer, Alberta. Geology by Ralph Leslie Rutherford, 1935 and 1936. Map 504A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Regina sheet, Saskatchewan. Geology by Frank Harris McLearn, 1927-1931, and Percival Sidney Warren, 1928-1930. Map 267A. Scale 1:506,880, or 1 inch to 8 miles. Pub. 2271, 1935. Sections supplementing Map 267A, Regina sheet, Saskatchewan, Pub. 2341, 1935.
- Ribstone Creek, Alberta. Geology by Percival Sidney Warren and George Sherwood Hume, 1935 and 1936. Map 501A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Rouyn area, Rouyn Township, Temiscamingue County, Quebec. Geology by Morley Evans Wilson, 1934, 1935. Map 453A. Scale 1:9,600, or 1 inch to 800 feet. 1939.
- Rouyn-Bell River area, Abitibi and Temiscamingue Counties, Quebec. Map 328A. Scale 1:253,440, or 1 inch to 4 miles. Pub. 2404, 1936.
- Rouyn-Harricana area, Abitibi and Temiscamingue Counties, Quebec. Map 271A. Scale 1:253,440, or 1 inch to 4 miles. Pub. 2275, 1931.
- Rush Lake sheet, Sudbury District, Ontario. Geology by Harold MacColl Bannerman. Map 200A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2321, 1933.
- Seal River area, northern Manitoba. Geology by Ashton William Johnston, 1935. Maps 345A, 346A. Scale 1:760,320, or 1 inch to 12 miles. 1936.
- Sevogle Rivers area, Northumberland County, New Brunswick. Geology by Eugene Wesley Shaw, 1935. Map 382A. Scale 1:126,720, or 1 inch to 2 miles. 1938.

Canada Geological Survey—Continued.

1. Geological maps as follows—Continued.

- Shebandowan area, Thunder Bay district, Ontario. Geology by Thomas Leslie Tanton, 1928-29, 1931. Map 338A (Provisional edition). Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Sherbrooke Lake, Lunenburg and Kings Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong, 1935, and James Tinley Wilson, 1936. Map 531A. Scale 1:63,360, or 1 inch to 1 mile. 1939.
- Springfield, Annapolis, Lunenburg, Kings, and Queens Counties, Nova Scotia. Geology by Eugene Rodolphe Faribault, P. Armstrong (1935), and James Tinley Wilson, 1936. Map 532A. Scale 1:63,360, or 1 inch to 1 mile. 1939.
- Springhill sheet, Cumberland and Colchester Counties, Nova Scotia. Geology by Forrest Alexander Kerr, 1924; Islwyn Winwaloe Jones, 1928; Walter Andrew Bell, 1936. Map 357A. Scale 1:63,360, or 1 inch to 1 mile, 1938.
- Stettler, Alberta. Geology by Ralph Leslie Rutherford, 1935 and 1936. Map 503A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Stikine River area, center sheet, Cassiar district, British Columbia. Geology by Forrest Alexander Kerr, 1926-29; topography by Forrest Alexander Kerr and International Boundary Commission. Map 310A. Scale 1:126,720, or 1 inch to 2 miles. Pub. 2366, 1935.
- Stikine River area, north sheet. Cassiar district, British Columbia. Geology by Forrest Alexander Kerr, 1926-29; topography by Forrest Alexander Kerr and J. Davidson. Map 309A. Scale 1:126,720, or 1 inch to 2 miles. Pub. 2365, 1935.
- Stikine River area, south sheet, Cassiar district, British Columbia. Geology by Forrest Alexander Kerr, 1926-29; topography by Forrest Alexander Kerr and International Boundary Commission. Map 311A. Scale 1:126,720, or 1 inch to 2 miles. Pub. 2367, 1935.
- Stony Rapids sheet (west half), northern Saskatchewan. Geology by Frederick James Alcock, 1935. Map 365A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Stull Lake sheet, east half, Manitoba and Ontario. Geology by D. L. Downie, 1936 and Ontario Dept. Mines. Map 451A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Stull Lake sheet, west half, Manitoba and Ontario. Geology by D. L. Downie, 1936 and Ontario Dept. Mines. Map 452A. Scale 1:253,440, or 1 inch to 4 miles. 1938.
- Sturgeon River area, Thunder Bay district, Ontario. Geology by Thomas Leslie Tanton. Map 312A. Scale 1:126,720, or 1 inch to 2 miles. 1934.
- Sydney sheet (east half), Cape Breton County, Nova Scotia. Geology by Albert Orion Hayes, 1917-19; Walter Andrew Bell, 1921, 1930, 1931; and Edwin Alexander Goranson, 1930, 1931. Map 361A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Sydney sheet (west half), Cape Breton and Victoria Counties, Nova Scotia. Geology by Walter Andrew Bell and Edwin Alexander Goranson, 1930, 1931. Map 360A. Scale 1:63,360 or 1 inch to 1 mile. 1938.
- Tahta-Morice area, coast district, British Columbia. Geology by Mathew Sherwood Hedley, 1935. Map 367A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Taltson Lake, District of Mackenzie, Northwest Territories. Geology by James Fenwick Henderson, 1936. Map 625A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Taschereau sheet, Abitibi County, Quebec. Geology by Basil Scott Whyte Buffam, 1925, 1926, revised by Arthur Hamilton Lang, 1932. Map 285A. Scale 1:63,360, or 1 inch to 1 mile. Pub. 2311, 1934.
- Tazin Lake sheet, northern Saskatchewan. Geology by Frederick James Alcock, 1935. Map 363A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Teslin-Quilet Lake area, Yukon Territory. Geology by Everett John Lees. Map 350A. Scale 1:253,440, or 1 inch to 4 miles. 1936.
- Thunder Bay silver area, Thunder Bay district, Ontario. Map 276A. Scale 1:253,440 or 1 inch to 4 miles. Pub. 2282, 1931.
- Tofield, Alberta. Geology by Ralph Leslie Rutherford, 1935 and 1936. Map 505A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Tuadook Lake sheet, west half, Victoria and York Counties, New Brunswick. Map 393A. Scale 1:63,360, or 1 inch to 1 mile. 1936.
- Vancouver sheet, British Columbia. Map 196A. Scale 1:506,880, or 1 inch to 8 miles. Pub. 2138, 1928.
- Ville-Marie sheets, Témiscamingue County, Quebec. Maps 384A, 383A. Scale 1:63,360, or 1 inch to 1 mile. 1936.
- Ville-Marie sheet, east half, Témiscamingue County, Quebec. Geology by James Fenwick Henderson, 1935. Map 388A. Scale 1:63,360 or 1 inch to 1 mile. 1938.
- Ville-Marie sheet, west half, Témiscamingue County, Quebec. Geology by James Fenwick Henderson, 1935. Map 387A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Waite area, Duprat and Dufresnoy Townships, Abitibi County, Quebec. Geology by Morley Evans Wilson, 1932, 1933. Map 455A. Scale 1:9,600, or 1 inch to 800 feet. 1939.
- Wapus Lake, northern Saskatchewan. Geology by Frederick James Alcock, 1937. Map 527A. Scale 1:253,440, or 1 inch to 4 miles. 1939.
- Willow River sheet, east half, Cariboo district, British Columbia. Geology by George Hanson, 1933 and 1934. Map 336A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Willow River sheet, west half, Caribou district, British Columbia. Geology by George Hanson, 1933 and 1934. Map 335A. Scale 1:63,360, or 1 inch to 1 mile. 1938.
- Woodstock area, Carleton and York Counties, New Brunswick. Geology by J. F. Caley. Map 380A. Scale 1:126,720, or 1 inch to 2 miles. 1938.

2. Prospecting in Canada, by officers of the Geological Survey, Ottawa: Canada Geol. Survey Econ. Geology Ser. 7, 288 pp., 25 figs., 23 pls., 1930: 2d ed., Pub. 2159, 1935.
3. [Map showing] distribution of early pre-Cambrian sedimentary formations in the Canadian Shield. Scale 1 inch to 60 miles. 1933.

Canfield, Charles Reiter.

1. Subsurface stratigraphy of Santa Maria Valley oil field and adjacent parts of Santa Maria Valley, Calif.: Am. Assoc. Petroleum Geologists Bull., vol. 23, no. 1, pp. 45-81, 8 figs. incl. index maps, January 1939.

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1. (and Cannon, Joe). Structural and stratigraphic development of South Permian basin, west Texas: *Am. Assoc. Petroleum Geologists Bull.*, vol. 16, no. 2, pp. 189-204, 4 figs., February 1932.

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1. Geology of the Piseco Lake quadrangle: *New York State Mus. Bull.* 312, 107 pp., 9 pls. incl. geol. and topog. maps, 6 figs incl. index map, July 1937.

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3. Colorado amethyst: *Rocks and Minerals*, vol. 12, no. 3, p. 83, March 1937.
4. Minerals of Leadville, Colo.: *Rocks and Minerals*, vol. 12, no. 6, pp. 172-175, June 1937.
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Capps, Stephen Reid.

1. The Skwentna region, Alaska: *U. S. Geol. Survey Bull.* 797, pp. 67-98, 1 fig., 1 pl. map, 1929.
2. The Mount Spurr region, Alaska: *U. S. Geol. Survey Bull.* 810, pp. 141-172, 2 pls., 1929.
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1. Contributions from the Cushman Laboratory for Foraminiferal Research, Sharon, Massachusetts.

Vol. 5, pt. 1, March 1929.

70. *Kyphopta*, a new genus from the Cretaceous of Texas, pp. 1-4, 1 pl.
71. *Cycloloculina* in the Western Hemisphere, pp. 4-5.
72. (and Jarvis, P. W.). New Foraminifera from Trinidad, pp. 6-17, 2 pls.
73. (and Leavitt, David H.). On *Elphidium macellum* (Fichtel and Moll), *E. striato-punctatum* (Fichtel and Moll), and *E. crispum* (Linné), pp. 18-22, 1 pl.

Vol. 5, pt. 2, June 1929.

74. The term "arenaceous Foraminifera" and its meaning, pp. 25-27.
75. The genus *Bolivina* and its species, pp. 28-34, 1 pl.
76. On *Guttulina lactea* (Walker and Jacob), *Polymorphina burdiga lensis* D'Orbigny, and *Pyrulina gutta* D'Orbigny, by Yoshiaki Ozawa, pp. 34-39, 1 pl.
77. Notes on the Foraminifera of the Byram marl, pp. 40-48, 2 pls.

Vol. 5, pt. 3, September 1929.

78. An American *Virgulina* related to *V. pertusa* Reuss, pp. 53-54.
79. Some species of *Siphogenerinoides* from the Cretaceous of Venezuela, pp. 55-59, 1 pl.
80. On *Quinqueloculina seminula* (Linné), pp. 59-60.
81. (and Alexander, Charles Ivan). *Frankenina*, a new genus of arenaceous Foraminifera, pp. 61-62.
82. (and Waters, James Alton). Some arenaceous Foraminifera, from the Taylor marl of Texas, pp. 63-66, 1 pl.

83. Pliocene Lagenas from California, pp. 67-72, 1 pl.

Vol. 5, pt. 4, December 1929.

84. A lato Tertiary fauna of Venezuela and other related regions, pp. 77-101, 3 pls.
85. *Planulina ariminensis* D'Orbigny and *P. wuellerstorfi* (Schwager), pp. 102-105, 1 pl.
86. *Virgulina gunteri* Cushman—a correction of name, p. 105.

Vol. 6, pt. 1, March 1930.

87. (and Alexander, Charles Ivan). Some *Vaginullinas* and other Foraminifera from the Lower Cretaceous of Texas, pp. 1-10, 2 pls.
88. Some notes on the genus *Petallina*, pp. 11-17, 1 pl.
89. Fossil species of *Hastigerinella*, pp. 17-19.

Vol. 6, pt. 2, June 1930.

90. Notes on Upper Cretaceous species of *Vaginulina*, *Flabellina*, and *Fronicularia* from Texas and Arkansas, pp. 25-38, 2 pls.
91. (and Wickenden, Robert Thomas Daubigny). The development of *Hantkenina* in the Cretaceous with a description of a new species, pp. 39-43, 1 pl.
92. Notes on early Paleozoic Foraminifera, pp. 43-44.

Vol. 6, pt. 3, September 1930.

93. (and Moyer, Dorothy A.). Some recent Foraminifera from off San Pedro, California, pp. 49-62, 2 pls.
94. On *Uvigerina pigmea* D'Orbigny, pp. 62-63.
95. (and Hedberg, Hollis Dow). Notes on some Foraminifera from Venezuela and Colombia, pp. 64-69, 1 pl.

Cushman, Joseph Augustine.—Continued.

1. Contributions from the Cushman Laboratory for Foraminiferal Research, Sharon, Massachusetts—Continued.

Vol. 6, pt. 4, December 1930.

- 96. A résumé of new genera of the Foraminifera erected since early 1923, pp. 74-94, 3 pls.
- 97. (and Cole, William Storrs). Pleistocene Foraminifera from Maryland, pp. 94-100, 1 pl.
- 98. The range of *Sigmoidella plummerae* Cushman and Ozawa, a correction, p. 101.

Vol. 7, pt. 1, March 1931.

- 99. (and Parker, Frances L.). Miocene Foraminifera from the Temblor of the east side of the San Joaquin Valley, California, pp. 1-16, 2 pls.
- 100. Some notes on the genus *Flabellinella* Schubert, pp. 16-17.
- 101. The microspheric and megalospheric forms of *Valvulina oriedoiana* D'Orbigny, pp. 17-19, 1 pl.
- 102. *Parrina*, a new generic name, p. 20.

Vol. 7, pt. 2, June 1931.

- 103. New late Tertiary Foraminifera from Vitilevu, Fiji, pp. 25-32, 1 pl.
- 104. (and Ponton, Gerald Mungo). A new *Virgulina* from the Miocene of Florida, pp. 31-33.
- 105. Cretaceous Foraminifera from Antigua, B. W. I., pp. 33-46, 2 pls.
- 106. (by Nuttall, Winfred Laurence Falkner). Additional localities of the *Challenger* Foraminifera, pp. 46-47.

Vol. 7, pt. 3, September 1931.

- 107. (and Ellisor, Alva Christine). Some new Tertiary Foraminifera from Texas, pp. 51-58, pl. 7.
- 108. Three new upper Eocene Foraminifera, pp. 58-59, pl. 7.
- 109. (and Ponton, Gerald Mungo). A new *Plectofrondicularia* from Florida, pp. 60-62, pl. 8.
- 110. Notes on the Foraminifera described by Batsch in 1791, pp. 62-72, 2 pls.

Vol. 7, pt. 4, December 1931.

- 111. (and Jarvis, P. W.). Some new Eocene Foraminifera from Jamaica, pp. 75-78, pl. 10.
- 112. Two new foraminiferal genera from the south Pacific, pp. 78-82, pl. 10.
- 113. *Glandulina ozawai* Cushman, new species, p. 83.
- 114. *Hastigerinella* and other interesting Foraminifera from the Upper Cretaceous of Texas, pp. 83-90, pl. 11.

- 115. (by Henbest, Lloyd George). The species *Endothyra baileyi* (Hall), pp. 90-93, pls. 11, 12.

Vol. 8, pt. 1, March 1932.

- 116. (and Ponton, Gerald Mungo). Some interesting new Foraminifera from the Miocene of Florida, pp. 1-4, pl. 1.
- 117. *Rectogumbelina*, a new genus from the Cretaceous, pp. 4-7, pl. 1.
- 118. Notes on the genus *Virgulina*, pp. 7-23, 2 pls.

Vol. 8, pt. 2, June 1932.

- 119. (and Barbat, William Franklin). Notes on some arenaceous Foraminifera from the Temblor formation of California, pp. 29-40, 1 pl.
- 120. (and Ellisor, Alva Christine). Additional new Eocene Foraminifera, pp. 40-43.
- 121. Some recent Angulogerinas from the eastern Pacific, pp. 44-48, 1 pl.

Vol. 8, pt. 3, September 1932.

- 122. (and Ponton, Gerald Mungo). An Eocene foraminiferal fauna of Wilcox age from Alabama, pp. 51-72, 2 pls.

Vol. 8, pt. 4, December 1932.

- 123. The genus *Vulvulina* and its species, pp. 75-85, 1 pl.
- 124. *Textularia* and related forms from the Cretaceous, pp. 86-97, 1 pl.
- 125. The relationships of *Textulariella* and description of a new species, pp. 97-98, pl. 11.
- 126. Two new Navarro Foraminifera from Texas, pp. 98-99, pl. 11.

Vol. 9, pt. 1, March 1933.

- 127. New Foraminifera from the upper Jackson Eocene of the southeastern Coastal Plain region of the United States, pp. 1-21, 2 pls.
- 128. A new species of *Clavulina* from the Cretaceous of Texas, pp. 21-22.

Vol. 9, pt. 2, June 1933.

- 129. (and Ponton, Gerald Mungo). A new genus of the Foraminifera, *Gunteria*, from the middle Eocene of Florida, pp. 25-30, 1 pl.
- 130. (by Pijpers, Paul J.). *Ruttenia*, a new name for *Bonairea* Pijpers, 1933, p. 30.
- 131. (by Carman, Katherine Woodley). *Dentostomina*, a new genus of the Miliolidae, pp. 31-32.
- 132. Some new foraminiferal genera, pp. 32-38, 1 pl.
- 133. Relationships and geologic distribution of the genera of the Valvulinidae, pp. 38-44, 1 fig.

Vol. 9, pt. 3, September 1933.

- 134. New American Cretaceous Foraminifera, pp. 49-64, 2 pls.
- 135. Post-Cretaceous occurrence of *Gumbelina* with a description of a new species, pp. 64-69, 1 pl.
- 136. Some notes on D'Orbigny's models, pp. 70-73.

Vol. 9, pt. 4, December 1933.

- 137. Some new recent Foraminifera from the tropical Pacific, pp. 77-95, 3 pls.
- 138. (and Ellisor, Alva Christine). Two new Texas Foraminifera, pp. 95-96.
- 139. On homonyms in Foraminifera, pp. 96-98.

Vol. 10, pt. 1, March 1934.

- 140. (and Klempell, Robert Minssen). New and unrecorded Foraminifera from the California Miocene, pp. 1-23, 4 pls.
- 141. (and Galliher, Edgar Wayne). Additional new Foraminifera from the Miocene of California, pp. 24-26.

Vol. 10, pt. 2, June 1934.

- 142. (and Parker, Frances L.). Notes on some of the earlier species originally described as *Bulimina*, pp. 27-36, 2 pls.
- 143. Notes on the genus *Spiroplectoides* and species, pp. 37-44.
- 144. The generic position of "*Cornuspira cretacea* Reuss", pp. 44-47.

Vol. 10, pt. 3, September 1934.

- 145. (and Dusenbury, Arthur N., Jr.). Eocene Foraminifera of the Poway conglomerate of California, pp. 51-65, 2 pls.
- 146. (and Garrett, Julius Benjamin, Jr.). New species of *Triloculina* from the Claiborne of Louisiana, pp. 65-70, 2 pls.
- 147. (and Campbell, Arthur Shackelton). A new *Spiroplectoides* from the Cretaceous of California, pp. 70-71, pl. 9, figs. 15-17.
- 148. (and Jarvis, P. W.). Some interesting new uniserial Foraminifera from Trinidad, pp. 71-75, pl. 10, figs. 6-13, and 16.

Cushman, Joseph Augustine—Continued.

1. Contributions from the Cushman Laboratory for Foraminiferal Research, Sharon, Massachusetts—Continued.

- Vol. 10, pt. 4, December 1934.
 149. Notes on the genus *Tretomphalus*, with descriptions of some new species and a new genus, *Pyropilus*, pp. 79-101, 3 pls.
 150. The relationships of *Ungulatella* with descriptions of additional species, pp. 101-104, pl. 13, figs. 5-8c.
 151. A recent *Gumbelitra* (?) from the Pacific, p. 105.
- Vol. 11, pt. 1, March 1935.
 152. (by Lalicker, Cecil Gordon). New Cretaceous Textulariidae, pp. 1-13, 2 pls.
 153. (and Hedberg, Hollis Dow). A new genus of Foraminifera from the Miocene of Venezuela, pp. 13-16, 1 pl. (in part).
 154. (and Adams, Bradford C.). New late Tertiary Bolivinas from California, pp. 16-20, 1 pl. (in part).
 155. *Bitubulogenerina howei*, a new species from the lower Oligocene, pp. 20-21, 1 pl. (in part).
- Vol. 11, pt. 2, June 1935.
 156. New species of Foraminifera from the lower Oligocene of Mississippi, pp. 25-39, 2 pls.
 157. (by Lalicker, Cecil Gordon). New Tertiary Textulariidae, pp. 39-51, 2 pls.
- Vol. 11, pt. 3, September 1935.
 158. (and Hobson, Henry David). A foraminiferal faunule from the type San Lorenzo formation, Santa Cruz County, Calif., pp. 53-64, 2 pls.
 159. (and Campbell, Arthur Shackelton). Cretaceous Foraminifera from the Moreno shale of California, pp. 65-73, 2 pls.
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 Ver Wiebe, W. A. (and Vickery, W. R.). Index to the stratigraphy of eastern Kansas and adjoining areas, pp. 105-120.
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Ver Wiebe, W. A. Geology of southwestern Kansas and adjacent States, pp. 8-37, 19 figs. incl. maps, bibliography.
 Taylor, Garvin L. The Hugoton gas area, pp. 57-63, 2 figs.
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8. Guidebook 9th annual field conference, upper Mississippi Valley, Iowa City, Iowa, to Duluth, Miss., August 25 to September 1, 471 pp. (†), illus. incl. geol. maps, 1935. Includes the following papers:

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 Ball, John Rice. Isopach map of the Galena, Decorah, and Platteville, pp. 346-347, 1 map.
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- Howell, Jesse V. (and Thwaites, Fredrik Turville). Structural map on top of the pre-Cambrian, opposite p. 354; (and Thwaites, Fredrik Turville, and Jones, Daniel Johnathan). Structural map on top of the St. Peter sandstone, opposite p. 360; The Mississippi River arch, pp. 386-389, 2 pls. (geol. maps), 3 figs.
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- Lamar, John Everts. Isopach map of St. Peter formation, opposite p. 348.
- Laudon, Lowell Robert. Supplemental statement on the Mississippian system in Iowa, pp. 246-247.
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- Sutton, Arle Herbert. Stratigraphy of the Silurian of the upper Mississippi Valley, pp. 268-280, 3 figs. incl. geol. sketch map.
- Tester, Allen Crawford. Isopach map of the post-Kinderhook-Mississippian, opposite p. 334; Isopach map of the Kinderhook group, opposite p. 336; Isopach map of the Devonian system, opposite p. 338.
- Thwaites, Fredrik Turville. Structural map on top of the Dresbach formation opposite p. 356; Physiography of the Baraboo district, Wis., pp. 395-404, 2 pls. incl. geol. map, 12 figs. incl. geol. map; Zones of mineralization of underground waters in Minnesota, Iowa, Illinois, and Wisconsin, pp. 415-416, 3 figs. incl. geol. maps.
- Trowbridge, Arthur Carleton. Structural map on top of the Jordan sandstone, opposite p. 358.
- Workman, Lewis Edwin. Isopach map of the Silurian system in the Mississippi Valley opposite p. 340; (and others) Mississippi Valley geologic cross section, pp. 362-372, 3 pls.

9. Guidebook 10th annual field conference [Pennsylvanian and Permian rocks of northeastern Kansas and northwestern Missouri], September 4 to September 7, 74 pp. (†), 47 figs. incl. strat. columns, 1936. Includes the following paper:

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- Abernathy, George Elmer. The Cherokee group of southeastern Kansas, pp. 18-23, 2 figs.
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Anonymous—Continued.

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Anonymous—Continued.

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INDEX

[The numbers refer to entries in the Bibliography]

Ablation.

- Greenland, Nugssuak region : Kindle, 36.
- Snow fields, high altitudes : Matthes, 21.
- Snow, western mts. : Matthes, 23.

Abbott Farm site redates : Richards, 20-a.

Abrasives.

- Emery deposits, Peekskill, N. Y. : Zodac, 25.

Georgia, tripoli deposits : Crickmay, G. W., 20, 21.

Illinois, lms. and dolomite : Lamar, 15.

Industrial minerals and rocks : A. I. M. E., 2.

North Carolina : Bryson, 7-a.

Nova Scotia, grindstones : Messervey, 3.

Oklahoma : Ham, 2.

Opaque minerals, emery ores : Bray, J. M., 1.

Absolute scale of geol. ages : Keyes, 347.

Abyssal assimilation : Grout, 5.

Accessory minerals.

Igneous and metam. rocks : Reed, J. C., 9.

Wolfe Mtn. granite, Tex. : McAdams, 1.

Accuracy of analyses, amphiboles, Larsen, 20.

Acmite, fusion relations : Bowen, N. L., 3.

Adamite, Gold Hill, Utah : Staples, 3.

Addresses. See also Miscellaneous.

Alaska, geol. features : Mertie, 22.

Ancient life of the Arctic : Foerste, 15.

Birds of the past : Wetmore, 8.

Borderlands in sci. : Richtmyer, 1.

Canada mining history : Allan, 10.

Carbon dioxide occurrence : German, F. E. E., 1.

Centennial, Dana's System of mineralogy : Kraus, 8.

Classification and duration, Pleist. : Kay, G. F., 9.

Continents, form, drift, and rhythm : Watts, 1, 2.

Contributions to geol. sci. by econ. geologists : Tolman, C. F., 5.

Crazy Mts., Mont. : Wolff, 4.

Crystallography, century of progress : Whitlock, 7.

Deep earthquakes : Slichter, 4.

Deep-focus earthquakes and allied problems : Stechschulte, 3.

Deformation, earth's crust : Bucher, 19.

Dentition, earliest mammalian : Simpson, 37.

Addresses—Continued.

Depths of the earth : Daly, 8.

Development and evolution : Swinerton, H. H., 1.

Dutch geol. inv. in Cuba : Rutten, L. M. R., 2.

Early man in N. Am. : Kay, G. F., 20 ; Woodward, A. S., 2.

Earth, interior : Heck, 46.

Earth physics and geog. papers : Fleming, J. A., 1.

Earth structure and origin : Matber, 29.

Earthquakes in Hawaii : Waesche, 1.

Environment, sedimentation and stratigraphy : Twenhofel, 5.

Erosion, cyclic and noncyclic aspects : Fenneman, 6.

Eutopotroplism : Lane 16.

Evolution, new aspects : Pycraft, 1.

Facies in strat. paleontology : Kindle, 22.

Folded mts., origin : Prouty, 5, 17.

Fluorescence and related phenomena : Melhase, 23.

Frontiers of geology : Geol. Soc. America, 1.

Geochemistry, present trends : Wells, R. C., 14.

Geologic class. and correl. : Chamberlin, 9.

Geological education : Swartz, C. K., 4.

Geological factors in mine valuation : McLaughlin, 9.

Geological Survey of Canada : Gray, F. W., 1.

Geological surveys : Dott, 12.

Geologic-seismologic frontier : Macelwane, 19.

Geologist, and his profession : Bryan, 37.

Geologists, future in petroleum industry : Fuqua, 3.

Geology and chemistry : Bowen, 21.

Geology and clay researches : Ries, 8.

Geology and engineering : Berkey, 25.

Geology and history : Merriam, 16.

Geology and industry : Jillson, 20.

Geology and literature : Collins, 8.

Geology and petroleum : Heroy, 2.

Geology and the State : Mendenhall, 1.

Geology, agent in human welfare : Penrose, R. A. F., 2.

Addresses—Continued.

- Geology, economic and cultural value: Hall, G. M., 11.
- Geology in nat. and everyday life: Mansfield, G. R., 26.
- Geophysics and geology in petroleum work: Kannenstine, 1.
- Glaciers, mtn. and continent: Hobbs, 11.
- Globe, the living: Willis, R., 5.
- Grand Coulee, Wash.: McMacken, 3.
- Hilo, Hawaii, and lava flows: Jaggar, 39.
- History of study of ore minerals: Thomson, J. Ellis, 20.
- Homo sapiens, whence and whither: Hooton, 2.
- Hot springs problem: Day, 11.
- Ice ages: Coleman, 11.
- Ideas of geology, emergence: Ashley, 25.
- Illinois State Geol. Survey: Bastin, 3.
- Indiana's mammals, origin: Lyon, M. W., Jr., 2.
- Interpretation, geophys. data: Blau, 2.
- Invertebrate paleontology in America: Bassler, 12.
- Isomorphous substitution in minerals: Phillips, A. H., 1.
- Isostasy, ideal, departures from: Daly, 19.
- Kilauea, Hawaii, crack measurement and tilt: Wacsche, 2.
- Limestone, phosphatic, Ky.: Peter, 1.
- Lyell, Sir Charles: Adams, F. D., 7-a.
- Magmatic differentiation: Fenner, 15.
- Man, early, paleontology of: Merriam, J. C., 14.
- Marine unconfs. and congloms.: Twenhofel, 20.
- Mauna Loa, Hawaii, lava flows: Jaggar, 37.
- Metamorphism and ig. action: Read, H. H., 1.
- Migrations, Cenozoic mammals: Colbert, 8.
- Mineral fuels and civilization: Eavenson, 2.
- Mineral veins, origin: Behre, 17.
- Mineralogy, present trends: Palache, 34.
- Mineralogy's contributions: Bayley, 7.
- Minerals around us: Thomson, J. Ellis, 16.
- Conservation: Leith, 11.
- In medicine: Jones, A. C., 1.
- Role in internat. situation: Leith, 12.
- Mountains, N. Am.: Reger, 8.
- Origin: Longwell, 33, 34.
- National Academy of Sciences, history of: Campbell, W. W., 1.
- Natural gas and geology: Lucke, 1.
- Natural law in geology: Bucher, 17.
- New England, surface layers, data: Leet, 11.
- New mineralogy: Winchell, 9.
- New viewpoint in paleontology: Kindle, 9.
- Nonmetallics, problems: Ries, 5.
- Observation, induction and exper.: Bowen, 18.

Addresses—Continued.

- Ore deposits, field studies: Sales, 3.
- Orton: Edward, geologist: Swinnerton, 11.
- Pacific Basin structure: Gutenberg, 35.
- Paleontology and humanity: Hawkins, H. L., 1.
- Paleontology, future of: Cushman, 37.
- Reptilian, prog. in: Gilmore, 24.
- Paleontology versus genetics: Osborn, 14.
- Petroleum, expl. for: Rosaire, 4.
- Future in U. S.: DeGolyer, 11.
- Geology: Lahee, 9.
- Geology and the A. A. P. G.: Levorsen, 9.
- Possibilities, Ill. Basin: Weller, 25.
- Problem: Clapp, F. G., 6.
- Production and eng.: Scott, W. W., 1.
- Production practice: Wrather, 6.
- Reserves of U. S.: Heroy, 1.
- Stratigraphic vs. structural accumulation: Levorsen, 7.
- Physics and geology: Karcher, 4.
- Plant life and philos. of geology: Gordon, W. T., 1.
- Plant records of the rocks: Seward, 1.
- Plants, fossil, collecting and preserving: Sanborn, 4.
- Pleistocene of Iowa: Kay, G. F., 5, 20.
- Powers, Sidney, eulogy: Wrather, 7.
- Pre-Cambrian: Leith, 8.
- Canada: Wilson, M. E., 21.
- Life: Raymond, 12.
- Research, prog. and scope: Sederholm, 2.
- Problems of glacialist: Leverett, 6.
- Problems of geology: Gregory, J. W., 6.
- Recent devel. of geology as applied sci.: Berkeley, 14.
- Reefs or bioherms: Cumings, 4.
- Rise of physiography: Fenneman, 10.
- Rocky Mtn. phosphate field: Mansfield, G. R., 10.
- Role of analysis in sci. inv.: Johnson, D. W., 28.
- Silicates, high-temperature research on, and ig. rocks: Bowen, 17.
- Sir Charles Lyell: Adams, F. D., 4.
- Skull and teeth development: Branson, C. C., 1-a.
- Southern California as structural type: Reed, 24.
- State-resource survey, model: Leighton, 23.
- Structure, continents and ocean basins: Field, 20.
- Tertiary map, discovery: Osborn, 12.
- Titanium deposits, Va., mineralization: Ross, C. S., 26.
- Trend of geol. thought: Tilton, 5.
- Trend of geology: Allan, 16.
- Ultrametamorphism and anatexis: Sederholm, 3.
- Uniformitarianism and inductive logic: Baker, H. B., 5.
- Up from the rocks: Jillson, 39.

Addresses—Continued.

- Vertebrate paleontology since 1888:
 Scott, W. B., 12.
 Volcanoes, geysers, and hot springs:
 Day, 10.
 Water conserv. geology and eng.: Bart-
 lett, T., 1.
 Water supply: Mehnzer, 25.

Aeolian sands.

- Central plains region: Van Royen, 2.

Aerial photography, photographs, and map-
ping.

- Air mapping: Meyer, W. H., Jr., 3.
 Airplanes in geol. studies: Alcock, 15.
 Alaska: Smith, P. S., 8.
 Alberta, Brazeau area: Sanderson, 4.
 Appalachian Mts. and plateau: Rich, 30.
 Barbers Hill area, Tex.: Barton, 25.
 Brazos River area, Tex.: Haquinus, 1.
 California placers: Jenkins, 18.

- San Jacinto tunnel area: Henderson,
 L. H., 3.

- Canada, Yukon Terr.: Wood, W. A., 1.
 Development, photog. equipment: Meyer,
 W. H., Jr., 1.

- Developments, recent: Talley, 1.

- Errors, compiling maps from photos.:
 Jones, B. G., 1.

- General: Atkinson, 1; Kerr, R. C., 1;
 Rice, G. S., Jr., 1; Snelgr, 1.

- Geologic explor.: Cozzens, W. L., 1;
 Olson, L. V., 1.

- Interpretation: Nouhuys, 1.

- Mapping from the air: Desjardines, 2.

- Glaciers from an airplane: Richards,
 C. P., 1.

- Greenland: Koch, L., 1; Lachmann, 1.
 Guadalupe, Mts., Tex.: Butcher, 2.

- History and devel.: Baisley, 1.

- Improvements in: Bruce, H. T., 1.

- Labrador: Forbes, A., 1, 2; Washburn,
 A. L., 2.

- Mapping from the air: Steinberg, 1.

- By refraction shooting: Gardner, L.
 W., 1.

- From photos.: Talley, 2.

- Inaccessible regions: Zeller, M., 1.

- Oil industry: Atkinson, J. C., 2; La-
 hee, 16.

- Michigan, Indian Lake: Poindexter, 3.

- Mississippi River, upper: Cooper, W.
 S., 6.

- Mounds, soil: Melton, 16.

- Newfoundland, Blow-Me-Down area:
 Snelgrove, 6.

- Oklahoma, Wichita Mts. oil field: Mil-
 lison, 2.

- Pacific region: Patton, R. S., 2.

- Petroleum discovery from air: Maple, 1.
 Industry helped by: Rice, G. S., Jr., 2.

- Structures: Bowen, R. A., 1.

- Photogrammetry, applied: Anderson, R.
 O., 1.

- Photographic equipment, development:
 Meyer, W. H., Jr., 2.

Aerial photography—Continued.

- Photographs in geol. mapping: English,
 W. A., 2; Loel, 3.

- Plotting maps from aerial photos.:
 Birdseye, 1.

- Prospecting from the sky: Whitmore, 1.

- Reconnaissance and contour mapping:
 Eliel, 2, 3.

- South Carolina, Coastal Plain: Cooke,
 C. W., 17.

- South Dakota, Black Hills: Tullis, 5.

- Surveying from the air, scope and lim-
 its: Miller, O. M., 1.

- Surveys: Jackson, K. B., 1.

- Tennessee River Basin mapping: Pen-
 dleton, 1.

- Tennessee Valley, planimetric maps:
 Pendleton, 2.

- Texas, Austin chalk cuesta: Blakemore,
 E. F., Jr., 2.

- Brazos River area: Haquinus, 1.

- Mounds and soil mottlings: Rich, 15.
 Uses of: Snelgr, 1.

- Volcanic eruptions: Jaggar, 5.

- Wyoming, Medicine bow oil field: Mc-
 Canne, 1.

- Aerial mapping and geol. explor.: Cozzens,
 W. L., 1.

- Aerial photography and map compilation:
 Low, J. W., 1.

- Aerinite, St. Louis Co., Mo.: Robertson,
 P., 5.

Agates.

- Atlantic Coast: Zodac, 13.

- Atlantic Coastal Plain: Ulke, 5.

- Bibliography: Zodac, 15.

- California blue agates: Akers, 1.

- Mint Canyon: Patton, J. W., 1.

- Vein silicates: Gordon, B. F., 2.

- Fluorescence: Dake, 24.

- Formation: Wild, 1.

- Experimental inv.: Cahen, 1.

- Theory: Cassirer, 1.

- Fracture agates: Reiner, 1.

- Freak simulations: Weidhaus, 1.

- General: Blair, J. M., 2; Cassirer, 2;
 Harstad, 1; Zeihen, 1; Zodac, 12, 14.

- Growth of bands: Goddard, M. G., 1.
 Idaho: Olson, B. H., 1.

- Lake Superior beaches: Alessi, 2.

- Lake Superior region: Dustin, 4.

- Localities, early American: Robinson,
 S., 1.

- Montana: Harstad, 2.

- Moss, formation of: Wild, 2.

- New Jersey, in trap-rock quarry:
 Reamer, 1.

- New Mexico, Laguna: Ellenmeier, 1.

- Oregon, drusy specimens: Southwick, 1.
 Pony Butte, Jefferson Co.: Forbes,
 P. L., 3.

- Rainbow or Iris: Dake, H. C., 4.

- Panama Canal Zone: Freehan, 1.

- Ring-agate vs. eye-agate: Wilson, B.
 H., 3.

Agates—Continued.

- Washington, blue: Clinesmith, 1.
Wyoming, Carbon Co.: Martin, R. I., 1.
Sweetwater River area: Buddhue 29;
Ellermeler, 2.

Age correls., metamorphic rocks, New Eng.:
Foye, 6.

Age of the earth. See Earth, age.

Age of desert soils: Botkin, 2.

Age of mammals, beginning: Simpson, 39.

Age, rocks and minerals, radioactive deter-
mination: Lane, 37.

Aguilarite, Comstock Lode, Virginia City,
Nev.: Coats, 2.

Airplanes in geol. studies: Alcock, 15.

Airways of America: Lobeck, 4.

Agnostidae.

- Appalachians, Camb.: Resser, 21.
Nomenclature, Camb. fossils: Resser, 22.
Spence sh. fauna, Utah and Idaho:
Resser, 23.

Alabama.

- Bibliography: Harper, R. M., 2.
Magnetic vector study: Jenny, 5.
Report of progress, 1926-30: Jones, W.
B., 6.

Areas described.

Birmingham: Poor, 1.

Economic geology.

Barite deposits: Jones, W. B., 8.

- Hydrothermal origin: Adams, G. I., 6.
Origin, Appalachian Valley: Crick-
may, G. W., 11.

Bauxite deposits: Jones, W. B., 3, 9.

Bentonite: Bowles, E. O., 2.

Birmingham area: Blair, C. S., 1.

Bituminous lms. and ss., porosity: Ut-
terback, D. D., 1.

Blue Creek coal: Blair, C. S., 4.

Brown iron ore, Muscle Shoals: Blair,
A. J., 1.

Building stones: Jones, W. B., 1; Poor, 7.
Cement res., lime, gypsum: Eckel, E.
C., 9.

Clays: McVay, 1, 3; Mansfield, G. R., 19;
Spain, 2.

Coals, regional devolatilization: Blair,
C. S., 2.

Copper deposits, Ducktown type: Ross,
C. S., 23.

Glass sands: Jones, W. B., 15.

Gold deposits: Adams, G. I., 4.

Hog Mtn.: Lloyd, D. J., 1; Park, 4;
Poor, 9; Wisser, 5.

Southern Appalachians: Anonymous,
89.

Graphite: Jones, W. B., 4.

Hartsell ss. bldg. stone: DeJarnette, 1.

Hog Mtn. area: Park, 4; Wisser, 5.

Iron, Red Mtn. fm.: Burchard, 3.

Alabama—Continued.

Iron ores: Burchard, 10; Jones, W. B.,
14.

Lignite: Barksdale, J., 2.

Magnetic inv.: Adler, 2; Eby, 6.

Magnetic vectors: Jenny, 2.

Manganese deposits: Blair, C. S., 3.

Metabentonites, Ord.: Laurence, 1.

Mineral production: Barksdale, J., 3, 4,
5.

Mineral res.: Jones, W. B., 13-a.

Molding sands: Adams, G. I., 1.

Natural gas, Paleozoic horizons: Bailey,
W. F., 3.

Nonmetallic min. res.: Jones, W. B., 6.

Ochers: Barksdale, 6.

Oil and gas: Semmes, 1.

Oolitic lms.: Jones, 17.

Plateau coal field: Cudworth, 1.

Possible salt deposits: Barksdale, J., 1.

Rock asphalt deposits: Lloyd, S. J., 3.

Structure, marble deposits: Prouty, 4.

Tennessee Valley region: Jones, 16.

Tin: Ellsworth, E. W., 5.

Tuscaloosa white clays, origin: Adams,
G. I., 5.

Wattsville Basin, Coosa coal field:
Jones, W. B., 2.

Historical geology.

Ackerman fm.: Cooke, C. W., 9.

Ancient man in Ala.: Jones 18.

Cambrian, restricted: Resser, 21.

Chewacla Park: Jones, W. B., 11.

Citronelle fm., type locality: Roy, C. J.,
4.

Coal fields, sedimentation cycles: Poor,
6.

Cockfield and Gosport fms., correl.:
Blanpied, 1.

Cocoa sand mbr., Jackson fm.: Cooke,
C. W., 12.

Cretaceous, Upper: Stephenson, 23.

Crystallines: Adams, G. I., 7.

Dam sites, Tenn. River and tributaries:
Wentworth, 3.

Erin shale, structure: Park, 5.

General: Jones, W. B., 13; Poor, 4;
Shreveport G. Soc., 1.

Geologic cross-sec.: Hazzard, R. T., 1.

Gosport sand equivalent to Moodys marl:
Cooke, C. W., 22.

Ground water, Paleozoic rocks: John-
ston, W. D., Jr., 6.

Hatchetigbee anticline and Jackson fault
areas: Blanpied, 3.

Hog Mtn. area: Park, 4; Wisser, 5.

Lower Peachtree area: Haase, 2.

Montgomery dist.: Jones, W. B., 21.

Ordovician volcanic materials and clays:
Kay, G. M., 15.

Pleistocene, marine: Richards, 21.

Prairie Bluff chalk and Owl Creek fm.:
Stephenson, 19.

Salt Mtn. lms., Eocene: Blanpied, 4.

Alabama—Continued.

Historical geology—Continued.

Talladega pre-Camb.: Crickmay, G. W., 15, 16.

Tennessee Valley region: Jones, 16.

Tertiary correl. zones: Gravell, 5.

Troy dist.: Jones, 20.

Vicksburg group: Cooke, C. W., 16.

Wattsville Basin, Coosa oil fields: Jones, W. B., 2.

Western Alabama: Barksdale, J., 2.

Mineralogy.

Athens meteorite: Hampton, 1; Wylie, C. C., 6.

Dust storm, Nov. 13, 1933, Birmingham: Poor, 3.

Galena-sphalerite: Andrews, T. G., 1.

Hog Mtn. area: Wisser, 5.

Metabentonites, Ord.: Laurence, 1.

Mineral res.: Jones, W. B., 13-a.

Paleontology.

Adhaerentia: Plummer, H. J., 12.

Ancient man, Mobile dist.: Jones, 19.

Annelida: Gardner, 16.

Archaeoceti: Kellogg, 9.

Bairdia: Howe, 11.

Cambrian restricted: Resser, 21.

Chlorotyllites, alga: Howe, M. A., 3.

Choctaw Bluff fauna: McGlamery, 3.

Coral reefs: McGlamery, 1.

Cytherelloidea: Howe, H. V., 8.

Cytheridea: Stephenson, M. B., 3, 5.

Cytheropteron: Martin, J. L., 1.

Diploschiza: Stephenson, L. W., 9, 11.

Disocyclina, Salt Mtn.: Vaughan, 31.

Footprints, Coal Measures: Aldrich, T. H., 1.

Walker County mine: Jones, W. B., 5.

Foraminifera: Cushman, 1.

Eocene, Woods Bluff: Cushman, 1.

Midway: McGlamery, 4.

Oligocene: Cushman, 1, 35.

Rotaliform, Cret., Tert.: Cushman, 1.

Ripley fm.: Sandige, 1, 4.

Tertiary, Gulf coast: Hadley, W. H., Jr., 2.

Upper Eocene: Cushman, 26.

Gastropoda: Gardner, 16.

Graptolites: Foster, 7; Poor, 2.

Gulf area Eocene: Gardner, 16.

Hantkenina: Howe, 9; Thalmann, 2.

Index fossils, Cret.—Eocene contact: McGlamery, 2.

Invertebrates, Eocene: Aldrich, T. H., 2.

Jackson Eocene fossils: Conrad, 1.

Leda, Black Bluff: Gardner, J. A., 1.

Loxoconcha: Murray, G. E., Jr., 3.

Micro-fauna, Nanafolia fm.: Harris, 11.

Mollusca, Eocene: Gardner, 15; Palmer, K. E. H. V., 2.

Montgomery dist.: Jones, W. B., 21.

Nautiloids, Midway group: Miller, A. K., 10.

Nonionella: Garrett, J. B., Jr., 1.

Ostreidae: Stephenson, 12.

Alabama—Continued.

Paleontology—Continued.

Paleocyclusidae, Paleozoic corals: Bassler, 25.

Pectinidae: Rowland, H. I., 1; Tucker, 7, 8.

Porpittella: Clark, H. L., 4.

Reptilia: Renger, 1, 2, 3.

Syntrophinella: Ulrich, 19.

Telephidae: Ulrich, E. O., 4.

Trilobites, Camb.: Lalicker, 2.

Turrids, Eocene: Harris, G. D., 4.

Turtle, giant, and Cret. mososaur: Anonymous, 73.

Uvigerina, Eocene: Cushman, 1.

Venericardia planicosta: Chavan, 1, 2.

Verneulinidae, Valvulinidae, and Virgulinidae: Cushman, 29.

Zeuglodon, a résumé: Richards, E. F., 1.

Zeugmatolepas, Eocene: Withers, T. H., 1.

Petrology.

Pottsville ss.: Wellman, 2.

Physical geology.

Caves: Ayrs, 1; Johnston, W. D., Jr., 1.

Erin sh., structure: Park, 5.

Hatchetigbee anticline and Jackson fault areas: Blanpied, 3.

Hog Mtn. area: Wisser, 5.

Montgomery dist.: Jones, 21.

Structure, determination: Hubbert, 8.

Tectonic metamorphism of S. Appalachians: Becker, H., 3.

Tennessee Valley area: Jones, 16.

Physiographic geology.

Coastal Plain streams: Adams, G. I., 2.

Coosa lowlands: Wright, F. J., 10.

General: Jones, W. B., 13.

Northern: Johnston, W. D., Jr., 1, 6.

Physical divs. of N. Ala.: Johnston, W. D., Jr., 1.

Tennessee Valley area: Jones, 16.

Underground water.

Ground water, Paleozoic rocks: Johnston, W. D., Jr., 6.

Alabandite, occurrence and relations: Hewett, 2.

Alaska.

Aerial photography: Smith, P. S., 8.

Fairbanks area: Wilkerson, 3.

Frozen ground: Taber, 16.

Middleton Is., air reconn.: Capps, 8.

Petroleum rocks: Stadnichenko, 1.

United States Geol. Survey work: Smith, P. S., 7.

Areas described.

Alaska Range: Capps, 10.

Aniakchak area: Knappen, 1.

Antbracte Ridge area: Richards, R. W., 1; Waring, 6.

Chakachamna-Stony area: Capps, 3.

Chandalar-Sheenjek area: Mertie, 1.

Chitina Valley: Moffit, 10.

Dennison Fork area: Mertie, 7.

Alaska—Continued.

Areas described—Continued.

- Eagle-Circle area: Mertie, 4.
 Eureka Kantishna areas: Wells, F. G., 4.
 Fairbanks lode-deposits: Hill, J. M., 2.
 General: Smith, P. S., 12.
 Girdwood area: Park, 2.
 Hyder area: Buddington, 2.
 Kantishna area: Moffitt, 3.
 Kodiak Is.: Capps, 12, 13.
 Koyukuk area: Ohrenschall, 2.
 Lake Clark-Mulchatna area: Capps, 4.
 Lituya Bay: Mertie, 8.
 Matanuska Valley: Shearer, M. H., 1.
 Moose Pass-Hope area: Tuck, 4.
 Mt. Eielson area: Reed, J. C., 3.
 Mt. McKinley Nat. Park: Capps, 6.
 Mt. Spurr area: Capps, 2.
 Nizina River: Moffitt, 1.
 Nushagak area: Mertie, 20.
 Northwestern Alaska: Smith, P. S., 1, 3.
 Rampart and Hot Springs area: Mertie, 12.
 Ruby-Kuskokwim area: Mertie, 14.
 Skwentna area: Capps, 1.
 Slana-Tok area: Moffitt, 2, 11.
 Southeastern Alaska: Buddington, 1.
 Suslota Pass area: Moffitt, 5.
 Tatonduk-Nation area: Mertie, 10.
 Valdez Creek mining dist.: Ross, C. P., 10.
 Willow Creek gold lode: Ray, J. C., 5.
 Willow Creek-Kashwitna area: Capps, 11.
 Yukon-Tanana area: Mertie, 16.

Economic geology.

- Alaska Juneau mine: Wernecke, 2.
 Alaska Range: Capps, 10.
 Alaska R. R. belt: Capps, 7; Waring, 1.
 Anthracite Ridge: Richards, R. W., 1; Waring, 6.
 Asbestos: Bowles, O., 4.
 Chicagof mining dist.: Reed, J. C., 18.
 Chitina Valley: Moffitt, 10.
 Chulitna River: Ross, C. P., 9.
 Circle area: Mertie, 6.
 Coal, Moose Creek: Waring, 2.
 Copper River area: Moffitt, 9.
 Copper resources: Moffitt, 6.
 Copper, and Tanana Rivers: Moffitt, 8, 9.
 Eska Creek coal field: Tuck, 7.
 Fairbanks area: Hill, J. M., 2.
 Fortymile area: Mertie, 3.
 General: Mertie, 22.
 Geophysical surveying Kennecott mines: Bateman, A. M., 2.
 Girdwood area: Park, 2.
 Gold, Eureka, Kantishna: Wells, F. G., 4.

Lodes, Willow Creek: Ray, J. C., 4.

Placers: Mertie, 19.

Resources: Smith, P. S., 4.

Gypsum, Chicagof Is.: Stewart, B. D., 1.
 Hyder area: Buddington, 2.

Alaska—Continued.

Economic geology—Continued.

- Investigations, Alaska R. R.: Waring, 1.
 Kaiyuk Hills: Mertie, 15.
 Kennecott copper deposit: Bateman, A. M., 4; Lasky, 3.
 Koyukuk area: Ohrenschall, 2.
 Limestones: Hodge, 24.
 Matanuska coal field: Tuck, 8.
 Mineral deposits, Glacier Bay: Reed, J. C., 11.
 Mineral industry repts.: Smith, P. S., 2.
 Mineral res.: Smith, P. S., 11.
 Molybdenite, Shakan: Buddington, 4.
 Moose Pass-Hope area: Tuck, 4.
 Muck-silt, origin, Fairbanks: Tuck, 11.
 Northwestern Alaska: Smith, P. S., 4.
 Petroleum resources: Smith, P. S., 10.
 Placer gold production: Smith, P. S., 5.
 Platinum, Goodnews Bay area: Mertie, 18, 21.
 Rampart and Hot Springs areas: Mertie, 12.
 Placer concentrates: Waters, A. E., Jr., 1.
 Ruby-Kuskokwim area: Mertie, 14.
 Slana-Tok area: Moffitt, 11.
 Suslota Pass area: Moffitt, 5.
 Tatlanika and Totalanika Basins: Moffitt, 4.
 Tin: Patty, 1.
 Tonsina area: Moffitt, 7.
 Valdez Creek mining dist.: Ross, C. P., 10; Tuck, 9.
 Willow Creek area: Ray, 5.
 Yukon-Tanana area: Mertie, 16.

Historical geology.

- Alaska Peninsula and Aleutian Islands: Capps, 9.
 Alaska Range: Capps, 10.
 Anthracite Ridge coal dist.: Waring, 6.
 Cambrian, east-central: Mertie, 9.
 Cantwell fm., age: Chaney, 28.
 Chitina Valley: Moffitt, 10.
 Copper, Tanana Rivers: Moffitt, 8.
 Curry districts: Tuck, 5.
 Eska Creek coal field: Tuck, 7.
 General: Mertie, 22; Smith, P. S., 12.
 Geologic names lexicon: Wilmarth, 2.
 Gold placers: Mertie, 19.
 Kaiyuk Hills: Mertie, 15.
 Kodiak Is. area: Capps, 12, 13.
 Koyukuk area: Ohrenschall, 2.
 Mt. Katmai area: Fenner, 4.
 Nushagak area: Mertie, 20.
 Ordovician, Sil., Dev.: Kirk, 4.
 Paleozoic glaciation: Blackwelder, 27.
 Pleistocene: Wilkerson, 2.
 Pre-Cambrian: Mertie, 2.
 Quaternary history: Sachs, V. N., 1.
 Ruby-Kuskokwim area: Mertie, 14.
 Slana-Tok area: Moffitt, 11.

Tertiary: Hollick, 9.

Tonsina area: Moffitt, 7.

Upper Cret. plant beds: Martin, G. C., 1.
 Valdez Creek: Tuck, 9.

Alaska—Continued.

Historical geology—Continued.

Yakataga-Controller Bay area: Tallafarro, 5.

Yakataga, Katella, and Nichawak: Tallafarro, 5.

Yukon-Tanana area: Mertie, 11, 16.

Yukon Valley: Eardley, 7.

Mineralogy.

Anothite, Duke Is.: Glass, 5.

Chicago mining area: Reed, J. C., 18.

Epidote, Prince of Wales Is.: Montgomery, A., 3.

Fumarolic incrustations, Valley of Ten Thousand Smokes: Zies, 1.

General: Smith, P. S., 12.

Glacier Bay area: Reed, J. C., 10, 11.

Gold in School of Mines Mus.: Gries, J. P., 1.

Mineral reconn.: Karpinski, 1.

Nickel-bearing sill, Admiralty Is.: Reed, J. C., 17.

Platinum, Goodnews area: Mertie, 21.

Prince of Wales Is.: Henderson, E. P., 12.

Troctolite sill, nickel content: Reed, J. C., 15.

Paleontology.

Actia, Cret., Tert.: Schenck, 27.

Brachiopoda, Camb.: Cooper, 21.

Briscol Camb. fauna: Kobayashi, 2.

Clistocrinus, Carb.: Kirk, 16.

Drepanolepis: Berry, 34.

Faunal lists, Chitina Valley: Moffit, 10.

Fish, Tert., Healy Creek: Schalkjer, 8.

Flora, Pleist., Fairbanks: Chaney, 26.

Floras, Tert.: Hollick, 9.

Forests, interglacial, Glacier Bay: Cooper, W. S., 1, 3.

Frozen fauna: Frick, 3.

General: Smith, P. S., 12.

Ivory, fossil: Budhue, 5.

Mammals and plants, frozen, Pleist.: Chaney, 32.

Paleocyclus, Paleozoic corals: Bassler, 25.

Plant fossils in the making: Chaney, 32-a; Anonymous, 134.

Plants in petroleum "mother rocks": White, C. D., 4.

Pollen analysis, Kodiak bogs: Bowman, P. W., 2.

Poul and Yakataga fms., Oligocene: Clark, 15.

Sequoia, St. Lawrence Is.: Chaney, 8.

Tertiary cycads: Hollick, 8.

Upper Cret. plant beds: Martin, G. C. 1.

Yakataga fauna: Clark, 14.

Yukon-Tanana area: Mertie, 16.

Petrology.

Black sand, Nome Creek: Wilkerson, 1.

Coast Range composite batholith: Kerr, F. A., 9.

Eocene volcanics: Buddington, 6.

Falling Mtn. volcanic activity: Fenner, 17.

Alaska—Continued.

Petrology—Continued.

Fumarolic incrustations, Valley of Ten Thousand Smokes: Zies, 1.

Hornblende, Annette and Duke Is.: Koschmann, 4.

Kodiak Is.: Capps, 13.

Mineral deposits, Glacier Bay: Reed, J. C., 11.

Nickel-bearing sill, Admiralty Is.: Reed, J. C., 17.

Nushagak area: Mertie, 20.

Yukon-Tanana area: Mertie, 16.

Yukon Valley: Eardley, 8.

Physical geology.

Akutan volcano, Aleutian Is.: Finch, 12.

Aniakchak and Veniaminof volcanoes: Knappen, 3.

Anthracite Ridge: Waring, 6.

Bogoslof volcano: Jaggard, 8; Lukens, 1.

Chicago mining area: Reed, J. C., 18.

Chitina Valley area: Moffit, 10.

Coast Range composite batholith: Kerr, F. A., 9.

Craters, Alaskan Pen.: McGavock, 1.

Earthquake, 7/22/37: Bramball, 1; Scott, F. P., 1.

Earthquake history: Heck, 42.

Earthquakes, Kodiak Is. and Dutch Harbor: Jones, A. E., 3.

Eska Creek coal field: Tuck, 7.

Falling Mtn. volcanic activity: Fenner, 17.

Faulting, Kennecott: Lasky, 1.

General: Mertie, 22; Smith, P. S., 12.

Glacier Bay: Cooper, W. S., 2.

Ice jams in sub-Arctic rivers: Wentworth, 17.

Katmai eruption: Chaney, 32-a; Okimura, 1.

Kodiak Is.: Capps, 12, 13.

Lava domes: Jaggard, 28.

Microseisms, January 1, 1929-December 31, 1931, Sitka: Bradford, 6.

Mountain bldg.: Mertie, 5.

Mt. Katmai and Mt. Mageik: Fenner, 4.

Nushagak area: Mertie, 20.

Ruby-Kuskokwim area: Mertie, 14.

St. Paul volcanic Is.: Jaggard, 18.

Shishaldin volcano: Finch, 10.

Slana-Tok area: Moffit, 11.

Troctolite sill, nickel content: Reed, J. C., 15.

Tuffs and other volcanic deposits, Katmai: Fenner, 16.

Valley of Ten Thousand Smokes: Reck, 1; Zies, 1.

Volcanism, pre-Cambrian and Paleozoic: Mertie, 13.

Volcanoes in Nat. Parks: Waesche, 3.

Yukon-Tanana area: Mertie, 16.

Physiographic geology.

Alpine glaciation: Tuck, 6.

Aniakchak and Veniaminof craters: Hubbard, B. R., 1.

Anthracite Ridge coal area: Waring, 6.

Alaska—Continued.

Physiographic geology—Continued.

- Black Rapids glacier advance: Hance, 1.
 Chitina Valley area: Moffit, 10.
 Curry area: Tuck, 5.
 Eska Creek coal field: Tuck, 7.
 Fort Liscum landslide: Johnson, B. L., 4.
 General: Mertie, 22; Smith, P. S., 12.
 Glacial studies: Cooper, W. S., 7.
 Glaciation: Capps, 5; Kerr, F. A., 19.
 Glacier Bay: Romer, E., 1; Cooper, W. S., 8.
 Glacier positions, 1931: Wentworth, 25, 37.
 Glaciers, advancing: Washburn, H. B., Jr., 1.
 Glaciers, coastal, 1935: Field, W. O., Jr., 2.
 Glaciers, southeastern: Wright, C. W., 1.
 McCarty Glacier retreat: Whitney, P. C., 1.
 Priace William Sound: Field, W. O., Jr., 1.
 Recession: Wentworth, 16.
 Gold placers: Mertie, 19.
 Ice caps, distrib.: Hawley, M. M., 1.
 Kaiyuh Hills: Mertie, 15.
 Kodiak Is: Capps, 12, 13.
 Koyuk Valley: Marshall, R., 1.
 Land bridge, Siberia to Alaska: Smith, P. S., 2.
 Lituya Bay, Mt. Crillon areas: Washburn, 4.
 Loess, Mantanuska Valley: Tuck, 10.
 Matanuska Valley: Shearer, M. H., 1.
 Melaspina glacier: Washburn, H. B., Jr., 2.
 Mt. Katmai and Mt. Mageik: Fenner, 4.
 Muck-silt origin, Fairbanks: Tuck, 11.
 Nushagak area: Mertie, 17, 20.
 Quaternary: Saks, 1.
 Mertie, 14.
 Quaternary history: Sachs, V. N., 1.
 Ruby-Kuskokwim area: Mertie, 14.
 Shapes, glacial and ice-jam cobbles: Wentworth, 40.
 Slana-Tok area: Moffit, 11.
 Snow line: Wasowicz, 1.
 South Crillon glacier motion: Washburn, 5.
 Talsekwe River extraordinary floods: Kerr, F. A., 16.
 Tonsina area: Moffit, 7.
 Tree line and snow line: Rober, E., 2.
 Valdez Creek area: Tuck, 9.
 Valley glaciers and glaciation: Ray, L. I., 1.
 Yukon channel shiftings: Eardley, 9; Lowenstine, 1.
 Yukon-Tanana area: Mertie, 16.
 Yukon Valler, lower: Eardley, 8.

Alberta.

- Athabasca and Lesser Slave dists.: Rutherford, R. L., 1.
 Brûlé mines coal area: MacKay, 3.
 Geological inv., 1928: Allan, J. A., 2.

Alberta—Continued.

- Geological Survey reports: Allan, J. A., 4, 5, 6, 7, 14, 15, 16, 17.
 Milk River-Red Coulee oil field: Evans, C. S., 3.
 Peace Hills: Rutherford, R. L., 1.
 Southern Alberta: Williams, M. Y., 2.
 Spray water power project, Rocky Mtn. Nat. Park: Allan, J. A., 1.
Areas described.
 Blood Indian Reserve: Russell, L. S., 10.
 Crowsnest area: MacKay, 8.
 Waterton Lakes-Flathead Valley: Hume, 19.
Economic geology.
 Alderslyde area oil and gas: Owen R. M. S., 1.
 Athabasca oil sands: Ball, M. W., 1.
 Birch Ridge: Hume, 20.
 Bituminous sands: Clark, K. A., 1, 2; Ellis, 1, 2, 4, 5, 6, 7.
 Central Alberta: Allan, 11.
 Clay, shale, Turner Valley: Worcester, W. G., 2.
 Coleman coal area: MacKay, 10.
 Crowsnest Pass: MacKay, 9.
 Del Bonita area: Russell, 34-a.
 Duvernay-Brosseau structure: Heiland, 19.
 East-Central Alberta: Hume, 28.
 East Coulee coal area: Kidd, G. L., 1.
 Fallentimber area: MacKay, 12.
 Foremost-Skiff area: Howells, 1.
 General: Hake, 2; Moore, P. D., 3.
 Gravels and sands: Rutherford, 12, 14.
 Gypsum, Peace River: Cameron, A. E., 1.
 Rocky Mts.: Allan, 12.
 Highwood-Jumpingpound anticline: Hume, 1.
 Jasper Park coal fields: MacKay, 4.
 Limestones: Goudge, 1.
 Oil and gas-bearing, Turner Valley: Campbell, W. P., 3.
 McMurray oil sands, origin: Sproule, 4.
 Milk River area: Russell, 31.
 Natural gas: Calder, 2; Hume, 18; Madgwick, 1; Slipper, 2.
 Oil City area: Craig, 2.
 Oil fields: Craig, 2.
 Pekisko Hills area: Hume, 26.
 Petroleum: Calder, 1, 2; Hume, 18; 26-a; Madgwick, 1.
 Prospects: Hume, 33.
 Seepages, Belt ser.: Link, 10.
 Source rocks, distrib.: Hume, 21.
 Phosphate, Canadian Rockies: Telfer, 1.
 Plains, southern: Russell, 36.
 Red Coulee oil field: Yarwood, 1.
 Ribstone-Blackfoot anticline: Hume, 2.
 Salt, McMurray: Allan, 20.
 Salt and gypsum: Allan, 3.
 Taber dist.: Russell, 34-b.
 Turner Valley: Hume, 29, 31, 32.

Alberta—Continued.

Economic geology—Continued.

Turner Valley gas and oil field: Elliott, G. R., 1; Goodman, A. J., 1, 3; Hume, 1, 22, 27; Link, 11; Rowe, R. C. 2; Spratt, 2.

Zones, Benton group shs.: Webb, J. B., 1.

Historical geology.

Age of Exshaw sh.: Warren, 18.

Alberta syncline: Link, 6.

Battleview anticline: Hume, 25.

Bearberry sheet, west half: Canada G. S., 1.

Bearpaw shale: Clark, C. M., 1.

Leathbridge area: Link, 8.

Belt ser., northern: Fenton, 54.

Birch Ridge area: Hume, 20.

Blairmore conglom.: Warren, 21.

Bragg Creek sheet, g. map: Hume, 4, 9, 10.

Brazeau area: Sanderson, 4.

Cadomin sheet, g. map: MacKay, B. R., 2.

Cambrian fms.: Allan, 22; Deiss, 12.

Sunwapta Pass area: Allan, 22.

Canadian Rockies: Rutherford, R. L., 6.

Canmore area: Canada G. S., 1.

Central Alberta: Allan, 11.

Colorado shale: Spratt, 1.

Correlation and nomenclature: Irwin, J. S., 1.

Cretaceous: Dannenberg, 1; Russell, 41.

Cretaceous-Tertiary transition: Russell, 13.

Crowsnest Pass: Warren, P. S., 10; MacKay, 9.

Del Bonita area: Russell, 34-a.

Devonian lms.: Warren, P. S., 11.

Devonian, Missn., Jasper Park: Kelly, W. A., 11.

Duvernay-Brosseau structure: Helland, 19.

East-central Alberta: Hume, 28.

Eastern foothills: Hume, 13.

Edmonton g. map: Canada, G. S. 1.

Fallentimber g. map: Canada G. S., 1; MacKay, 12.

Fernie shale: Warren, P. S., 12.

Fish Creek g. map: Hume, 8.

Flaxville plain: Warren, 22.

Foothills: Evans, C. S., 1.

Foremost, Pakowski, Milk River fms.: Slipper, 1.

Foremost-Skiff area: Howells, 1.

Fox Hills fm.: Sanderson, 3.

General: Hake, 2; Moore, P. D., 3.

Geological map: Allan, 19; Link, 7.

Gravels and sands: Rutherford, 12, 14.

Hardisty, g. map: Canada G. S., 1.

Highwood-Jumpingpound anticline: Hume, 1.

Jasper Park: Kindle, E. M., 1.

Jasper Park, coal fields: MacKay, 4.

Geologic history: Kindle, E. M., 1.

Paleozoic: Raymond, 4.

Jumpingpound, g. map: Hume, 12.

Laosaurus horizon: Allan, 9.

Alberta—Continued.

Historical geology—Continued.

Lea Park shale: Warren, P. S., 14.

Lower Cretaceous: McLearn, 13.

McMurray oil sands, origin: Sproule, 4.

Mesozoic, Blairmore area: McLearn, 3.

Milk River area: Russell, 31.

Milk River Ridge: Hake, 1.

Montana sedimentation: Williams, M. Y., 6.

Mountain Park g. map: MacKay, B. R., 1.

Natural-gas fields: Slipper, 2.

Ordovician, base: Raymond, 5.

Orthoclase crystal habit: Rutherford, 15.

Pale beds and Foremost fm.: Powers, D. L., 1.

Paleozoic: Moore, P. D., 1.

Peace River, Grande Prairie areas: Rutherford, R. L., 3, 4.

Pekisko Hills: Canada G. S., 1; Hume, 26.

Petroleum and gas: Calder, 2; Hume, 26-a.

Pierre sedimentation: Williams, M. Y., 6.

Plains, southern: Russell, 36.

Pre-Cambrian: Cameron, A. F., 2.

Red Coulée oil field: Yarwood, 1.

Red Deer g. map: Canada G. S., 1.

Relief model: Allan, 21.

Ribstone Creek, g. map: Canada G. S., 1.

Rocky Mts.: Allan, 8; Warren, P. S., 1.

Sandstone dikes, origin: Russell, 37.

Section through glacial drift, Wabamun Lake: Erdtmann, 1.

Smith and Cold Lake area: Rutherford, 9.

Source rocks of oil: Sur, 1.

Spring Coulee well: Mellen, W. P., 1; Yarwood, 2.

Stettler g. map: Canada G. S., 1.

Structure section, Rocky Mts.: Raymond, 8.

Sweetgrass arch: Michener, 1.

Taber dist.: Russell, 34-b.

Tofield g. map: Canada G. S., 1.

Turner Valley gas and oil fields: Hume, 26-a, 27, 29, 31, 32; Link, 11; Rowe, R. C., 2; Spratt, 2.

Turner Valley g. map: Hume, 5, 6, 7.

Volcanic ash beds, Cret.: Sanderson, 1.

Wapiti River Basin: Evans, C. S., 2.

Wildcat Hills area: Hume, 10.

Zones, Benton shs.: Webb, J. B., 1.

Mineralogy.

Orthoclase crystal habit: Rutherford, 15.

Pickeringite: Rutherford, R. L., 7.

Paleontology.

Age of Exshaw shale: Warren, 18.

Algae, Camb., Lake Louise area: Fenton, 51.

Allison flora, Blairmore dist.: Berry, E. W., 6.

Ammonoidea, Blairmore: Buckman, 1.

Cretaceous: Warren, P. S., 4.

Fernie fm.: McLearn, 12.

Anchiceratops: Sternberg, C. M., 2.

Anodontosaurus: Sternberg, C. M., 1.

Alberta—Continued.

Paleontology—Continued.

- Artifacts, Canadian River terraces: Fenton, 51.
 Aspideretes, Paskapoo fm.: Russell, L. S., 5.
 Bad lands: Gillingham, D. W., 1.
 Bearpaw invertebrates: Williams, M. Y., 3.
 Blairmore flora: Berry, E. W., 5.
 Caenagnathus: Sternberg, R. M., 2.
 Cephalopoda: Ulrich, 24.
 Champsosaurus: Parks, 9.
 Chasmosaurus: Brown, B., 8.
 Coals, microscopic features: Jones, I. W., 10.
 Cretaceous faunas: McLearn, 2, 9.
 Devonian fauna, Nordegg: Warren, P. S., 8.
 Dinosaur collecting: Kindle, E. M., 5; Parks, 6, 10.
 Edmontonia: Russell, 40.
 Eodelphis: Simpson, G. G., 9.
 Fauna, Milk River Cret.: Russell, L. S., 28.
 Fish, Trias., Dev.: Warren, 15.
 Footprints: Kindle, 17.
 Foraminifera: Wickenden, 5, 6, 10.
 Fossil zones, Alberta sh.: McLearn, 21.
 Gastrolites and Neogastrolites: McLearn, 14.
 Gastropoda, Cret., Tert.: Russell, L. S., 3.
 Hooded hadrosaurs, Upper Cret.: Sternberg, 2.
 Hoploparia, Bearpaw sh.: Rathbun, 5.
 Inglefieldia? birdsalli: Howell, 27.
 Invertebrates: Warren, P. S., 6.
 Jasper Park: Kindle, E. M., 4.
 Kiln shale fauna: Burgess, C. H., 1.
 Kootenay, Blairmore floras: Berry, E. W., 4.
 Lambeosaurus skull: Russell, 43.
 Lea Park sh. fauna: Warren, P. S., 14.
 Leidyosuchus: Sternberg, 8.
 Lizard, Belly River fm.: Gilmore, 10.
 Mammals, Paleocene: Russell, L. S., 15.
 Mammal tracks: Russell, L. S., 6.
 Mesoblastus, Mt. Coleman, Miss.: Fritz, 6.
 Mesozoic faunas: McLearn, 6.
 Mollusca, Cret., Tert.: Russell, L. S., 7, 35.
 McMurray fm.: Russell, L. S., 12.
 St. Marys River fm.: Russell, L. S., 11.
 Monoclonius and Centrosaurus: Sternberg, 19.
 Multituberculata, Belly River: Granger, 1; Russell, 33.
 Nonmarine Mollusca: Dyer, 2.
 Ornithomimus, Edmonton fm.: Sternberg, 13.
 Ornithomimus edmonticus = Struthiomimus currelli: Sternberg, 15.
 Ozarkia, Jasper Park: Kindle, C. H., 1.
 Paleocene vertebrates: Russell, L. S., 1.

Alberta—Continued.

Paleontology—Continued.

- Peace River dist.: McLearn, 6.
 Pelecypoda, Fernie fm.: Warren, P. S., 7.
 Clearwater fm.: McLearn, 15.
 Plants, Cypress Hills: Berry, 22.
 Plesiosaurs, fresh-water: Russell, L. S., 8.
 Rocky Mts., Jasper Park: Allan, J. A., 2.
 Smoky River and Dunvegan fms.: Warren, P. S., 3.
 Stylomyleodon and Kindeleia: Russell, L. S., 2.
 Styracosaurus, Cret.: Brown, B., 15.
 Theropod dinosaurs, Belly River fm.: Sternberg, 7.
 Timanites, Jasper Park: Miller, 29.
 Trachodont dinosaurs, Belly River fm.: Parks, W. A., 2.
 Troodon and nodosaurs: Russell, L. S., 16; Sternberg, 11.
 Upper Cret. dinosaur faunas: Russell, L. S., 4.
 Wood in bituminous sands: Ellis, 3.

Petrology.

- Belt series: Fenton, 54.
 Blairmore conglom.: Warren, 21.
 Limestone, oil- and gas-bearing, Turner Valley: Campbell, W. P., 3.

Physical geology.

- Alberta syncline: Link, 6.
 Brazeau area: Sanderson, 4.
 Cretaceous: Russell, 41.
 Folded sheet thrusts: Hake, 3.
 Foothills structures: Hopkins, 1; Link, 12.
 Moyle-Lenia overthrust fault: Kirkham, 6.
 Overthrust faulting: Hume, 11.
 Rocky Mtn. structure: Hopkins, 2.
 Schistosity in Rocky Mts.: Fourmarier, 2.
 Sedimentation, Lake Cavell: Kindle, 8.
 Sheet thrusts, Jasper Park: Willis, R., 4.
 Syngenetic nodules, Cret. shs.: Roy, C. J., 1.
 Turner Valley gas and oil field: Hume, 22, 27, 29, 32.
 Wildcat Hills area: Hume, 23.

Physiographic geology.

- Age, glacial deposits: Wickenden, 13.
 Brazeau area: Sanderson, 4.
 Cavell glacier, retreat: Perry, E. L., 2.
 Cypress Hills: Crickmay, C. H., 14.
 Duvernay-Brosseau structure: Heiland, 19.
 East-central Alberta: Hume, 28.
 Flaxville plain: Warren, 22.
 Gravels and sands: Rutherford, 14.
 Kicking Horse Pass stream history: Willard, 7.
 Moraines and glacial lakes: Johnston, W. A., 4.

Alberta—Continued.

Physiographic geology—Continued.

- Southern Alberta: Williams, M. Y., 1.
- Terminal moraines, Jumpingpound-Wildcat Hills area: Nichols, D. A., 1.
- Toby glacier, Purcell Range: McCoubrey, 1.
- Viking moraines: Warren, 19.

Underground water.

- Oil-field waters: Campbell, W. P., 1.
- Peace River, Grande Prairie areas: Rutherford, R. L., 3, 4.
- Red Coulée area: Campbell, W. P., 2.
- Water supply: Rutherford, R. L., 5.

Albite, Pa., Md.: Ingerson, 4.

Algal oolites: Bradley, W. H., 5.

Algal reefs: Bradley, W. H., 3; Howe, M. A., 4.

Algae.

- Appalachians, southern, Camb.: Resser, 21.
- Barbados, Peridinites: Lefèvre, 1, 2.
- Belt series: Fenton, C. L., 6, 21, 54.
- Calcareous: Johnson, J. H., 13-a.
- California, Carmelo ser., fossil markings: Herold, C. L., 1.
- Canadian shield: Wilson, M. E., 20.
- Chlorotylites, Ala.: Howe, M. A., 3.
- Colorado, Green River fm.: Bradley, W. H., 6.
- Coralline: Ruedemann, 6.
- Environment indicators: Fenton, 58.
- Globulina: Ulke, 7.
- High Plains Tert. beds: Elias, 3-a.
- Lime-secreting: Howe, M. A., 2; Kindie, 26.
- Micropaleontology, Johns Valley sh. Okla.: Harlton, 7.
- Montana, Glacier Nat. Park: Fenton, 43, 60.
- Nubecularia, Girvanella, Pa., N. Mex.: Johnson, J. H., 30-a.
- Oldhamia, Maine: Smith, E. S. C., 5.
- Olenellus zone, Camb., Appalachians: Resser, 20.
- Pacific Coast marine fms.: Nelson, R. N., 1.
- Paleozoic plankton: Ruedemann, 24.
- Parallelopora, Dev., Wyo.: Johnson, J. H., 31.
- Pre-Cambrian, Northwest Territories: Rutherford, R. L., 2.
- Pre-Cambrian and Paleozoic: Fenton, 57.
- Quebec, Gaspé: Northrop, 10.
- Rock builders: Johnson, J. H., 24.
- Travertine from thermal waters: Allen, E. T., 4.

Algonkian. See Pre-Cambrian.

- Alkali sulphide solutions, action: Lindner, 2.
- Allanite, age determination: Marble, 7.
- Alleghany Dist., Calif.: Ferguson, H. G., 2.
- Alma dist., Colo.: Singewald, Q. D., 7.
- Alum, Mt. Adams area, Wash.: Fowler, C. S., 1.

Aluminum.

- Arkansas, bauxite area: Bramlette, 5.
- Georgia, kyanite and vermiculite: Prindle, 2.
- Utah: Callaghan, 9; Schaller, 27.

Aluminum and silicosis: Emmons, R. C., 11.

Alunite. See also Potash.

- Nevada, Sugarloaf Butte: Heineman, 5.
- Utah, Tushar Mts.: Beutner, 1.

Alurzite, Calif.: Webb, R. W., 11.

Amazonstone, Colo.: Reitsch, 1.

Amber.

- California, Eocene: Murdoch, 1.
- Canada, insects and arachnids in: Carpenter, 16.
- Dominican Republic, Miocene: Lengweiler, 1.
- General: Farrington, 1; Blair, J. M., 1.
- Manitoba, Cedar Lake: Walker, 17.
- Chemawinit: Carpenter, 11; Walker, 13.
- Mexico: Buddhue, 1.

American Indian discoveries, vertebrate fossils: Kindie, 25.

Amethyst, Colo.: Caplan, 3; Longyear, 1.

Maine pegmatite belt: Morrill, 1.

Amisk Lake area, Saskatchewan: Wright, 16, 19.

Ammonites. See Cephalopoda.

Ammonoldea. See Cephalopoda.

Amphibia. See also Vertebrata.

Aistopoda, Carb., Gymnophiona ancestors, Mex.: Müllerried, 32.

Arkansas, stegocephalian: Lane, H. H., 1.

Branchiosaurus, Carb., Pa.: Romer, 24.

Buettneria, Tex.: Case, 6.

Chemung, Pa., tracks and trails: Willard, 28.

Dinosaurs, ancestors and neighbors: Anonymous, 198.

Eryops, brain case: Dempster, 1; Olson, E. C., 2.

Evolution, atlas-axis complex: Evans, F. G., 1.

Footprints, coal measures, Ala.: Aldrich, T. H., 1.

Boulder, Colo.: Toepelmann, 4.

Narragansett Basin: Willard, 6.

Kansas, Urodele: Adams, L. A., 2.

Labyrinthodont stegocephallans, Greenland: Romer, 3; Silve-Soderbergh, 5.

Lysorophus, Tex.: Olson, 5.

New York, Staten Is.: Hollick, 7.

Nova Scotia, Carb.: Steen, 2.

Ohio, Carb.: Steen, 1.

Pennsylvanian: Romer, A. S., 1.

Pleistocene cave fossils, Tenn.: Cahn, 4.

Scaphiopus, Kans.: Taylor, E. H., 1.

Stegocephallans, Greenland: Romer, A. S., 15; Silve-Soderbergh, 2, 5.

Stegocephallans, Tex.: Case, 18.

Tetrapods, Ohio: Romer, A. S., 3.

Permian-Carb., N. Am.: Romer, 17.

Amphibia—Continued.

- Triassic, Rocky Mt. area: Branson, E. B., 2.
 Trimerorhachis, Tex.: Case, 16.
 Urodele, Kans.: Adams, L. A., 1.
 Amphibole, Franklin Furnace, N. J.: Foshag, 15.
 Sedimentary, intrusive, Black Hills: Runner, J. J., 7.
 Amphibolite, Arctic Am.: Roy, 13.
 Amygdales, Idaho: Reed, J. C., 12, 13.
 Amygdaloids and cavity fillings: Morris, F. K., 1.
 Amygdules and pseudo-amygdules: Morris, F. K., 2.
 Analcime, Mont.: Larsen, 23.
 Analcite beds, Green River fm.: Bradley, W. H., 1.
 Analyses of rocks and minerals: Wells, R. C., 11.
 Analysis, mechanical, of sediments: Krumbein, 10.
 Ancestral Rocky Mts.: Ver Wiebe, 4.
 Ancient man in America: Sanders, W. E., 1.
 Andalusite.
 California: Dunn, J. A., 1; Sampson, R. J., 1; Webb, 14.
 White Mtn., Mono Co.: Jeffery, J. A., 1; Kerr, P. F., 7; Woodhouse, 2.
 Andros Island: Field, R. M., 2.
 Anhydrite.
 Canada: Cole, L. H., 4.
 New Mexico: Kroelein, 2; Robinson, T. W., Jr., 6.
 Nova Scotia: Flynn, 1, 2.
 Anisotropism, metallic minerals: Sampson, E., 1.
 Annelida.
 Devonian, annelid jaws, N. Y.: Eller, E. R., 2, 3, 5.
 Gaspé, Dev.: Kindle, 38; Northrop, 10.
 Gulf area Eocene: Gardner, 16.
 Hamulus, Trinidad: Rutsch, 6.
 Illinois, Niagaran scolecodonts: Croneis, 16.
 Richmond: Potter, F. C., 1.
 Minnesota, Ord.: Stauffer, 7.
 Missouri, Decorah fm.: Croneis, 17.
 Lower Missn.: Branson, 33, 37.
 Northview and Hannibal fms.: Branson, 34.
 Ohio, scolecodonts: Gries, P., 1.
 Olenellus zone, Camb., Appalachians: Resser, 20.
 Polychaeta, Ohio, Ontario: Stauffer, 22.
 Scolecodonts: Croneis, 15.
 Chemung fm. N. Y.: Eller, 4.
 Silurian, N. Y.: Johnson, H., 4.
 Trails and burrows: Eller, 8.
 Wyoming, Sacajawea fm.: Branson, C., 14.
 Anomalies of vertical intensity: Somers, 2.

Anorthosite.

- Adirondack Mts.: Miller, 1.
 Canada, N. bank St. Lawrence: Faessler, 20.
 Intrusive power: Miller, W. J., 8.
 Minnesota, Lake Superior coast: Grout, 23.
 Origin: Faessler, 15.
 Quebec, Côte-Nord: Faessler, 10.
 Anosma, Flagstaff volcanic area: Colton, H. S., 2.
 Anosma or "squeeze ups": Colton, 4.
 Anthophyllite, Kamiah: Anderson, A. L., 7.
 Anthozoa. See also Coelenterata.
 Anthracolitic corals: Smith, S., 2, 3.
 Antilophyllia: Vaughn, 19.
 Archeocyathids, Wash.: Bennett, W. A., G., 1.
 Arctic America, Ord., Sil.: Teichert, 12.
 Arizona, Utah: McKee, 11.
 Aulocaulis, Iowa, N. Y.: Fenton, M. A., 10.
 Aulopora, Mich., N. Y.: Fenton, M. A., 8, 9.
 Auloporoids, Ky.: Okulitch, 9.
 Bainbridgia, Mo.: Ball, 9.
 Barbados, Cret., Eocene: Wells, J. W., 5.
 Calapoecia, revision: Cox, 5.
 Canada, Black River: Okulitch, 11.
 Carboniferous, Ky.: Kirk, 20.
 Caryophyllia, Calif.: Quayle, 1; White, R. T., 2.
 Chaetetes milleporaceus: Heritsch, 1; Oakley, 1.
 Chazy corals: Okulitch, 5.
 Coral reef, Pa.: Willard, 38.
 Cretaceous, Eocene, West Indies: Wells, J. W., 5, 8.
 Cretaceous, U. S.: Wells, J. W., 3.
 Cylindrophyllyum, Mich.: Ehlers, 2.
 Dendroseris, Trinidad: Gregory, J. W., 2.
 Desmidopora and Multisolenia: Fritz, 7.
 Devonian, Ohio: Schuchert, 50; Stewart, G. A., 1, 11.
 Devonian, Ohio, Ky., Ind.: Werner, C., 2.
 Devonian, Pa.: Willard, 52.
 Eocene, Cuba, Tex.: Wells, J. W., 7.
 Eomontipora, Honduras: Gregory, J. W., 4.
 Eridophyllyum, Ohio: Stewart, 7.
 Fletcheria, systematic position: Okulitch, 10.
 Graphocrinus, Mo.: Keyes, 461.
 Greenland, Ord.: Troedsson, 2.
 Heliolites, Tetradium, Chaetetes: Okulitch, 6.
 Heliophyllyum, Cistiphyllyum, N. Y.: Fenton, 61.
 Heliophyllyum, Dev., N. Y.: Wells, J. W., 10.
 Hexacoralla, Madreporian, revision: Vaughan, T. W., 34.
 Hindeastrae, Tex.: Hoffmeister, J. E., 1.
 Homalophyllyum, Ontario: Stewart, 8.
 Illinois, Chicago region: Bretz, 10.

Anthozoa—Continued.

- Indiana, Kentland Ord.: Shrock, 12.
 Invertebrates, Carb., Tex.: Williams, J. S., 12.
 Jamaica cays: Steers, 1.
 Jamaica Cret., Eocene: Wells, J. W., 5, 8.
 Kansas, Okla.: Newell, 3.
 Kansas coal field: Williams, J. S., 12.
 Lepidocyclus, Panama Canal Zone: Vaughan, 20.
 Lichenaria, Ont.: Okulitch, 17.
 Lindströmia, nomenclature: Willoughby, 1.
 Lithostrotionella, Carb.: Hyasaka, 1.
 Louisiana, Caldwell, Winn Parishes: Huner, 1.
 Pleistocene, Miss. River delta: Wells, J. W., 4.
 Madreporaria - Hexacoralla check list, 1758-1935: Vaughan, 32.
 Madreporarian, Calif.: Faustino, 1.
 Malonophyllum, Tex.: Okulitch, 7.
 Mississippiian: Grove, B. H., 1, 3.
 Missouri, Dev.: Ball, 19.
 St. Louis Missn. fm.: Clark, E. L., 1.
 Multisolenia and Desmidopora: Fritz, 7.
 Multisolenia, Silurian, Ont.: Fritz, 5, 10.
 Nevada, coral reefs: Muller, 10, 14.
 New York, Berne quad.: Goldring, 11.
 Portage: Chadwick, 29.
 Skaneateles quad.: Smith, B., 4.
 Niagaran, Hudson Bay area: Lee, D., 1.
 Nodules, Ill.: Grubbs, 1.
 Nomenclature and type species: Wells, J. W., 9.
 Nova Scotia, Carb.: Lewis, H. P., 1.
 Ohio: Chappars, 3; Stewart, G. A., 4.
 Cincinnati area fauna: Bucher, 21.
 Portersville mbr., Conemaugh fm.: Laird, W. M., 1.
 Oklahoma, Quinton-Scipio coal field: Williams, J. S., 9.
 Ontario, Mantoulin Is.: Caley, 1.
 Peninsula, Guelph and Eramosa fms.: Shaw, E. W., 2.
 Ordovician, evolution: Okulitch, 15.
 Paleocyclusidae, Paleozoic: Bassler, 25.
 Paleofavosites, mural pores: Twenhofel, 1.
 Paleozoic: Grove, B. H., 1.
 Pennsylvania: Willard, 49, 57.
 Polyporites stenssoni is coral: Brown, 18.
 Quebec, Silurian: Parks, 5.
 Black River group: Okulitch, 3.
 Gaspé: Northrop, 10.
 Ste. Anne River: Laverdière, 6.
 Reef corals, evolution: Gerth, 1.
 Oligocene, Ala., Ga.: McGlamery, 1.
 Rugose corals: Sloss, 2; Stumm, 2, 3; Werner, 1.
 Permian, Tex.: Heritsch, 3.
 Sea balls, Sil., Ill.: Croneis, 46.
 South Carolina, Pamlico fm.: Cooke, C. W., 20.
 Streptelasma, Ordovician: Cox, 6.
 Stromatoporoidea, relationships: Parks, 11.

Anthozoa—Continued.

- Tabulata and Alcyonaria: Fenton, 42.
 Tabulate of Hall: Fenton, 42.
 Tertiary, Porto Rico: Coryell, 1.
 Tetracorals, Dev., Nev.: Stumm, 1.
 Paleozoic: Sanford, W. G., 1.
 Tetradium, revision: Okulitch, 1.
 Supposed columella: Okulitch, 12.
 Texas, Eocene: Vaughan, 27.
 Glen Rose fm.: Wells, J. W., 1.
 Midway group: Gardner, 8.
 Trinity group: Wells, J. W., 2.
 Trinidad: Gregory, J. W., 2.
 Toco Bay: Thomas, H. D., 2.
 Tully lm. Pa.: Willard, 47.
 Turbinolia, Calif.: Quayle, 3.
 Waagenophyllum, Tex.: Heritsch, 2.
 Wisconsin, Sil. bioherms: Shrock, 14.
 Xylodes rugosus: Smith, S., 1.
 Zaphrentis: Grove, B. H., 2.
- Anthracite.
 Bibliography: Anonymous, 2.
 General: Hudson Coal Co., 1.
 Pennsylvania, constitution: Turner, H. G., 1.
 Panther Valley: LeVan, 1.
- Anthraxolite, Northwest Territories: Ruth-erford, 16.
- Antigua.
 Paleontology.
 Foraminifera: Cushman, 1.
 Operculina and Operculinoides: Vaughan, 28.
- Antillean-Caribbean area: Baker, C. L., 25.
 Antillean area, g. hist.: Schuchert, 31.
- Antilles. See also West Indies.
 Historical geology.
 General: Reed, R. D., 2, 3.
- Antimony.
 Alaska: Moffit, 3.
 Epithermal deposits: Schrader, 4.
 Idaho: Anderson, A. L., 1; Currier, 4; Dickey, F. H., 1.
 Mexico: Santillán, 14.
 Nevada: Cameron, E. N., 2.
 Newfoundland: Heyl, 1.
 Nova Scotia: Messervey, 15.
- Antiquity of man in America: Merriam, J. C., 13.
- Antlerite, Ariz.: Palache, 38.
 X-ray study: Richmond, 6.
- Apatite, N. H.: Stewart, G. W., 1.
- Appalachia, possible position: Thom, 22.
 Surface, seismic evidence: Ewing, 14-a.
- Appalachian drainage: Johnson, D. W., 10.
- Appalachian front: Price, P. H., 2.
- Appalachian geomorphic evolution: Johnson, D. W., 10; Woodward, 14.
- Appalachian peneplains: Ashley, 3.
- Appalachians, folded: Itter, 2.
 Northern: Schuchert, 11.
 Southern structure: Boesch, H. H., 2.
- Applied geology: Berkey, 14.

Arachnida.

- Amber, Canada : Carpenter, 16.
 Cambrian, Mo. : Lochman, 6.
 Mazonia, Kans. : Elias, 17.
 Merostomata, Camb. : Raasch, 6.

Aragonite.

- Great Salt Lake, Utah : Eardley, 11.
 Louisiana, Texas : Hanna, M. A., 11.

Archean. *See* Pre-Cambrian.

Arctic America.

- Geologic inv. : Foerste, 4; Krueger, H. K. E., 1.

Historical geology.

- Baffinland, Melville Pen. : Mathiassen, 1.
 Boothia Pen. : Downes, 1.
 Cambrian : Besser, 3.
 Cretaceous : Reeside, 3.
 Devonian : Kindle, E. M., 3.
 Ellesmere Land : Bentham, 2, 3.
 General : Kindle, 40.
 Ordovician, Sil. : Foerste, 5.
 Tertiary : Stirton, 22.
 Triassic, Juras. : Stanton, T. W., 1.

Paleontology.

- Baffin Is. : Wilson, A. E., 1, 2.
 Baffinland fossils : Wilson, A. E., 1, 2.
 Floras : Berry, E. W., 16.
 Graptolites : Ruedemann, R., 4-a.
 Mammalia : Stirton, 22.

Petrology.

- Gold ores of Frobisher : Roy, 13.

Physical geology.

- Boothia Pen. : Downes, 1.
 Ellesmere Land : Bentham, 2, 3.
 General : Kindle, 40.

Physiographic geology.

- Arctic Archipelago Prov. : Nichols, D. A., 4.
 Boothia Pen. : Downes, 1.
 Ellesmere Land : Bentham, 2, 3.
 General : Kindle, 40.
 Glaciers and ice caps : Smith, E. H., 1.
 Grinnel ice cap : Roy, 12.
 Mounds, unglaciated, N. W. America : Macar, 3; Porsild, 1.
 Southampton Is. : Mathiassen, 1.

- Argillite, Ariz. : Bartlett, K., 2.
 North Carolina : Thiesmeyer, 5-b.

Arizona.

- Bibliography, geology and min. res. : Wilson, E. D., 7.
 Grand Canyon area : McKee, 1.
 Guidebook, Southern Pacific Lines :

Darton, 4.

- Hoover dam site : Berkey, 11.
 Navajo country : Reagan, 7.

Areas described.

- Fort Apache area : Reagan, 6.
 Holbrook area : Harrell, 2.
 Mammoth mining camp : Peterson, N. P., 1, 2.
 Oatman, Katherine areas : Lausen, 4.
 Ore deposits : Butler, 18.

Arizona—Continued.

Areas described—Continued.

- Silver King area : Galbraith, F. W., 3d, 1.
 Tombstone dist. : Butler, 17.
 Yuma County : Wilson, E. D., 5.

Economic geology.

- Ajo area : Gilluly, 17, 20; Joralemon, 4.
 Alabandite : Hewett, 2.
 Apache dome : Roe, H., 1.
 Asbestos : Butler, G. M., 1; Bowles, O., 4.
 Bagdad mine : Butler, 20.
 Bajada placers : Werber, 1.
 Bisbee dist. : Tenney, 1; Ransome, 3; Trischka, 4.
 Bisbee ore bodies : Trischka, 3.
 Boulder Dam : Hewett, 12.
 Boxwork siderite : Eckel, E. B., 1; Trischka, 2.
 Campbell mine : Schwartz, 9.
 Cerbat Mts. : Hernon, 1.
 Childs-Aldwinkle mine : Kuhn, 1.
 Clifton-Morenci area : Butler, 19.
 Copper ores dists. : Schwartz, 25; Tenney, 4.
 Pyritic deposits : Kania, 4.

- Diatomite : Trischka, 1.
 Gold placers : Fansett, 3; Wilson, E. D., 4.
 Iron ore : Burchard, 2.
 Jerome area : Reber, 1.
 Lode gold mines : Wilson, E. D., 6.
 Magna mine area : Short, 6.
 Manganese mineralization, Tombstone : Rasor, 2.
 Miami-Inspiration dist. : Rubey, 1.
 Mining geology, Old Dominion, Globe : Bjorge, 1.
 Montana mine, Ruby : Fowler, 14.
 Ore deposits : Schmitt, 5; Butler, 18, 21.
 Petroleum : Butler, G. M., 2.
 Petroleum poss. : Holm, 1.
 Pre-Cambrian greenstone complex, Jerome quad. : Lausen, 2.
 Precious metals, Mont., Idaho mines. Ruby : Warren, H. V., 2.
 Quicksilver deposits : Schuette, C. N., 1.
 Ray dist. : Anonymous, 179.
 Silver King area : Galbraith, F. W., 3d, 1.

Strontium : Moore, B. N., 7.

- Tennessee Schuylkill mine : Garrett, S. K., 1.
 Tombstone area : Butler, 17, 21; Tenney, 6.

Tonto ss. : Keyes, 54.

- Turquoise : Crawford, W. P., 2.
 Warren mining dist. : Trischka, 3.

Historical geology.

- Abiquiu quad. : Smith, H. T. U., 10.
 Aguja for Chiquito : Keyes, 453.
 Ajo quad. : Gilluly, 17, 20; Joralemon, 4.
 Algonkian : Darrah, 2; Darton, 3; Hinds, 13.

Arizona—Continued.

Historical geology—Continued.

- Apache dome: Roe, H., 1.
 Apache group: Keyes, 197.
 Archean metamorphics, Grand Canyon: Campbell, I., 3.
 Archean ripple marks: Maxson, 8.
 Archean, Grand Canyon: Campbell, I., 2.
 Archean system: Maxson, 11.
 Aubrey title: Keyes, 320.
 Aubreyan lms.: Keyes, 53.
 Bagdad mine: Butler, 20.
 Bisbee area: Trischka, 4.
 Black Mesa: Reagan, 4.
 Boulder dam site: Berkey, 17.
 Boulder Reservoir floor: Longwell, 23.
 Brice, Zion, Grand Canyons: Woodbury, 1.
 Cambrian: Stoyanow, 1.
 Cameron area: Reiche, 3.
 Canyon de Chelly: McKee, 6.
 Carboniferous: Keyes, 457.
 Cerbat Mts.: Hernon, 1.
 Childs-Aldwinkle mine: Kuhn, 1.
 Chinle fm.: VanderHoof, 5; Keyes, 276.
 Chinle fossil horizons: Camp, 2.
 Chouteau fauna: Keyes, 499.
 Clifton-Morenci area: Butler, 19.
 Coconino ss.: McKee, 4.
 Colorado Plateau: Gregory, H. E., 2.
 Colossal cave: Keyes, 47.
 Cretaceous: Keyes, 250, 260; Reeside, 1; Stoyanow, 8.
 Devonian: Keyes, 64; Stoyanow, 2.
 Diastrophism: Keyes, 185.
 Earth fissure: Leonard, R. J., 3.
 Eldon Mt.: Brady, 7.
 El Paso lms., correl.: Kirk, 14.
 Ep-Archean and Ep-Algonkian intervals: Hinds, 19.
 Grand Canyon: Sharp, R. P., 6.
 Ep-Archean Plain: Whitman, 2.
 Escabrosa lms.: Keyes, 462.
 Fundamental crystalline complex: Keyes, 184.
 Fusselman lms.: Keyes, 462.
 Gila River, San Simon Creek Valley: Knechtel, 6.
 Grand Canyon: Hinds, 27; Obern, 1; Richter, R., 2; White, C. D., 1, 4; Anonymous 16.
 Basement complex: Keyes, 428.
 Evolution: Johnson, D. W., 33-a.
 Group title: Keyes, 429.
 Moencopie fm.: McKee, 5.
 Paleozoic: McKee, 15.
 Rim rocks, age: Keyes, 317; McKee, 7.
 Greenstone complex: Lindgren, 3.
 Guadalupan ser.: Keyes, 274.
 Hermit sh.: White, C. D., 5.
 Holbrook area: Harrell, 2.
 Jerome area: Reber, 1.
 Jurassic fms., correl.: Baker, F. C., 13.
 Zunian ser.: Keyes, 293.
 Kaibab lms.: Wagner, O. E., Jr., 1.
 Kiene structure: Mackay, 2.

Arizona—Continued.

Historical geology—Continued.

- Lewis sh.: Keyes, 281.
 McElmo fm.: Mook, 1.
 Magma mine area: Short, 6.
 Marine Tert.: Wilson, E. D., 3.
 Mazatlat pre-Camb. revolution: Wilson, E. D., 8.
 Mesa Verde coal fm.: Keyes, 294.
 Miami-Inspiration area: Rubly, 1.
 Modoc lms.: Keyes, 160.
 Moencopie ss.: Brady, 8.
 Montana mine: Fowler, 14.
 Montezuma fm.: Keyes, 321.
 Nankowean group: Van Gundy, 3; Keyes, 454.
 Navajo: Reagan, 5, 7.
 Navajo ss.: Keyes, 292.
 Ore deposits: Butler, 18, 21.
 Oshawanan: Keyes, 244.
 Paleozoic fms., correl.: Stoyanow, 5.
 Paradise fm.: Hernon, 3.
 Permian: Baker, A. A., 1; McKee, 9.
 Petroleum poss.: Holm, D. A., 1.
 Pleistocene gravels, Grand Canyon: Hinds, 25.
 Polygonal cracking in granite: Leonard, R. J., 3.
 Pre-Camb. nomenclature: Keyes, 423.
 Quaternary, valleys: Hack, 1.
 Ray dist.: Anonymous, 179.
 Santa Rita lms.: Keyes, 412.
 Silver King area: Galbraith, F. W., 3d, 1.
 Silurian: Keyes, 188.
 Supai as terranall title: Keyes, 324.
 Supai, Grand Canyon: Keyes, 450.
 Supaian correl.: Keyes, 127.
 Tennessee-Schuykill mines: Garret, S. K., 1.
 Todilto lms.: Keyes, 308.
 Tombstone area: Butler, 17, 21; Tenney, 6.
 Tonto group: Wheeler, R. B., 1.
 Toroweap, Kaibab fms.: McKee, 11.
 Triassic: Mehl, 1.
 Triassic bentonite: Allen, V. T., 4.
 Tucson Mts.: Brown, W. II., 4.
 Turquoise: Crawford, W. P., 2.
 Tyente ss., Montezuma shs.: Keyes, 306.
 Uncompahgran, Beltian deposits: Hinds, 21.
 Unkar group: Van Gundy, 1.
Mineralogy.
 Antlerite: Palache, 38.
 Anaxite: Rogers, 9.
 Barite: Bryan, J. J., 2.
 Bermanite: Hurlbut, 4.
 Bisbee area: Trischka, 4.
 Brochantite: Palache, 40.
 Bromyrite: Rasor, 1.
 Canyon Diablo meteorite: Brady, 15; Ksanda, 2; Nininger, 61.
 Cerbat Mts.: Hernon, 1.
 Clifton-Morenci area: Butler, 19.
 Copper ores: Schwartz, 25.
 Cuprotungstite: Schaller, 12.

Arizona—Continued.

Mineralogy—Continued.

- Delafossite: Pabst, 13.
 Diamonds, Canyon Diablo meteorite: Ksanda, 2; Nininger, 61.
 Diatomite: Trischka, 1.
 Dumortierite: Wilson, E. D., 1.
 Elden meteorite (?): Brady, 3.
 Flagstaff meteorite: Brady, L. F., 2.
 Gold nugget: Heineman, 3.
 Incrustations, sulphate: Merwin, 3.
 Iron, Eldon meteorite: Brady, 14.
 Lechatelierite: Rogers, A. F., 3.
 Mammoth mining camp area: Peterson, N. P., 1, 2.
 Manganese mineralization: Rasor, 2.
 Marcasite: Webber, B. N., 1.
 Mercury, Chinle shales: Lausen, 5.
 Meteor Crater: Bingham, W. F., 2; Colvocoresses, 1; Lundberg, 10; Stutzer, 1.
 Meteorites: Boon, 7; Brady, 14, 15; Heineman, 1; Perry, S. H., 3.
 Monazite: Heineman, 2.
 Montana mine: Fowler, 14.
 Obsidianites: Buddhue, 14.
 Ore deposits: Butler, 17, 18, 21.
 Phosphates: Hurlbut, 1.
 Piedmontite: Guild, 4.
 Prehistoric meteorite: Brady, L. F., 1.
 Psittacinite: Taber, 5.
 Pyrite, wolframite: Guild, 2.
 Quartz crystals: Johnson, R., 1.
 Richardite: Crawford, W. P., 1.
 San Francisco Mts. meteorite: Perry, S. H., 3.
 Sillimanite staurolite: Campbell, I., 5.
 Tombstone area: Butler, 17.
 Turquoise: Crawford, W. P., 2.
 Winona meteorite: Heineman, 1.

Paleontology.

- Antilocaprine: Roosevelt, 1.
 Bat: Stirton, 4.
 Chouteau fauna: Keyes, 499.
 Conchostraca: Ulrich, 7.
 Conrad's type fossil locs.: Keyes, 309.
 Conularia: McKee, 8.
 Cretaceous: Stoyanow, 8.
 Crocodile, ancestral: Brown, B., 5.
 Dinosaurs: Camp, 5, 6; Gilmore, 20.
 Dipoides: Stirton, 15.
 Edentates: Schenk, 6.
 Egg filled with colemanite: Ward, T. W., 4.
 Fauna, Burlington: Keyes, 250.
 Devonian: Keyes, 503.
 Floras: Daugherty, L. H., 3; White, C. D., 1, 4.
 Fossiliferous zones: Stoyanow, 7.
 Fresh-water shells: Colton, H. S., 1.
 Fucoids: McKee, 3.
 Gastropoda in slag: Brady, 16.
 Grand Canyon: Hinds, 27; White, C. D., 1, 4; Anonymous, 12, 16.
 Hares: Dice, 1.
 Insects: Walker, M. V., 5.

Arizona—Continued.

Paleontology—Continued.

- Iowa Rockford fauna: Keyes, 326.
 Jellyfish, pre-Camb.: Carnegie Inst. Wash., 1, 2; Hinds, 31; Van Gundy, 2.
 Jurassic, Cret. faunas: Stoyanow, 6.
 Kaibab lms.: Wagner, O. E., Jr., 1.
 Landslides, Colorado Plateau: Hinds, 28.
 Malone, Torcer faunas: Stoyanow, 4.
 Mammals: Hill, E. W., 1.
 Mollusca: Henderson, J., 8; Reagan, 1.
 Mylodon: Brady, L. F., 5.
 Navajo country: Reagan, 5.
 Paradise fm. fauna: Hernon, 3.
 Pebbles, Trias., with Perm. fossils: McKee, 10.
 Petrified forest: Hollick, 3; Geithmann, 1.
 Placeries: Camp, 12.
 Plants in Nothrotherium dung: Lauder-milk, 11.
 Pleistocene Mollusca: Reagan, 1.
 Plesiosaur: O'Connell, 1.
 Protosuchus, ancestral crocodile: Brown, B., 10.
 Reptilia: Camp, 4.
 Schilderia: Daugherty, L. H., 1.
 Segisaurus: Camp, 8.
 Stegocephalia: Brown, B., 6.
 Supaia seeds: White, 21.
 Tetrameryx: Colbert, 9.
 Theropod: Brady, 10, 12.
 Toroweap, Kaibab fms.: McKee, 11.
 Tracks: Brady, 9, 17.
 Trigonocarpaceles: Deevers, 1.
 Wood: Le Duchat d'Aubigny, 1.

Petrology.

- Ajo quad.: Gilluly, 17.
 Argillite: Bartlett, K., 2.
 Cleavage in parascists: Stark, 17.
 Coconino ss.: Reiche, P., 4.
 Concretions: Bryan, 24.
 Copper ores: Schwartz, 25.
 Fabrics, inclusions and intrus.: Ingerson, 7.
 Mazatzal pre-Camb. revolution: Wilson, E. D., 8.
 Pegmatites: Campbell, I., 6.
 Piedmontite: Guild, 4.
 Silver King area: Galbraith, F. W., 3d, 1.

Tucson Mts.: Brown, W. H., 4.

Physical geology.

- Abiquiu quad.: Smith, H. T. U., 10.
 Aggradation, Grand Canyon: Matthes, 14.
 Ajo quad.: Gilluly, 17, 20.
 Alteration, schist and porphyry by fire: Leonard, 4.
 Anosma or "squeeze-ups": Colton, H. S., 2, 3, 4.
 Archean "ripple mark" is drag fold: Maxson, 14.
 Bagdad mine: Butler, 20.

Arizona—Continued.

Physical geology—Continued.

- Bajada placers: Werber, 1.
- Basalt, Sunset Crater: Colton, 5.
- Bisbee area: Trischka, 4.
- Bombs, volcanic, from cinder cones: Brady, 18.
- Boulder Reservoir floor: Longwell, 23.
- Bright Angel faulting: Maxson, 6.
- Cameron area: Reiche, 3.
- Canyons, headward elongation: Melton, 21.
- Cerbat Mts.: Hernon, 1.
- Childs-Aldwinkle mine: Kuhn, 1.
- Cinder cones, lava flows, San Francisco Mtn.: Colton, 8.
- Cleavage in parashists: Stark, 17.
- Clifton-Morenci area: Butler, 19.
- Colorado Delta: Fox, C. K., 1; Sykes, 2, 3.
- Colorado Plateau: Butler, B. S., 3.
- Copper deposits: Tenney, 2, 4.
- Dumortierite: Wilson, E. D., 1.
- Earthquake, Grand Canyon 1/4/35: Donald, E. M., 1.
- Earthquake risks: Branner, 11.
- Elden Mtn.: Brady, 7.
- El Picacho: Keyes, 251.
- Fabrics, inclusions and intrus.: Ingerson, 7.
- Grand Canyon: Keyes, 300; McKee, 13.
- Holbrook area: Harrell, 2.
- Jerome area: Reber, 1.
- Landslides: Hinds, 28.
- Lava flow, Grand Canyon: Schenk, 7.
- Lava squeeze-ups: Colton, H. S., 2, 3, 4.
- Lost Vulture mine: Thompson, A. P., 1.
- Louderbacks: Keyes, 416.
- Magma mine area: Short, 6.
- Mammoth mining camp area: Peterson, N. P., 1, 2.
- Manganese deposits: Wilson, E. D., 2.
- Marcasite, Twin Buttes: Webber, B. N., 1.
- Mazatzal pre-Camb. revolution: Wilson, E. D., 8.
- Meteor Crater: Colvocoresses, 1; Stutzer, 1.
- Meteoritic and supposed craters: Boon, 5.
- Miami-Inspiration area: Rubly, 1.
- Montana mine: Fowler, 14.
- Nonmetallics: Hansen, M. G., 1.
- Ore deposits: Butler, 18, 21.
- Quicksilver: Schuette, C. N., 1.
- Ray district: Anonymous, 179.
- Roaring Springs cave: Seagle, 1.
- San Francisco Mts.: Colton, 6.
- Santa Catalina Mts.: Davis, W. M., 13.
- Stream fluting and erosion: Maxson, 10.
- Sunset Crater: Francker, 1.
- Tennessee-Schuykill mine area: Garrett, S. K., 1.
- Thrust faulting: Wilson, R. A., 1.
- Tombstone area: Butler, 17.
- Toreva-block landslide: Reiche, 2.
- Tucson Mts.: Brown, W. H., 4.
- United Verde mine: Hansen, M. G., 2.

Arizona—Continued.

Physical geology—Continued.

- Valleys dammed by lava: Richter, R., 4.
- Verde fault: Ransome, F. L., 8.
- Volcanoes: Williams, H., 10, 11.
- Zuni volcanic crater: Keyes, 284.
- Physiographic geology.*
- Ajo quad.: Gilluly, 17, 18.
- Alamagordo desert dunes: Talmage, 4.
- Boulder Reservoir floor: Longwell, 22.
- Chiricahua area: Sauer, 2.
- Colorado Delta: Fox, C. K., 1; Bateman, 6; Lougee, 6; McKee, 14; Sykes, 2, 3.
- Colorado River: Blackwelder, 36, 37; McKee, 14.
- Galiuro Mts.: Davis, W. M., 4.
- Gila River and San Simon Creek valley: Knechtel, 6.
- Grand Canyon: Hinds, 27; Johnson, D. W., 33-a; Matthes, 13; Richter, R., 2; White, C. D., 2.
- Klene structure: Mackay, 2.
- Mammoth mining camp area: Peterson, N. P., 1, 2.
- Meteor Crater: Barringer, 2; Blackwelder, 29; Brown, F. M., 1; Delenbaugh, 1; Fairchild, 2, 6; Fisher, C., 1; Jakosky, 2; Longwell, 10; Russell, H. N., 1; Skerrett, 1; Spencer, L. J., 2, 4; Stutzer, 2; Tschirwinsky, 1; Watson, F. G., Jr., 1; Wylie, 7; Anonymous, 19.
- Moencopi Plateau: Melton, 15.
- Peacock Range: Davis, 7.
- Pediments: Gilluly, 15; Morris, F. K., 3.
- Physiographic prov.: Hoover, J. W., 2; Keyes, 21.
- Quaternary, valleys: Hack, 1.
- Rio de Flag Arroyo: Brady, L. F., 13.
- Rio Santa Cruz: Sykes, 6.
- Santa Catalina Mts.: Davis, 13.
- Supai, Grand Canyon: Keyes, 450.
- Tectonics: Darton, 13.
- Tucson Mts.: Brown, W. H., 4.
- Valleys and ground water: Smith, G. E. P., 2, 3.
- Valleys dammed by lava: Richter, R., 4.
- Underground water.*
- Avra-Altar Valley area: Andrews, D. A., 4.
- General: Piper, 5.
- Gila River and San Simon Creek Valley: Knechtel, 6.
- Holbrook area: Harrell, 2.
- Indian Hot Springs: Knechtel, 3.
- Rio Santa Cruz: Sykes, 6.
- Valleys and ground water: Smith, G. E. P., 3.

Arkansas.

- Arkansas Geol. Survey: Branner, 6.
- General: Hall, B. F., 1.
- Report of State geologist: Branner, 9, 14, 18.
- Wealth of State: Branner, 19.

Arkansas—Continued.

Areas described.

- Coal fields: Hendricks, 8.
De Queen, Caddo Gap quads.: Miser, 1.
Ozark Mts.: Schottenloher, 2.
Paleozoic: Croneis, 2.
Southwestern Ark.: Dane, 1.

Economic geology.

- Ark-La-Tex oil and gas field: Easton, 8.
Atlanta oil field: Schmidt, K. A., 1.
Barite: Branner, 7; Parks, B., 1, 2.
Bauxite: Bramlette, 5; Stearn, 4.
Bentonite: Branner, 5; Burchard, 1.
Buckner pool: Link, W. K., 1.
Carbon ratios, Ark.-Okla. coal fields:
Hendricks, T. A., 6; Fisher, D. J., 8.
Cinnabar: Branner, 10; Reed, J. C., 8;
Stearn, 11.
Coal fields: Hendricks, T. A., 7, 8.
Coals, classn.: Hendricks, T. A., 2.
Coastal Plain oil fields: Bignel, 1.
Cretaceous: Shreveport G. Soc., 4.
Diamond fields: Branner, 4.
Garland City pool: McFarland, L. R., 1.
Geomagnetic survey, bauxite area:
Stearn, 4.
Gypsum: Giles, 9.
Hempstead County, oil poss.: Easton, 4.
Irma oil field: Teas, 1.
Magnetic vectors: Jenny, 2.
Magnolia pool: Trager, H. H., 1.
Manganese: Miser, 13.
Metallic minerals: Branner, 2.
Mid-continent oil and gas fields: Miser, 9.
Mineral survey: Branner, 20.
Natural-gas fields: Croneis, 23.
Nonmetallic min. res.: Branner, 8.
Pennsylvanian sedimentation, coal field:
Hendricks, 13.
Petroleum, 1937: Shearer, 5.
Petroleum and natural gas: Bingham,
D. H., 1; Branner, 1, 15; Jenny, 12;
Lloyd, A. M., 2; Miser, 9; Moody, 4,
5; Shearer, H. K., 3; Spooner, 4,
5, 6.
Quicksilver: Hansell, 1; Reed, J. C., 6,
7, 16; Sohlberg, 1, 2; Stearn, 7.
Rodessa field: Clark, C. C., 2; Ivy, 1.
Schuler pool: Weeks, W. B., 1, 3.
Smackover field: Bell, H. W., 1; Free-
man, L. L., 1; Haury, 1; Spooner, 3.
Snow Hill field: Easton, 5; Weeks,
W. B., 4.
Southern Ark., and Coastal Plain:
Weeks, W. B., 2.
Stamps field: Morgan, C. L., 1.
Stephens oil field: Spooner, 2.
Sulphide ores: Eummons, W. H., 1.
Village oil pool: Link, W. K., 2.
Zinc and lead: McKnight, 2; Miser, 11;
Anonymous, 39.

Historical geology.

- Annona chalk: Thomas, N. L., 6.
Archimedes lms.: Keyes, 451.
Ark-La-Tex oil and gas field: Easton, 8.

Arkansas—Continued.

Historical geology—Continued.

- Atlanta oil field: Schmidt, K. A., 1.
Bauxite area: Bramlette, 5.
Bloyd shale: Henbest, 7.
Boone chert: Giles, 10.
Brownstone marl: Stephenson, L. W., 3.
Brownstown fm.: Israelsky, 1.
Buckner pool: Link, W. K., 1.
Carboniferous, proposed dismemberment:
Keyes, 327.
Centerpoint volcanics: Hazzard, R. T., 2.
Chalks, Cret.: Thomas, N. L., 3.
Cinnabar: Stearn, 11.
Coal fields: Hendricks, T. A., 4, 5, 7, 8.
Comanche and pre-Comanche fms.: Haz-
zard, R. T., 2.
Correlations by graptolites: Decker, 13,
14.
Cretaceous: Alexander, 16; Hazzard, R.
T., 4; Shreveport G. Soc., 4;
Thomas, N. L., 3.
Cross sec.: Alexander, 15; Lloyd, A. M.,
3; Purzer, 1.
Diamond fields: Branner, 4.
Fayetteville sh.: Croneis, 5.
Garland City pool: McFarland, L. R., 1.
General: Kansas. G. Soc., 6.
Geologic fms., new names: Weber, 1.
Geologic map: Branner, 3.
Gulf Coastal Plain: Spooner, 4.
Hale Mtn. area: Giles, 2.
Igneous rocks: Croneis, 1, 3.
Index fossils: Calahan, 1.
Izard dolomite: Keyes, 490.
Jackford and Stanley fms.: White, 23.
Johns Valley sh.: Moore, R. C., 24.
Kinderhook, vs. Chouteau: Keyes, 494.
Magnolia pool: Trager, H. H., 1.
Megafossils, Smackover lms.: Adkins, 10.
Mid-continent area: Labee, 8.
Mid-continent oil-field sediments:
Cheney, 3.
Midway group: Alexander, C. I., 12.
Mississippian and Morrow fms.: Roth, 2.
Murfreesboro lms.: Ulrich, 34.
Natural gas fields: Croneis, 23.
Novaculite: Henbest, 8.
Osage fms.: Cline, L. M., 1.
Ouachita boulder problem: Kramer, 6;
Watershoot van der Gracht, van.
12.
Ouachita Mts.: Hariton, 8; Kans. G. Soc.,
4; Miser, 2, 6, 7, 8.
Ouachita Mts. and Bucher's laws: Tom-
linson, 5.
Ozarks: Cozzens, 2; Kans. G. Soc., 1.
Paleozoics, Ouachita: Miser, 9.
Pennsylvanian sedimentation: Hen-
dricks, 13.
Petroleum and gas, 1937: Shearer, 3.
Polk Creek sh.: Decker, 11.
Quicksilver area: Reed, J. C., 16; Stearn,
8.
Rodessa field: Clark, C. C., 2.
St. Peter and older Ord. ss.: Giles, 1.

Arkansas—Continued.

Historical geology—Continued.

- Saratoga chalk: Thomas, N. L., 5.
- Schuler field: Weeks, W. B., 1, 3.
- Silurian: Ball, J. R., 21.
- Smackover oil and gas field: Haury, 1.
- Snow Hill pool: Weeks, W. B., 4.
- Southern Ark. and Coastal Plain: Weeks, M. B., 2.
- Southwestern Ark.: Rankin, C. L., 1.
- Tectonics: Cronels, 9.
- Upper Cretaceous: Dane, 1.
- Village oil pool: Link, W. K., 2.
- Volcanic deposits: Ross, C. S., 1.
- Zinc and lead deposits: McKnight, 2.

Mineralogy.

- Cinnabar: Sohlberg, 2.
- Enargite, wulfenite: McKnight, 3.
- Fayetteville meteorite, 12/26/34: Richardson, D. P., 1.
- Magnet Cove: Haldon, 1; Landes, 9.
- Meteorites: Richardson, D. P., 1; La Paz, 1; Nininger, 15, 49; Wylie, 1.
- Mineral survey: Branner, 20.
- Newport meteorite: Nininger, 15.
- Norfolk, iron meteorite: La Paz, 1; Nininger, 49.
- Paragould meteorite: Wylie, C. C., 1.
- Quartz crystals: Toothaker, 3.
- Quicksilver: Reed, J. C., 16; Sohlberg, 2.
- Radioactivity, Hot Springs: Schlundt, 1.
- Sodalite, Magnet Cove: Glass, 7.
- Stibnite in quartz: Stearn, 9.
- Taeniolite: Miser, 15.
- Titanium: Brock, C. L., 2.

Paleontology.

- Basilosaurus, Eocene: Palmer, K. E. H. V., 5.
- Boone fauna: Girty, 1.
- Brachiopoda, Triplesidae: Ulrich, 27.
- Carboniferous invertebrates: Girty, 2.
- Casteroides ohioensis, distrib.: Cahn, 3.
- Cephalopoda, Carb.: Miller, 38; Scott, G., 8.
- Conodonts, Missn.: Cooper, C. L., 7.
- Corals, Missn.: Grove, B. H., 3.
- Cretaceous: Shreveport, G. Soc., 4.
- Crinoids, Morrow subseries: Moore, 44.
- Echinoids, Paleozoic: Cronels, 32.
- Fayetteville fauna: Cronels, 4, 5.
- Flora, Stanley shale and Jackfork ss.: White, 28.
- Weddington ss.: White, 28.
- Foraminifera: Alexander, 16; Cushman, 1, 17.
- Gastropoda: Girty, 2.
- Graptolites, Polk Creek sh.: Decker, 11.
- Griffithides: Wheeler, 7.
- Hypoparia: Thomas, N. L., 1.
- Index fossils: Calahan, 1.
- Megafossils, Smackover lms.: Adkins, 10.
- Microfossils in peat: Sears, P. B., 5.
- Mississippian, Morrow fms.: Roth, 2.
- Mississippian, Penn. Ostracoda: Harlton, 3.

Arkansas—Continued.

Paleontology—Continued.

- Opisthoptaria: Thomas, N. L., 1.
- Ostracoda: Alexander, 16; Harlton, 3; Israelsky, 2.
- Productidae, Missn.: Sutton, 14.
- Proparia: Thomas, N. L., 2.
- Saratoga chalk: Thomas, N. L., 5.
- Setigerella, Worthenella, Productus: Girty, 9.
- Stegocephalian, Penn.: Lane, H. H., 1.
- Verneullinidae, Valvulinidae, Virgulinidae: Cushman, 29.

Petrology.

- Concretions, Fayetteville sh.: Giles, 12.
- Gypsum, Fayetteville sh.: Giles, 9.
- Igneous rocks: Cronels, 1, 3.
- Ordovician ss.: Giles, 7.
- Sandstone porosities: Branner, 17.

Physical geology.

- Beauxite area: Bramlette, 5.
- Cinnabar area: Stearn, 11.
- Cone-in-cone in siderite: Hendricks, 12.
- Cylindrical structures in ss.: Hawley, 11.
- Earthquakes: Robertson, F., 1; Walter, E. J., 1.
- Faulting: Rankin, C. L., 1.
- Ouachita orogeny and sedimentation: Keyes, 469.
- Parnell Hill quicksilver mine: Stearn, 8.
- Quicksilver area: Reed, J. C., 16.
- Rodessa field: Clark, C. C., 2.
- Rough Creek fault, Ouachita deformation: Russell, W. L., 15.
- Sandstone porosities: Branner, 17.
- Tectonics: Cronels, 9.
- Volcanoes, Cret.: Miser, 17.
- Volcanism, Magnet Cove: Ross, C. S., 29.
- Zinc and lead areas: McKnight, 2.

Physiographic geology.

- Natural mounds: Melton, 2.
- Ouachita orogeny and sedimentation: Keyes, 469.
- Ozark province: Cozzens, 2.
- Quicksilver area: Reed, J. C., 16.

Underground water.

- Grand Prairie region: Thompson, 15, 19.
- Water wells to June 1937: Branner, 16.
- Arntfield-Aldermac mines area, Quebec: Bruce, 7.
- Arroyo running, in desert: Brown, W. H., 1.
- Arsenic.
 - Alabama: Adams, G. I., 4.
 - Arkansas: McKnight, 3.
 - California: Johnston, W. D., Jr., 13.
 - General: Tyler, P. M., 1.
 - Michigan: Broderick, 3.
 - Newfoundland: Heyl, 1.
 - Ore deposits: Butler, G. M., 4.
- Artesia oil field, Eddy County, N. Mex.: Davis, R. E., 1.
- Artesian pressure, origin: Russell, W. L., 5.

Artesian waters and wells. See also Under-ground water.

Florida: Stringfield, 7.

New Mexico: Morgan, A. M., 1.

Arthraria-like markings: Fenton, 33.

Arthrodira: Stetson, H. C., 3.

Arthropoda.

Arachnid, Va.: Ewing, H. E., 1.

Bellnurus, N. Y.: Eller, 12.

Burgess sh.: Hutchinson, 1.

Cambrian, British Columbia: Kobayashi, 4.

Missouri: Lochman, 6.

Ceratiocaris, Ill.: Roy, S. 10.

Crabs: Stenzel, 11.

Echinocaris, N. Y.: Eller, 7, 11.

Euproops, Pa.: Eller, 13.

Eurypterus, Canada, Pa.: Ehlers, 4; Kindie, 21.

Evolution, segmentation: Reynolds, J. M., 1, 2.

Evolution, terrestrial types: Tillyard, 3.

Merostomata: Raasch, 6.

Micrichnus, Artiodactylus tracks: Caster, 14.

Mid-Cambrian, British Columbia: Raymond, 15.

Ordovician, Sil., Arctic Canada: Telchert, 12.

Paleoecology: Raymond, 18.

Paleozoic plankton: Ruedemann, 24.

Paramphibius tracks, Dev., Pa.: Caster, 9.

Pennsylvania, Dev.: Willard, 59.

Lehigh Valley: Miller, B. L., 13.

Protolimulus, Pa.: Eller, 14.

Segmentation, evolution: Reynolds, J. M., 1, 2.

Stomatopod, Mont.: Scott, H. W., 13.

Stylonurus, Pa.: Willard, 19.

Texas, Marathon area: Turner, F. E., 6.

Tracks, Carb., cf. recent scorpions: Brady, 17.

Coconino ss., Ariz.: Brady, 17.

Trilobita, relation to arachnids: Störmer, 1.

Wisconsin, Merostomata: Raasch, 1.

Xanthias, N. J.: Rathbun, 11.

Articulata. See also Arthropoda.

Florida, Eocene crab: Rathbun, 1.

Artiodactylus and Micrichnus tracks: Caster, 14.

Asbestos.

Arizona: Butler, G. M., 1.

Bibliography: Gamble, 1.

California: Leudemilk, 1.

Chrysotile asbestos: Bain, G. W., 6; Dufresne, 3.

Brittleness: Sobolev, 1.

Canada: Dufresne, 3; Ross, J. G., 1.

Vermont: Keith, S. B., 1.

Colorado: Wahlstrom, 2.

General: Bowles, O., 4.

Asbestos—Continued.

Idaho: Anderson, A. L., 7.

Industrial minerals and rocks. A. I. M. E., 2.

Mexico: Flores, 3; Garcia Lozano, 1.

Newfoundland: Cooper, J. R., 1.

New York: Zodac, 27.

North Carolina: Greaves-Walker, 2.

Oregon: Moore, B. N., 8.

Quebec: Bain, 21; Cooke, H. C., 12, 15, 16, 20, 21, 22; Denis 1; Paige 3; Starks-Field, 1.

Vermont: Keith, S. B., 1.

Virginia: Thiesmeyer, 2.

Wyoming: Beckwith, 5.

Ashtenite, British Columbia: Poitevin, 2.

Asphalt. See also Bitumens; Bituminous rocks and sands; Grahamite.

Alabama: Lloyd, S. J., 3.

Arbuckle lms., Okla.: Decker, 23.

California: VanderHoof, 6, 8.

Crude oil metamorphisms: Ginter, 4.

Cuba: Lewis, J. W., 2; Ortega y Ros, 1.

Kentucky: Marks, 1; Russell, W. L., 8.

Mexico: Muñoz Lumbier, 2.

Tampico region: Müllerried, 15; Muir, 3.

Missouri: Crabtree, 1.

Natural, relation to oil deposits: Woodruff, E. G., 2.

North America, natural: Woodruff, E. G., 3.

Oklahoma: Ham, 2.

Origin: Berl, 1; Van Tuyl, 8.

Trinidad: Corry, 2; Graefe, 1; Kugler, 2; Lehner, 1; Van der Weg, 1.

Asphalts and allied substances: Abraham, 1.

Associations, meetings.

American Association for the Advancement of Science, Section E.: Buwalda, 10; Large, 2; Mansfield, G. R., 3, 5; Mather, 4, 7, 9, 10, 11, 12, 13, 16, 17, 18, 20, 21, 24, 26; Meyerhoff, 20, 22, 24, 26, 27, 29.

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Associations, meetings—Continued.

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- Asteroidæa. See also Echinodermata.
- Illinois, starfish: Croneis, 8.
- Ohio, Cincinnati area fauna: Bucher, 21.
- Ophioderma, Trinidad: Berry, C. T., 5.
- Ophiuroid species, Pa., Ill., Ind.: Weller, 7.
- Texas: Alexander, C. I., 2.
- Starfish, Ill.: Croneis, 8.
- Ordovician, Wis.: Jones, J. A., 2.
- Taeniolaster, Pa.: Bradford, 46.
- Asthenolith theory: Willis, 16.
- Asthenosphere, viscosity: Haskell, 1.
- Astronomical forces in geology, present status: Taylor, 12.
- Atlantic Coastal Plain, geophys. inv.: Ewing, 15.
- Interpretation of geophys. data: Miller, B. L., 10.
- Atlantic rift: Baker, H. B., 1, 2, 3.
- Atlas of Am. geology: Lobeck, 3.
- Atolls, Bermuda, beaches: Prat, H., 1.
- Austinite, Utah: Staples, L. W., 2.
- Austinite=brickerite: Brendler, 1.
- Auto-traction hypothesis: DeLury, J. S., 3, 4, 11.
- Autunite, N. C.: Johnson, B., 1.
- Avalanches, Calif., sculpture: Matthes, 27.
- Aves. See also Vertebrata.
- Age of birds: Wetmore, 36.
- Anabernicula, Pleist., Calif.: Ross, R. C., 1.
- Anserine bird, Pliocene, Neb.: Compton, 4.
- Antiquity of migratory instinct: Miller, L. H., 5.
- Auk, Calif.: Miller, L. H., 14.
- Auklet, Oreg.: Miller, A. H., 2.
- Avian and other remains, Ill.: Smith, B., 4.

Aves—Continued.

- Avifauna and human remains, Rancho La Brea, Calif.: Howard, H., 15.
- Bahamas, cave deposits: Wetmore, 40.
- Bathornis Oligocene, Neb.: Wetmore, 22.
- South Dakota: Wetmore, 41.
- Bird, Miocene, Neb.: Wetmore, 22.
- Bird remains, cave deposits, N. Mex.: Howard, H., 6; Wetmore, 19.
- Birds, Eocene, Wyo.: Wetmore, 24.
- Miocene, Neb.: Wetmore, 24.
- Birds of the past: Wetmore, 8.
- Bonasa, Md.: Wetmore, 5.
- Branta, Pleist. Calif.: Miller, L. H., 2.
- Burnet Cave, Pleist., N. Mex.: Schultz, C. B., 3.
- Buteo, hawks: Wetmore, 7, 30.
- Caenagnathus, Alberta: Sternberg, R. M., 2.
- California: Manix Lake beds: Compton, 2.
- Miocene: Miller, L. H., 17.
- McKittrick: Miller, L. H., 3, 18.
- Pleistocene: Miller, Alden H., 7; Miller, L. H., 10, 11, 14, 21.
- Rancho La Brea: Stock, 7; Miller, Alden H., 1.
- Tembler fm., Bakersfield: Wetmore, 13.
- Vulture, Pliocene: Miller, L. H., 12.
- Caracara, Rancho La Brea: Howard, H., 14.
- Check list, fossil birds, N. Am.: Wetmore, 4.
- Chendytes, Pleist. Calif.: Miller, L. H., 16.
- Ciconia, Pleist. Calif.: Miller, L. H., 22.
- Classification, systematic, revised: Wetmore, 31.
- Colorado: Koerner, 2.
- Dakota ss.: Mehl, 6.
- Columbus, Pliocene, Calif.: Wetmore, 42.
- Cormorants, Calif.: Howard, H., 3; Miller, L. H., 6.
- Cryptoglaux, N. Mex.: Howard, H., 3.
- Cuba, Pleist.: Wetmore, 6.
- Cyrtonyx Neb.: Wetmore, 21.
- Development, knowledge of fossil birds: Wetmore, 21.
- Diatryma: Troxell, 4, 7–a; Wetmore, 14.
- Distribution, geol. features in: Kelly, J. W., 2.
- Eagle, Wyo.: Wetmore, 27.
- Eagles and vultures, Calif.: Howard, H., 5.
- Eggs: Toepelmann, 3; Ward, T. W., 4; Wetmore, 46.
- Eocene age of "Cretaceous" birds: Wetmore, 15.
- Eonessa, Utah: Wetmore, 45.
- Falcons, Pleist., Calif.: Miller, L. H., 4.
- Fauna, McKittrick, Calif.: Stock, 80.
- Florida, Pleist.: Wetmore, 15, 19.
- Fossil birds of the A. O. U. check list: Wetmore, 9.
- Fringillids, Calif.: Sibley, 1.
- Goose, Pliocene: Burt, W. H., 1; Miller, Alden H., 6; Miller, L. H., 8.

Aves—Continued.

- Great horned owl, N. Mex.: Wetmore, 17.
 Grebe, other birds, Pliocene, Kans.: Wetmore, 38.
 Grus, Pliocene, Kans.: Wetmore, 17.
 Gulls, Pleist., distrib.: Miller, L. H., 1.
 Hawks, Miocene, Neb.: Wetmore, 35.
 Idaho, Pliocene, aquatic: Wetmore, 28.
 Miocene birds.
 Maryland: Wetmore, 1.
 South Dakota: Miller, Alden H., 8, 9.
 Moris, Calif.: Compton, 6; Howard, H., 11.
 Mycteria, Calif.: Howard, H., 9.
 New Jersey, Eocene: Wetmore, 11.
 Oligocorax and Miocorax, not valid for N. Am.: Wetmore, 33.
 Origin: Troxell, 8.
 Orus, Calif.: Miller, L. H., 15.
 Parapavo, Pleist.: Howard, H., 9; Miller, L. H., 19; Sandoz, 1.
 Passerine birds, Calif.: Miller, Alden H., 2, 5.
 Phalacrocorax, Pliocene, Calif.: Howard, H., 1.
 Pleistocene, Calif.: Compton, 3; Howard H., 10.
 Pliocene, Pleist., Tex.: Compton, 1.
 Pliolunda, Pliocene, Calif.: Miller, L. H., 20.
 Polyborus, Nesotrochia, and Oreopelela, Puerto Rico: Wetmore, 2.
 Protostrix, Mont., Wyo.: Wetmore, 39, 44.
 Pycorhamphus, N. Mex.: Miller, A. H., 4.
 Puerto Rico: Wetmore, 2, 3, 37.
 Ralls, Eocene, Colo., Wyo.: Wetmore, 16.
 Rancho La Brea bird, lesion: Moodie, 2.
 Road runner, Calif.: Howard, H., 2; Larson, 1.
 St. Croix, Puerto Rico: Wetmore, 2, 37.
 Spizaetus, Pleist., Nev.: Howard, H., 8.
 Storks, Pleist., Calif.: Miller, L. H., 13.
 Strix, Pleist., Calif.: Howard, H., 7.
 Sula, Md.: Wetmore, 43.
 Torrington, Wyo.: Wetmore, 25.
 Toxostoma redivivum, Pleist., Calif.: Engels, 3.
 Tracks, Death Valley, Calif.: Curry, H. D., 2.
 Pliocene, Tex.: Johnston, C. S., 2.
 Trumpeter swan, Pleist., Ill.: Wetmore, 34.
 Turkey, Tert., N. Mex.: Needham, 5.
 Tyto, Corvus, Puerto Rico: Wetmore, 3.
 Vulture, hawk, Calif.: Miller, L. H., 9.
 Vultures, Pliocene, S. Dak.: Compton, 5.
 Williams Cave, Tex.: Ayer, 1.
 Woodpecker, Pliocene, Neb.: Wetmore, 18.
 Wyoming, eagle: Wetmore, 27.
 Babingtonite, Mass.: Kitson, J. E., 2; Palache, 33.

- Bacteria in ancient rocks (?): Farrell, 1.
 In anthracite (?): Turner, H. G., 3.
 In meteorites (?) Farrell, 1; Lipman, 2, 3; Nininger, 22; Roy, 11, 14.
 In sediments, geol. effect: ZoBell, 1.
 Bacterial genesis, hydrocarbon from fatty acids: Thayer, L. A., 1.
 Baffinland fossils: Wilson, A. E., 2.
 Bahamas.
 Andros Is.: Field, R. M., 3.
 Boring, New Providence Is.: Field, 12.
 Great Bahama Lagoon: Black, 3.
Historical geology.
 Calcareous shallow-water deposits: Thorp, E. M., 2.
Paleontology.
 Bird remains: Wetmore, 40.
 Geocapromys: Allen, G. M., 3; Lawrence, B., 1.
 Mollusca: Pillsbury, 3.
Physiographic geology.
 Calcareous deposits: Thorp, E. M., 3, 5.
 Submerged river valleys: Hess, H. H., 2, 3.
 Baraboo Range, Wis.: Smith, G. H., 1.
 Barbados.
Historical geology.
 Coral rock: Trechmann, 10.
 General: Matley, 3; Saint, 1.
 Paleogene: Senn, 1.
Paleontology.
 Chelonechinus, Neogene: Bather, 1.
 Coral rock fauna: Trechmann, 10.
 Corals, Eocene: Wells, J. W., 5.
 Diatoms: Fuge, 1; Robinson, J. H., 1, 2.
 Fish, Scotland beds: White, E. I., 1.
 Iguana remains: Swinton, 1.
 Peridinites: Lefèvre, 1, 2.
Physical geology.
 Coral rock: Trechmann, 10.
Physiographic geology.
 Coral rock, Trechmann, 10.
 Barbados uplift: Trechmann, 5.
 Barite.
 Alabama: Adams, G. I., 6; Jones, W. B., 8.
 Appalachian Valley: Crickmay, G. W., 11.
 Arizona, Grand Canyon: Bryan, J. J., 2.
 Arkansas: Branner, 7; Parks, B., 1, 2.
 California: Bradley, W. W., 1, 2; Howard, A. D., 2.
 Colorado: Howland, 3.
 Cuprotungstite: Schaller, 12.
 Kentucky: Robinson, L. C., 4.
 Missouri: Duke, C. L., 1; Tarr, 8; Weigel, 1.
 Montana: Shenon, 12.
 North Carolina: Stuckey, 5, 8.
 Nova Scotia: Messervy, 12; Norman, 5.
 Oklahoma: Boos, 16; Tarr, 10.
 Origin, Appalachian Valley: Crickmay, G. W., 12.

Barite—Continued.

- Tennessee: Laurence, 3; Penhallegon, 1; Witlatch, 17, 20.
- Texas: Baker, C. L., 12; Barnes, 7.
- United States, SE.: Lloyd, S. J., 1.
- Virginia: Edmundson, 1, 2, 4; Woodward, H. P., 13.

Barium.

- General: Specht, 1.
- Industrial minerals and rocks: A. I. M. E., 2.

Barred basins and source rocks of oil: Woolnough, 3.

Bars.

- Florida, Pensacola: Howard, A. D., 4-a.
- New York, Long Is. offshore: Howard, A. D., 12.
- Offshore bars and changes of level: Price, 22.

Bartlett Trough region: Hess, H. H., 2; Taber, 8.

Barytes. See Barite.

Basalt.

- California, Lava Beds Nat. Monument: Swartzlow, 5-a.
- Columbia River Basin, Wash., Oregon: Landes, H., 1.
- Crystallization process: Barth, 13.
- Guatemala: Deger, 3.
- Idaho: Anderson, 22.
- Mexico: Blázquez L., 3.
- New Mexico: Hunt, 4; Nichols, R. L., 4, 12.
- Nova Scotia: Cries, 1.
- Ontario: Satterly, 4.
- Oregon: Hodge, 22.
- Volcanic products: Powers, H. A., 5.
- Yellowstone Nat. Park: Howard, A. D., 6.

Base exchange in sediments: Kelley, W. P., 1.

Base-level: Johnson, D. W., 3.

Basin Range types: Davis, 18.

Batholithic intrus.: Brock, R. W., 1.

Batholiths. See also Intrusions.

- Aruba, West Indies: Westermann, J. H., 1.
- Bibliography: Grout, 5-a.
- British Columbia, Coast Range: Lay, 2; Schofield, 1.
- Eagle-McDane: Hanson, 13.
- Fort Fraser: Armstrong, J. E., 2.
- Osoyoos: Cockfield, 14.
- Sheep Creek: Marshall, I. M., 1.
- Terrace area: Kindel, E. D., 2.
- Ymir-Nelson area: Cockfield, 15.
- Zeballos area: Stevenson, J. S., 5.
- California, Mother Lode and Sierra Nevada: Cloos, 10, 13.
- San Andreas Rift area: Willis, 18.
- San Gabriel Mts.: Oakeshott, 1.
- San Marcos gabbro: Miller, F. S., 2.
- Canada, Porcupine and Kirkland Lake areas: Dougherty, 5.
- Timiskaming sub-province: Collins, 12.
- Canadian Shield: Wilson, M. E., 20.

Batholiths—Continued.

- Colorado, Front Range: Boos, 10.
- Longs Peak-St. Vrain: Boos, 5.
- Montezuma quad.: Lovering, 17.
- Sawatch Range: Stark, 8, 9.
- Twin Lakes and Clear Creek: Chapman, E. P., 2.
- Columbia River Basin, Wash., Oregon: Landes, H., 1.
- Depth: Lane, 10.
- Duluth lopolith: Grout, 5.
- Formation: DeLury, 4.
- General: Dresser, 3; Grout, 11, 15.
- Georgia: Calhoun, 1.
- Granitic, basal regions: Emmons, W. H., 7.
- Greenland: Wegmann, 6.
- Idaho: Clapp, C. H., 5; Dickey, F. H., 1; Ross, C. P., 14, 29.
- Atlanta area: Anderson, 23.
- Boise County: Anderson, A. L., 13.
- Cassia: Anderson, 56.
- Casto quad.: Ross, C. P., 22.
- Dixie area: Capps, 14.
- Edwardsburg, Thunder Mtn. area: Shenon, 16.
- Florence area: Reed, J. C., 19.
- Salmon River area: Wilson, R. A., 5.
- Igneous rocks, structural behavior: Balk, 13.
- Intrusions, mechanics of: Loewinson-Lessing, 1.
- Inyo Range, Calif., Nev.: Anderson, G. H., 5.
- Jamaica complex: Trechmann, 9.
- Kansas: Koester, 2.
- Labrador: Gill, 6.
- Magma waves, theory: Lay, 2.
- Maine: Chadwick, 32, 33.
- Massachusetts: Clifford, J. N., 1.
- Mexico: Woodford, 6.
- Minnesota-Ontario boundary: Grout, 3.
- Montana, Boulder: Grout, 13.
- Idaho batholith: Langton, 1.
- Tobacco Root Mts.: Lorain, 1.
- Nature and origin: Moore, E. S., 9; Nevin, 8.
- Nevada: Grout, 4.
- Newfoundland: Heyl, 1.
- Conception Bay: Vhay, 1.
- New Hampshire, mechanics of intrusion: Billings, 17-a.
- New Mexico: Dunham, 3, 4.
- North Carolina: Parker, J. M., 1.
- Northwest Territories: Henderson, J. F., 6.
- Nova Scotia: Cameron, H. L., 1.
- Ontario, Birch Lake: Tolman, C., 1.
- Burntbrush River: Thomson, Robt., 4.
- Cutler: Quirke, 18-b.
- French River: Quirke, 2.
- Kashabowie Lake: Perdue, 1.
- Michipicoten: Froberg, 3.
- Stull Lake: Satterly, 3.
- Thunder Lake: Pettijohn, 15.

Batholiths—Continued.

- Ontario and Quebec gold areas: Spearman, 3.
 Oregon: Hodge, 13.
 Quebec: Freeman, B. C., 5; Ross, S. H., 1; Spearman, 3.
 Relation to ore deposits: Emmons, W. H., 5.
 Saganaga granite, Minn.-Ontario: Grout, 18.
 Sierra Nevada, Calif.: Lawson, 8.
 Size: Lane, 15.
 South Carolina: Kesler, 1.
 South Dakota: Wright, L. B., 3.
 Texas: Stenzel, 9.
 Two-granite, pre-Camb.: Moore, E. S., 7.
 Virginia: Bloomer, 2; Thiesmeyer, 5-a.
 Washington, Chelan: Waters, 12.
 Colville: Waters, 14; Campbell, C. D., 3.

Xenoliths with flake graphite: Newcomb, 1.

- Wyoming: Wright, L. B., 3.
 Yukon: Lees, E. J., 2.

Bathymetric compilation off Calif. coast: Shepard, 33.

Batrachia. See Amphibia.

Baumhauerite sulpho salts: Palache, 37.

Bauxite.

- Alabama: Jones, W. B., 3, 9.
 Arkansas: Stearn, 4.
 General: Dovalina, 2.
 Georgia: Smith, R. W., 1.
 Industrial minerals and rocks: A. I. M. E., 2.
 Mexico: Dovalina, 3.
 Mississippi: Foster, 5; Vestal, 2.
 Origin: Just 1; Harder, 1.
 Tennessee: Whitlatch, 12, 20.

Beach cusps. See Shore Lines.

Beach cusps and tides: Shepard, 44.

Beach markings, Wichita Mts.: Evans, O. F., 1.

Beach sand, composition: Hamaker, 1.

Beach sands, Atlantic Coast: MacCarthy, 3.

Beaches. See also Changes of level; Glacial lakes; Shore lines; Terraces.

Algonquin-Nipissing hiatus, Great Lakes area: Stanley, 10.

Arctic America, Southampton, Is.: Mathiasen, 1.

Barrier beach devel.: Melton, 24.

Bermuda: Pratt, 1.

Calcium carbonate in sands: MacCarthy, 6.

California coast: Buwalda, 16.

Ancient Lake Mojave: Bode, 8; Campbell, E. W. D., 2.

Changes in: Grant, 16.

Coastal changes: Grant, 15.

Erosion: O'Brien, 3.

Gravel cusps: Shepard, 20.

Wind-deposition shore line: Shepard, 54.

Beaches—Continued.

- Canada: Nichols, D. A., 3; Stanley, 9.
 Ecology of sand areas: Twenhofel, 17.
 Erosion: Barden, 1, 2; Brown, E. I., 1; Schmitt, F. E., 1.
 Firm and soft sand: Kindle, 29.
 Florida: Martens, 2, 8; Cooke, C. W., 24.
 Fossil, original structure: Thompson, W. O., 6.
 General: Martens, 13.
 Georgia: Martens, 8.
 Greenland: Bentham, 2; Sugden, 1.
 Hawaii: Wentworth, 45.
 Huron-Erie Basins: Leverett, 24.
 Illinois: Bretz, 10.
 Jamaica, coral cays: Steers, 1.
 Kansas, shoestring sands: Garlough, 2; Read, W. F., 3.
 Labrador: Odell, 4, 6.
 Littoral drift: Hennebique, 1.
 Louisiana: Howe, 18.
 Maine: Chadwick, 33.
 Massachusetts: Schalk, 1.
 Michigan: Evans, 13; Stanley, G. M., 2.
 Minnesota: Swanson, R. W., 1.
 New Jersey: Kimmel, 2; Lucke, 2; MacClintock, 12.
 New Mexico: Powers, 13.
 New York: Howard, A. D., 12.
 North America, last ice age: Hawley, M. M., 1.
 Oklahoma: Bass, 15.
 Ontario, Algonquin beaches: Stanley, 4, 5, 6.
 Georgian Bay: Stanley, 7.
 Lake Ontario, North shore: Coleman, 10.
 Pebbles, orientation in sed. deposits: Krumbein, 25.
 Petroleum accumulations: Rich, 26.
 Port Huron moraines: Taylor, 13.
 Quebec: Butler, J. W., 4; Evans, 16; Wilson, J. T., 15.
 Rhode Island: Brown, C. W., 7; Nichols, 8-a, 14.
 Rip currents: Shepard, 29.
 Rounding of beach sands: MacCarthy, 5.
 Sands, local variation: Krumbein, 17.
 South Carolina: Martens, 8.
 Structures, original: Thompson, W. O., 6.
 Texas: Price, W. A., 14.
 Undertow: Evans, 15.
 Vermont: Doll, 2.
 Wind-deposition, shore lines: Bryan, 41.
 Wisconsin: Krumbein, 16; Shrock, 17.
 Beaver dams as geologic agents: Ruedemann, 45.
 Beidellite, replacing calcareous shells: Ross, C. S., 31.
 Belt series: Fenton, 54.
 Benches.
 California: Glendinning, 1.
 Colorado: Van Tuyl, 4-a.
 Cycles, orogeny and erosion: Baulig, 4.
 Hawaii: Stearns, 22; Wentworth, 45.

Benches—Continued.

- Newfoundland : Flint, 25.
- Pennsylvania : Filmer, 2.
- Wisconsin : Shrock, 17.

Bentonite.

- Alabama : Bowles, E. O., 2.
- Arkansas : Branner, 5 ; Ross, C. S., 1.
- British Columbia : Richmond, A. M., 2.
- California : Hill, H. R., 1 ; Kerr, P. F., 4 ; Melhase, 21.
- Canada : Allan, 13 ; Spence, 12.
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- Mississippi : Mellen, F. F., 1 ; Morse, H. M., 1 ; Vestal, 1.
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- Oklahoma : Beach, 1 ; Ham, 2 ; Ross, C. S., 1.
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- Wyoming : Heathman, 1.

Bermuda.

- Caves : Swinnerton, A. C., 1.
- Changes in base-level : Swinnerton, A. C., 2.
- Glacial control theory : Schuchert, 21.
- Pleistocene fms. : Sayles, R. W., 1.

Historical geology.

- General : Swinnerton, A. C., 3 ; Willard, 25.
- Pleistocene climate : Bryan, 23.
- Quaternary : Sayles, R. W., 4.
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Mineratology.

- Minerals, deep-sea cores and surface sediments : Young, J. A., Jr., 2.

Paleontology.

- Land shells, Pliocene : Kutchka, 1.
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Physical geology.

- Structural geology : Woollard, 5.

Bermuda—Continued.

Physiographic geology.

- Erosion, littoral : Prat, 1.
- Shoal-water deposits : Todd, J. P., 2.

Beryl.

- Colorado : Landes, 19.
- Idaho : Anonymous, 43.
- South Dakota : Lincoln, 1.

Beryl and albite, crystallization vs. replacement : Shaub, 10.

Beryl and ceramics : Luks, 1.

Beryllium.

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 Britton, N. L.: Anonymous, 62.
 Brock, R. W.: Schofield, 3; Williams, M. Y., 10.
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 Geologic map, source data: Jenkins, 19.
 Minerals: Pabst, 8.
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 Placers: Jenkins, 18.
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 Yosemite Valley: Matthes, 5.
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 Campbell, H. D.: Roberts, 22.
 Canada, interior plains: Kindle, 40.
 Outliers in pre-Cambrian Shield: Hume, 34.
 Timiskaming sub-province: Collins, 12.
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 Petritus transportation: Straub, 6.
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 Prout, H. A.: Greger, 8.
 Pumpelly, Raphael: Willis, 15.
 Putnam, F. W.: Tozzer, 1.
 Quartz dikes: Tolman, C., 5.
 Quarternary, Atlantic, Gulf Coastal Plain: Cooke, C. W., 26.
 Quebec, Abitibi area: Dresser, 6.
 Gaspé: Northrop, 10.
 St. Lawrence lowlands: Clark, T. H., 11.
 Timiskaming-Rouyn area: Gunning, 24.
 Ransome, F. L.: Lindgren, 16.
 Reagan, A. B.: Tannér, V. M., 2.
 Recent sediments and source beds of petroleum: Trask, 23.
 Reservoir and dam sites: Bryan, K., 2.
 Rhinoceroses: Matthew, 13.
 Rhode Island, Block Is.: Woodworth, 2.
 Rice, W. N.: Bowman, I., 1.
 Richardson, C. H.: Currier, 6; Ruedemann, 36.
 Richarz, Stephen: Allen, 12; Retzek, 1.
 Ries, Heinrich: Anonymous, 184.
 Robinson, H. H.: Bowman, I., 1.
 Rocky Mts. area: Atwood, W. W., 10; Heaton, 3; Uren, 2.
 Petroleum and gas area: Uren, 2.
 Roundy, P. V.: Girty, 6.
 Rudistids, Mexico: Palmer, R. H., 1.
 Salisbury, R. D.: Chamberlin, 5.
 St. Peter ss., Ky.: Jillson, 40.
 Sand movement, beaches, etc.: Haferkorn, 1.
 Seattle area, Wash.: Seeger, 1.
 Sedimentary fragments, classn.: Russell, R. D., 11; Williams, L., 2.

Bibliography—Continued.

Sedimentation: Brown, C. B., 6; Wentworth, 8.

Chemical studies: Steiger, 1, 2, 3.

Sediments, sedimentation papers, 1934-37: Stetson, 18.

Seeds, Paleozoic: Arnold, 31.

Seismic evidence, earth's interior: Macelwane, 27.

Seismic geography: Byerly, 18.

Seismology: Hodgson, E. A., 2, 5, 12, 13.

Shattuck, G. B.: Mathews, E. B., 8.

Shaw, E. W.: Westgate, 8.

Shepard, E. M.: Buehler, 7.

Shimek, Bohumil: Kay, G. F., 21.

Shufeldt, R. W.: Lambrecht, 2.

Sieenthal, C. E.: Lindgren, 5.

Silicates, natural, classn: Swartz, C. K., 5.

Silurian, lower Miss. Valley: Ball, 21.

Simpson, H. E.: Norton, W. H., 4.

Sinclair, W. J.: Scott, W. B., 14.

Sisler, J. D.: Ashley, 23.

Slates, metamorphism: Grout, 12.

Sloan, Earle: Vaughan, T. W., 4.

Smith, J. P.: Arthaber, 1; Anonymous, 33.

Smyth, C. H., Jr.: Buddington, 21.

Soil erosion: Wieland, L. H., 2.

Solids, trans. by water: U. S. Bur. Reclamation, 1.

South Dakota, Black Hills: Tullis, 5.

Tungsten deposits: Cummings, J. B., 2.

Southwestern Ill.-southeastern Mo.: Ver Webe, 24.

Southwestern U. S.: Effinger, 4.

Spillite problem: Gilluly, 12.

Spirifer, evolution: Fenton, C. L., 10.

Stegocephalia, Reptilia, Greenland: Säve-Söderbergh, 5.

Structure maps, oil States: Postley, 3.

Surface waves from earthquakes: Lect. 2.

Talc, soapstone: Wilson, H., 3.

Talmage, J. E.: Miller, B. L., 5.

Taylor, F. B.: Leverett, 22.

Temperatures, earth's crust: Van Orstrand, 13.

Tertiary, Atlantic, Gulf Coastal Plain: Cooke, C. W., 25.

Tertiary mammal-bearing fms.: Simpson, 22.

Tetracorals, Paleozoic: Sanford, W. G., 1.

Texas geology, bibliography, subject index: Sellards, 28.

Glass Mts.: King, P. B., 5.

Travis Peak fm.: Cuyler, 6.

Western: Bybee, 1.

Thomas, A. O.: Lees, J. H., 6.

Tilton, J. L.: Reger, 5.

Toroweap, Kaibab fms., Ariz., Utah: McKee, 11.

Transportation detritus by water: Hjulström, 1.

Bibliography—Continued.

Trenton group: Kay, G. M., 19.

Trenton, Black River Ord.: Hussey, 1.

Trinidad: Lehner, 1.

Turner, H. W.: Lawson, 11.

Udden, J. A.: Baker, C. L., 18.

Uinta Mts., Utah and Colo.: Forrester, 1.

United States, E.-cent., lower Missn.: Stockdale, 12.

United States Geol. Survey and its work: Rubey, J. T., 1.

Ground water: Meinzer, 27.

Upham, Warren: Emmons, W. H., 9.

Utah, Wasatch-Great Basin area: Eardley, 12.

Valentine, Tert.: Johnson, 37.

Van Horn, F. R.: Hyde, J., 1.

Van Ingen, Gilbert: Howell, B. F., 4.

Varves, non-glacial: Bradley, 17.

Vermont, Paradoxides beds: Howell, B. F., 1.

Petrology: Hubbell, M., 1.

Taconic Mts., peneplains: Pond, A. M., 1.

Vertebrata, N. Am. catalogue: Hay, 4.

Skull evolution: Gregory, 20.

Tertiary: Wood, H. E., 2d, 12.

Virginia, Warrenton quad.: Furcron, 9.

Zinc and lead area: Currier, 2.

Vogt, J. H. L.: Ransome, 5.

Volcanoes, mechanism: Jaggard, 11.

Washington, H. S.: Keyes, M. G., 1; Pelloux, 1.

Washington: Culver, 6.

Geology, min. res.: Bennett, W. A. G., 2.

Inland Empire: Kirkham, 3.

Mt. Ranier Nat. Park: Coombs, 3.

Waterschoot van der Gracht, W. A. J. M.: van Strachan, 1.

West Indies: Reed, 31; Rutten, 8.

Gravity anomalies, island arcs: Hess, H. H., 12.

West Indies, Dutch, cat. of fossils: Rutten, L. M. R., 1.

West Virginia, geology, nat. res.: Lucke, 5.

White, C. D.: Postley, 2; Schuchert, 40.

Wilder, F. A.: Bain, H. F., 2.

Williams, E. H., Jr.: Miller, B. L., 6.

Williams, I. A.: Williams, J. W., 1.

Winchester, D. E.: Emery, W. B., 4.

Wind worn stones: Bryan, 12.

Winslow, Arthur: Lane, 42.

Woodward, R. S.: Wright, F. E., 5.

Wyoming, Absaroka Range: Love, 6.

Cretaceous, Tert.: Nace, 1.

Uinta, Co.: Veatch, 1.

Wind River Canyon: Fanshawe, 1.

X-ray identification, ore min.: Waldo, 1.

Yellowstone Nat. Park: Russell, C. P., 1.

Big Badlands, S. Dak.: O'Harra, 5.

Big Lake oil pool, Tex.: Hennen, 1.

Bigstone Bay area, Ontario: Suffel, 2.

Biography.

- Abbe, Cleveland, Jr.: Sumner, 1.
 Adams, G. I.: Burchard, 6; Semmes, 2.
 Adams, G. W.: Becker, C. M., 3.
 Agassiz, Louis: Pegrum, 1.
 Alden, J. M.: Bass, 11.
 Aldrich, T. H.: Gardner, J. A., 5.
 Alexander, A. M.: Westby, 2.
 Ami, H. M.: White, 12.
 Augur, I. V.: English, W. A., 2-a.
 Barton, D. C.: Gilmour, 1; Pratt, 4, 5.
 Barton, G. H.: Lane, 27.
 Barus, Carl: Archibald, 1.
 Bather, F. A.: Lang, W. D., 1; Raymond, 14; Schuchert, 30.
 Becker, C. M.: Fulton, L. J., 1.
 Bell, J. M.: Camsell, 9; Collins, 9.
 Bennett, C. M.: Thompson, S. A., 2.
 Beyer, S. W.: Bain, H. F., 4; Anonymous, 32.
 Binney, Edwin, Jr.: Heald, 1.
 Blake, W. P.: Keyes, 47.
 Boese, Emilio: Waitz, 3.
 Bownocker, J. A.: Stauffer, C. R., 1.
 Boydell, H. C.: Lindgren, 13.
 Brandenthaler, R. R.: George, H. C., 2.
 Branner, J. C.: Lane, 32.
 Brauns, Reinhard: Kraus, 7.
 Brigham, A. P.: Baker, 22; Dodge, R. E., 1, 2; Keith, 7.
 Britton, N. L.: Anonymous, 62; N. Y. Bot. Garden Bd. Managers, 1.
 Britton, W. E.: O'Kane, 1.
 Brock, R. W.: Kindle, 32; Schofield, 3; Williams, M. Y., 10.
 Brown, T. C.: Mather, 19.
 Burckhardt, Carlos: Müllerried, 24, 27; Schuchert, 87.
 Burrows, A. G.: Knight, C. W., 3.
 Campbell, H. D.: Roberts, 22.
 Carney, Frank: Hubbard, 6; Thomas, N. L., 9, 11.
 Chalmers, W. J.: Field, S., 1.
 Chamberlin, T. C.: Alden, 1; Chamberlin, 7; Collie, 1; Leith, C. K., 1; Longwell, 2; MacMillan, W. D., 1; Mather, 22; Moulton, F. R., 1; Penrose, R. A. F., 1; Schuchert, 4, 5; Willis, B., 2, 3, 5.
 Chance, H. M.: Anonymous, 122.
 Cheney, C. A.: Valerius, 1.
 Chumard, B. F.: Keyes, 449.
 Clapp, C. H.: Deiss, 5; Flint, H. R., 1.
 Clarke, F. W.: Schaller, 6.
 Clarke, J. M.: Raymond, 11.
 Cleland, H. F.: Raymond, 13.
 Cobb, Collier: Lance, T. D., Jr., 1; Prouty, 3, 16, 19.
 Coleman, A. P.: Chamberlin, 20; Dymond, 1; Phemister, 2; Tyrrell, J. B., 2; Anonymous, 189.
 Collins, M. J.: Durward, 2.
 Collins, W. H.: Knopf, 12; Malcolm, 2; Moore, E. S., 19; Quirke, 17; Anonymous, 127.

Biography—Continued.

- Colony, R. J.: Kerr, P. F., 18; Krieger, 8.
 Conrad, T. A.: Palmer, K. E. H. V., 1; Wheeler, H. Edgar, 1.
 Cook, W. C.: Hobbs, 12; Hunt, W. F., 1.
 Cope, E. D.: Davis, W. H., 1; Keyes, 48; Osborn, H. F., 3, 16, 17.
 Crook, A. R.: Cowles, 1; Farrington, 6; Walcott, A. J., 1.
 Crosby, W. O.: Lane, 9.
 Culver, G. E.: Culver, 12.
 Dake, C. L.: Bridge, 5; Brown, J. S., 3.
 Dale, T. N.: Anonymous, 155.
 Dana, E. S.: Berkey, 21; Ford, W. E., 1, 2, 3; Palache, 32; Schuchert, 35, 37; Tarr, Mrs. W. A. 1; Anonymous, 90.
 Darton, N. H.: Miser, 16.
 Davis, W. M.: Auer, 3; Block, 1; Bondarenko, 1; Bowman, I., 3; Bryan, 26; Buwalda, 12, 14; Davies, A. M., 1; Dodge, R. E., 3; Edelshtein, 1; Johnson, D. W., 31; Keyes, 204; Martonne, 1; Mill, 1; Nussbaum, 1; Sestini, 1.
 Day, D. T.: Darton, 7.
 Dean, Bashford: Gregory, W. K., 4; Osborn, H. F., 3.
 Diller, J. S.: Collier, 2.
 D'Inwilliers, E. V.: Ashley, 18.
 Douglas, Earl: Holland, W. J., 1; Peterson, O. A., 2.
 Dowling, D. B.: Allan, 6.
 Dunston, A. W.: Roark, 1.
 Dutton, C. E.: Stegner, 1.
 Eakle, A. S.: Palache, 12; Schaller, 9; Stearns, 9.
 Emerson, B. K.: Keyes, 123; Lane, 20; Loomis, 3, 6.
 Evans, John: Evans, R. X., 1.
 Farrington, O. C.: Fisher, D. J., 4; Roß, 7.
 Faustino, L. A.: Smith, W. D., 7.
 Fisher, C. A.: Bain, H. F., 3.
 Foerste, A. F.: Bassler, 26; Cumings, 5; Wright, F. J., 11; Anonymous, 97.
 Foye, W. G.: Perkins, E. H., 14.
 Fulton, J. A.: Plate, 1.
 Geikie, A.: Shimer, 4.
 Gibb, Hugh: Schuchert, 23.
 Gidley, J. W.: Lull, 8.
 Gilbert, G. K.: Penck, 2.
 Gill, A. C.: Harris, G. D., 2.
 Girty, G. H.: Anonymous, 190.
 Gleason, C. D.: McQueen, H. S., 5.
 Goldschmidt, V.: Palache, 25, 29.
 Graham, W. A. P.: Cram, 7; Grout, 16.
 Grant, U. S.: Bain, H. F., 5; Haas, 3; Keyes, 139; Shepherd, 3; Anonymous, 47.
 Grasty, J. S.: Maynard, T. P., 1.
 Gregory, J. W.: Longwell, 17.
 Halberstadt, Baird: Ashley, 26.
 Handlirsch, Anton: Schuchert, 36.
 Harnsberger, T. K.: Shutt, 1.

Biography—Continued.

- Harris, G. D.: Cheney, 9.
 Haworth, Erasmus: Moore, R. C., 21, 22.
 Hay, O. P.: Lull, 7.
 Hayford, J. F.: Burger, 1.
 Henderson, Junius: Cockerell, 20.
 Henley, A. S.: McLaughlin, R. P., 2.
 Higgins, D. F., Jr.: Decker, C. E., 2; Grant, U. S., 2; Plummer, F. B., 2.
 Holland, W. J.: Gazin, 8; Leighton, H., 4.
 Hollick, Arthur: Howe, M. A., 5; Jeffrey, E. C., 1; Anonymous, 43.
 Holmes, W. H.: Swanton, 1.
 Hoover, J. E.: Kirk, C. T., 1.
 Hopkins, T. C.: Ploger, 1.
 Horne, J.: Daly, 10.
 Howe, Ernest: Cross, C. W., 1; Warren, C. H., 1.
 Howe, M. A.: Barnhart, 1; Grout, A. J., 1; Setchell, 3; Vaughan, 35.
 Hubbard, L. L.: Lane, 24.
 Hudson, G. H.: Ruedemann, 32.
 Hunt, T. S.: Adams, F. D., 5.
 Hyde, J. E.: Gruener, 1; Morris, 6.
 Iddings, J. P.: Mathews, E. B., 7.
 Jenison, H. A.: White, C. D., 6.
 Jillison, W. R.: Norris, P., 1; Willis, G. L., 1.
 Jones, J. C.: Chamberlin, 6-a; Louderback, 5.
 Jordan, D. S.: Treat, 1.
 Katz, F. J.: Smith, G. O., 2.
 Kemp, J. F.: Adams, F. D., 6; Emerson, B. K., 1.
 Kerr, F. A.: Cairnes, 16; Mawdsley, 9.
 Keyes, Wilson: Butcher, 1; McClure, J. H., 1.
 Keyte, I. A.: Heaton, 2.
 Kiaer, J.: Raymond, 10.
 Kinkel, J. F.: Holl, 1.
 Kitson, H. W.: Stewart, I. E., 1.
 Kunz, G. F.: Kerr, P. E., 8; Spencer, 3; Whitlock, 6.
 Landes, Henry: Goodspeed, 11.
 Lawson, A. C.: Moody, 7.
 Lees, J. H.: Cable, 1; Kay, G. F., 18.
 Leith, C. K.: Anonymous, 108.
 Leonard, A. G.: Hult, 1; Keyes, 149; Quirke, 10, 11; Simpson, H. E., 5.
 Leonard, R. J.: Butler, 23.
 Lesquereux, Leo: Darrah, 6.
 Lindgren, Waldemar: Geijer, 2; Graton, 3, 14; Holland, T. H., 1; McLaughlin, 10; Newhouse, 17; Ramdohr, 1; Anonymous, 22.
 Loomis, F. B.: Granger, 4; Romer, 23.
 Lowe, E. N.: Brown, C. S., 1; Morse, 4.
 Lupton, T. C.: Ball, M. W., 2; Hares, 4.
 Luquer, L. M.: Kerr, P. E., 2.
 Macbride, T. H.: Keyes, 227.
 McCallie, S. W.: Bayley, 2.
 McCaskey, H. D.: Ferguson, 9; Smith, W. D., 8.
 McKellar, Peter: Tanton, 3.
 McNutt, V. H.: Finch, E. H., 2.

Biography—Continued.

- Mall, F. B.: Sabin, 1.
 Mann, Albert: Hagelstein, 1.
 Mansfield, W. C.: Gardner, 17; Anonymous, 197.
 Marbut, C. F.: Darton, 12.
 Marsh, O. C.: Schuchert, 18, 54.
 Matthew, W. D.: Abel, 1; Granger, 2; Gregory, W. K., 7; Matthew, 18; Osborn, 19; Schuchert, 10; Stromer, 1.
 Maury, C. J.: Reeds, 16.
 Melcher, A. F.: Van Orstrand, 9.
 Melhase, John: Anonymous, 168, 169.
 Mendenhall, T. C.: Crew, 1.
 Mendenhall, W. C.: Cheney, 10.
 Merrill, F. J. H.: Berkeley, 8.
 Merrill, G. P.: Benjamin, 1, 2; Farrington, 5; Lindgren, 11; Schuchert, 13.
 Merrill, L. B.: Palache, 5.
 Miller, A. M.: Buckner, 1; Jillson, 5, 7; McFarlan, 12.
 Mitchell, S. L.: Hall, C. R., 1.
 Moodie, R. L.: Bryan, W. A., 2.
 Moore, P. N.: Jillson, 7.
 Morse, P. F.: Plummer, F. B., 3; Williams, S. R., 1.
 Muir, J. M.: Weaver, P., 3.
 Nason, F. L.: Newland, 1.
 Newson, J. F.: Blackwelder, 16.
 Noé, A. C.: Cronis, 41, 48; Kraus, E. J., 1; Shull, C. A., 3.
 Norwood, C. J.: Jillson, 6.
 Officer, H. G.: Lovejoy, 1.
 O'Hara, C. C.: Connolly, 8; Jackson, R. J., 1.
 Orton, Edward, Jr.: Bleininger, 1; Magruder, 1; Swinnerton, 11.
 Osborn, H. F.: Abel, 2; Andrews, R. C., 1; Douvillé, 2; Ehrenberg, Kurt, 2; Flinsch-Buba, 1; Grabau, 2; Gregory, 12, 21; Keyes, 286; Lull, 11; Osborn, 9; Richter, R., 1, 3; Shimer, 6; Teilhard de Chardin, 2; Woodward, A. S., 3.
 Parks, W. A.: Kindle, 33; Lull, 12; Moore, E. S., 20.
 Patten, William: Gerould, 1.
 Patton, H. B.: Butler, G. M., 3; Eggleston, 2; Lane, A. C., 5.
 Penrose, R. A. F., Jr.: Chamberlin, 6; Lindgren, 9; Schuchert, 17; Stanley-Brown, 1, 2.
 Pepperberg, L. J.: Stephenson, E. A., 2, 3.
 Perkins, E. H.: Mather, 25.
 Perkins, G. H.: Fairchild, 16.
 Perry, J. H.: Alden, 5.
 Peterson, O. A.: Anonymous, 54.
 Phillips, A. H.: Buddington, 19.
 Phillips, E. D.: Owens, 1.
 Phillips, W. B.: Anonymous, 78.
 Pirsson, L. V.: Warren, C. H., 2.
 Powell, J. W.: Hobbs, 13.
 Powers, Sidney: Clark, F. R., 5; DeGolyer, 7; Wrather, 3, 7.
 Prout, H. A.: Greger, 8.

Biography—Continued.

- Pumpelly, Raphael: Willis, 15.
 Putnam, F. W.: Tozzer, 1.
 Ransome, F. L.: Lindgren, 14, 16, 17; Anonymous, 78.
 Reagan, A. B.: Tanner, V. M., 2.
 Reagan, A. G.: S—, 1; Weatherwax, 1; Anonymous, 115, 128.
 Reed, R. D.: Hoots, H. W., 10.
 Rice, W. N.: Britton, W. E., 1; Lane, 21; Longwell, 1; Westgate, 1, 2.
 Richardson, C. H.: Currier, 6; Reudemann, 36.
 Richarz, Stephen: Allen, 12; Retzek, 1; Waagen, 1.
 Richtmyer, F. K.: Kennard, E. H., 1.
 Ries, Heinrich: Anonymous, 184.
 Rinne, F.: Gruner, 16.
 Robinson, H. H.: Bowman, I., 1.
 Rogers, W. B.: Bevan, 20; Roberts, 24.
 Roundy, P. V.: Girty, 6; Anonymous, 144.
 Rowley, R. R.: Williams, J. S., 5.
 Ryan, R. F.: Cortes, 1.
 Salisbury, R. D.: Chamberlin, R. T., 1; Collie, 1.
 Schlumberger, Conrad: Leonardon, 4; Anonymous, 100.
 Scott, W. B.: Scott, W. B., 13.
 Seaman, A. E.: Lane, 38.
 Segall, Julius: Peterson, O. F., 1.
 Seymour, D. B.: Barnes, R. M., 2.
 Shattuck, G. B.: Mathews, E. B., 8.
 Shaw, E. W.: Trowbridge, 13; Westgate, 8.
 Shepard, E. M.: Buehler, 6, 7.
 Shimek, Bohumil: Kay, G. F., 21; Anonymous, 116.
 Shufeldt, R. W.: Lambrecht, 1, 2; Palmer, T. S., 1.
 Shumard, B. F.: Greger, 7.
 Siebenthal, C. E.: Lindgren, 5; Anonymous, 14.
 Simpson, H. E.: Norton, W. H., 4.
 Sinclair, W. J.: Scott, W. B., 14; Anonymous, 68.
 Sisler, J. D.: Ashley, 23; Price, P. H., 8.
 Sloan, Earle: Vaughan, T. W., 4.
 Smith, G. L.: Lees, 7.
 Smith, J. P.: Arthaber, 1; Plummer, F. B., 7; Schuchert, 15; Shedd, 2.
 Smyth, C. H., Jr.: Buddington, 21; Anonymous, 136.
 Snyder, J. Y.: Crider, 5.
 Sparks, D. D. D.: Tasman, 1.
 Springer, Frank: Keyes, 4.
 Starke, E. A.: Kew, 1.
 Talmage, J. E.: Miller, B. L., 5.
 Taylor, F. B.: Leverett, 21, 22.
 Termier, P.: Lindgren, 6.
 Thomas, A. O.: Lees, J. H., 6.
 Tietze, Emil: Mathews, E. B., 5.
 Tillyard, R. J.: Dunbar, 14.
 Tilton, J. L.: Keyes, 100; Reger, 5.
 Turner, H. W.: Lawson, 11.
 Tyrrell, J. B.: Loudon, 1.
 Udden, J. A.: Baker, C. L., 18; Sellards, 18, 21.

Biography—Continued.

- Ulrich, E. O.: Strachan, C. B., 1.
 Upham, Warren: Emmons, W. H., 9; Keyes, 200.
 Van Horn, F. R.: Hyde, J. E., 1, 2; Kraus, 5.
 Van Ingen, Gilbert: Howell, B. F., 4.
 Veatch, A. C.: Snider, 10.
 Vogt, J. H. L.: Daly, 11; Ransome, F. L., 5.
 Washington, H. S.: Barth, 11; Fenner, 8; Keyes, M. G., 1; Lewis, J. V., 5; Pelloux, 1.
 Weinzierl, L. L.: Deussen, 14.
 Weller, Stewart: Jillson, 6, 27.
 White, C. D.: Berry, 52; Mendenhall, 7, 11; Miser, 10, 12; Oklahoma City, G. Soc., 2; Schuchert, 40; Shimer, 5; Stanton, 4; Anonymous, 64.
 Whitehead, R. B.: Thomas, J. E., 1.
 Whiteside, R. M.: Bush, F. A., 2.
 Wilder, F. A.: Bain, H. F., 2; Runner, J. J., 1.
 Williams, E. H., Jr.: Miller, B. L., 6.
 Williams, I. A.: Osborne, C. B., 1; Williams, J. W., 1.
 Winchester, D. E.: Emery, W. B., 4.
 Winslow, Arthur: Lane, 42.
 Woodward, R. S.: Wright, F. E., 5.
 Woodworth, J. B.: Sayles, R. W., 5.
 Young, K. E.: Howe, 24.
 Big Horn Basin, erosian: Mackin, 7.
 Big Horn Basin-Yellowstone Valley Conf., 1937: Tomlinson, 10.
 Biogenesis of petroleum hypothesis, status: Thayer, L. A., 2.
 Bioherms: Cumings, 4.
 Birds. See Aves.
 Birch Ridge area, Alberta: Hume, 20.
 Birmingham area, Ala.: Poor, 1.
 Bismuth.
 British Columbia: Warren, H. V., 8.
 Colorado: Chapman, E. P., 2; Sandberg, 3.
 Newfoundland: Heyl, 1.
 Bitumens. See also Asphalt.
 Canada, analyses: Rosewarne, 2.
 Industrial minerals and rocks: A. I. M. E., 2.
 Bituminous rocks and sands. See also Asphalt; Oil shales; Petroleum.
 Alberta: Clark, K. A., 1, 2; Ellis, 1, 2, 4, 5, 6, 7.
 Carbon and hydrogen determination: Hoots, 5.
 Utah, Vernal: Spieker, 2.
 Black shales.
 New York: Ruedemann, 27; Twenhofel, 35.
 Blastoides.
 Carboniferous, Mo.: Greger, 12.
 Chouteau lms., Mo.: Peck, R. E., 1, 13.
 Cryptoblastus, Miss. Valley: Cline, L. M., 2.
 Devonian, N. Y.: Reimann, 8.

Blastoidea—Continued.

- Eublastoidea, bibl. index : Greger, 4.
 Mesoblastus, Alberta : Fritz, 6.
 Mississippian, Mo. : Branson, 37.
 Ontogeny : Cronels, 24.
 Pentremites, Va. : Glass, F. W., 1.
 Schizoblastus, genus, emended : Cline, L. M., 2.
 Utah, Brazier lms. : Peck, R. E., 2.
 Blasting inv. : Slichter, 5-a.
 Bleaching clays, Tenn. : Whitlatch, 20.
 Block diagrams : Ives, R. L., 8.
 Bloedite : Schaller, 14.
 Boise Basin, Idaho : Ross, C. P., 18.
 Bonaire, Danish West Indies : Pijpers, 6.

Paleontology.

- Decapoda, Eocene : Van Straelen, 2.

Petrology.

- Pebbles, foreign : Pijpers, 1.
 Bombing Manua Loa eruption : Jaggard, 35.
 Bonanza mining area, Colo. : Burbank, W. S., 4.
 Book of stones : Meyerhoff, 18.
 Boracite, La. : Hurlbut, 8.
 Borates, Calif. : Gale, H. S., 5.
 Borax.

- Boulder dam area : Lee, 7.
 California : Esselink, 2; Vonsen, 1.
 Borax Lake : Vonsen, 2.
 Boron : Calvert, E. L., 1.
 Ceramic materials other than clays : Burchfiel, 1.
 Death Valley : Boyd, Julian, 1, 2; Foshag, 3.
 Kern County : Calvert, E. L., 2.
 Kramer area : Mead, R. G., 1; Schaller, 3, 20.
 Lake deposits : Melhase, 17; Scott, D. B., 1.
 Tick, Red Rock Canyons : Luce, 1.
 Industrial minerals and rocks : A. I. M. E., 2.
 Nevada : Esselink, 2.

- Borderland, geology, physics, chemistry : Lovering, 27.

- Bore-hole surveying : McLaughlin, R. P., 1.

Borings.

- Alberta : Evans, C. S., 3.
 Bahamas : Field, R. M., 12.
 Borehole inv., Yellowstone Park : Fenton, 14.
 British Columbia : Johnston, W. A., 8; Maddox, 1.
 California : Dorn, 1.
 Canada : Johnston, W. A., 6, 7; Maddox, 2, 3.
 Colorado : Rankin, C. H., Jr., 3.
 Crooked-hole problems, Gulf Coast : Murphy, P. C., 1.
 Deepest well : Sellards, 2.
 Illinois : Bell, A. H., 5.
 Indiana : Logan, 8, 10.

Borings—Continued.

- Iowa : Lees, 3; Norton, W. H., 2, 3.
 Kentucky : Jillson, 25, 28; Meacham, 2.
 Michigan : Thwaites, 4.
 Minnesota : Stauffer, 13.
 Montana : Reeves, F., 1.
 Nebraska : Condra, 5.
 New Mexico : Winchester, 2.
 New York : Fettke, 2.
 Nova Scotia : Imperial Oil, Ltd., 1; McCall, 1.
 Ohio : Wasson, T., 1.
 Oklahoma : Six, 1, 2.
 Ontario : Johnston, W. A., 7.
 Orientation of cores : Macready, 1.
 Pennsylvania : Fettke, 2.
 Photographing walls of boreholes : Kelly, 21.
 Quebec : Maddox, 6.
 South Dakota : Applin, 1.
 Temperature gradients : Heald, 4.
 Texas : Hennen, 1; Sellards, 4, 14, 17.
 West Virginia : Tucker, R. C., 2.
 Yellowstone Nat. Park : Allen, E. T., 5.
 Boron compounds, volcanologic : Schaller, 22.
 Botany, fossil. See Paleobotany.
 Boulders.
 Animal-polished, Kans. : Schoewe, 9.
 Arkansas : Kramer, 6; Waterschoot van der Gracht, 12.
 Erratic, Carb. : King, P. B., 6.
 Etched : Hobbs, 15.
 Haymond fm. : King, P. B., 11.
 Glacial, migrating : Fryxell, 5.
 Montana : Knechtel, 9.
 Oklahoma : Kramer, 6; Waterschoot van der Gracht, 12.
 Ontario : Wilson, M. E., 9.
 Ouachitas, Ark., Okla. : Waterschoot van der Gracht, van, 12.
 Quebec, glacial : Cooke, H. C., 26.
 Striated, origin : Blackwelder, 12.
 West Virginia : Price, P. H., 3.
 Boulder trains, N. Y. : Chadwick, 26.
 Montana : Knechtel, 9.
 Brachiopoda.
 Alberta : Allen, 8; Warren, P. S., 7, 8.
 Allegheny fauna, Ohio : Sturgeon, 1.
 Appalachians, S. : Resser, 21.
 Argyrothea gardnerae : Cooke, C. W., 14.
 Argyrothea, Mexico : Cole, W. S., 2.
 Arizona, Utah : McKee, 11.
 Arkansas, Kans., Carb. : Girty, 2.
 Athyris, Cyrtina, Iowa : Fenton, C. L., 41.
 Atrypa : Fenton, C. L., 5.
 Cedar Valley stage : Fenton, C. L., 5.
 Devonian : Fenton, C. L., 41; Gregor, 11.
 Horizon marker : Fenton, C. L., 14.
 Lamellae, spines : Fenton, C. L., 27.
 Orientation, injury : Fenton, C. L., 25.
 Traverse group : Fenton, C. L., 5.
 Barbados, coral rock : Trechmann, 10.

Brachiopoda—Continued.

- British Columbia : Crockford, 1.
 California : Anderson, F. M., 14; White, R. T., 2.
 Camarotoechia, Mo. : Ball, 8.
 Cambrian.
 Alaska : Cooper, 21.
 British Columbia : Kobayashi, 4.
 Idaho : Resser, 19.
 Minnesota : Stauffer, 23.
 Missouri : Lochman, 6.
 Montana : Campbell, I., 7.
 Newfoundland : Lochman, 5.
 Texas : Lochman, 4.
 Vermont : Howell, 30; Schuchert, 43.
 Cambrotrophia for Eostrophia : Ulrich, 30.
 Carboniferous, Tex. : Girty, 2; King, R. H., 3; Williams, J. S., 11.
 Centroporella, Vt. : Howell, 30.
 Chonetes brazosensis for C. fragilis : King, R. H., 6.
 Classification : Cooper, G. A., 11.
 Color patterns : Foerste, 10.
 Colorado : Bassett, C. F., 3.
 Convexity of articulates : McEwan, E. D., 1.
 Cranaenella syn. of Cranaena : Fenton, C. L., 3.
 Craniae, Ord. : Sardeson, 12.
 Cretaceous, Calif., Mexico, Oregon : Anderson, F. M., 14; Imlay, 6.
 Dalmanella, Pa. : Barnsley, E. R., 1.
 Devonian.
 Illinois : Cooper, 26.
 Iowa : Stainbrook, 4.
 Pennsylvania : Willard, 52.
 Quebec, Gaspé : Kindle, 38.
 Enteletes, Penn., Kans. : Bridwell, A., 1.
 Evolution in Spirifer : Fenton, 28.
 Fernvale fm., Ord. fauna : Greger, 9.
 Greenbrier lms., Uniontown, Pa. : Benson, F. M., 1.
 Greenland : Frebold, 1, 2, 9, 13; Poulsen, 4; Spath, 1; Teichert, 11; Troedsson, 2.
 Gruenewaldtia, Dev., Mo. : Greger, 10.
 Gypidula petroskeyensis, Mich. : Imlay, 1.
 Hesperorhynchia, Cret., Saskatchewan : Warren, 17.
 Horizon of extinction, correl. aid : Thomas, 14.
 Hypothyridina Nev. : Merriam, C. W., 10.
 Pennsylvania : Willard, 29.
 Illinois : Sutton, 5.
 Inarticulate, Mo. : Greger, 6.
 Indiana : Huddle, 2; Shrock, 12.
 Jurassic : Crickmay, 23.
 Kansas coal field : Williams, J. S., 12.
 Kansas : Newell, 3.
 Kentucky : Sutton, 5.
 Leiophrynchus jasperense for L. athabascense : Burgess, C. H., 2.
 Linguloids, Ohio, Pa. : Girty, 10.
 Lyttonia, Tex. : Huang, 1.
 McCloud lms., Calif. : Wheeler, 8.

Brachiopoda—Continued.

- Mesolobus mesolobus, form, range : Weller, 17.
 Mexico : Imlay, 6; Jones, T. S., 1.
 Michigan : Bassett, 1.
 Mimulus renamed Brachymimulus : Cockrell, 1.
 Mississippi : Morse, W. C., 9.
 Mississippian, coloration : Rowley, R. R., 1.
 Missouri : Ball, 12; Branson, 33, 34, 37; Hinchey, 1.
 Montana : Bell, C., 1; DeWolf, 4; Fenton, 30, 43.
 Neospirifer dunbari : King, R. H., 2.
 Newfoundland : Howell, 43.
 New Hampshire : Billings, 11.
 New names for homonyms : Schuchert, 3.
 New York : Sproule, 1.
 Niagaran nodules, Ill. : Grubbs, 1.
 Nomenclature, Camb. : Resser, 22.
 North America : Hatal, 1; Nomura, 1; Schuchert, 56; Ulrich, 33.
 Nova Scotia : Bell, W. A., 2.
 Obolus, Utah : Resser, 6.
 Ohio, Cincinnati area : Bucher, 21; Chappars, 3.
 Oklahoma : Bass, 15; Newell, 3; Warthin, 2; Williams, J. S., 9.
 Olenellus zone, Appalachians : Resser, 20.
 Oligorhynchia, Tenn. : Cooper, 16.
 Ontario : Caley, 1; Okulitch, 18; Shaw, E. W., 2; Sproule, 1; Wilson, A. E., 3.
 Ordovician : Caley, 1; Little, 1; Poulsen, 4; Sardeson, 1; Troedsson, 2.
 Oregon : Anderson, F. M., 14.
 Ortholdea : Schuchert, 16, 20.
 Ozarkian, Canadian : Ulrich, 29.
 Pallial sinuses, Composita : Weller, 16.
 Pennsylvania : Cleaves, 8; Miller, B. L., 13; Willard, 49, 56, 57.
 Pennsylvanian, Neb. : Dunbar, 4.
 Pentameridae, Iowa : Stainbrook, 5.
 Pentameroldea : Schuchert, 16, 20.
 Phosphoria fm. : Branson, C. C., 1.
 Pionodema : Cooper, J. A., 3.
 Platystrophia : Willard, 4.
 Picatoderbya, Wyo. : Thomas, H. D., 9.
 Portersville mbr. Conemaugh fm., Ohio : Laird, W. M., 1.
 Productella, Ky. : Brill, 1.
 Productidae, Mo. : Branson, E. B., 6; Girty, 4; Sutton, A. H., 14.
 Protreta, Mont. : Bell, W. C., 1.
 Ptarmigania fauna, Idaho-Utah. Resser, 24.
 Punctospirifer, Wyo. : Thomas, H. D., 7.
 Quebec, Chicoutimi area : Cooper, 23; Jones, I. W., 13; Laverdière, 2, 6; Northrop, 10; Twenhofel, 31, 32.
 Rafinesquina incurvata : Kay, G. M., 1.
 Revision, Grand Traverse, Mich. : Ehlers, 3.

Brachiopoda—Continued.

- Roemer's Paleozoic types, Tex., re-description: Bridge, 8.
 St. Louis fm., Mo.: Clark, E. L., 1.
 Salonia, Pa.: Cooper, G. A., 14.
 Schizophoriidae, Kans.: Newell, 2.
 Sea balls, Ill.: Cronels, 46.
 Setigerella, Mo.—Ark.: Girty, 9.
 Setigerites for Setigerella: Girty, 12.
 Shaler, Ohio Valley: Jackson, R. T., 1.
 Silurian: Ruedemann, R., 1; Shrock, 15.
 Spence sh., Utah-Idaho: Resser, 23.
 Spirifer: Fenton, C. L., 2, 10, 28;
 Garretson, 1; Greger, 1.
 Stringocephalus, zones, Eureka dist., Nev.: Merriam, C. W., 13.
 Strophalosia, Mo.: Hinchey, 1.
 Strophomena filitexta Hall: Fenton, C. L., 4.
 Terebratula uta Marcou: Girty, 8.
 Terebratulina, Trinidad: Rutsch, 5.
 Texas: Albritton, 5; Girty, 2, 7; King, R. E., 3.
 Trinidad, Soldado Rock: Kugler, 4;
 Rutsch, 5.
 Triplesidae, Silurian: Ulrich, 27.
 Tully lms., Pa.: Willard, 47.
 Utah: Gunnell, F. H., 6.
 Virginia: Bates, R. L., 4.
 Wyoming: Branson, C. C., 14.
 Yukon: Lees, E. J., 1.

Bradford oil field, Pa.—N. Y.: Newby, 1.

Branchiopoda.

- Burgess sh. fossils: Hutchinson, 1.
 Schizodiscus, Pa.: Cleaves, 2.

Breccias.

- Arizona: Kuhn, 1.
 British Columbia: Goranson, E. A., 3.
 California: Anderson, C. A., 4; Andrews, P., 2; MacDonald, G. A., 3;
 Waters, 8.
 Canada: Moore, E. S., 23.
 Colorado: Koschman, 6; Wilkerson, A. S., 5.
 Cuneiform, from faulting: White, C. H., 1.
 Mexico: Ordóñez, 6.
 Montana: Fenton, 60.
 Nevada: Sharp, R. P., 4.
 New Mexico: Lasky, 14.
 Ontario: Bartley, 1; Yates, 1.
 Quebec: Cooke, H. C., 22; Osborne, 23.
 Tennessee: Born, 10; Wilson, C. W., Jr., 12.
 Washington: Goodspeed, 12; Waters, 12.
 Wyoming: Howard, A. D., 3; Pierce, 10; Rouse, 6.
 Yellowstone Nat. Park: Howard, A. D., 6.

Brines, W. Va.: Price, P. H., 10.

British Columbia.

- Borings: Johnston, W. A., 8; Maddox, 1.
 Coast Range batholith: Schofield, 1.
 Explorations, Stikine-Taku Rivers:
 Kerr, F. A., 6.

British Columbia—Continued.

Areas described.

- Aberdeen Mtn.: Cairnes, 7.
 Alice Arm area: Hanson, 2.
 Barkerville: Johnston, W. A., 11.
 Bear River, Stewart map areas: Hanson, 1.
 Big Bend area: Gunning, 2.
 Brisco-Dogtooth area: Evans, C. S., 4.
 Britannia Beach area: James, H. T., 1.
 Buttle Lake, Vancouver Is.: Gunning, 6.
 Clearwater Lake: Davis, N. F. G., 1.
 Clearwater River, Foghorn Creek:
 Walker, J. F., 4.
 Corbin coal field: MacKay, 5.
 Crownsnest area: MacKay, B. R., 8.
 Eagle-McDame area: Hanson, 13.
 Finlay River: Dolmage, 3.
 Gun Creek: Dolmage, 2.
 Iskut River: Kerr, F. A., 4.
 Kootenay dist.: Walker, J. F., 2.
 Lardeau map area: Walker, J. F., 1.
 Lightning Peak: Cairnes, 5.
 Nickel Plate Mts.: Bostock, 1.
 Owen Lake: Lang, A. H., 1.
 Quatsino-Nimkish, Vancouver Is.:
 Gunning, 3.
 Quesnel Forks area: Cockfield, 11.
 Salmo area: Walker, J. F., 5.
 Slocan, Upper Arrow Lakes area:
 Cairnes, 1.
 Stikine River: Kerr, F. A., 1.
 Taku River: Kerr, F. A., 3.
 Topley area: Hanson, 3.
 Waterton Lakes-Flathead Valley: Hume, 19.
 Whitewater gold belt: Kerr, F. A., 11.
 Zeballos River: Gunning, 11.

Economic geology.

- Alice Arm dist.: Hanson, 4.
 Barkerville gold belt: Davis, N. F. G., 2; Hanson, 12.
 Bitumen: Kleinpell, 2.
 Bowser River, Portland Canal areas:
 Hanson, 6.
 Bralorne mine: Cleveland, 1; Hedley, M. S., 1; Joralemon, 3.
 Bralorne, Pioneer mines: Cleveland, 1.
 Bridge River camp: Cairnes, 15.
 Buck Flats: Lang, A. H., 2.
 Cadwallader Creek, gold: Cockfield, 6, 9.
 Cariboo dist.: Cockfield, 16.
 Cariboo, Bridge River, gold fields: Dolmage, 7; Nichols, H. G., 1.
 Clays: Hodge, 24.
 Copper Mtn.: Dolmage, 4, 6.
 Copper, pyritic: Kania, 4.
 Coquihalla, serpentine belt: Cairnes, 3.
 Corbin coal field: MacKay, 5.
 Cranbrook: Cairnes, 12; Rice, H. M. A., 4.
 Eagle-McDame: Hanson, G., 13.
 Eastern min. dist.: Sargent, H., 1.
 Exploration, oil, gas, Peace River:
 Dresser, 1.

British Columbia—Continued.

Economic geology—Continued.

- Finlay River: Dolmage, 3.
 Fort Fraser area: Armstrong, J. E., 1, 2.
 Fraser River-Harrison Lake: Horwood, 4.
 General: Galloway, J. D., 1, 2; Richmond, A. M., 1; Walker, J. F., 7.
 Geophysical surveys: O'Neill, J. J., 1.
 Gold: Bancroft, 1; Kerr, F. A., 12; Mandy, 1; Nichols, H. G., 2; Warren, H. V., 9, 11.
 Gold, metallic minerals, relationship: Warren, H. V., 11.
 Gold-bismuth: Warren, H. V., 8.
 H. P. H. group, Nahwitti Lake, Vancouver Island: Gunning, 9.
 Hidden Creek ores: Nelson, H. E., 1.
 Hudson Bay Mtn.: Kerr, F. A., 20.
 Keithley Creek: Lang, A. H., 6, 7.
 Kettle River area, W. half: Cairnes, 17.
 Kootenay, Big Ledge: Cairnes, 2.
 Lardeau map area: Gunning, 1.
 Lillooet, map area: Walker, J. F., 6.
 Limestone: Goudge, 3; Hodge, 24.
 Lode-gold deposits: Cockfield, 14, 15; Galloway, J. D., 2, 3.
 McConnell Creek placer: Lay, 1.
 Magnesite: Cockfield, 10.
 Manson River, Slate Creek placers: Kerr, F. A., 13.
 Michel coal: McKay, 10.
 Mineral res. Canadian Nat. Ry.: Kerr, F. A., 18.
 Terrace area: Kindle, E. D., 2.
 Mineral wool: Cummings, J. M., 1.
 Mineral zones, N. British Columbia: Kerr, F. A., 7.
 Minerals, industrial, nonmetallic: Richmond, A. M., 2.
 Mining industry: Cockfield, 5; Galloway, J. D., 1, 2; Richmond, A. M., 1; Walker, J. F., 7.
 Molly Gibson gold deposit: Stevenson, 3.
 Monarch, Kicking Horse deposits: Goranson, E. A., 3.
 Monashee Creek placers: Cairnes, 11.
 Nelson area: Rice, H. M. A., 15, 16.
 Nickel: Cockfield, 13; Horwood, 3, 8.
 Nimpkish Lake copper: Gunning, 1, 8.
 Northeastern min. dist.: Lay, 4.
 Northern min. dist.: Kerr, F. A., 2.
 Northwestern min. dist.: Kerr, F. A., 5; Mandy, 2.
 Oil and gas: Hume, 18.
 Oil poss., Okanagan Valley: Cairnes, 4.
 Oil seepages, Belt ser.: Link, 10.
 Okanagan Valley: Cairnes, 4, 10.
 Ore depth in mines: Schofield, 2.
 Peace River: Williams, M. Y., 7.
 Phosphate, Canadian Rockies: Telfer, 1.
 Placer, vein gold deposits: Johnston, W. A., 11.
 Placer gold deposits: Kerr, F. A., 10.

British Columbia—Continued.

Economic geology—Continued.

- Polaris-Taku mine; Sharpstone, David C., 1.
 Portland Canal: Hanson, 11.
 Pre-Mississippian veins and deposits: Lay, 3.
 Pyrrhotite ruby-silver deposit: Warren, H. V., 10.
 Quesnel Forks area: Cockfield, 11.
 Rock Candy fluorspar deposit: Dolmage, 1.
 St. Paul group: Cairnes, 6.
 Salmo area: Walker, J. F., 3, 5.
 Schwartzite: Warren, H. V., 6.
 Sheep Creek: Marshall, I. M., 1.
 Skeena River: Kerr, F. A., 22.
 Slocan mining camp: Cairnes, 13, 14.
 Snowflake tin-silver vein: Dolmage, 5.
 Soda Creek-Quesnel, oil poss.: Cockfield, 7.
 Southeastern dist.: Maconachie, 1.
 Southern, cent. dist.: Hedley, M. S., 2.
 Southwestern dist.: Sargent, 2.
 Structure, ore deposition, Britannia mines: Ebbutt, 2.
 Submarine coal mine, Vancouver Is.: Dickson, 1.
 Tellurides near Smithers: Pratt, G. M., 1.
 Terrace area: Kindle, E. D., 3.
 Tertiary gravels, gold poss.: Rice, H. M. A., 2.
 Tin-silver vein, Snowflake mine: Gunning, 7.
 Usk-Cedarvale-Terrace area: Kindle, E. D., 4.
 Vanadium: Ellsworth, 7.
 Vancouver Is.: Bancroft, 1; Gunning, 5.
 Western dist.: O'Grady, 1.
 Whitewater gold belt: Kerr, F. A., 11.
 Willow River: Cockfield, 12; Hanson, 9.
 Ymir-Sheep Creek gold field: Nichols, H. G., 3.
 Ymir Yankee Girl gold mine: Wright, L. B., 5.
 Zeballos River area: Gunning, 11; Stevenson, 5, 6.
Historical geology.
 Ashcroft, g. map: Canada G. S., 1.
 Atlin, g. map: Cockfield 3.
 Baculites zone, Alberta shs.: Webb, J. B., 2.
 Barkerville gold belt: Davis, N. F. G., 2; Hanson 12.
 Batholith, Coast Range: Schofield, 1.
 Belt series: Fenton, 54.
 Bogs, strat., pollen flora: Oswald, 2.
 Bralorne mine: Joralemon, 3.
 Bralorne, Pioneer mines: Cleveland, 1.
 Bridge River camp: Cairnes, 15.
 Bulkley, Babine Mts.: Kerr, F. A., 21.
 Cache Creek Perm.: Cockfield, 1.
 Cadwallader Creek: Canada G. S., 1.
 Cambrian fms.: Deiss, 12.
 Cariboo dist.: Cockfield, 16.

British Columbia—Continued.

Historical geology—Continued.

- Cate Creek, Cret.: Olsson, 1.
 Coast Range: Crickmay, C. H., 10.
 Copper Mtn.: Dolmage, 6.
 Cranbrook: Canada, G. S., 1; Dannenberg, 1; Rice, 4.
 Crowsnest Pass: Warren, P. S., 10.
 Eagle-McDame area: Canada, G. S., 1; Hanson, 13.
 Flathead townsite: De Béthune, 3.
 Fort Fraser: Armstrong, J. E., 1, 2; Gray, J. G., 1.
 Fraser River-Harrison Lake: Horwood, 4.
 Garibaldi Lake: Mathews, W. H., 1.
 Gold deposits, Vancouver Is.: Bancroft, 1.
 Gun Lake, g. map: Canada G. S., 1.
 Hudson Bay Mtn.: Kerr, F. A., 20.
 Jurassic, Ashcroft: Crickmay, C. H., 8.
 Keithley Creek: Lang, A. H., 6, 7.
 Kettle River area: Cairnes, 17; Canada, G. S., 1.
 Kruger syenites: Campbell, C. D., 1, 6.
 Lode-gold deposits: Cockfield, 14, 15.
 Lower Cretaceous: McLearn, 13.
 Manson River, Slate Creek placers: Kerr, F. A., 13.
 Mesozoic: Crickmay, C. H., 2.
 Mineral resources on Canadian Nat. Ry.: Kerr, F. A., 18.
 Monarch, Kicking Horse ores: Goranson, E. A., 3.
 Nahatlatch region: Horwood, 5.
 Nelson area: Rice, 5, 6.
 Nickel mines, Yale area: Horwood, 3.
 Nimpkish Lake area: Gunning, 4, 17, 18.
 Northeastern min. dist.: Lay, 4.
 Northwestern min. dist.: Mandy, 2.
 Okanagan Valley: Cairnes, 10.
 Peace River Valley: McLearn, 23; Williams, M. Y., 4.
 Pleistocene, Vancouver: Crickmay, C. H., 6.
 Polaris-Taku mine: Sharpstone, David C., 1.
 Portland Canal area: Hanson, 11; Canada G. S., 1.
 Pre-Mississippian veins, deposits: Lay, 3.
 Prince Rupert sheet: Canada G. S., 1.
 Privateer mine: MacDonnel, 1.
 Quesnel Forks sheet: Canada G. S., 1.
 Rocky Mts., 51st parallel: Warren, P. S., 1.
 St. Eugene silt: Berry, E. W., 18.
 Sandon, g. map: Cairnes, 8.
 Schoen Lake area: Gunning, 21.
 Sheep Creek area: Marshall, I. M., 1.
 Shuswap terrane: Brock, B. B., 1.
 Skeena River area: Kerr, F. A., 22.
 Skidegate Inlet: McLearn, 1.
 Slokan sheet: Cairnes, 9, 13.
 Soda Creek-Quesnel area: Cockfield, 7.
 Southeastern min. dist.: Maconachie, 1.
 Southern and Central min. dist.: Hedley, M. S., 2.

British Columbia—Continued.

Historical geology—Continued.

- Stikine River area: Canada G. S., 1.
 Structure, Rocky Mts.: Raymond, P. E., 8.
 Structure, ore deposits, Britannia mine: Ebbutt, 2.
 Tahtsa-Morice area, g. map: Canada G. S., 1.
 Terrace area: Kindie, E. D., 2, 3.
 Triassic Schooler Creek fm.: McLearn, 18.
 Usk-Cedarvale area: Kindie, E. D., 4.
 Vancouver Is.: Bancroft, 1; Gunning, 5.
 Vancouver sheet: Canada G. S., 1.
 Western min. dist.: O'Grady, 1.
 Willow River area: Canada G. S., 1; Hanson, 9.
 Woss Lake g. map: Gunning, 19, 20.
 Ymir Yankee Girl gold mine: Wright, L. B., 5.
 Zeballos area: Stevenson, 5.

Mineralogy.

- Amphibole, Purcell sills: Rice, H. M. A., 1.
 Ashtonite: Poitevin, 2.
 Copper - tourmaline - hematite veins: Stevenson, 4.
 Cosalite: Warren, H. V., 12.
 Fort Fraser area: Armstrong, J. E., 2.
 Gold and metallic minerals, relationship: Warren, H. V., 11.
 Gold-bismuth occurrence, Cariboo mine: Warren, H. V., 8.
 Gold ores: Warren, H. V., 9, 11.
 Hudson Bay Mtn.: Kerr, F. A., 20.
 Kettle River area, west half: Cairnes, 17.
 Knebelite, Blue Bell mine: Gunning, 14.
 Minerals, indust., nonmetallic: Richmond, A. M., 2.
 Monarch, Kicking Horse ore deposits: Goranson, E. A., 3.
 Nickel, Yale area: Horwood, 8.
 Privateer mine: MacDonnel, 1.
 Pyrrhotite ruby-silver deposit: Warren, H. V., 10.
 Rhodacite, Tert.: Stevenson, L. S., 1.
 Schwartzite, Windemere dist.: Warren, H. V., 6.
 Sericite: Baker, J. M., 1.
 Sheep Creek area: Marshall, I. M., 1.
 Shuswap terrane: Gilluly, 9.
 Skeena Creek area: Marshall, I. M., 1.
 South-central min. dist.: Hedley, M. S., 2.
 Southeastern min. dist.: Maconachie, 1.
 Texada Is., Marble Bay mine: Walker, T. L., 1.
 Tungstite, Kootenay Bell mine: Walker, T. L., 11.
 Zeballos area: Stevenson, 5, 6.

Paleontology.

- Ammonoiden, Neo-Trias.: McLearn, 26, 27.
 Anthracolithic corals: Smith, S., 2.

British Columbia—Continued.

Paleontology—Continued.

- Archaeoceti, Tert.: Kellogg, 9.
 Archaeonassa, Camb.: Fenton, 49.
 Belt ser.: Fenton, 54.
 Bogs, strat., pollen flora: Osvald, 2.
 Brachiopoda, Tert.: Nomura, 1.
 Bryozoa, Perm., Vancouver Is.: Fritz, 2.
 Burgess sh. fossils: Hutchinson, 1;
 Ruedemann, 8; Walcott, C. D., 1.
 Cache Creek Perm. fauna: Crockford, 1.
 Cambrian Crustacea: Resser, 2.
 Cambrian fauna: Kobayashi, 4.
 Cephalopoda, Perm.: Miller, 24.
 Coloradoan fauna, Peace River: Warren,
 P. S., 9.
 Corals, anthracolithic: Smith, S., 3.
 Desmostylus, Miocene: VanderHoof, 11.
 Dinosaur tracks, Peace River: McLearn,
 10; Sternberg, 6.
 Faunas, Peace River: McLearn, 7, 22,
 23, 25, 28.
 Florule, Oligocene, Vancouver Is.:
 LaMotte, 6.
 Foraminifera: Cushman, 1.
 Graptolite, Chushina fm.: Ruedemann,
 9.
 Harrison Lake area: Crickmay, C. H., 7.
 Ichthyosaur locs.: Sternberg, 5.
 Jurassic fauna: Crickmay, C. H., 8;
 Warren, P. S., 5.
 Mammalia, Eocene: Russell, L. S., 23.
 Mesozoic faunas: McLearn, 6.
 Mid-Camb. Arthropoda: Raymond, 15.
 Middle Camb. fauna: Ruedemann, 11.
 Mollusca, Peace River: McLearn, 22.
 Neoschwagerina, Perm.: Dunbar, 6.
 Peace River area: McLearn, 7, 22, 23,
 25, 28; Williams, M. Y., 4.
 Pelecypoda, Trias., Peace River:
 McLearn, 28.
 Privateer mine: MacDonnel, 1.
 Propinoceras, Kamloops: Miller, A. K.,
 11.
 Skidegate Inlet: McLearn, 1.
 Triassic Schooler Creek fm.: McLearn,
 18.
 Trogosus, Eocene: Russell, L. S., 27.

Petrology.

- Amphibole, Purcell sills: Rice, H. M. A.,
 1.
 Barkerville gold belt, Island Mtn.:
 Davis, N. F. G., 2.
 Belt ser.: Fenton, 54.
 Bridge River mining camp: Cairnes, 15.
 Coast Range batholith: Kerr, F. A., 9;
 Schofield, 1.
 Fort Fraser area: Armstrong, J. E., 2.
 Kettle River area: Cairnes, 17.
 Kruger syenites: Campbell, C. D., 6.
 Molly Gibson gold deposit: Stevenson, 3.
 Quartz, pre-Camb., Vernon: Walker, 18.
 Shuswap terrane, min. orientation: Gil-
 luly, 9.

Physical geology.

- Batholith, Coast Range: Kerr, F. A., 9;
 Schofield, 1.

British Columbia—Continued.

Physical geology—Continued.

- Bralorne mine area: Cleveland, 1;
 Hedley, M. S., 1; Joralemon, 3.
 Bridge River area: Cairnes, 15.
 Bulkley, Babine Mts.: Kerr, F. A., 21.
 Coast Range batholith: Kerr, F. A., 9.
 Coast and Cascade Ranges: Crickmay,
 C. H., 10.
 Cranbrook area: Rice, 4.
 Eagle-McDame area: Hanson, 13.
 Flathead Townsite: De Béthune, 3.
 Fort Fraser area: Armstrong, J. E.,
 1, 2.
 Garibaldi Lake area: Mathews, W. H., 1.
 Gold deposits, Vancouver Is.: Bancroft,
 1.
 Hidden Creek ore bodies: Nelson, H. E.,
 1.
 Hudson Bay Mtn.: Kerr, F. A., 20.
 Kruger syenites: Campbell, C. D., 6.
 Magma waves in batholiths: Lay, 2.
 Monarch, Kicking Horse deposits: Goran-
 son, E. A., 3.
 Nelson area: Rice, 5.
 Nickel mines, Yale area: Horwood, 3.
 Nimpkish batholith: Gunning, 10.
 Pioneer mines: Cleveland, 1.
 Polaris-Taku mine: Sharpstone, David
 C., 1.
 Pre-Missn. veins, deposits: Lay, 3.
 Pyrrhotite-ruby-silver deposit: Warren,
 H. V., 10.
 Rhyodacite, Tert.: Stevenson, L. S., 1.
 Sheep Creek area: Marshall, I. M., 1.
 Shuswap terrane, metamorphism: Brock,
 B. B., 1.
 Submarine channels, orogenic coastal
 movements: Williams, M. Y., 15.
 Terrace area: Kindle, E. D., 2, 3.
 Usk-Cedarvale, Terrace area: Kindle, E.
 D., 4.
 Varved clays, Tide Lake: Hanson, 7.
 Western min. dist.: O'Grady, 1.
 Ymir Yankee Girl gold mine: Wright,
 L. B., 5.
 Zeballos area: Stevenson, 5.
- Physiographic geology*.
- Bear River delta, glaciation: Hanson, 8.
 Cordilleran area: Kerr, F. A., 17.
 Cranbrook area: Rice, 4.
 Eagle-McDame area: Hanson, 13.
 Fiord-land: Peacock, 8.
 Fiords: Carter, N. M., 1.
 Fort Fraser area: Armstrong, J. E., 2.
 Garibaldi Park: Taylor, W. 1.
 Glaciation: Kerr, F. A., 14, 19; Rice,
 3.
 Glaciers: Munday, 1; Taylor, W., 1.
 Hunlen Falls, Turner Lake: Munday, 2.
 Keithley Creek area: Lang, A. H., 6.
 Kicking Horse Pass, stream history: Wil-
 lard, 7.
 Mt. Washington area: Munday, 1.
 Nelson map area: Rice, 5.
 Polaris-Taku mine: Sharpstone, David
 C., 1.

British Columbia—Continued.

Physiographic geology—Continued.

- Submarine channels, orogenic coastal movements: Williams, M. Y., 15.
Talsekwe River: Kerr, P. F., 15.
Terrace area: Kindle, E. D., 2, 3.
White silt, Okanagan Valley: Flint, 14.
Willow River area: Hanson, 9.

British Honduras.

Historical geology.

- Cretaceous lms.: Dickerson, 1.
Brochantite, Ariz.: Palache, 40.
Bromyrite, Ariz.: Rasor, 1.
Brucite: Callaghan, E., 2; Goudge, 8; Osborne, 31.
Brunner focal depth-time-distance chart: Brunner, 4.

Bryozoa.

- Amplexopora, Ontario: Fritz, 1.
Arctic America: Teichert, 12.
Arizona: McKee, 11.
Aulopora: Fenton, M. A., 3, 8.
Batostoma, Minn.: Sardeson, 33.
Batostoma to Fenestella: Sardeson, 36.
British Columbia, Perm.: Fritz, 2.
Cincinnatian: Shideler, 17.
Classification, ordinal: Swayze, 1.
Cryptostomatous, Mich.: McNair, 2.
Dekayella, Minn.: Sardeson, 28.
Devonian: Duncan, H. M., 2; McNair, 4; Willard, 52.
Dutchtown, Mo.: Cullison, 4.
Eridotrypa, Minn.: Sardeson, 34.
Evolutions, Ord.: Sardeson, 42.
Fenestellae, Carb., European-American affinities: Nekhoroshev, 1.
Fenestellidae, Mich.: Deiss, 1.
Fenestrellinidae, Dev., N. Am.: Fritz, 4.
Fresh-water, primitive characters: Twitchell, 2.
Greenland: Oepik, A., 1; Troedsson, 1.
Hallopore, Minn.: Sardeson, 29.
Hedereloidea: Bassler, 14.
Hemiphragma, Minn.: Sardeson, 33.
Homotrypa, Minn.: Sardeson, 27.
Illinois, Chicago area: Bretz, 10.
Indiana, Kentland area: Shrock, 12.
Invertebrates, Carb., Tex.: Williams, J., S., 11.
Kansas: Elias, 16; Williams, J. S., 12.
Leptotrypa to Fistulipora: Sardeson, 35.
Loculipora implicata for L. loculata: McNair, 3.
McCloud lms. fauna. Calif.: Wheeler, H. E., 8.
Microfauna, Ord., Okla.: Harris, R. W., 2.
Micropaleontology, Johns Valley sh., Okla.: Harlton, 7.
Monotrypa, Minn.: Sardeson, 34.
Monticuliporoidea: Sardeson, 25, 39.
New Jersey, Vincentown: Canu, F., 1.
New York, Ruedemann, R., 1; Sproule, 1.
Niagaran nodules, Ill.: Grubbs, 1.
North America, Paleozoic: Bassler, 29.

Bryozoa—Continued.

- Nomenclature: Bassler, 23.
Northwest Territories, Ord.: Oakley, 2.
Ohio-Cincinnati area: Bucher, 21; Chap-pars, 3.
Oklahoma: Harris, R. W., 2; Warthin, 2; Williams, J. S., 9.
Oientangy sh. fauna, Ohio: Stauffer, 20.
Ontario: Caley, 1; Fritz, 9; Sproule, 1.
Paleozoic, N. Am.: Bassler, 29.
Pennsylvania: Miller, B. L., 13; Willard, 49, 57, 59.
Plethopora, Georges Bank: Bassler, 22.
Prasopora, Minn.: Sardeson, 24.
Quebec: Fritz, 8; Jones, I. W., 13; Kindle, 38; Laverdière, 6; Twenhofel, 31.
Reefs, Carb. Tex.: Plummer, F. B., 25.
St. Louis fm., Mo.: Clark, E. L., 1.
Sea balls, Ill.: Croneis, 46.
Silurian sh., N. Y.: Ruedemann, R., 1.
Stellate apertures: McNair, 5.
Stictoporella to Arthropora: Sardeson, 38.
Stromatotrypa to Pachydictya: Sardeson, 37.
Texas: Albritton, 8; Plummer, 25; Moore, R. C., 3, 11.
Treptostoma: Duncan, H. M., 1, 2; Twitchell, 4.
Urnatella: Twitchell, 3.
Utah: McKee, 11.
West Virginia: Price, P. H., 17.
Wyoming: Branson, C. C., 14.
Zoecia, specialized: McNair, 1.
- Building Stone. See also Granite; Limestone; Sandstone; Stone.
Alabama: DeJarnette, 1; Jones, W. B., 1, 17; Poor, 7.
British Columbia: Richmond, A. M., 2.
California: Dudley, 1; Galliher, 4; Miller, W. J., 12.
Colorado: Balcom, 1; Green, T. H., 1.
Connecticut: Moore, F. H., 1.
Granite, Manitoba: Cole, L. H., 9.
Hawaii, Oahu: Stearns, 28.
Idaho, Salmon River valley: Bebre, 1.
Illinois: Lamar, 15.
Industrial minerals and rocks: A. I. M. E., 2.
Manitoba: Cole, L. H., 9; Hutt, 3; Pugh, F., 1.
Marble, Tenn.: Oder, 3.
Maryland: Mathews, E. B., 2.
Minnesota: Grout, 23; Thiel, 8.
Missouri: Brown, C. L., 1.
Montana: Mansfield, G. R., 13.
Oklahoma: Decker, 25; Ham, 2; Wilson, C. W., Jr., 13.
Oregon: Moore, B. N., 8.
Pennsylvania: Bascom, 6; Butts, 13; Detrick, 2; Leighton, H., 6; Miller, B. L., 15; Stone, 11; Anonymous, 150.
Quebec: Laverdière, 6; Osborne, 21.
TVA area: Anonymous, 130.

Building Stone—Continued.

- Texas: Barnes, V. E., 8; Plummer, 17.
 Vermont: Jacobs, 2; Krieger, M. H., 1.
 Virginia: Bates, R. L., 4; Brown, C. B., 3; Furcron, 9; Hughes, H. H., 2.
 West Virginia: Price, P. H., 17; U. S. Comm., 1.
 Burbank oil field, Okla.: Sands, 1.
 Bureau Mines Exper. Sta. serv. to surveys: Finch, J. W., 8.
 Burkeite, Calif.: Foshag, 14.
 Burling lms., distrib. significance: Keyes, 395.
 Burrows.
 Daemonehelix, Texas: Wood, H. E., 2d, 7.
 Montana, pre-Camb.: Fenton, 43.
 Texas, Penn.: Fenton, 53.
 By-passing and discontinuous deposition of sediments: Eaton, 1.
 Cabin Creek oil field, W. Va.: Wasson, T., 1.
 Caddo oil field, La.: Fletcher, C. D., 1.
 Cadmium in smithsonite, N. Mex.: Schaller, 25.
 Cadwallader Creek area, B. C.: Cockfield, 9.
 Caesium, Maine: Burbank, B. B., 1.
 Calaverite and law of complication: Peacock, 3.
 Calcite: Park, 7; Patton, 10; Schenck, 8; Anonymous, 42.
 Calcopysoides balli not a fossil: Berry, 58.
 Caliche as a fault indicator: Cuyler, 3.
 Road material: Runner, D. G., 9.
 Caledonite, Utah: Palache, 39.
 California.
 Aerial mapping: Eliel, 1.
 Bibliography, geology and min. res.: Shedd, 1.
 Colorado River aqueduct: Ransome, F. L., 2.
 Death Valley: Lee, B., 1.
 Fairview Dam, Trinity River: Louderback, 4.
 Geological survey: Bradley, W. W., 4; Jenkins, 2, 4, 5, 6.
 Geology [compendium]: Reed, R. D., 9.
 Geothermal gradient, Grass Valley: Johnston, W. D., Jr., 4.
 Guidebook, Southern Pacific Lines, New Orleans to Los Angeles: Darton, 4.
 Lafayette Dam: Louderback, 2.
 Mulholland Dam, Hollywood: Berkey, 5.
 Opal stactalites from lava tube: Anderson, C. A., 1.
 Paragenesis, Crestmoore: Daly, J. W., 1.
 Radioactivity measurements: Engel, 1.
 Report, Geol. Branch: Jenkins, 7.
 Sacramento Valley: Forbes, H., 2.
 San Gabriel Dam, Los Angeles County: Berkey, 3.
 Southern Calif.: Gale, H. S., 3.
 State mineralogist bienn. repts.: Bradley, W. W., 3, 6, 8, 10, 11.
 Strategic minerals: Merrill, C. W., 2.
 Study of geology by airplane: Tieje, 1.

California—Continued.

Areas described.

- Alleghany area: Ferguson, 4.
 Darwin silver-lead area: Kelley, 10.
 Death Valley: Lee, B., 1.
 Elk Hills: Woodring, 12.
 Engels mine, Plumas Co.: Anderson, C. A., 2.
 Julian area: Donnelly, 2.
 Lompoc oil field: Dolman, 2.
 Madera County: Erwin, 1.
 Mohave Desert: Thompson, D. G., 1.
 Mono County: Mayo, 2.
 San Jacinto quad.: Fraser, 1.
 San Miguel Is.: Bremner, 2; Cockerell, 21.
 Santa Cruz Is.: Bremner, 1; Rand, W. W., 1.
 Santa Monica Mts.: Hoots, 3.
 Shasta quad.: Averill, 1.

Economic geology.

- Age, Kettleman Hills producing horizon: Cunningham, G. M., 1.
 Andalusite deposits: Dunn, J. A., 1; Jeffery, J. A., 1; Kerr, P. F., 7; Woodhouse, 2.
 Asbestos: Bowles, O., 4; Lauder milk, 1.
 Barite: Bradley, W. W., 1, 2.
 Borates: Gale, H. S., 5; Vonsen, 1.
 Borax: Esselink, 2; Mead, R. G., 1.
 Borax Lake: Vonsen, 2.
 Boron: Calvert, E. L., 1.
 Boulder Dam area, min. res.: Hewett, 12.
 Buena Vista Hills oil field: Howard, P. J., 1.
 Building stone: Galliber, 4.
 Buried-river channels: Ellsworth, E. W., 3.
 Buttonwillow gas field: Musser, 2.
 Casmallia oil field: Porter, W. W., II, 3.
 Central valley: Stalder, W., 2.
 Ceramic materials other than clays: Burchfiel, 1.
 Cerro Gordo mining dist.: Webb, R. W., 3.
 Chromite: Johnston, W. D., Jr., 10; Maxson, 4; O'Farrell, 1; Rogers, 8.
 Cinnabar: Baum, 2.
 Clays: Allen, 22; Hodge, 24; Sutherland, J. C., 1.
 Clear Lake area: Anderson, C. A., 5.
 Coalinga oil field: Galloway, J., 1; Henny, 4.
 Connate water in oil sands: Pyle, 2.
 Copper: Averill, 3, 7; Johnston, W. D., Jr., 8; Knopf, A., 8; Shenon, 7; Tolman, C. F., 3.
 Correlation, subsurface, method: Rankin, W. D., 1.
 Darwin silver-lead area: Kelley, V. C., 8, 10.
 Del Norte, Siskiyou Cos.: Maxson, 5.
 Del Rey Hills: Metzner, 1.
 Diatomite, Lompoc: Mulryan, 1, 2.
 Diatoms, oil source: Phleger, 9.
 Edison oil field: Carter, F. B., 1; Noble, E. B., 1.

California—Continued.

Economic geology—Continued.

- Elastic wave surveys: Rieber, 4.
 Eldorado Co. min. res: Logan, C. A., 2.
 Elizabeth Lake quad.: Simpson, E. C., 1.
 Elk Hills oil field, Kern Co.: Pember-ton, 1.
 El Segundo oil field: Porter, L. E., 1; Reese, 1.
 Elwood oil field: Dolman, 1.
 Engels copper deposit: Donnay, 3; Knopf, A., 2.
 Fault, active, in oil field: Sanders, T. P., 4.
 Feldspar, silica, andalusite, cyanite deposits: Sampson, R. J., 1.
 Foraminifera, Elwood field: Smith, W. M., 1.
 Fruitvale oil field: Preston, 1.
 Fuller's earth: Kerr, P. F., 16.
 Gas fields: Beebe, 2; Eckis, 3; Hansen, D. C., 1; Hoots, 6; Richardson, G. B., 5; Stalder, 3; Stockman, 1, 2, 3; Wernekke, 1.
 Gem minerals: Van Amringe, 2.
 Geophysical prosp.: Dick, J. A., 1; Pratley, 1; Vaughan, F. E., 2.
 Geothermal conditions, oil-producing areas: Carlson, A. J., 2; French, R. W., 1.
 Geothermal variations, Coalinga: Carlson, A. J., 3.
 Gold: Averill, 2; Donnelly, 2; Erich, 1; Ferguson, H. G., 2, 3; Hulin, 9; Knaebel, 1; Lindgren, 18; Schroter, 2; Tucker, W. B., 1; Webb, 7.
 Huntington Beach oil field: Gale, H. S., 4.
 Inclusions, dislocated, gold-quartz veins: Farmin, 4; Wiebenga, 1.
 Inyo Co. min. res.: Tucker, W. B., 3.
 Iron: Hodge, 16.
 Julian area: Donnelly, 1.
 Kettleman Hills oil field: Beal, 1; Bramlette, 3; Dodd, 1, 2; Gester, 2; Goudkoff, 1, 2; McCollough, 1; Musser, 1.
 Lakes, dry, minerals: Scott, D. B., 1.
 Lassen Co. min. res.: Averill, 5.
 Laurel, Convict basins: Mayo, 6.
 Limestones: Eckel, E. C., 1; Hodge, 24.
 Lithium ores: Chambers, 1.
 Lompoc oil field: Dolman, 2.
 Long Beach oil field: Crown, 1; Roberts, D. C., 1.
 Los Angeles Basin: Gale, H. S., 3.
 McDonald Is. gas field: Knox, G. L., 1.
 McKittick oil field: English, W. A., 1; Taff, 1.
 Magnesite ores: Hodge, 24.
 Magnesite mine, Bald Eagle: Perry, J. B., 1.
 Magnetic vectors: Jenny, 2.
 Magnetites, San Gabriel Mts.: Moorhouse, 2.

California—Continued.

Economic geology—Continued.

- Magnetometer surveys: Lynton, 1.
 Meadow Lake gold veins: Wisker, 1.
 Miargyrite silver ores: Shannon, 2.
 Middle Calif.: Jenkins, 13.
 Mineral paint materials: Symons, 2.
 Mineral production: Symons, 1, 2.
 Mineral resources: Franke, H. A., 2; Pabst, 8.
 Mineral wool from wollastonite: Thorndyke, 1.
 Modoc Co.: Averill, 6.
 Mojave mining dist.: Schroter, 1; Tucker, W. B., 2.
 Mother Lode belt: Hulin, 5; Knopf, A., 1; Logan, C. A., 1.
 Mountain View oil field: Gow, 1; Miller, R. H., 1.
 Mt. Poso oil field: Diepenbrock, 1.
 Natural gas: Beebe, 2; Edwards, M. G., 2; Hansen, D. C., 1; Hoots, 6, 7, 9; Richardson, G. B., 5; Wernekke, 1; Wilhelm, V. H., 1.
 Newhall oil field: Walling, 1.
 Nitrate deposits: Noble, L. F., 1.
 Nonmetallic minerals: Bradley, W. W., 7.
 North Belridge oil field: Preston, 2; Williams, R. N., Jr., 1.
 Oil. See Petroleum.
 Oil conversion: Trask, 26.
 Oil and gas fields: Beebe, 2; Eckis, 3; Norris, B. B., 1; Richardson, G. B., 5.
 Geophysical prosp.: Anonymous, 77.
 Temperatures: Carlson, A. J., 1.
 Waters: Jensen, 1.
 Oil fields. See names of fields.
 Oil in metamorphic rocks: Brown, A. B., 1.
 Oil reserves: Eaton, 7.
 Oil shale: Hoots, 1.
 Ore deposits: Hulin, 7.
 Panamint Range: Sampson, R. J., 4.
 Panamint silver area: Murphy, M. F., 2.
 Perris block min. res.: Dudley, 1; Sampson, R. J., 5.
 Petroleum: Beebe, 1, 2; Crandall, R. R., 1; Cunningham, G. M., 2; D'Arcy, 4; Edwards, M. G., 2; Hoots, 7, 9; McCollough, 1; Porter, 8; Reed, R. W., 10; Taff, 2; Wilhelm, V. H., 1.
 Placers: Duling, 1; Jenkins, 18; Sampson, R. J., 3.
 Playa del Rey oil field: Barton, C. L., 1; Hoots, 4.
 Plumas Co. min. res.: Averill, 7.
 Potrero Hills gas field: Hansen, D. C., 1.
 Prospecting vein deposits: Sanborn, F., 1.
 Pyrophyllite: Richard, 2.
 Quicksilver deposits: Schuette, 1, 4; Werner, T., 1.
 Reflection seismograph work: Pratley, 1.
 Round Mtn. oil field: Diepenbrock, 2.

California—Continued.

Economic geology—Continued.

- Saline deposits: Boyd, Julian, 1, 2;
Melbase, 17.
San Diego Co. res.: Hertlein, 11;
Tucker, W. B., 4.
San Gabriel Mts.: Oakeshott, 1.
San Jacinto quad.: Sampson, R. J., 2.
San Joaquin Valley: Eckis, 3; Hoots, 2;
Mills, 1.
San Louis Obispo Co.: Franke, H. A., 1.
Santa Barbara Mesa oil field: Chase, 1.
Santa Fe Spring oil field: Hendrickson,
A. B., 1.
Santa Maria oil fields: Canfield, 1;
Collom, 1; Porter, 5; Sheldon,
D., 1.
Santa Monica Mts.: Soper, 4.
Santa Rita ore body: Henderson, L.
H., 2.
Schist surface, buried: Waggoner, 1.
Seal Beach oil field: Barnes, R. M., 1.
Semitropic gas field: Valentine, W. W., 1.
Sbasta quad.: Averill, 1.
Sierra Nevada placers: Jenkins, 15.
Silica deposits: Hodge, 24.
Silver mines, Calico Mts.: Lewis,
W. S., 5.
Siskiyou Co.: Averill, 4.
Source beds, Mesozoic: Trask, 20.
Southern Calif.: Livingston, A. J., 1.
Strontium: Moore, B. N., 7.
Sulphur, Inyo Co.: Lynton, 4.
Ten Section oil field: Wyatt, 1.
Tertiary gold-bearing channels: Jen-
kins, 16.
Tick, Red Rock Canyons: Luce, 1.
Tremblor Range: Henny, 6.
Tulare horizon: Stalder, 1.
Vein filling, Nevada City: Johnston, W.
D., Jr., 14.
Vein quartz, Alleghany area: Ferguson,
3.
Venice, Del Rey fields: Corey, 2.
Ventura Avenue oil field: Hertel, 1.
Wasco oil field: Vallat, 1.
Wilmington oil field: Bartosh, 1, 2, 3;
Nash, 1; Winterburn, 1.
Wollastonite: Melhase, 12.
Zinc foothill belt: Farrel, 1.

Historical geology.

- Adelaida quad.: Stanton, W. L., Jr., 1.
Age, "Los Angeles man" deposits: Clem-
ents, 9.
Age, Kettleman Hills producing horizon:
Barbat, 3.
Alameda canyon: De Béthune, 5.
Algal lms.: Gillan, 1.
Alleghany area: Ferguson, H. G., 2.
Anorthosite: Miller, W. J., 4.
Archean, Plute, Old Woman Mts.: Haz-
zard, 5.
Astrodapsis faunal zones: Clark, B. L.,
9; Richards, G. L., Jr., 2.
Auriferous gravels, age: Chaney, 11, 17.

California—Continued.

Historical geology—Continued.

- Barrelian ser.: Keyes, 91.
Bedrock complex, Sierra Nevada: Talia-
ferro, 3.
Berkeley Hills: Clark, 13; Louderback,
11.
Borophagus littoralis loc.: Barbat, 2.
Breccias, Miocene: Reed, R. D., 19.
Brittle-star lms.: Merriam, C. W., 2.
Buena Vista Hills oil field: Howard, P.
J., 1; Koch, T. W., 1.
Cambrian: Hazzard, 1, 2.
Camulos fm.: Keyes, 90.
Capay Valley Eocene fms.: Crook, T. H.,
1, 2; Merriam, C. W., 10.
Carpinteria: Reed, R. D., 11.
Catalina Is.: Shepard, 55.
Cedarville fm.: LaMotte, 9.
Central valley: Stalder, 2.
Chico Creek Cret.: Hanna, 31.
Clays: Sutherland, J. G., 1.
Clear Lake area: Anderson, C. A., 6.
Climates, Eocene, Oligocene: Stock, 67.
Coalinga area: Henny, 4; Reed, R. D., 3.
Coast: Buwalda, 16.
Coast Ranges: Louderback, 10; Reed,
R. D., 22; Weaver, C. E., 1, 4.
Coastal basin: Eckis, 1.
Columbia geol. sec.: Louderback, 6.
Conglomerates: Edwards, E. C., 2.
Contact sec., Mokelumne River: Fitch, 3.
Corrections: Reed, R. D., 20.
Correlations, Pliocene, Pleist.: Grant, U.
S., IV, 8.
Sespe: Stock, 68.
Subsurface, methods: Rankin, W. D., 1.
Cosco Range area: Hopper, 2.
Cretaceous: Anderson, F. M., 3, 12, 13,
14; Church, 6; Nomland, 1; Po-
penoe, 4.
Crystalline rocks: Miller, W. J., 21.
Darwin silver-lead area: Kelley, 8, 10.
Deadman Is.: Crickmay, C. H., 1, 5.
Death Valley: Blackwelder, 11; Noble,
L. F., 3, 4; Anonymous, 60.
Deep borings, Salinas Valley: Dorn, 1.
Deep crustal structure: Byerly, 45-a.
Del Norte, Siskiyou Cos.: Maxson, 5.
Del Rey Hills area: Metzner, 1.
Devonian: Stauffer, C. R., 2.
Diastrophism, plutonism, pre-Tert: Wood-
ford, 8.
Diatomite, Lompoc: Mulryan, 1.
Domengine, Markeley fms.: Weaver, C.
E., 3.
Domengine, Arroyo Hondo fms.: An-
derson, J. Q., 1; Vokes, 12.
Domengine, Ventura Co.: McMasters, 2.
Edison oil field: Carter, F. B., 1; Noble,
E. B., 1.
Elephants, Channel Is.: Stock, 48.
Elizabeth Lake quad.: Simpson, E. C., 1.
El Segundo oil field: Porter, L. E., 1.
Elsinore quad.: Engel, 2.

California—Continued.

Historical geology—Continued.

- Eocene: Allen, H. B., 1; Clark, B. L., 6, 21; Herold, 3; McMasters, 1; Reed, 24; White, R. T., 1; Woodring, 10.
 Esmeralda fm.: Keyes, 99.
 Fernando group: Pressler, 2; Waterfall, 1.
 Foraminifera as index fossils: Adams, 1.
 Foraminiferal corals: Laiming, 1.
 B. C., 1-a.
 Fossils, Sierra Nevada: Mayo, 3.
 Frazier Mtn.: Buwalda, 8.
 Fusulinids: Wheeler, H. E., 2.
 Gas fields: Stockman, 1, 2, 3.
 Gaviota fm.: Effinger, 6.
 General: Eaton, J. E., 3.
 Geologic fms.: Jenkins, 11; Wilmarth, 1.
 Geologic map: Jenkins, 22; Smith, J. P., 1.
 Geophysical prosp.: Vaughan, F. E., 2.
 Glacial deposits: Blackwelder, 30.
 Glaciation, pre-Camb.: Hazzard, 10.
 Granites, Inyo Range: Anderson, G. H., 5.
 Granodiorite, Mariposa: Cloos, E., 4.
 Grass Valley: Johnston, W. J., Jr., 7.
 Greenwater volcanics: Keyes, 106.
 Helicoprion, paleogeog., significance: Wheeler, 9.
 Hopper Canyon area: Crandall, R. R., 1.
 Horsetown beds, age: Anderson, F. M., 2.
 Indio Hills: Buwalda, 7.
 Intrusive rocks: Hinds, 2, 15.
 Inyo Range: Anderson, G. H., 5, 8; Maxson, 7; Phleger, 1.
 Ione fm.: Allen, V. T., 2; Russell, P. G., 2.
 Iron Canyon, Table Mtn., Kennett dam sites: Etcheverry, 1; Louderback, 3.
 Ivanpah area: Hewett, 16.
 Jamesburg quad.: Herold, 6, 8.
 Julian area: Donnelly, 1.
 Kettleman Hills oil field: Bramlette, 3; Gester, 2; Goudkoff, 2; Schenck, 6.
 Klamath Mts.: Hinds, 2, 8, 9, 11, 12, 15, 17, 18, 33; MacGinitie, 7.
 Knoxville series: Anderson, F. M., 10, 11.
 Knoxville-Shasta succession: Anderson, F. M., 6, 7, 8.
 Kreyenhagen sh.: Anderson, F. M., 1, 4; Condit, 1; Jenkins, 8; Von Estorff, 1.
 Lake Mojave culture, age: Anteys, 22.
 Las Posas Hills: Stock, 18.
 Lassen Volcanic Nat. Park: Williams, H. 4; Reck, 2.
 Laurel, Convict Basins, Mono Co.: Mayo, 6.
 Lepidocyclina, significance: Schenck, 10.
 Lillias fm.: Hanna, G. D., 27.
 Limestones, crystalline: Webb, 12.
 Lajas formation, Ventura Co.: McMasters, 1.
 Lompoc oil field: Dolman, 2.
 Lone Hill, Santa Clara Co.: Rogers, A. F., 4.

California—Continued.

Historical geology—Continued.

- Los Angeles: Soper, E. K., 2.
 Los Angeles Basin: Eckis, 2.
 Lower Pliocene, Puente Hills: Stewart, R. E., 2.
 Lucia quad.: Reiche, 1.
 McCloud lms. fauna: Wheeler, H. E., 6, 8.
 McCloud, Nosoni fms., fusulinids: Wheeler, H. E., 3.
 McKittrick oil field: Taff, 1.
 McLure sh.: Henny, 1, 2.
 Magnesia ores: Hodge, 24.
 Marine-continental rec.: Eaton, 10.
 Marine Pleist., San Diego Co.: Stephens, F., 1.
 Marine Tert., Colorado Desert: Woodring, 14.
 Markley fms.: Bailey, T. L., 1.
 Marysville Buttes: Williams, H., 1.
 Merced fm.: Johnson, F. A., 1.
 Middle Calif.: Jenkins, 13.
 Milton fm.: Clark, S. G., 1.
 Miocene: Goudkoff, 3; Kleinpell, 6, 7, 8, 9; Maxson, 12; Reed, 37; Snedden, 1; Wilson, R. R., 1.
 California, Europe: Kleinpell, 9.
 Foraminifera, Reliz Canyon: Kleinpell, 3.
 Kettleman Hills wells: Schenck, 6.
 Miocene-Pliocene boundary: Maxson, 12.
 Modelo fm., age: Hudson, S. F., 1.
 Modoc County: Averill, 6.
 Modoc Lava-bed quad.: Powers, H. A., 7.
 Mojave mining area: Schroter, 1.
 Mojave River inv.: Conkling, 3.
 Mokelumne area: Piper, 16; Stearns, H. T., 6.
 Mono Craters: Putman, 4.
 Mono Lake area: Gihbert, C. M., 1.
 Monterey fm.: Eaton, 6; Galliher, 3.
 Mother Lode belt: Knopf, A., 1; Logan, C. A., 1.
 Mother Lode, Sierra Nevada batholiths: Cloos, 10.
 Mt. Diablo area: Clark, B. L., 4, 19; Taff, 3.
 Mt. Jura: Crickmay, C. H., 9, 19.
 Mt. Pinos quadrangle: Dreyer, F. E., 1; Gazin, 2, 3.
 Mt. Poso oil field: Diepenbrock, 1.
 Mt. Shasta quad.: Jenkins, 10.
 Mt. View field: Miller, R. H., 1.
 Mt. Whitney: Matthes, 24.
 Natural gas fields: Hoots, 6.
 Nipomo quad.: Tallafiero, N. L., 1.
 Nomlaki tuff: Russell, P. G., 4.
 Nopah, Resting Springs Mts.: Hazzard, 7.
 North Belridge oil field: Williams, R. N., Jr., 1.
 Northern Sierra Nevada: Jenkins, 12.
 Northwestern Calif.: Jones, B. E., 3.
 Oligocene fms.: Clark, B. L., 10.
 Oligocene mammal beds, Death Valley: Stock, 49.

California—Continued.

Historical geology—Continued.

- Pacific Coast : Reed, R. D., 13.
 Paleozoic, Argus, Panamint Ranges :
 Hopper, 3.
 Klamath Mts. : Hinds, 11.
 Palos Verdes Hills : Woodring, 17.
 Panamint, Ashford Canyons, Black Mts. :
 Wolf, J. E., 3.
 Panamint Range : Murphy, F. M., 2, 3.
 Panamint Valley : Hopper, 1.
 Paragenesis, Crestmore : Daly, J. W., 1.
 Peninsular Range : Miller, W. J., 12.
 Perris Block : Dudley, 1, 2.
 Petaluma area : Morse, R. R., 1.
 Pine Canyon Dam : Berkey, 9.
 Pinnacles Nat. Monument : Andrews,
 P., 2.
 Placers : Duling, 1; Hulin, 9; Jen-
 kins, 18.
 Playa del Rey field : Hoots, 4.
 Pleistocene : Allison, 7; Grant, 10; Hill,
 R. T., 1; Woodring, 15.
 Pliocene : Barbat, W. F., 7; Clark, A., 1;
 Clark, B. L., 13; Porter, W. W., II,
 1; Russell, P. G., 3; Woodring, 4, 6.
 Plumas County : Averill, 7.
 Potrero Hills, Vacaville areas : Bailey,
 T. L., 2.
 Poway Eocene conglomerate : Dusenbury, 1.
 Providence Mts. : Hazzard, J. C., 8.
 Province, Marble Mts. : Hazzard, J. C., 2.
 Rancho La Brea : Stock, 7.
 Ravenna quad : Sharp, R. P., 1.
 Redding quad : Popenoe, 2, 5.
 Redding-Weaverville area : Hinds, 14.
 Reef Ridge sh. : Barbat, 5; Siegfus, 1.
 Refugian stage, Pacific Coast : Schenck,
 22.
 Reliz Canyon, Foraminifera : Klempell, 3.
 Ridge Basin : Eaton, 9.
 Ritter area, Sierra Nev. : Erwin, 4.
 Riverside area : Bacon, 2.
 Roof-rocks, batholiths : Webb, 6.
 Sacramento River Basin dam sites :
 Forbes, H., 1.
 Salinas quad. : Herold, C. L., 2, 6, 8.
 Salinas Valley : Edwards, M. G., 1;
 Herold, C. L., 4.
 San Andreas rift : Cummings, G. A., 1, 2;
 Mielenz, 1; Willis, 17, 18.
 San Diego Co. : Hertlein, 11.
 San Emigdio-Sunset area : Henny, 5.
 San Fernando Valley, Pacoima Canyon :
 D'Arcy, 5.
 San Gabriel Mts. : Clements, 3; Hill,
 M. L., 1; Miller, W. J., 2, 10, 11;
 Oakeshott, 1, 2.
 San Jacinto tunnel : Henderson, L. H., 3.
 San Joaquin clay : Barbat, 6.
 San Joaquin Hills : Bode, 7; Findlay, 1.
 San Joaquin Valley : Eckis, 3; Henny, 7;
 Hoots, 2.
 San Lorenzo fm. : Forrest, 1; Hobson, 2.
 San Nicholas Is. : Kemnitzer, 1.
 San Pedro Hills : Reed, R. D., 6.

California—Continued.

Historical geology—Continued.

- San Ramon Basin : Clark, B. L., 2.
 San Simeon, Adelaida, Paso Robles
 quads. : Taliaferro, 11.
 Santa Ana Mts. : Moore, B. N., 1, 3;
 Post, W. S., 1.
 Santa Cruz area : Rode, 1.
 Santa Lucia Range : Stanton, W. L., Jr.,
 2.
 Santa Margarita conglomerate : Reed, R. D.,
 12.
 Santa Maria Valley oil field : Canfield, 1;
 Porter, 5.
 Santa Monica Bay : Shepard, 14, 42.
 Santa Monica Mts. : Kelley, V. C., 1;
 Soper, 3, 4; Woodring, 3.
 Santa Rita ore body : Henderson, L. H., 2.
 Santa Rosa Is. : Moody, G. B., 1.
 Santa Susana, Lower Lajas fauna's :
 Clark, 17.
 Sedimentation and faulting : Ashauer, 1.
 Sespe Creek-Piru Creek area : Hobson, 1.
 Sespe deposits, Ventura Co. : Stock, 5.
 Sespe fm. : Reed, R. D., 1; Stock, 18.
 Sharktooth Hill : Hanna, G. D., 8.
 Shasta Co. : Averill, 8.
 Sierra Blanca lms. : Keenan, 1.
 Sierra Nevada : Cloos, E., 2, 10, 13; Jen-
 kins, 15; McDonald, G. A., 1; Mc-
 Ginitie, 6; Mayo, 1, 11; Miller,
 W. J., 6; Taliaferro, 8.
 Silica deposits : Hodge, 24.
 Simi Valley : Glendinning, 1; Stipp, 2, 3.
 Soledad quad. : Nickell, 1.
 Southeastern Calif. : Noble, L. F., 2.
 Southern Calif. : Buwalda, 20; Grace, 7;
 Livingston, A. J., 1; Reed, 25, 26;
 Shepard, 52.
 Southern Peninsular Mts. : Miller, W.
 J., 4.
 Speeds, seismic waves : Byerly, 48.
 Stratigraphy, tectonics, Coast Ranges :
 Clark, B. L., 5.
 Structural evolution, S. Calif. : Grace, 7.
 Structural trends off coast : Shepard, 52.
 Sulfur, Inyo Co. : Lynton, 4.
 Sycamore Canyon fm. : Krueger, M. L., 1.
 Tectonic development off coast : Shepard,
 53.
 Tehachapi area : Buwalda, 13.
 Tejon quad. : Clements, 1, 6.
 Temblor Range, Eocene : Henny, 6.
 Ten Section oil field : Wyatt, 1.
 Tertiary : Axelrod, 6; Buwalda, 13;
 Fourmarier, 5; Reed, R. D., 18;
 Stirton, 22; Woodring, 8, 11.
 Tesla quad. : Huey, 1.
 Tick, Red Rock Canyons : Luce, 1.
 Timms Point Pleist. : Clark, A., 1.
 Transverse Ranges : Reed, R. D., 14.
 Triassic, San Bernardino Co. : Hazzard,
 J. C., 4.
 Tumey fm. : Atwill, 2.
 Turrillita zones : Applin, 2; Moore, B.
 N., 1; Vokes, 1.

California—Continued.

Historical geology—Continued.

- Tuscan fm.: Anderson, C. A., 3.
 Twenty-nine Palms area: Miller, W. J., 17.
 Uncompahgran, Beltian deposits: Hinds, 21.
 Vacaville-Rumsey Hills area: Kirby, J. M., 1.
 Valle Grande: Clark, B. L., 1.
 Val Verde area: Osborn, E. F., 1.
 Vaqueros: Clark, L. M., 2; Loel, 1; Schenck, 10, 15.
 Venice, Del Rey fields: Corey, 2.
 Ventura Basin: Eaton, J. E., 1; Jahns, 4.
 Ventura County: Conkling, 1.
 Ventura quad.: Kerr, P. F., 3.
 Volcanism and diatomaceous sediments: Taliaferro, 9.
 Volcanism, Pinnacles Nat. Monument: Herold, C. L., 5.
 Waltham Valley: Reed, R. D., 20.
 Wasco oil field: Vallat, 1.
 Weaverville: Hinds, N. E. A., 16.
 Wheatland fm.: Clark, 24, 28.
 White Mtn. quad.: Anderson, G. H., 1, 2.
 Wilmington oil field: Bartosh, 2, 3; Nash, 1.

Mineralogy.

- Adamite: Murdoch, 6.
 Agates: Akers, 1; Gordon, B. F., 2; Patton, J. W., 1.
 Alurgite: Webb, 10, 11.
 Anauxite: Rogers, A. F., 9.
 Andalusite in pegmatite: MacDonald, G. A., 2; Murdoch, 4; Webb, 14.
 Anorthite: Miller, 1.
 Apatite: McConnell, 4.
 Arsenic, native: Johnston, W. D., Jr., 13.
 Augelite: Lemmon, 1.
 Balaklaia chonolith: Seager, 1.
 Barite: Fitch, 1; Howard, A. D., 2.
 Barstow desert area: Chapman, F. W., 2.
 Bavenite: Schaller, 13.
 Benitoite: Hill, H. R., 1; Melhase, 21; Van Amringe, 7; Ward, T. W., 6; Yaekel, 1.
 Biotite-glaucconite: Galliher, 15.
 Bonsal tonalite: Hurlbut, 2.
 Borates: Foshag, 3; Gale, H. S., 5; Schaller, 3; Vonsen, 1.
 Borax Lake: Vonsen, 2.
 Burkeite: Foshag, 14.
 Bustamite: Murdoch, 5.
 Calcium carbonate: Trask, 39.
 Californite: Esselink, 4.
 Castanite: Rogers, 6.
 Cerro Gordo area: Webb, R. W., 4.
 Chlatholite: Brown, W. L., 1; Noren, 1.
 Chlorite in serpentine: Durrell, 1.
 Chromite: Swartley, 1.
 Cinnabar: Baum, 2.
 Claudetite: Kelley, 4.
 Clay, bentonitic: Foshag, 16.
 Clay minerals: Woodford, 2.

California—Continued.

Mineralogy—Continued.

- Clinoptilolite: Bramlette, 2.
 Colemanite: Van Amringe, 8.
 Collophane: Galliher, 2.
 Crestmore area: Daly, J. W., 1, 2; Kelley, V. C., 6.
 Curtisite: Wright, F. E., 2.
 Darwin silver-lead area: Kelley, 8, 10.
 Darwin stock: Kelley, 9.
 Diadochite: Rogers, 25.
 Diatoms replaced by calcite: Schenck, 8.
 Diopsides, Crestmore: Merriam, R., 1.
 Diorite with garnets: Schürmann, 4.
 Dumortierite: Murphy, F. M., 1; Wolff, J. E., 2.
 Fluorescent minerals: Melhase, 4, 24.
 Fossil pearls: Russell, P. G., 1.
 Fuller's earth: Kerr, P. F., 16.
 Garnets: Melhase, 7; Pabst, 3; Schürmann, 4.
 Gem minerals: Sperisen, 1.
 General: Melhase, 2.
 Gold, hydrothermal: Schroter, 2.
 Goose Lake meteorite: Leonard, 6, 7, 8; Watson, F. G., Jr., 3.
 Heavy minerals, Yosemite: Pabst, 11.
 Hedenbergite: Esselink, 1.
 Howlite: Van Amringe, 11.
 Hübnerite: Gianella, 14.
 Inyo Co. min. res.: Tucker, W. B., 2.
 Iron magnetic sulphide: Wright, R., 2.
 Iron tannate: Lauder milk, 3.
 Jasper: Bell, O. J., 1; Lewis, W. S., 6; Walcott, 4.
 Joaquinite: Van Amringe, 7.
 Kernite: Calvert, E. L., 2; Schaller, 20.
 Krausite: Foshag, 7.
 Kunzite: Buranek, 1.
 Lakes, dry, minerals: Scott, D. B., 1.
 Lapis lazuli: Rogers, 28.
 Maghemite and ferric oxides: Newhouse, 14.
 Magnetites: Moorhouse, 2.
 Martinez white sand: Pulitz, F., 1.
 Meteorites: Nininger, 48, 50.
 Miargyrite: Murdoch, 11; Shannon, 2.
 Mineral high-lights: Bradley, W. W., 10.
 Minerals: Goudey, 1; Melhase, 16; Pabst, 8.
 Monazite: Dykes, 2.
 Monticellite: Moehlman, 2; Rogers, 30; Schaller, 19.
 Montmorillonite: Lauder milk, 6.
 Montroydite: Woodhouse, 1.
 Mother Lode: Knopf, A., 1.
 Museum collections: Symons, 3.
 Nagyagite: Esselink, 3.
 Neptunite: Buttgenbach, 1; Van Amringe, 7.
 New York, Providence Mts.: Van Amringe, 10.
 Nodules, opal- or agate-filled: Renton, 4.
 Nonmetallic minerals: Bradley, W. W., 7.
 Obsidian: Wright, D. G., 1.
 Opal: Lewis, W. S., 1; Swartzlow, 9.

California—Continued.

Mineralogy—Continued.

- Paragenesis, Crestmore: Daly, J. W., 1.
 Pegmatites: Donnelly, 4.
 Periclase: Rogers, A. F., 2.
 Peridotite minerals: Lewis, W. S., 2.
 Phosphorite, sea floor: Dietz, R. S., 2.
 Piedmontite: Mayo, 4, 5; Short, A. M., 1; Simonson, 1; Webb, 10.
 Plazolite: Pabst, 9.
 Plumas Co., min. res.: Averill, 7.
 Probertite: Eakle, 1; Foshag, 6.
 Pseudomorphs: Murdoch, 2, 3.
 Pumpellyite: Irving, J., 1.
 Quartz: Kennard, T. G., 2.
 Radium, Lassen lavas: Evans, R. D., 1.
 Rare-earth min.: Melhase, 9.
 Round Valley: Chapman, R. W., 4.
 Rubidium, gallium, thallium: Kennard, T. G., 1.
 Saline lake deposits: Melhase, 17.
 Sanbornite: Bradley, 15; Melhase, 6; Rogers, 7.
 San Diego Co., gem min.: Grieger, 2.
 San Gabriel Mts.: Oakeshott, 1.
 San Marcos gabbro: Miller, F. S., 2.
 Santa Catalina Is.: Knopf, E. C., 1.
 Schalerite: Foshag, 5.
 Serendibite: Richmond, 1.
 Shasta Co.: Averill, 8.
 Sodium bicarbonate: Foshag, 18.
 Southern Calif.: Murdoch, 7.
 Sphene crystals: Webb, R. W., 13.
 Spodumene: McIntosh, F. G., 1.
 Strategic min.: Merrill, C. W., 2.
 Sulphur, native: Raymond, L. C., 1.
 Teepleite: Gale, W. A., 1.
 Tetradyomite: Webb, R. W., 2.
 Thunder eggs: Patton, J. W., 2.
 Tilleyite: Rogers, 14.
 Tonalite: Wilson, R. W., 13.
 Tourmaline: Grieger, 3; Irving, E. M., 1; Tompkins, 1.
 Ulexite: Murdoch, 12.
 Veatchite: Murdoch, 9; Switzer, 1.
 Vein filling: Johnston, W. D., Jr., 14.
 Vein-quartz: Rogers, 14.
 Vesuviantite: Pabst, 5.
 White Mts.: Kerr, P. F., 7.
 Witherite: Fitch, 1.
 Wollastonite: Melhase, 12; Peacock, 10.
 Woodhouseite: Lemmon, 2.

Paleontology.

- Acila: Schenck, 27.
 Algae: Clark, L. M., 1; Nelson, R. N., 2.
 Amber: Murdoch, 1.
 Amphistegina: Schenck, 4.
 Amynodont skull: Stock, 26, 77.
 Anabernicula: Ross, R. C., 1.
 Anadara Pelecypoda: Schenck, 32.
 Anchitherine horses: Bode, 4.
 Anthracolithic trilobites: Wheeler, H. E., 6.
 Arcidae: Reinhart, 5.
 Arctothere: Stock, 61.
 Artiodactyla: Stock, 46.

California—Continued.

Paleontology—Continued.

- Astrodapsis zones: Richard, G. L., Jr., 1, 2.
 Aturoidea: Miller, A. H., 1.
 Auk: Miller, L. H., 14.
 Auluroid: Phleger, 3.
 Avifauna: Howard, H., 15; Miller, A. H., 7; Miller, L. H., 3, 21.
 Bear: Frick, 1.
 Birds: Compton, 2, 3; Howard, H., 1, 10, 15; Miller, A. H., 7; Miller, L. H., 3, 7, 17, 18, 21; Wetmore, 13.
 Bison: Stock, 65.
 Bollvina: Adams, B. C., 2.
 Borophagus: VanderHoof, 1.
 Brachiopoda: Nomura, 1.
 Branta: Miller, L. H., 2.
 Brittle-star lms.: Merriam, C. W., 2.
 Bullmina: Cushman, 1.
 Calyptogena: Crickmay, C. H., 3.
 Cambrian faunas: Crickmay, C. H., 17; Mason, J. F., 3, 4.
 Campanile: Hanna, 36.
 Cancer: Rathbun, 7.
 Capay fm.: Merriam, C. W., 10.
 Capromeryx: Furlong, 1.
 Caracara: Howard, H., 14.
 Cardiidae: Keen, 7.
 Cardita: Quayle, 4.
 Carnivora, Sespe: Stock, 28.
 Caryophyllia: Quayle, 1.
 Cats, Rancho La Brea: Merriam, J. C., 6, 8.
 Cedarville flora: LaMotte, 9.
 Cedrus: Barghoorn, 1.
 Cephalopoda: Schenck, 5; Vokes, 7.
 Cercidiphyllum: Brown, 24.
 Cernictis: Hall, E. R., 7.
 Cetothere: Kellogg, 3, 8.
 Change, lateral, of fauna: Bailey, T. L., 4.
 Chelonia (?): Gilmore, 19.
 Chendytes: Miller, L. H., 16.
 Ciconia: Miller, L. H., 22.
 Colymbus: Wetmore, 42.
 Conrad's Miocene species from "Ocoya" Creek: Clark, A., 4.
 Coral: Faustino, 1; Webb, 12.
 Cormorant: Howard, H., 4; Miller, L. H., 6.
 Corylus: Mason, H. L., 5.
 Cosomys: Hinton, 1; Wilson, R. W., 1.
 Creodontia: Stock, 35.
 Cretaceous: Anderson, F. M., 13, 14.
 Cretaceous Foraminifera: Cushman, 6.
 Deadman Is.: Crickmay, C. H., 5.
 Decapod crustaceans: Rathbun, 2.
 Deep borings, Salinas Valley: Dorn, 1.
 Dentalium: Greger, 5.
 Desmostylus: Hanna, 22; VanderHoof, 11.
 Devonian: Stauffer, C. R., 2.
 Diatoms: Hanna, G. D., 1, 10, 16, 20, 29, 32-a; Hendy, 1; Laporte, 1; Lohman, K. E., 5; Schenck, 8.

California—Continued.

Paleontology—Continued.

- Dinosaur: Hesse, 11.
 Discocyclus: Schenck, 1, 11.
 Dolphin: Wilson, L. E., 2.
 Dragon fly: Cockerell, 2.
 Dyseohyus: Stock, 69.
 Eagles, vultures: Howard, H., 5.
 Echinoidea: Grant, 14.
 Ectopistes: Howard, H., 13.
 Elephants, Channel Is.: Stock, 1, 48, 54.
 Endemism, Calif. Coast Range flora: Mason, H. L., 1.
 Eocene, algae and orbitoids: Nelson, R. N., 2.
 Faunas: Dusenbury, 1 Merriam, C. W., 7; Vokes, 12.
 Foraminifera: Cushman, 14, 30; Woodring, 5.
 Mammals: Stock, 16, 19.
 Santa Ynez Range: Woodring, 5, 10.
 Eohoplomys: Stock, 40.
 Eomellivora: Stock, 21.
 Epitonium: Woodring, 9.
 Eporeodon, Sespe: Stock, 36.
 Eumysops: Wilson, R. W., 3.
 Fagesia, Chico group: Anderson, F. M., 5.
 Falcons, Pleist.: Miller, L. H., 4.
 Faunas, Camb., Marble Mts.: Mason, J. F., 1.
 Cuyama: Wood, A. E., 11.
 Eocene: Dusenbury, 1; Merriam, C. W., 7; Vokes, 12.
 McKittick: Stock, 74, 80.
 Marine: Richey, 2.
 Markeley fm.: Clark, 27.
 Miocene: Richey, 2; Woodring, 18.
 Paleocene: White, R. T., 2.
 Pleistocene: Willett, 2.
 Pliocene: Adams, B., 1; Johnson, F. L., 1.
 Redding quad.: Popenoe, 5.
 Felidae, Rancho La Brea: Merriam, J. C., 7; Stock, 15.
 Fernando group: Pressler, 2; Waterfall, 1.
 Fish: David, L. R., 1, 2; Hesse, 16.
 Floras: Axelrod, 1, 2, 3, 5; Chaney, 15; Condit, C., 2; La Motte, 13; MacGinitie, 3, 4; Potbury, 2.
 Foraminifera: Barbat, 4; Berthiaume, 2; Bush, J. B., 1; Church, C. C., 1, 3, 4, 5; Cushman, 1, 30, 36; Defandre, 3; Dibble, 1; Hobson, 2; Kleinpell, 1; Laiming, B., 1; Martin, L. T., 3; Natland, 1, 2; Schenck, 35; Smith, W. M., 1; Stewart, R. E., 1, 3; Ten Eyck, 1.
 Foraminifera as index fossils: Adams, B. C., 1-a.
 Fossil markings: Herold, C. L., 1.
 Fossils, marine: Woodring, 15.
 Fringillids: Sibley, 1.
 Fusulinids: Wheeler, H. E., 2.
 Gabb's type lamellibranchs: Stewart, R., 1.
 Geomyid rodents: Wood, A. E., 14.

California—Continued.

Paleontology—Continued.

- Goose footprints: Miller, A. H., 6; Miller, L. H., 8.
 Gryphaeoid oyster: Hertlein, 4.
 Haliotis: Hertlein, 10; Vokes, 4; Woodring, 13.
 Harpa: Vokes, 8.
 Helicina: Hanna, 33.
 Helicoprion: Wheeler, H. E., 10.
 Helminthoglypta: Cockerell, 19, 22.
 Heteromyid rodents: Wood, A. E., 15.
 Horses: Antonius, 1; Bode, 3; Stock, 70.
 Hyadenodontidae: Stock, 24.
 Hyadenognathus: Stock, 20.
 Hyatt's unfigured types: Crickmay, C. H., 16.
 Hyopsodontidae: Stock, 34.
 Imperial fm.: Bramkamp, 1.
 Insectivora: Stock, 42.
 Inyo Mts., Ord.: Phleger, 1.
 Jurassic ammonite: Crickmay, C. H., 12.
 Brachiopoda: Crickmay, C. H., 23.
 Kentrodiscus: Defandre, 4.
 Kern River mammals: Stock, 2.
 Kyphopyxa: Church, C. C., 2.
 Lagomorphs: Hall, E. R., 3; Wilson, R. W., 14, 19, 20.
 Lamellibranchiata: Clark, 18.
 Land shells, Sespe: Hanna, G. D., 30.
 Lepidocyclus: Taliaferro, 6.
 Leptoreodon (Hesperomeryx): Stock, 52.
 Lithodesmium: Hanna, G. D., 4.
 Lithothamninae: Howe, M. A., 6.
 Los Angeles: Soper, E. K., 2.
 McCloud lms.: Wheeler, 8.
 Mammalia: Curry, H. D., 2; Hay, 8; Henshaw, 1; Maxson, 1; Merriam, J. C., 9; Schultz, J. R., 4; Stirton, 18, 19, 22, 25, 26; Stock, 4, 49, 66; Wilson, L. E., 1; Wilson, R. W., 3; Wood, A. E., 18.
 Man, ancient: Bowden, 1; Harrington, M. R., 3; Anonymous, 29.
 Marine-continental records: Eaton, 10.
 Marginula: Hanna, 34.
 Martinezicancer: Van Straelen, 4.
 Mastodons: Blackwelder, 1; Frick, 2.
 Megalonyx: Lyon, G. M., 1.
 Meliosma: Berry, E. W., 15.
 Merychippine horses: Bode, 1.
 Merychippus zone: Bode, 6.
 Metarhinus (?): Stock, 64.
 Miacid: Stock, 25.
 Microsopsinae: Stock, 34.
 Mimmomys, Pliocene: Hesse, 2.
 Mint Canyon fauna: Stirton, 10.
 Miocene faunas: Clark, H. L., 1; Cushman, 16; Kleinpell, 8; Snedden, 1; Stirton, 3; Wiedey, 3; Woodring, 7.
 Mojave petrified forest: Stock, 62.
 Mollusca: Grant, U. S. IV, 7; Hanna, 35; Pilsbry, 8; Popenoe, 4; Vokes, 5; Wiedey, 4; Willett, 1, 3; Woodring, 19.
 Monadenia: Hanna, 25.
 Montebello oil field: Stockman, 4.

California—Continued.

Paleontology—Continued.

- Moris, Tert.: Compton, 6; Howard, H., 11.
 Mycteria, Quat.: Howard, H., 9.
 Mytilus loeli: Grant, U. S., IV, 2.
 Neptunea: Grant, U. S., IV, 6.
 Neroly fm. plants: Condit, C., 1.
 New names for W. Am. Mollusca: Hertlein, 2.
 Noetinae: McNeil, 7.
 Nothrotherium: Moodie, 11.
 Oligocene Mammalia: Stock, 18.
 Operculum: Woodring, 16.
 Orbitoids: Nelson, R. N., 2.
 Oreodonts: Stock, 5.
 Osteoborus: Richey, K. A., 1.
 Ostrea: Hertlein, 7; Tieje, 2; Vokes, 2.
 Otus: Miller, L. H., 15.
 Oysters and Pecten: Hertlein, 7.
 Palos Verdes Hills: Woodring, 17.
 Parapavo: Howard, H., 12.
 Passerine birds: Miller, A. H., 2, 5.
 Peccaries: Colbert, 6.
 Pecten: Hertlein, 1, 7.
 Pelagic mammals: Kellogg, 5.
 Pelecypoda: Popenoe, 3.
 Peratherium: Stock, 50.
 Perissodactyla: Stock, 27, 53.
 Peromyscus: Wilson, R. W., 11.
 Petrified forest: Anonymous, 27.
 Pines, closed-cone: Mason, H. L., 3.
 Pinnacles, Algae: Johnston, P., 1.
 Pinnotherids: Rathbun, 9.
 Pinto Basin site: Cambell, E. W. C., 1.
 Plants, auriferous gravels: Chaney, 14.
 Pleistocene, birds: Miller, L. H., 10, 11.
 Floras: Mason, H. L., 2.
 Mollusca: Grant, U. S., IV, 3; Oldroyd, 1.
 Rodents: Wilson, R. W., 2.
 Shells: Cockerell, 23.
 Plesiosaur: Welles, 2.
 Plesippus: Schultz, J. R., 2.
 Pliocene: Stock, 20; Woodring, 4, 6.
 Floras: Dorf, 1.
 Fresh-water fossils: Pilsbry, 7.
 Mollusca: Grant, U. S., IV, 3.
 Pliohippus: VanderHoof, 2, 15.
 Pliolunda: Miller, L. H., 20.
 Pliomastodon: Matthew, W. D., 8.
 Point Loma fauna: Webb, 5.
 Porpoise: Kellogg, 6.
 Primates, Eocene: Stock, 29, 31, 32.
 Portitanops: Stock, 60.
 Prothippus: Stock, 44.
 Ptiloteuthis: Rehn, 1.
 Radiolarian earths: Clark, 29.
 Rancho La Brea: Gale, H. S., 3; Miller, Alden H., 1; Moodie, 2; Stock, 2, 3.
 Reef Ridge sh.: Barbat, 5; Siegfus, 1.
 Reliz Canyon, Foraminifera: Kleinpell, 3.
 Reptilia: Stock, 79.
 Restorations, Pleist. Mammalia: Burroughs, H., 1.
 Rhododendron: Read, C. B., 1.

California—Continued.

Paleontology—Continued.

- Road-runner: Larson, L. M., 1.
 Rocella: Hanna, G. D., 13.
 Rodents: Hall, E. R., 3; Wilson, R. W., 2, 5, 14, 19, 20.
 Rouxia: Hanna, G. D., 3.
 Sabre-tooth tiger: Moodie, 12.
 San Bruno flora: Potbury, 1.
 Santa Barbara, Pliocene, Pleist.: Grant, 8.
 Santa Cruz Is. flora: Chaney, 3.
 Santa Margarita-San Pablo fms.: Richards, G. L., Jr., 3.
 Searlesia: Grant, 4.
 Serbelodon: Osborn, 30.
 Serpulid: Howell, 28.
 Sespe faunas: Stock, 33, 39, 41, 43, 45.
 Shrews: Compton, 7.
 Silicoflagellates: Hanna, G. D., 9, 17.
 Simimeryx: Stock, 37.
 Siphonogeneria: Parker, R. W., 1.
 Smilodon: Moodie, 11.
 Sorecidae: Stirton, 3.
 Storks: Miller, L. H., 13.
 Strix: Howard, H., 7.
 Syngnathus: Hesse, 15.
 Tapir: Stirton, 1.
 Tarslid primate: Stock, 71.
 Tarsloids: Stock, 78.
 Teeth, horse: Bode, 5.
 Tehama fauna: VanderHoof, 3.
 Teleodus: Stock, 45.
 Termite pellets: Rogers, 29.
 Tertiary, Foraminifera: Cushman, 8.
 Great Basin: Axelrod, 6.
 Vertebrates: Gazin, 1.
 Timms Pt., Pleist.: Clark, A., 1.
 Titanotheres: Stock, 51, 73.
 Tomales fm., flora: Mason, H. L., 4.
 Toxostoma: Engels, 3.
 Trilobita, Carb.: Wheeler, H. E., 6.
 Turbinolia: Quayle, 3.
 Turritellas: Merriam, C. W., 4; Wiedey, 1.
 Typhis: Keen, 8.
 Valvulinidae: Cushman, 29.
 Vaqueros fm.: Loel, 2.
 Velates: Vokes, 3.
 Venericardia: Chavan, 1.
 Ventura Basin: Jahns, 4.
 Verneuilinidae: Cushman, 29.
 Vertebrates: Clements, 7; Russell, P. G., 3; Schultz, J. R., 5; Stock, 33; VanderHoof, 7.
 Virgulinidae: Cushman, 29.
 Viverravus (Plesiomiocis): Stock, 41.
 Vultures, hawk: Miller, L. H., 9, 12.
 Wheatland fm.: Clark, 28.
 Wolf jaw: Stock, 72.
 Woods, Tert.: Mitchell, R. L., 1; Webber, I. E., 1.
 Zamites: Wieland, 4.
Petrology.
 Alteration, lavas: Anderson, C. A., 5.
 Analsite diabase: Tallafarro, N. L., 2.

California—Continued.

Petrology—Continued.

- Andalusite in pegmatites: MacDonald, G. A., 2; Webb, 14.
 Anorthosite: Miller, W. J., 4.
 Balaklaia chonolith: Seager, 1.
 Ben Lomond Mtn.: Fitch, 2.
 Bentonite: Kerr, P. F., 4.
 Bonsal tonalite: Hurlbut, 2.
 Burnt lava flow: Finch, R. H., 9.
 Catalina Is.: Shepard, 35.
 Cherts: Smith, H., 1; Taliaferro, 10.
 Chromite: Johnston, W. D., Jr., 10.
 Clear Lake area: Anderson, C. A., 6.
 Concretions: Hyde, E. M., 1.
 Conglomerates: Simonson, 2.
 Crestmore contact rocks: Dunham, 2.
 Crystalline rocks: Miller, J. W., 21.
 Darwin stock: Kelley, 9.
 Diatomaceous sh.: Schenck, 7.
 Eureka earthquake, 1932: Stoneley, 1.
 Fabrics, inclusions, intrusions: Ingerson, 7.
 Feldspar: Anderson, G. H., 6.
 Flood gravel: Krumbein, 27.
 Garnets: Murdoch, 10; Schürmann, 4.
 Glass Mts.: Anderson, C. A., 4.
 Granites: Anderson, F. M., 7; Anderson, G. H., 5; Miller, W. J., 9.
 Granodiorite melted to obsidian: Larsen, 24.
 Hat Creek lava flow: Anderson, C. A., 12.
 Heavy minerals: Cogen, 2; Pabst, 11.
 Hornblendes: Miller, F. S., 3.
 Igneous rocks: Bacon, 1.
 Inclusions, dislocated, gold-quartz veins: Farmin, 4; Wiebenga, 1.
 Inyo Range: Anderson, G. H., 7.
 Iron sulphide in lms.: Laudermilk, 9.
 Jasper: Bell, O. J., 1.
 Lassen Peak dacites: Williams, H., 3.
 Lassen Volcanic Nat. Park: Williams, H., 4.
 Lava Beds Nat. Monument: Swartzlow, 5-a.
 Limestones, crystalline: Webb, 12.
 Lucia, quad: Reiche, 1.
 Martinez white sand: Pultz, 1.
 Mesozoic (?) rocks: Hazzard, 9.
 Modoc Lava-bed quad.: Powers, H. A., 7.
 Monazite: Dykes, 1.
 Mt. Thielsen: Williams, H., 7.
 Mylonites: Waters, 8.
 Monodepositional surface off coast: Shepard, 59.
 Nopah, Resting Springs Mts.: Hazzard, 7.
 Orthoclase: Donnelly, 3.
 Panamint Range: Murphy, F. M., 3.
 Paragenesis: Daly, J. W., 1.
 Pegmatites: Donnelly, 4.
 Pépérite, intrus.: MacDonald, G. A., 3.
 Piedmontite: Simonson, 1.
 Plutonic intrusions, Sierra Nevada: Durrell, 2.
 Pseudoclastic texture, ig. rocks: Anderson, G. H., 4.

California—Continued.

Petrology—Continued.

- Pyrophyllite: Richard, 2.
 Quartz basalt eruptions: Finch, R. H., 4.
 Radiolarian earths: Clark, 29.
 Radium, Lassen lavas: Evans, R. D., 1.
 Recent sands: Reed, R. D., 4.
 Rhyolites: Taliaferro, 4.
 Round Valley deposit: Chapman, R. W., 4.
 Salton volcanic domes: Rogers, 15.
 Sandstone, algal: Gill, J. P., 1.
 San Gabriel Mts.: Miller, W. J., 11.
 San Jacinto tunnel: Henderson, L. H., 3.
 San Marcos gabbro: Miller, F. S., 2.
 San Pedro Hills: Reed, R. D., 7.
 Santa Monica Bay sediments: Shepard, 42.
 Sierra Nevada: Fitch, 4; Webb, 9.
 Sierra Nevada pluton: Cloos, 13.
 Syenites: Webb, 8.
 Tuff, Mono Lake: Gilbert, C. M., 1.
 Tuscan fm.: Anderson, C. A., 3.
 Twenty-nine Palms area: Miller, W. J., 17.
 Val Verde tonalite: Osborn, E. F., 1.
 Yosemite region: Calkins, 1.

Physical geology.

- Alameda Canyon: De Béthune, 5.
 Alteration, lavas: Anderson, C. A., 5.
 Anomalies, vertical intensity: Somers, 1.
 Asphalt deposits: VanderHoof, 6, 8.
 Avalanche sculpture, Sierra Nevada: Matthes, 27.
 Balaklaia chonolith: Seager, 1.
 Basaltic lava flows: Jones, A. E., 8.
 Bathygenetic, orogenetic movements: Gillson, 4.
 Bathymetric compilations, Calif. coast: Shepard, 33.
 Beach deposits: Thompson, W. O., 5.
 Berkeley Hills: Louderback, 11.
 Breccia, intrus.: MacDonald, G. A., 3.
 Buena Vista Hills oil field: Koch, T. W., 1.
 Burnt Lava flow: Finch, R. H., 9.
 Catalina Is. emergence: Shepard, 55.
 Caves, Mojave Desert: Lewis, W. S., 3.
 Clear Lake area: Anderson, C. A., 6.
 Coast: Buwalda, 16.
 Coast Ranges: Reed, R. D., 17; Weaver, 5.
 Coast and Geodetic Survey, seismol. program: Ulrich, F. P., 2.
 Coastal mts.: Buwalda, 18.
 Coast Ranges: Clark, 26; Reed, 22.
 Colorado delta: Fox, C. K., 1.
 Cuyama fault: Gregersen, 1.
 Darwin silver-lead area: Kelley, 8, 10.
 Death Valley: Noble, L. F., 4; Anonymous, 60.
 Debris flow from canyons: Taylor, C. A., 1.
 Deep crustal structure: Byerly, 45-a.
 Deformation: Mayo, 14; Woodring, 20.
 Diamond Peak vent: Finch, R. H., 6.

California—Continued.

Physical geology—Continued.

Diastrophism, plutonism, pre-Tert.:
Woodford, 8.

Earth movement: Benioff, 6; Louderback, 1.

Earthquakes: Blackwelder, 2; Byerly, 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 22, 23, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 45, 46, 47; Chick, 1; Davis, 25; Dyk, 2; Eaton, 5; Gutenberg, 6; Heck, 33; Hillis, 2; Hoskins, E. E., 1; Newcombe, 7; Reeds, 11; Richter, C. F., 1; Sparks, N. R., 1; Spitaler, 2; Stechschulte, 1; Wilson, J. T., 1, 2, 3; Wimmer, 3; Wood, H. O., 5, 11, 13, 15 16.

Earthquake history: Wood H. O., 16.

Elevation changes, Los Angeles Basin: Grant, 17.

Evolution, structural: Irving, E. M., 2.

Exfoliation, Sierra Nevada: Matthes, 26.

Fabrics, inclusions and intrusives: Ingerson, 7.

Fault blocks: Hill, R. T., 3.

Fault patterns: Russell, R. J., 1.

Fault trough sedimentation: Clark, B. L., 7.

Faulting: Anderson, C. A., 8; Benioff, 5; Callaghan, 15; Hill, M. L., 2; Louderback, 9; Matthes, 32; Miller, W. J., 16; Sanders, T. P., 4; Shepard, 31.

Faults: Raguin, 1.

Flood, La Canada Valley: Troxell, H. C., 1.

Folding: Clark, B. L., 16, 23.

Fracture systems, Grass Valley: Johnston, W. D., Jr., 7.

Frazier Mtn.: Buwalda, 8.

Garnet Hills, wind abrasion: Stock, 75.

Geothermal gradient, Mother Lode belt: Johnston, W. D., Jr., 5; Knopf, A., 5.

Glass Mtn.: Anderson, C. A., 4; Powers, H. A., 2.

Granodiorite, melted: Knopf, A., 18; Larsen, 24.

Gravel beach cusps: Shepard, 20.

Great Basin lake sediments: Shrock, 8.

Hat Creek lava flow: Anderson, C. A., 12.

Haywards fault: Louderback, 12.

Horizontal displacement, San Andreas fault: Wood, H. O., 1.

Hornblendes, San Marcos gabbro: Miller, F. S., 3.

Inclusions, dislocated, gold-quartz veins: Farmin, 4; Wiebenga, 1.

Intra-septum intrusion, Sierra Nevada: Mayo, 7, 10.

Inyo Range: Anderson, G. H., 7.

Ivanpah area: Hewett, 16.

Kern Canyon fault: Webb, 4.

Kettleman Hills faulting: Hill, M. L., 3, 4.

Klamath Mts.: MacGinitie, 7.

California—Continued.

Physical geology—Continued.

La Jolla sea cliff recession: Vaughan, 14.

Landslides: Hackett, 1; Krauskopf, 1; Miller, W. J., 5.

Lassen Peak: Farmer, 1; Finch, R. H., 1, 4; Hanna, H. C., 1; Holmes, A., 3; Jaggard, 17.

Lassen Volcanic Nat. Park: Keathley, 1; Reck, 2; Swartzlow, 8; Williams, H., 4.

Lava Beds Nat. Monument: Swartzlow, 5-a.

Lava domes: Jaggard, 28.

Long Beach earthquakes: Clements, T., 2; Gutenberg, 9; Heck, 14, 18; Wood, H. O., 6, 7.

Los Angeles Basin, seismic reflections: Gutenberg, 22.

Los Angeles earthquake, 3/11/33: Bois, 1.

Lowering of playas: Blackwelder, 20.

Lucia quad.: Reiche, 1.

Marine sediments: Vaughan, 18.

Mesozoic (?) rocks: Hazzard, 9.

Microseisms, Berkeley: Byerly, 44.

Mojave desert: Davis, 21.

Mojave mining: Schroter, 1.

Mono Craters: Mayo, 12; Putnam, 4.

Monterey Bay sedimentation: Galliber, 11.

Moon, effect on earthquakes: Allen, M. W., 2.

Mt. Diablo area: Clark, 19.

Mt. Shasta: Williams, H., 6, 8.

Mt. View field: Miller, R. H., 1.

Mt. Whitney: Matthes, 24.

Movements on Haywards rift: Buwalda, 4.

Movements, reverse, along faults: Erwin, 3.

Opal stalactites, stalagmites: Anderson, C. A., 9.

Orogeny: Stille, 2, 6.

Overtaken plunge, Sespe-Piru Creek area: Leach, 1.

Panamint Mts.: Davis, 27.

Panamint Valley: Hopper, 1.

Peninsular Range: Miller, W. J., 12.

Periodicity, earth movements, Los Angeles harbor: Leyboldt, 1.

Perris block: Dudley, 2.

Pinnacles Nat. Monument: Andrews, P., 2.

Plutonic intrusions, Sierra Nevada: Durrell, 2.

Primary faulting, Coast Ranges: Clark, B. L., 12.

Quartz basalt eruptions, Lassen Park: Finch, R. H., 4.

Recent earthquakes near Whittier: Wood, H. O., 3.

Reflection seismograph rec.: Salvatori, 1.

Ridge Basin: Eaton, 9.

Ritter area: Erwin, 4.

California—Continued.

Physical geology—Continued.

- River action, San Gabriel Mts.: Loderback, 7.
 Rockies, structure: Collet, 1.
 Roof rocks, batholiths: Webb, 6.
 Round Valley: Chapman, R. W., 4.
 St. Francis dam; Hill, L. C., 1.
 Salinas, Jamesburg quads.: Herold, C. L., 6, 8.
 Salinas Valley: Herold, C. L., 4.
 Salton volcanic domes: Kelley, 5.
 San Andreas fault: Mielenz, 1; Noble, L. F., 2; Shepard, 25; Soske, 1; Taliaferro, 14; Willis, 18; Wood, H. O., 1.
 San Clemente submarine fault: Shepard, 47.
 San Emigdio-Sunset area: Henny, 5.
 San Francisco earthquakes: Huber, 1.
 San Gabriel Mts.: Hill, L. C., 1; Oakeshott, 1, 2.
 San Jacinto tunnel: Henderson, L. H., 3.
 San Joaquin Valley: Fox, L. S., 1; Henny, 7.
 San Marcos gabbro: Miller, F. S., 2.
 Sand-blast effects, Sierra Nevada: Blackwelder, 8.
 Sandstone dikes in shs.: Jenkins, 3.
 Santa Catalina Is.: Knopf, E. C., 1.
 Santa Cruz earthquakes: Mitchell, G. D., 1.
 Santa Lucia Range structure: Stanton, W. L., Jr., 2.
 Santa Maria Valley: Canfield, 1.
 Santa Monica Mts.: Soper, 4.
 Schistosity: Fourmarier, 1.
 Sedimentation: Ashauer, 1; Trask, 8.
 Sediments, Monterey Bay: Galliher, 5.
 Seismological research: Ulrich, F. P., 4; Wood, H. O., 12.
 Sierra Nevada: Byerly, 38; Cloos, E., 2, 13; Cloos, H., 1, 2; MacDonald, G. A., 1; Mayo, 11, 13, 15; Webb, R. W., 9.
 Southern Calif. structure: Reed, 25, 26.
 Speeds, seismic earth waves: Byerly, 48.
 Strike-slip, faulting, Death Valley: Curry, 3.
 Strong earthquake motions: Heck, 29.
 Structure, S. Calif.: Reed, 25, 26.
 Structural trends off coast: Shepard, F. P., 52.
 Subsidence: Lawson, 12; Rappleye, 1; Stohsnet, 1; Anonymous, 141.
 Subsequent faulting, Great Basin: Hulin, 6.
 Tectonic devel. off coast: Shepard, 53.
 Tejon quad.: Clements, 6.
 Tick, Red Rock Canyons: Luce, 1.
 Tree-ring calendar, volcanic flows: Finch, R. H., 13.
 Truncation, Maricopa ss.: Atwill, 1.
 Tuff, Mono Lake: Gilbert, C. M., 1.
 Turtle-back fault surface, Death Valley: Curry, 4.

California—Continued.

Physical geology—Continued.

- Twenty-nine Palms area: Miller, W. J., 17.
 Unconformity: Moody, G. B., 2; Taliaferro, 13.
 Valle Grande tectonics: Clark, B. L., 1.
 Vein filling, Nevada City: Johnston, W. D., 14.
 Ventura region: Putnam, 5.
 Velocities, P and S waves: Dahm, 2.
 Volcanoes: Anderson, C. A., 10; Herold, C. L., 5; Waesche, 3.
 Volcanism, Pinnacles: Herold, C. L., 5.
 Waters, volcanic: Jaggard, 19.
 Whipple Mts.: Kemnitzner, 2.
 Wilmington oil field: Bartosh, 3; Nash, 1.
Physiographic geology.
 Afton Basin, Mojave desert: Ellsworth, E. W., 4.
 Alluvial-fan flooding: Chawner, 2.
 Avalanche sculpture, Sierra Nev.: Matthes, 27.
 Barrancos and arroyos: Grant, 9.
 Barstow Desert: Chapman, E. W., 2.
 Basins of sea floor: Dietz, R. S., 1.
 Beaches: Grant, 12, 15, 16; O'Brien, 3.
 Ben Lomond: Rode, 2.
 Biotite-glaucinite in sediments: Galliher, 15.
 Changes along coast: Grant, 12, 15, 16.
 Classification, surfaces and types: Clark, B. L., 8, 11.
 Clear Lake: Davis, 15.
 Coast: Buwalda, 16; Maxson, 3.
 Coastal basin: Eckis, 1.
 Colorado River: Blackwelder, 37.
 Colorado River Delta: Bateman, 6; Fox, C. K., 1; Lougee, 6; McKee, 14; Sykes, 2, 3.
 Death Valley: Lewis, W. S., 4; Noble, L. F., 4; Anonymous, 60.
 Devil's Postpile: Matthes, 6.
 Dunes, Pacific Coast: Cooper, W. S., 5.
 Elevated shore lines: Davis, 5.
 Erosion: Matthes, 25; Rode, 3; Smith, R. L., 1.
 Fanglomerates: Gross, P. L. K., 2.
 General: Clute, 1.
 Geographic littoral: Hoover, J. W., 1.
 Geomorphic provs.: Jenkins, 21.
 Glacial history: Blackwelder, 3, 24, 47; Davis, 19; Gianella, 13; Hazzard, 10; Jones, W. D., 1.
 Glass Mts.: Powers, H. A., 2.
 Granitic domes: Davis, 22.
 Ice caves: Swartzlow, 7.
 Inyo Range: Anderson, G. H., 3.
 June, Gull, Silver Lake Valleys: Kessell, 1.
 Lake Mojave: Bode, 8; Campbell, E. W. D., 2.
 Lakes: Blackwelder, 31, 40, 43; Davis, 20; Mayo, 9.
 Land forms: Russell, R. J., 5.
 Lassen Peak domes: Williams, H., 2.

California—Continued.

Physiographic geology—Continued.

- Lucia quad.: Reiche, 1.
 Modoc lava field: Peacock, 2.
 Mojave Desert: Davis, 29.
 Mokelumne area: Piper, 16.
 Mono Craters: Mayo, 12; Putnam, 4.
 Moraines, Convict Lake: Blackwelder, 6.
 Morena Reservoir: Barnes, F. F., 7.
 Mounds, soil, origin: Melton, 16.
 Mt. Shasta: Williams, H., 6.
 Mt. Thielsen: Williams, H., 7.
 Mt. Whitney: Matthes, 24.
 Multiple glaciation: Matthes, F. E., 3, 4.
 Northwesternmost Calif.: Maxson, 2.
 Off-shore sediments: Revelle, 1-a.
 Pacific Coast: Reed, R. D., 13.
 Palisade glacier: Engeln, von, 7.
 Peninsular Range: Miller, 14; Sauer, 1.
 Perris block: Dudley, 2.
 Pinnacles Nat. Monument: Andrews, P., 2.
 Pleistocene glaciation: Blackwelder, 35.
 Pleistocene terraces: Woodring, 15.
 Relief map: Sedelmeyer, 1.
 Rhomboid ripple mark: Woodford, 4.
 Ridge Basin: Eaton, 9.
 Sacramento River Canyon: Marliave, 1.
 Salton region: Soske, 2.
 San Andreas rift: Cummings, G. A., 2; Willis, 17.
 San Benito trough: Reed, 29.
 Sand concretions: Edwards, S. C., 1.
 San Gabriel Mts.: Miller, W. J., 10.
 San Nicholas Is.: Kemnitzner, 1.
 Santa Catalina Is.: Smith, W. S. T., 1.
 Santa Monica Bay sediments: Shepard, 42.
 Santa Monica Mts.: Davis, 10, 16, 19; Soper, 4.
 Scarp ramp, Owens Valley: Taylor, G. F., 1.
 Schist surface, buried: Waggoner, 1.
 Sedimentation off coast: Cohee, 4; Revelle, 3.
 Sheet-floods and stream floods: Lucke, 10.
 Shore line of emergence erosion: Macar, 4; Putnam, W. C., 2.
 Sierra Nevada: Matthes, 6; Miller, W. J., 6; Panzer, 1.
 Simi Valley: Glendinning, 1.
 Soil hillocks: Melton, 11.
 Southern Calif.: Bryan, 13; Livingston, A., Jr., 1.
 Southern Coast Ranges: Vickery, 1.
 Submarine canyons and valleys: Davis, 23; Shepard, 18, 24, 27, 28, 46, 49, 50.
 Subsidence, recent: Rappleye, 1.
 Terraces, marine: Wheeler, G., 4.
 Ubehebe craters: Engeln, von, 5.
 Valle Grande: Clark, B. L., 1.
 Valley, Shepherd's Crest: Matthes, F. E., 16.
 Ventura region: Putnam, 5.

California—Continued.

Physiographic geology—Continued.

- Wind-deposition shore line: Shepard, 54.
 Yardangs: Blackwelder, 33.
 Yosemite Valley: Atwood, W. W., Jr., 11; Jenkins, 13; Matthes, F. E., 2, 5, 28.
Underground water.
 Casa Diablo hot springs: Blake, A. H., 1.
 Coastal Basin: Eckis, 1.
 Depletion: Conkling, 4.
 Elsinore area: Engeln, von, 3.
 General: Piper, 5.
 Ground-water inv.: Blaney, 1.
 Hot springs, Lassen Pk.: Finch, R. H., 3.
 Investigations: Piper, 8.
 Lucia quad.: Reiche, 1.
 Mojave River: Conkling, 3.
 Mokelumne area: Piper, 16; Stearns, H. T., 6.
 Oil-field waters: Jensen, 1.
 Sacramento Valley: Forbes, H., 2.
 Santa Monica Mts.: Soper, 4.
 Subsidence near Los Angeles: Anonymous, 141.
 Ventura County: Conkling, 1, 2.
 Water fluctuations during earthquake: Piper, 9.
 Water-table fluctuations: Ebert, 1.
 Waters, volcanic: Jaggard, 19.
 Cambrian. See also Paleontology, Cambrian.
 Alabama: Johnston, W. D., Jr., 6; Jones, 16.
 Alaska: Mertie, 4, 10; Smith, P. S., 12.
 Alberta: Allan, 7, 8, 22; Deiss, 12; Hake, 2; Kindle, E. M., 4; Moore, P. D., 1; Raymond, 4; Russell, 36.
 Antille-Caribbean area: Schuchert, 31.
 Appalachia: Nelson, 6.
 Appalachian Mts.: Resser, 13, 21; Stose, 14.
 Appalachian Plateau-Miss. Valley: Butts, 12.
 Arizona: Brown, W. H., 4; Butler, 17, 18, 10, 21; Crawford, W. P., 2; Harrell, 2; Holm, 1; Keyes, 185; Roe, H., 1; Ruby, 1; Short, 6; Stoyanow, 1, 5; Trischka, 4; Wheeler, R. B., 1.
 Arkansas: Miser, 1.
 Arctic America: Benthams, 2; Kindle, 40; Mathiassen, 1; Resser, 3.
 Big Horn Basin-Yellowstone area: Anonymous, 117.
 British Columbia: De Béthune, 3; Deiss, 12; Evans, C. S., 4; Goranson, E. A., 3; Rice, 4, 5, 6; Wright, L. B., 5.
 California: Hazzard, J. C., 1, 2, 7, 8; Hopper, 2.
 Canada: Alcock, 13; Goodman, 4; Hume, 34; Kindle, 40; Weeks, L. J., 5.
 Chaleur Bay, Canada: Alcock, 13.
 Champlain Valley: Rodgers, J., 2.
 Clays, fire, U. S.: Chelikowsky, 1.

Cambrian—Continued.

- Colorado: Bassett, 3; Behre, 32; Brainard, 3; Burbank, W. S., 3; Cross, C. W., 2; Effinger, 3; Heaton, 5; Johnson, J. H., 17; Kans. G. Soc., 11; Lovering, 3, 14; Rohlfing, 1; Singewald, Q. D., 1, 3, 10; Vanderwilt, 8, 11.
- Connecticut: Cook, T. A., 1.
- Cordilleran Trough fms.: Deiss, 10.
- Correlations: Bridge, 7.
- Distribution, thickness: Ver Wiebe, 6.
- Dresbach fm., Minn.: Peterson, E., 1.
- Ellenburger lms., Tex.: Dake, C. L., 2.
- Gaspé: Kindle, C. H., 3.
- General: Keyes, 29, 193; Resser, 8, 13.
- Georgia: Georgia G. S., 1; Kesler, 4.
- Great Smoky fm.: Moneymaker, 5.
- Greenland: Benthams, 2; Büttler, 3; Koch, L., 2, 6, 10, 11, 12, 13, 14; Kranck, 4; Kulling, 1; Moos, von, 1; Odell, 5; Oepik, A., 1; Poulsen, 1; Telchert, 3, 8, 14; Wordie, 2.
- Guidebook, Pa. Geol. Conf. 1938: Bevan, 34.
- Idaho: Anderson, A. L., 9; Mansfield, G. R., 2; Ross, C. P., 21, 31; Shenon, 16.
- Illinois: Bevan, 2, 19, 36; Bretz, 10; Payne, J. N., 1; Wanless, 1.
- Illinois Basin: Weller, 25.
- Illinois-Missouri sec.: Kans. G. Soc., 12.
- Iowa: Keyes, 203, 295, 352.
- Jordan ss.: Trowbridge, 10.
- Kansas: Bass, 9; McClellan, 3; Ockerman, 3; VerWiebe, 16; Wilhelm, C. J., 1.
- Kentucky: McFarlan, 16.
- Keweenawan, age: Lane, 29.
- Labrador: Kranck, 4.
- Lowlands, S.-cent., and Ouachita provs.: Ruedemann, P., 3.
- Maine: Philbrick, 1.
- Maryland: Cloos, 12, 14; Jonas, 11; Keyes, 343.
- Massachusetts: Billings, M. P., 1; LaForge, 1; Newland, 13; Prindle, 1; Rhodes, 1.
- Mazomanie, Franconia fms.: Ulrich, 26.
- Mexico: Santillán, 15, 16.
- Michigan: Bergquist, 9; Newcombe, 9.
- Minnesota: Atwater, 4; Clement, 1; Couser, 2; Graham, W. A. P., 7; Keyes, 201; Powell, L. H., 1; Schwartz, 16; Stauffer, 8, 13, 21; Thiel, 14; Trowbridge, 8, 9.
- Miquelon Is., West Indies: Aubert de la Rue, 1.
- Minnesota, Minneapolis-St. Paul area: Anonymous, 199.
- Mississippi Valley: Atwater, 4; Bastin, 20; Kans. G. Soc., 8; Keyes, 467, 481; Raasch, 3; Sardeson, 48; Workman, 7.

Cambrian—Continued.

- Missouri: Bridge, 2; Brightman, 1; Condra, 12; Cordry, 1; Dake, C. L., 1; Grohskopf, 3; Kans. G. Soc., 6; McQueen, 4.
- Montana: Bevan, 3; Deiss, 3, 4, 7, 8, 11; Dorf, 9; Howell, 37; Lammers, 2; Langton, 1; Lovering, 1; Neely, 2; Reeves, F., 3; Romaine, 1; Sahinen, 4; Shenon, 1; Skeels, 1; Spiroff, 3; Thom, 14.
- Nebraska: Condra, 12, 14, 19; Lugn, 4; Reed, E. C., 1.
- Nevada: Callaghan, 7, 8; Ferguson, 5; Glock, 1; Hewett, 4; Nolan, 1; Westgate, 6; Wheeler, 11.
- New Brunswick: Alcock, 18; Hayes, 7.
- New England: Brown, C. W., 2.
- Newfoundland: Bain, 18; Betz, 1; Foley, F. C., 1; Hayes, 3; Schuchert, 28; Snelgrove, 5; Twenhofel, 40; Vhay, 1.
- New Mexico: Dunham, 3; Harley, 1; Just, 3; Lasky, 12; Spencer, A. C., 1; Talmage, 7; Winchester, 3.
- New York: Balk, 11; Berkey, 13; Buddington, 8; Colony, 2; Dale, N. C., 2; Megathlin, 3; Newland, 9, 13, 20; Reed, J. C., 5; Resser, 18; Rodgers, 5; Ruedemann, 7; Strzygowski, 2; Swinnerton, A. C., 7; Torrey, 8; Vaughan, H., 1; Whitcomb, 11-a.
- North America: Boesch, 3; Grabau, 5; Hinds, 22; Schuchert, 57; Waters, 13; Waterschoot van der Gracht, 15.
- North American systems: Cooper, B. N., 5.
- North Carolina: Keith, Arthur, 2; Moneymaker, 2; Murray, G. E., Jr., 5; Stuckey, 10.
- Northwestern U. S.: Resser, 11.
- Northwest Territories: Henderson, J. F., 3.
- Ohio: Wasson, I. B., 1.
- Oklahoma: Bass, 12; Bridge, 6; Decker, 6, 22, 24, 25; Hickock, 1; Hoffman, M. G., 1; Ireland, 4; Kirk, C. T., 2; Markham, E. C., 1; Melton, 4; Merritt, 7; Sawyer, 1; Sheerer, 1; Ulrich, 15; Wrather, 1.
- Olenellus zone: Resser, 7, 20.
- Ontario: Coleman, 10; Kay, G. M., 20-b.
- Ozark Mts.: Schottenloher, 2.
- Paleozoic, lower: Ulrich, 18.
- Pennsylvania: Bascom, 1, 3, 6; Berkey, 12; Butts, 10, 13; Detrick, 2; Fraser, 9, 15; Hills, J. M., 1; Jonas, 2, 4, 9; Knopf, E. F. B., 3; Mackin, 4; Miller, B. L., 4, 7, 8, 13, 15, 16; Moyer, 1; Piper, 7; Rogers, R. D., Jr., 1; Stose, G. W., 2, 8, 11, 12, 17, 21; Ward, F., 5; Watson E. D., 6; Willard, 55, 58.

Cambrian—Continued.

- Post-Keweenaw, age: Urry, 8.
 Prairie du Chien beds: Powers, E. H., 3.
 Pre-Devonian structure zones: Jonas, 8.
 Pre-Ordovician: Lane, 29.
 Quebec: Clark, T. H., 2, 7, 10, 11; Cooke, H. C., 12, 18, 22; Jones, I. W., 15; McGerrigle, 7; Osborne, 29; Parks, 4; Tolman, 12.
 Redefinition: Keyes, 299.
 Rio Grande depression: Bryan, 36.
 Rocky Mts.: Bartram, 10; Warren, P. S., 1.
 Rome fm.: Woodward, H. P., 4.
 St. Pierre ls., West Indies: Aubert de la Rue, 8.
 Scotland and Appalachians: Stose, 14.
 Shakopee dolomite: Keyes, 106, 108.
 South Carolina: Keith, Arthur, 2.
 South Dakota: Connolly, 3; Cummings, J. B., 2; Gries, J. P., 1; Meyerhoff, 8; Rothrock, 15, 16; Wright, L. B., 3.
 Southern Appalachians: Butts, 4.
 Southwestern U. S.: Effinger, 4.
 Spence sh.: Resser, 23.
 Tennessee: Currier, 3; Hall, G. M., 7; Laurence, 4; Oder, 4; Wilson, C. W., Jr., 5, 7.
 Texas: Arick, 2; King, P. B., 7, 29; Sellards, 28, 36, 38.
 Thickness in U. S.: Ver Wiebe, 14.
 Uinta Mts.: Forrester, 1.
 Unconformity: Atwater, 2; Hinds, 20.
 Uncompahgran, Beltian deposits: Hinds, 21.
 Utah: Blackwelder, 45; Eardley, 2, 12, 14; Gilluly, 5; Hintze, 2; Nolan, 3, 6.
 Vermont: Booth, 1; Foyles, 1, 3; Howell, B. F., 1, 12, 13, 32, 44, 45; Jacobs, 2, 13; Keith, Arthur, 4; Kreiger, M. H., 1; Larrabee, 1; McGerrigle, 1; Moore, C. H., 3; Newland, 13; Perry, B. L., 1; Richardson, C. H., 2, 3, 4, 5, 6, 7; Schuchert, 27, 43; Stose, 20-a.
 Virginia: Bates, R. L., 1, 4; Bevan, 9; Brown, W. H., 3; Butts, 5, 14; Cooper, B. N., 1, 7, 8; Currier, 2, 3; Furcron, 3, 4, 5, 9; Sears, C. E., Jr., 3; Stose, 6, 13, 19; Thiesmeyer, 4; Woodward, 3, 11, 13.
 Washington: Culver, 6; Park, 9.
 West Virginia: McCue, 1; Price, P. H., 8-a, 14; Reeves, F., 5.
 Wisconsin: Atwater, 4; Bates, R. E., 4; Ekern, 1; Keyes, 192; Raasch, 4; Thwaites, 6; Trowbridge, 8, 9; Twenhofel, 12, 19; Wanemacher, 2.
 Wyoming: Deiss, 7; Fanshawe, 1; Horberg, 1; Johnson, G. D., 1; Jones, C. T., 2; Love, J. D., 1, 6; Lovering, 2; Meyerhoff, 24; Miller, B. M., 2; Resser, 1; Wilson, C. W., Jr., 18; Wright, L. B., 3.

Canada (general). See also names of Provinces.

- Aerial surveying: Peters, F. H., 1.
 Borings: Johnston, W. A., 6, 7; Maddox 2, 3.
 Canadian Geol. Survey and mining devel.: Williams, M. Y., 16.
 Canadian Shield studies: Young, G. A., 2.
 Committee on strat. nomenclature: Alcock, 7.
 Department of Mines reports: Camsell, 1, 2, 4, 5, 6, 7, 8, 10, 11, 12; Canada Dept. Mines, 1.
 General: Baulig, 1; Sawa, 1.
 Geological Survey of Canada: Collins, W. H., 2; Gray, 1.
 Annual repts. 1928-35: Collins, W. H., 1; 1936, Lynch, F. C. C., 1.
 Geological Branch repts.: McLeish, 1.
 Mines Branch repts., 1929-32: McLeish, 1.
 Geophysical prosp.: Lundberg, 8.
 Gravitational, magnetometric inv.: Miller, A. H., 2.
 Great Slave Lake: Bell, J. M., 1.
 Index to repts.: Nicolas, 2.
 Land movements and sedimentation: Williams, M. Y., 6.
 Lime-secreting algae: Kindle, 26.

Areas described.

- Interior plains: Kindle, 40.
 Porcupine-Kirkland Lake areas: Dougherty, 5.
 Prairies: Eichmeier, 1.
 Timiskaming sub-province: Collins, 12.
 Turner Valley oil field: Anonymous, 138.

Economic geology.

- Analyses, crude oils, etc.: Rosewarne, 2.
 Anhydrite: Cole, L. H., 4, 6.
 Anticlinal theory, petroleum: Harkness, 3.
 Asbestos: Bowles, O., 4.
 Bentonite: Spence, 12.
 Beryllium: Simons, E. N., 1.
 Brucite: Goudge, 8.
 Canadian Shield: Bruce, 10; Dougherty, 4; Wilson, M. E., 20.
 Chrysotile asbestos: Dufresne, 3; Ross, J. G., 1.
 Clays: Hodge, 24.
 Coal: Gray, 2; MacKay, 11; Stansfield, 2.
 Copper: Alcock, 12; Burwash, L. T., 1; Duncan, 1.
 Diatomite: Eardley-Wilmot, 1.
 Feldspar: Spence, 8.
 Fluorspar: Wilson, M. E., 1.
 Geophysical prosp.: Kelly, 17.
 Gold: Bruce, 17, 19, 23; Bruet, 10; Cooke, H. C., 4, 13; Danloux-Dumesnil, 1; Dufresne, 4; Goodwin, W. M., 4; Knight, C. W., 2; Robinson, A. H. A., 1, 2, 4.
 Great Bear Lake silver: Furnival, 1.
 Gypsum: Cole, L. H., 1, 5.

Canada—Continued.

Economic geology—Continued.

- Helium : Rosewarne, 1.
 Iron : Faessler, 19; Royce, 2.
 Lake-bottom manganiferous deposits :
 Kindle, 31.
 Lead : Alcock, 3, 10.
 Limestones : Goudge, 2, 5, 7.
 Magnesite : Wilson, M. E., 15.
 Magnetite : Faessler, 19.
 Manganese : Hanson, 5.
 Mica : Spence, 3.
 Mineral deposits : Bruce, 6.
 Mineral industry : McLeish, 2.
 Mineral resources : Jeffreys, W. A., 1;
 Moore, E. S., 1; Myers, R. E., 2;
 Robinson, A. H. A., 3.
 Mining industry, history : Allen, 10.
 Molding sands : Freeman, C. H., 1, 2.
 Natural gas : Bell, W. A., 1-a; Hume,
 14, 18; Wait, 1.
 Nickel : Robinson, A. H. A., 5.
 Ore deposits : Bichan, 1; Wright, L.
 B., 2.
 Peat bogs : Auer, 1, 2.
 Petroleum : Goodman, 4; Hume, 14, 18,
 30, 34; Hunter, C. M., 1; Redfield,
 A. H., 1; Wait, 1.
 Petroleum and nat. gas : Bell, W. A., 1-a;
 Hume, 34; Irwin, 4.
 Phosphate : Spence, 1.
 Placer deposits : Cockfield, 8.
 Platinum, allied metals : O'Neill, 3.
 Porcupine-Kirkland areas : Dougherty, 5.
 Portraying structure, coal fields : Mac-
 Kay, 7.
 Prospecting : Canada G. S., 2.
 Rare-element minerals : Ellsworth, H. V.,
 4.
 Roofing-tile clays, shs. : McMahon, 1.
 Salt : Cole, L. H., 2.
 Semiprecious, ornamental stones : Par-
 sons, 17.
 Silica : Hodge, 24.
 Silver : Furnival, 1.
 Sydney coal field : Gray, 2.
 Tellurides : Thomson, J. Ellis, 17.
 Tillite : Teichert, 10.
 Timiskaming sub-province : Collins, 12.
 Turner Valley oil field : Anonymous, 138.
 Zinc : Alcock, 3, 10.

Historical geology.

- Age, rocks and minerals : Lane, 37.
 Arctic Canada : Teichert, 12; Wordie, 2.
 Black River, Ord. : Okulitch, 11.
 Canadian Shield : Bain, 8; Brock, R. W.,
 2; Bruce, 10, 17; Collins, 11; Cooke,
 H. C., 17; Derry, 9; Moore, E. S.,
 14; Wilson, M. E., 20; Young, G. A.,
 1, 3.
 Copper : Alcock, 12.
 Eastern Arctic : Weeks, L. J., 5.
 Eparchean peneplain : Lawson, 6.
 Floor, Paleozoic : Baker, M. B., 2.
 General : Baulig, 1; Sawa, 1.
 Geological history : Williams, M. Y., 5.

Canada—Continued.

Historical geology—Continued.

- Geologic names lexicon : Wilmarth, 2.
 Gold areas : Bruce, 17, 19, 23; Danloux-
 Dumesnil, 1.
 Hudson Bay-St. Lawrence Basin connec-
 tion : Potter, D., 1.
 Huronian, disappearance : Collins, W.
 H., 6.
 Interior plains area : Kindle, 40.
 Iron, Lake Superior : Royce, 2.
 Keweenaw olivine diabases : Moore, E.
 S., 3.
 Killarney, Algoman granites : Chamber-
 lin, 11; Lane, 28; Lawson, 7.
 Laberge area, Yukon : Anonymous, 132.
 Lake Superior area : Pettijohn, 11.
 Maritime Provinces : Bell, W. A., 3.
 Mingan Is. : Twenhofel, 31.
 Natural gas : Bell, W. A., 1-a; Hume, 34.
 Northwest Canada : Howell, J. V., 7.
 Ordovician, Arctic Canada : Teichert, 12.
 Ore deposits : Wright, L. B., 2.
 Paleozoic : Faessler, 21; Hume, 34.
 Petroleum geology : Goodman, 4; Hume,
 34.
 Petroleum and nat. gas : Bell, W. A., 1-a.
 Platinum, allied metals : O'Neill, J. J., 3.
 Porcupine-Kirkland Lake area : Dough-
 erty, 5.
 Pre-Cambrian : Legraye, 2; Moore, E. S.,
 22; Wilson, M. E., 21.
 Selkirk-Rocky Mt. uplifts : Warren, 20.
 Silica, deposits : Hodge, 24.
 Silurian, Arctic Canada : Teichert, 12.
 Steeprock ser. : Moore, E. S., 23.
 Stratigraphy, prog. in : McLearn, 11.
 Sudbury series : Collins, 11.
 Timiscaming sub-province : Collins, 12.
 Turner Valley oil field : Anonymous, 138.

Mineralogy.

- Anorthosites : Faessler, 20.
 Apatites : Dadson, 1.
 Brucite : Goudge, 8.
 Canadian Shield : Wilson, M. E., 20.
 Cosalite : Berry, L. G., 1.
 Cyrtolite analysis : Muench, 2.
 Detrital minerals : Fraser, F. J., 2.
 Gold, Canadian Shield : Bruce, 23.
 Iron and magnetite : Faessler, 19.
 Meteorite, Osseo : Marble, 8.
 Mineral resources : Myers, R. E., 2.
 Pitchblende : Marble, 9.
 Porcupine-Kirkland Lake areas : Dough-
 erty, 5.
 Rare-element minerals : Ellsworth, H. V.,
 4.
 Review of, 1882-1932 : Walker, T. L., 9.
 Semiprecious, ornamental stones : Par-
 sons, 13.
 Spinel : Prince, 1.
 Tellurides : Thomson, J. Ellis, 17.
 Tillite : Teichert, 10.
Paleontology.
 Acila : Schenck, 27.

Canada—Continued.

Paleontology—Continued.

- Canadian Shield: Wilson, M. E., 20.
- Climacograptus: Cox, I. H., 2.
- Corals: Okulitch, 11.
- Dinosaur tracks: Sternberg, 12.
- Early man: Bliss, 1.
- Eubanerops: Stensjö, 5.
- Faunas, Ord., Sil.: Teichert, 12.
- Index, 1917-26: Nicolas, 1.
- Insects in amber: Carpenter, 16.
- Interior Plains area: Kindle, 40.
- Life, pre-Camb., Canadian Shield: Wilson, M. E., 3.
- Mammals: Russell, 32.
- Marine shells: Richards, 3.
- Mastodons, mammoths: Sternberg, C. M., 3.
- Mingan Is.: Twenhofel, 31.
- Mollusca, post glacial: Mozley, 2.
- Niagaran corals: Lee, D., 1.
- Post-Pliocene fossils: Nichols, D. A., 3.
- Seeds, peat bog: McAtee, 1.
- Trilobites: Kobayaski, 2.
- Unionidae: Russell, L. S., 29.

Petrology.

- Canadian Shield: Grout, 21; Wilson, M. E., 20.
- Keweenawan olivine diabases: Moore, E. S., 3.
- Porcupine-Kirkland Lakes area: Dougherty, 5.
- Rapakivi granite: Furse, 1.
- Semi-precious, ornamental stone: Parsons, 17.
- Tillite: Teichert, 10.
- Two-granite batholiths: Moore E. S., 7.

Physical geology.

- Akpatok Is.: Cox, I. H., 3.
- Canadian Shield: Chamberlin, 16; Derry, 9; Wilson, M. E., 20.
- Earthquakes: Hodgson, 14.
- Eparchean peneplain: Lawson, 6.
- Interior plains: Kindle, 40.
- Porcupine-Kirkland Lakes area: Dougherty, 5.
- Pre-Cambrian: Moore, E. S., 22.
- Ripple marks: Wilson, M. E., 5.
- Selkirk-Rocky Mts. uplifts: Warren, 20.
- Steeprock ser.: Moore, E. S., 23.
- Timiskaming earthquake, 1935: Hodgson, 13.
- Timiskaming sub-province: Collins, 12.
- Volcanoes, recent: Hanson, 10.

Physiographic geology.

- Akpatok Is.: Cox, I. H., 3.
- Arctic Canada: Freuchen, 1; Wordie, 2.
- Athabasca-Great Slave Lakes: Harper, M. F., 1.
- Beaches, raised, James, Hudson Bays: Stanley, 9.
- Canadian, pre-Pliocene: Cooke, H. C., 10.
- Canadian Shield: Cooke, H. C., 2; Wilson, M. E., 20.
- Drainage changes: Zernitz, 2.

Canada—Continued.

Physiographic geology—Continued.

- Frozen ground: Johnson, W. A., 1.
- General: Baulig, 1; Sawa, 1.
- Glaciers: McCoubrey, 2; Wheeler, A. O., 1.
- Interglacial Champlain sea: Coleman, 4.
- Interior plains: Kindle, 40.
- Jasper conglom.: Slawson, 3.
- Labrador Pen.: Cooke, H. C., 2.
- Patrician glaciation: Johnston, W. A., 13.
- Pleistocene geology: Johnston, W. A., 9.
- Physiographic divs.: Powers, 14, 16.
- Prairies: Eichmeier, 1.
- Snow line: Wasowicz, 1; Romer, E., 1.
- Tillite, Kazan River: Teichert, 10.
- Tree line, snow line: Romer, E., 1.
- Wave markings, Dundas fm.: Okulitch, 16.
- Wisconsin glaciation: Coleman, 3.
- Yukon, photog. mapping: Wood, W. A., 1.
- Canadian system: Ashley, 30.
- Canal, sea-level, Florida: Paige, 2; Thompson, D. G., 17.
- Canal Zone. See Panama (including Canal Zone).
- Cancrinite, Ontario: Meen, 8.
- Cape Breton Is. See also Nova Scotia: General: Eastern Gulf Oil Co., 1.
- Carbon in meteorites: Buddhue, 8.
- Carbonates in veins: Charlewood, 1.
- Carbonation vs. silication: Holden, 8.
- Carbon dioxide occurrence: Germann, F. E. E., 1; Miller, J. C., 2.
- Carbon minerals: Buddhue, 18, 26.
- Carbon ratios: Fischer, D. J., 8; Hendricks, T. A., 6.
- Carbon ratios and oil gravities, Rocky Mts.: Dobbin, 5.
- Carboniferous. See also Paleontology, Carboniferous.
- Aeolian deposits: Branson, 24.
- Alabama: Johnson, W. D., Jr., 6; Jones, W. B., 2, 13, 16; Park, 5.
- Alaska: Buddington, 1; Mertie, 1, 4, 7, 10, 13, 14, 15, 16, 20; Moffit, 1, 7, 8, 10, 11; Smith, P. S., 3, 12; Tuck, 5.
- Alberta: Allan, 7, 8; Calder, 2; Hake, 2; Howells, 1; Hume, 27, 31; Kelly, W. A., 11; Kindle, E. M., 4; MacKay, 8; Moore, P. D., 13; Raymond, 4; Russell, 31, 34-a, 36; Sanderson, 4; Sur, 1; Telfer, 1; Warren, P. S., 10.
- American Perm.: White, C. D., 16.
- Antillean-Caribbean area: Schuchert, 31.
- Appalachian area: Ashley, 28; Bevan, 10; Butts, 12; Darrah, 8; Wanless, 16-a.
- Archimedes lms.: Kindle, 40.
- Arctic America: Kindle, 40.

Carboniferous—Continued.

Arizona: Brown, W. H., 4; Butler, 17, 18, 19, 21; Galbraith, 1; Harrell, 2; Hernon, 3; Holm, D. A., 1; Keyes, 244, 317, 450, 457, 499; Longwell, 23; McKee, 4, 6, 9, 11; Reber, 1; Roe, H., 1; Rubly, 1; Short, 6; Stoyanow, 5; Trischka, 4; Wagner, O. E., Jr., 1; Wilson, E. D., 8; Anonymous, 179.

Arkansas: Croncis, 2; Easton, 5; Giles, 2, 10; Hansell, 1; Harlton, 8; Hendricks, T. A., 4, 7, 8, 13; Kans. G. Soc., 6; Keyes, 378, 383, 469; McKnight, 2; Miser, 2, 8; Moore, 24; Reed, J. C., 16; White, 23.

Bethany lms.: Keyes, 42, 378, 383.

Big Blue sediments: Elias, 15.

Borden fm., Ind.: Stockdale, 5.

British Columbia: Armstrong, J. E., 1, 2; Bancroft, 1; Cairnes, 13, 15, 17; Cleveland, 1; Crockford, 1; De Béthune, 3; Gray, J. G., 1; Gunning, 6; Hanson, 13; Johnston, W. A., 11; Kerr, F. A., 4; Lang, A. H., 6; Telfer, 1; Walker, J. F., 1, 4; Williams, M. Y., 4.

Burlington lms.: Keyes, 230, 395.

California: Averill, 1, 7; Cloos, 10; Eckis, 1; Ferguson, H. G., 2, 4; Hazard, 7, 8; Hinds, 11, 14, 33; Hopper, R. H., 3; Jenkins, 12; Kelley, V. C., 8, 10; Knopf, A., 1; Noble, L. F., 3; Piper, 16; Webb, 6, 12; Wheeler, 8; Woodford, 8; Anonymous, 60.

Canada: Goodman, 4.

Cape Breton Is.: Eastern Gulf Oil Co., 1.

Capitan lms.: Lloyd, E. R., 1.

Carboniferous-Perm. boundary: Moore, 49; Wheeler, H. E., 4.

Chaleur Bay: Alcock, 13.

Chattanooga sh.: Klepser, 2.

Chester, Ky.: Butts, 1.

Chetopa fm.: Keyes, 118.

Chouteau lms.: Keyes, 221, 420.

Classifications, correl.: Chamberlin, 9.

Climatic evidences: Noé, 3; White, C. D., 9.

Coal: Noé, 1; Shepard, 17, 43; Young, C. M., 2.

Coal flora: Bertrand, 1.

Colorado: Bassett, 3; Behre, 32; Brainerd, 3, 4; Burbank, W. S., 3, 4, 16; Cross, C. W., 2; Eckel, E. B., 5; Gould, D. B., 6; Green, T. H., 1; Johnson, J. H., 2, 9, 14, 16, 17, 19, 23; Kans. G. Soc., 7, 11; Lerke, 1; Lovering, 4, 14, 15, 17, 30; Miller, J. C., 1; Prommel, 1; Rohlfing, 1; Roth, 13; Sanders, C. W., Jr., 2; Singewald, Q. D., 1, 10; Stone, J. B., 1; Traupe, 1; Vanderwilt, 2, 8, 11; Van Tine, 1; Van Tuyl, 17, 18; Waldschmidt, 4, 7; Wilkerson, 4, 5.

Connecticut: Cook, T. A., 1.

Carboniferous—Continued.

Correlations and floral provs.: Jongmans, 3.

Correlations:

Ammonites: Plummer, 19.

North American and Europe: Bertrand, 2; Moore, 37, 38.

Pennsylvanian, coal fields: Wanless, 16.

Pennsylvanian, Iowa-Mo.: Cline, 4.

Cross sections, Ky.-W. Va.: Krebs, 2.

Cyclical sedimentation: Weller, 6.

Cyclothems, Penn.: Weller, 21.

Deformation crustal: Moore, 30.

Devono-Missn. boundary: Swartz, J. H., 3.

Diastrophism, Mid-continent: Keyes, 322.

Distribution, thickness: Ver Wiebe, 6.

Drum lms.: Sayre, 1.

Eastern Interior Basin: Wanless, 14; Weller, 34.

Environment, Penn.: Moore, R. C., 5.

Flora, eastern States: Jongmans, 1, 2.

Forest City Basin: Hotchiss, H. G., 1.

Fusulinidae, correls.: Dunbar, 10.

Gaspé: Kindle, C. H., 3.

General: Keyes, 46, 65, 121, 166, 435.

Geologic periods and diastrophic circuits: Keyes, 435.

Geologic rhythms: Wanless, 15.

Georgia, g. map: Georgia G. S., 1.

Grassy sh.: Keyes, 222.

Greenland: Aldinger, 2, 6; Backlund,

1, 8; Bierther, 1; Büttler, 2, 4;

Cleaves, 3; Frebold, 2, 13; Koch,

L., 1, 2, 5, 10, 12, 14; Kulling, 1;

Malmquist, 1; Mayne, 1, 2, 3; Noe-

Nygaard, 1, 3, 5; Odell, 5; Rittman,

1; Rosenkrantz, 1, 3; Sive-Söder-

bergh, 6; Schaub, H. P., 1; Stauber,

H., 1, 2; Teichert, 8, 14; Vischer,

1, 2; Wegmann, C. E., 8.

Guadalupe series: Keyes, 122, 409.

Guadalupe Mts., Tex.: King, 23.

Guatemala: Termer, 6, 7.

Hermit shale, Grand Canyon: White, C. D., 5.

Idaho: Anderson, A. L., 1, 5, 9; Mans-

field, W. C., 5; Ross, C. P., 21, 22,

31; Umpleby, 1; Williams, J. S., 8.

Illinois: Arnold, H. H., Jr., 1; Ball,

10; Bell, A. H., 5, 10, 23; Bement,

1; Bretz, 1; Cady, G. H., 7, 8, 11;

Coryell, 19; Currier, 8; Ekblaw,

G. E., 11, 13; Ekblaw, S. E., 1, 2;

Griffin, J. R., 1; Grim, 13; Henbest,

L. G., 1; Howard, W. V., 12; Kans.

G. Soc., 12; Keyes, 430; Lee, L. K.,

1, 2; McGehee, 1; Moore, 27; Moul-

ton, 4; Needham, 2; Newton, W. A.,

1; Payne, J. N., 3; Prescott, 1;

Sloan, 1; Sutton, 8, 9; Wanless, 1,

3, 4, 5, 9; Wasson, T., 3; Weller,

J. M., 12, 19, 24, 28, 30; Weller, S.,

3, 4; Willman, 2; Workman, 11.

Carboniferous—Continued.

- Illinois Basin: Howard, W. V., 6; Weller, J. M., 25.
- Indiana: Culbertson, 1; Esarey, R. E., 5; Freed, 2; Logan, W. N., 3, 8, 10, 11; Malott, 4, 7, 8, 10; Shrock, 2, 3; Stockdale, 1, 2, 6, 7.
- Iowa: Condra, 8, 9, 10; Goshorn, 2; Gwynne, 3; Keyes, 212, 262, 367, 380, 431, 433, 441, 442, 443, 447, 448; Laudon, 1, 4, 5, 7, 12; Moore, 27; Wood, L. W., 3, 4, 7, 8, 9, 10, 11.
- Kansas: Abernathy, 1; Bass, 1, 9, 10; Bunte, 1, 2; Dalrymple, 1; Elias, 15; Gordon, G. H., 1; Hemsell, 1; Hiestand, 2, 3; Jewett, 1, 2, 3, 7; Kansas G. Soc., 5, 7, 10, 11; Kellett, 2; Keyes, 413, 415; Koester, 2; Kornfeld, J. A., 1; Landes, 28; Lee, W., 3; McClellan, 1; Moore, R. C., 12, 26, 34; Newell, 4; Norton, G. H., 1, 2; Ockermann, 3; Osborn, W. G., 2; Pierce, 3, 9; Plummer, N. V., 1; Rich, 11; Rutledge, 1, 2; Sayre, 1; Schoewe, 15; Ver Wiebe, 16, 17, 22; Wilhelm, C. J., 1.
- Kansas-Missouri area: Kans. G. Soc., 9; Moore, R. C., 31.
- Kaskaskia lms.: Keyes, 69.
- Kentucky: Chisholm, D. B., 1; Culbertson, 1; Freeman, L. B., 1; Glenn, 5; Hunt, C. B., 3; Jillson, 28; Knapp, T. S., 1; McFarlan, 16; Mayfield, 4; Morse, W. C., 2; Robinson, L. C., 3; Russell, W. L., 8; Savage, T. E., 7; Souder, 1; Stouder, 1; Sutton, 1, 4, 8; Twenhofel, 2; Weller, J. M., 1, 11; Wesley, 1, 3.
- Keokuk lms.: Keyes, 424.
- Kinderhook ser.: Branson, E. B., 20; Keyes, 434; Laudon, 1; Tester, 13.
- Lake Valley lms.: Keyes, 410.
- Lexington fm., Mo., Iowa: Keyes, 349.
- Louisiana, N.: Crider, 2.
- Lowlands, S.-cent. and Ouachita provinces: Ruedeman, P., 3.
- Luta lms.: Boos, M. F., 1.
- Maine: Chadwick, 33; Keith, Arthur, 5.
- Marmaton and Cherokee fms.: Roth, 7.
- Maryland: Eckel, 12; Stose, 11.
- Massachusetts: Billings, M. P., 1, 18; LaForge, 1.
- Merkel dolomite, Tex.: Kramer, 3.
- Metamorphism: White, 26.
- Mexico: Keller, W. T., 1; Kellum, 10; Kelley, W. A., 10; King, R. E., 4, 5, 6; Müllerried, 25; Muir, J. M., 3; Santillán, 15, 16; Woodford, 8.
- Michigan: Eddy, G. E., 1; Hake, 6; Hard, E. W., 2; Kelly, W. A., 5, 8; Mathews, A. A., 1; Newcome, 7, 12; Newman, E. A., 1; Pringle, 1; Rawlins, 1; Riggs, C. H., 2; Thomas, W. A., 1; Zavolco, 5.
- Mid-continent region: Cheney, 3; Condra, 8; Elias, 13; Moore, R. C., 14, 16, 18.

Carboniferous—Continued.

- Minnelusa fm.: Brady, F. H., 1.
- Mississippi: Foster, 5; Monroe, 3; Morse, H. M., 1; Morse, W. C., 1, 9.
- Mississippi Valley: Bastin, 20; Kans. G. Soc., 8; Keyes, 440; Weller, 32; Workman, 7.
- Mississippian, researches: Laudon, 9.
- Mississippian-Penn. contact: Pierce, 5.
- Missouri: Allen, 17; Bailey, W. F., 4; Bartle, 1, 2, 4; Branson, 28, 33, 34, 37; Bridge, 2; Clark, E. L., 1; Condra, 12; Conselman, 1; Cordry, 1; Crabtree, 1; Dake, C. L., 1; Gillerman, 1; Gleason, 2; Greene, F. C., 2, 4, 7; Grohskopf, J. G., 3; Kans. G. Soc., 5, 6; Kellett, 2; Keyes, 180, 396, 439; Knight, J. B., 1, 8; Laudon, 4, 12; McQueen, 7, 10; Moore, R. C., 19, 27; Sloss, 3; Swartzlow, 3; Anonymous, 180, 187.
- Missourian ser.: Keyes, 350.
- Montana: Bevan, 3; Collier, 1; Delss, 3; De Wolf, 4; Emery, 3; Knappen, 2; Lammers, 2; Lovering, 1; Neely, 2; Pardee, 9; Perry, 18; Reeves, F., 3; Romine, 1; Sabinen, 4; Scott, H. W., 5; Shenon, 1; Skells, 1; Spiroff, 3; Thom, 14; Wilson, C. W., Jr., 2, 11.
- Nebraska: Condra, 2, 3, 7, 12, 14, 18, 19, 20; Dunbar, 4; Kans. G. Soc., 5; Keyes, 390; Lugn, 4; Noble, E. B., 2; Reed, E. C., 1.
- Nevada: Glock, 1; Hewett, 4; Longwell, 22; Muller, 14; Nolan, 9; Sharp, R. P., 5; Westgate, 6.
- New Brunswick: Alcock, 18; Caley, 2; Hayes, 7; Norman, 2; Rose, B., 1; Shaw, E. W., 1; Wright, W. J., 3.
- Newfoundland: Bain, 18; Bryan, A. M., 1; Hayes, 6, 8; Heyl, 2; Schuchert, 28; Twenhofel, 40.
- New Hampshire: Hadley, J. B., 1, 2; Williams, C. R., 1, 2.
- New Jersey: Berkey, 12.
- New Mexico: Crandall, K. H., 1; Dunham, 3; Fiedler, 2; Harley, 1; Kans. G. Soc., 7; Keyes, 399, 426; Kroenlein, 2; Lang, W. T. B., 4, 6, 9; Lasky, 12, 14; Laudon, 19; Morgan, A. M., 1; Needham, 9; Renick, 3; Robinson, T. W., Jr., 6; Schmitt, 10; Smith, J. F., Jr., 3; Spencer, A. C., 1; Stott, 1; Talmage, 7; Winchester, 3; Zavolco, 6.
- New York: Newland, 9, 20; Rodgers, J., 5; Strzygowski, 2; Thwaites, F. T., 8; Torrey, 8.
- Nomenclature, Iowa: Keyes, 207.
- North America: Boesch, H. H., 3; Butler, 16; Moore, 32, 40, 41; Schuchert, 57; Waters, 13; Waterschoot van der Gracht, 10, 13, 15, 17; Wheeler, 13.
- North Carolina: Parker, J. M., 1.

Carboniferous—Continued.

- Nova Scotia: Bailey, H. B., 2; Bell, W. A., 1, 2; Hayes, 2; Miller, A. H., 8; Norman, 5; Wilson, J. T., 4.
- Ohio: Bucher, 15-a; Cushing, 1; Harper, J. L., 1; Klepser, 1; Lamborn, 1, 3, 4; Mitchell, R. H., 5; Rogers, J. K., 2; Stout, 1, 5, 17; Sturgeon, 1; Ver Steeg, 17.
- Oklahoma: Anderson, G. E., 1; Bale, 2; Bass, 5, 10, 12, 15; Boyd, W. B., 1; Boyle, J. P., 1, 2; Brandenthaler, 1; Buckstaff, 1; Bunn, 1; Charles, 2; Clifton, 1; Cloud, W. F., 3, 4; Cram, 2; Dane, 12; De Béthune, 4; Dillé, 3; Dott, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14; Evans, N., 1; Floyd, 1; Frele, 1; Giles, 10; Green, D. A., 1, 2; Greene, F. C., 1, 3; Grimes, 1; Ham, W. E., 1; Harlton, 8, 9; Hendricks, T. A., 4, 9; Hiestand, 2; Hill, H. B., 3; Hilseweck, 1; Hoffman, M. G., 1; Hyatt, 1; Ing-ham, 1; Ireland, 2; Kans. G. Soc., 6, 7, 10; Kirk, C. T., 2; Kramer, 1; Laudon, 10, 16; Lowman, 4, 5; Lucas, E. L., 2; McClelland, 1; McGee, 1; Markham, E. C., 1; Melton, 4; Merritt, C. A., 7; Millison, 1; Mills, 12; Miser, 8; Moore, C. A., 1; Moore, R. C., 12, 24; Paschal, 1; Patterson, J. M., 1; Radler, 2; Rau, 1; Rison, 1; Roth, 2; Ryniker, 2; Sawyer, 1; Schoff, 1; Sheerer, 1; Six, 1, 2; Stone, J. A., 1; Suffel, 1; Swarts, 1; Teis, 1; Tillotson, 2; Tomlinson, 1, 4; Travis, 1; Vanderpool, 6; Wallace, P. A., 1; Waterschoot van der Gracht, 7; Wiedman, 2; Whiteside, 3; Wrather, 1; Zavolco, 2.
- Oologah lms., Okla., Kans.: Keyes, 353.
- Oregon: Gilluly, 4, 16; Goodspeed, 20; Oregon Dept. Geol., 1; Packard, 4; Wheeler, 12.
- Orogeny. Appalachians: Holden, 4.
- Osage fms.: Cline, L. M., 1.
- Oshawanan series: Keyes, 76.
- Ouachita Mts., Ark., Okla.: Keyes, 469.
- Ozarks: Cozzens, A. B., 2; Dake, C. L., 6; Schottenloher, 2.
- Paleozoic, late, classn., nomenclature: Moore, 36.
- Paradox fm.: Baker, A. A., 4.
- Pawhuska lms.: Keyes, 69.
- Pennsylvania: Arnold, 8; Ashley, 1, 20, 31, 32; Austin, A. C., 1; Berkey, 12; Butts, 10, 13; Caster, 5, 6; Cathcart, 3, 4, 6, 12; Chadwick, 24; Claus, 1; Cleaves, 1, 5; DeWolf, 1; Fettke, 9, 11; Graeber, 1; Grim, 5; Hughes, H. H., 1; Johnson, M. E., 1; Laird, W. M., 2; Legette, 9; Leighton, H., 6; Linton, 1; Lohman, S. W., 4; Miller, B. L., 4, 7;

Carboniferous—Continued.

Pennsylvania—Continued.

- Moyer, F. T., 1; Piper, 7; Richardson, G. B., 2, 3, 4; Robinson, J. F., 2; Rogers, R. D., Jr., 1; Schaffner, 2; Sherrill, 5; Sisler, 2, 6, 8; Stadnichenko, 4; Stone, 8, 20; Stose, 11; Thomas, J. P., 1; Torrey, 5, 8; White, C. D., 20; Willard, 49, 50, 55, 56, 57.
- Pennsylvanian: Ashley, 6; Cady, G. H., 2; Croneis, 11; Keyes, 377; Levorse, 2; Moore, R. C., 7, 10, 15, 16, 20; Wanless, 6, 7; Weller, 12, 14, 15.
- Pennsylvania-Perm. boundary: Romer, 13.
- Permian: Baker, A. A., 1; Baker, C. L., 1, 2; Berry, E. Willard, 15; Blanchard, W. G., Jr., 1; Dott, 11; Keyes, 22, 58, 156, 163, 272, 398, 417; King, R. E., 3; Moore, R. C., 20; Schuchert, 24, 32; Willis, R., 1, 3; Anonymous, 153.
- Permian cross sec., Tex.-Nebr.: Mohr, 4.
- Permian-Penn. boundary: Moore, R. C., 25.
- Permian salt basin, Tex.-N. Mex.: Smith, H. L., 3.
- Permian volcanism, N. Am.: Wheeler, 13.
- Permo-Carb. orogeny: Waterschoot van der Gracht, 8.
- Petroleum: Bentz, 2.
- Phosphoria fm.: Branson, C. C., 1.
- Pocono orogeny: White, 22.
- Pocono problem: Chadwick, 13.
- Post-Keweenawan age: Urry, 8.
- Quebec, Gaspé: Jones, I. W., 15; Northrop, 10; Parks, W. A., 4.
- Red beds of America: Keyes, 406.
- Redfield anticline, Iowa-Nebr.: Condra, 17.
- Restorations, geol. landscapes: Reid, G. A., 1.
- Riley lms.: Gould, D. B., 3.
- Rio Grande depression: Bryan, 36.
- Rocky Mountain region: Bartram, 10; Heaton, 3; Hunt, E. H., 2; Mansfield, G. R., 10; Uhren, 2; Warren, P. S., 1.
- Saginaw fm., Mich.: Kelly, W. A., 2.
- St. Lawrence River, history: Gill, 6-a.
- Saskatchewan, Regina area: Fraser, F. J., 6.
- Sedimentary cycles: Benson, E. T., 2; Savage, 5.
- Sedimentation cyclic, Paleozoic: Benson, E. T., 2.
- Selenium, Perm. rocks and soils: Beath, 3.
- Shawnee group: Condra, 16.
- South Dakota: Connolly, 3; Dillé, 2; Gries, J. P., 1; Littlefield, 1; Rothrock, 15, 16.
- Southern Appalachians: Butts, 4.
- Southwestern U. S.: Effinger, 4.
- Stephanian in America: Darrach, 5.

Carboniferous—Continued.

Tennessee: Bailey, W. F., 2; Bassler, 8; Born, K. E., 5, 10, 11; Jewell, 1; Piper, 3; Pohl, 5, 9; Swartz, J. H., 2; Theis, 4; Wanless, 17; Wilson, C. W., Jr., 9, 10, 12, 16.

Texas: Ackers, 1; Adams, H. H., 1; Adams, J. E., 6, 7; Albritton, 7, 8; Arick, 1; Baker, C. L., 1; Barton, 40; Bay H. X., 2; Bullard, 2, 3, 4; Bybee, 1; Cannon, R. L., 1; Carpenter, C. B., 1; Cartwright, 2; Cheney, M. G., 2, 11; Coryell, 9; Crandall, K. H., 1; Cunningham, W. A., 11; DeFord, 4; Dunbar, 5; Johnson, H. L., 1; Kans. G. Soc., 7; Kendrick, 2; Keyes, 28; Keyte, 1; King, P. B., 2, 5, 12, 14, 16, 18, 19, 21, 24, 27, 29; King, R. E., 1, 2; Kinkel, 1; Kramer, 4; Lang, W. T. B., 4, 6, 9; Lee, W., 1, 2; Lloyd, A. M., 1; Meyer, W. G., 1; Nickell, C. C., 1; Patton, L. T., 1, 8; Plummer, F. B., 4, 17, 23; Reed, R. D., 5; Rogatz, 1, 2; Ross, C. P., 28; Roth, 14; Schoffemayer, 1; Scott, G., 6; Sellards, 4, 7, 28, 36; Skinner, 3; Stille, 1; Willis, R., 2; Young, A., 1, 2.

Tri-State dist. ore deposits: Fowler, 13.
Type secs. and faunules: Williams, J. S., 6.
Uinta Mts., Utah, Colo.: Forrester, 1.

United States: Ballard, 1; Fischer, R. P., 2; Lloyd, S. J., 1; Stockdale, 12; Waterschoot van der Gracht, 16; Williams, J. S., 10.

Utah: Andrews, W. B., 1; Baker, A. A., 3, 7; Bissell, 1, 2, 3, 4; Callaghan, 9; Dane, 7; Dobbin, 17; Eardley, 2, 12; Gilluly, 1, 5; Green, J., 1; Gregory, H. E., 1, 4, 6; Nolan, 3, 6; Prommel, 1; Schoff, 2.

Virginia: Bates, R. L., 1, 4; Butts, 5; Cady, R. C., 4; Cooper, B. N., 2, 7; McGill, 7; McKee, 11; Stose, 13; Swartz, J. H., 2; Woodward, 8, 13.

Warsaw shs.: Keyes, 438.

Washington: Culver, 6.

West Franklin fm.: Shrock, 2.

West Virginia: Core, 1; Galpin, 3; Heck, E. T., 1, 2, 4; Leet, 17; McCue, J. B., 1; Martens, 12; Morris, L. M., 1; Price, P. H., 1, 8-a, 14, 17; Reeves, F., 5; Reger, 2, 3, 4; Tilton, 2, 6; Tucker, R. C., 1.

Wyoming: Beckwith, 4; Bradley, W. H., 11; Brady, F. H., 1; Branson, C. C., 10, 13, 14, 15, 17, 18; Condra, 13; Dobbin, 1, 2; Emery, 3; Fanshawe, 1; Horberg, 1; Johnson, G. D., 1; Jones, C. T., 2; Knight, S. H., 2; Love, J. D., 1, 6; Lovering, 2; Miller, A. K., 30; Scott, H. W., 8; Stevens, E. H., 2; Thomas, H. D., 1, 6; Veatch, 1; Wilson, C. W., Jr., 18.

Yukon Laberge area: Bostock, 11; Lees, E. J., 1.

Carbon dioxide, Colo.: Miller, J. C., 1.

Carolina Bays and artesian water: Johnson, 39.

Cartography.

Aerial maps and mapping: Atkinson, 1; Barton, 25; Birdseye, 1; Cozzens, W. L., 1; Desjardins, 2, 3; Eliel, 2; Jones, B. G., 1; Meyer, W. H., Jr., 3; Rice, G. S., Jr., 1; Steinberg, 1; Talley, 2.

Aerial photos and photography: Banks, H. E., 1; Barton, 25; Birdseye, 1; Eliel, 2; English, W. A., 2; Jones, B. G., 1; King, J. E., 1; Loel, 3; Logan, J., 3; Low, 1; Olson, L. V., 1; Peters, F. H., 1; Sneigr, 1; Steinberg, 1; Talley, 2.

Aerial surveys: King, J. E., 1; Peters, F. H., 1.

Alidade and plane table in geol. surveys: Mather, 27.

America, NW. coast, to 1800: Wagner, H. R., 1.

Appalachians, folded: Itter, 2.

Auto-plane-tableing method of mapping: Meyer, A. H., 1.

Bentonite beds: Rankin, C. H., Jr., 2.

California: Henderson, L. H., 3.

Cameron Parish, La.: McGuirt, 2.

Canada: Peters, F. H., 1.

Charting sea bottom: Colbert, L. O., 1.

Colorado: Margerie, 1.

Continental, oceanic structure: Field, 24.

Desert, Great Am.: Smith, G. H., 3.

Errors, from aerial photos.: Jones, B. G., 1.

Fault-block structures: Rich., 21.

General: Raisz, 5; Thiele, 1.

Geodetic surveys: Bowie, 15, 22, 24.

Geologic mapping: Andrews, P., 1; Cloos, E., 7; Desjardins, 2.

Geologists need maps: Bowie, 29.

Greenland: Koch, 11.

History, geog. topog. mapping, Va.: Roberts, 27.

Illinois mapping, 1839-1939: Weller, 36.

Iowa, geol. boundaries: Tester, 17.

Isopach contouring: Atwater, 6.

Labrador, aerial mapping: Washburn, A. L., 1, 2.

Long shots with alidade: Hillis, 1.

Louisiana: Dohm, 1.

Mapping: Andrews, P. 1; Bowie, 17, 23; Longwell, 20; Rich, 20; Schmitt, H., 4.

Geologic, from aerial photos.: Desjardins, 2, 3.

Inaccessible regions: Zeller, 1.

Magnetometric methods: Barret, 1.

Representation of surface features: James, P. E., 2.

Unit in geology: Keyes, 355.

Maps, geomorphic notes: Sharp, 9.

Method to eliminate regional dip: Rich, 20.

Cartography—Continued.

- Mining geology: Schmitt, 4.
 Mississippi River Valley: Schweizer, 1.
 National mapping plan: Bowie, 19.
 New York: Goldring, 19; Newland, 18.
 Patrician ice sheet: Martin, L., 3.
 Petroleum, explor. mapping: Atkinson, J. C., 2; Lahee, 16; Sanders, T. P., 1.
 Photogrammetry, applied: Anderson, R. O., 1.
 Photo-mosaic, Barbers Hill, Tex.: Barton, 25.
 Physiographic provs., topog. maps: Whitcomb, 12.
 Plotting from aerial photos.: Birdseye, 1; Jones, B. G., 1.
 Rosiwal petrog. analysis and mapping: Trefethen, J. M., 2.
 Suboceanic relief: Joerg, 2.
 Tectonic map of U. S.: Longwell, 20.
 Tennessee River Basin: Pendleton, 1, 2.
 Terrain representation: Cooke, H. L., 1.
 Texas, Brazos River area: Haquinus, 1.
 Topographic mapping, U. S.: Nat. Res. Bd., 1; Sears, J. D., 4.
 Triangulation, N. Am.: Bowie, 11.
 Types, subsurface structural contouring: Rettger, 1.
 United States, tectonic map prog.: Longwell, 37.
 Vermillion Parish, La.: McGuirt, 2.
 Virginia, map making, geol., topog.: Roberts, 25.
 Catalogue of maps: Roberts, 28.
 Washington, status: Glover, 2.

Cassiterite.

- North Carolina: Frink, 1.
 South Carolina: Frink, 1.
 South Dakota: Tullis, 7.

Cataclysmal geology: Berry, E. W., 10.

Catalina, Is.: Shepard, 35.

Catalogue, Foraminifera: Ellis, B. F., 6.

Cave pearls, origin: Davidson, S. C., 1.

Cavernous rock surfaces of desert: Blackwelder, 9.

Caves.

- Alabama: Ayrs, 1; Johnston, W. D., Jr., 3.
 Arizona: Seagle, 1; Keyes, 47.
 Bermuda: Swinnerton, A. C., 1.
 California: Andrews, P., 2; Lewis, W. S., 3; Swartzlow, 7.
 Carlsbad Caverns: Haas, 2.
 Colossal Cave: Keyes, 47.
 Development, invasion theory: Malott, 9.
 Formation: Swinnerton, A. C., 4.
 Galena fm.: Bretz, 9.
 General: Henderson, J., 7.
 Georgia: Crickmay, G. W., 17.
 Gypsum in: Pohl, 13; Stock, 9.
 Ice caves: Palmer, J. T., 1; Robinson, H. G., 1; Smith, J. E., 5; Swartzlow, 7.
 Idaho: Blenkle, 1; Palmer, J. T., 1; Robinson, H. G., 1.

Caves—Continued.

- Indiana: Esarey, 4; Fidler, 2; Malott, 1.
 Kansas: Gordon, G. H., 2; Landes, 15.
 Kentucky: Lobeck, 1; McFarlan, A. C., 11-b; Mauntel, 1; Swinnerton, A. C., 9.
 Limestone: Davis, 8, 10; Gardner, J. H., 1; Henderson, J., 6; James, P. E., 1; Swinnerton, A. C., 5, 6, 8.
 Mammoth Cave: Lobeck, 1; Swinnerton, A. C., 9.
 Mexico: Wittich, 3.
 Missouri: Bartle, 3; Burrill, 1.
 Montana: Thomson, Ray, 1.
 Nature and fm.: Gardner, J. H., 1; Money-maker, 1.
 Nevada: Stock, 9.
 New England: Perry, C., 1.
 New Mexico: Burnett, 1.
 New York: Zodiac, 30.
 Oregon: Dake, 13.
 Origin: Davis, 8, 10; Swinnerton, A. C., 5, 6.
 Ozark region deposits: Buehler, 10.
 Pennsylvania: Butts, 13; Faux, 1; Gorman, J. M., 1; Miller, B. L., 11; Stone, R. W., 2, 3, 10; Willard, B., 53.
 Shafts development: Pohl, 12.
 Solution caves: Henderson, J., 6.
 South Dakota: Elloe, 1; Freeland, D., 1; Friedman, 1; Stoll, 1.
 Tennessee: Pohl, 8, 10.
 Tennessee Valley: Money-maker, 3.
 Texas: Law, M. H., 1.
 Underground-water work: Thompson, 10.
 Virginia: Bevan, 6; McGill, 1, 3, 10; Steidtmann, 6; Woodward, 13.
 West Virginia: Price, P. H., 17.
 Worlds underground: MacNeil, A., 1.
 Celestite: Schoewe, 13; Thibault, 2.
 Cenozoic.
 Geologic fms.: Alcock, 7; Shimer, 3.
 Centennial of Dana's system of mineralogy: Kraus, 8.
 Central America. See also Costa Rica, Guatemala, etc.
 General: Sorre, 1.
 Geologic names lexicon: Wilmarth, 2.
Economic geology.
 Copper: Ross, C. P., 24.
Historical geology.
 Connections with West Indies: Rutten, L. M. R., 5.
 General: Müllerried, 30; Reed, 34; Sapper, 5; Schuchert, 42; Sorre, 1.
 Geologic names lexicon: Wilmarth, 2.
Paleontology.
 Globotruncana, Cret.: Thalmann, 13.
Physical geology.
 Earthquakes, deep focus: Gutenberg, 27.
 General: Müllerried, 30; Reed, 34; Sorre, 1.
 Orogeny: Wolff, von, 1.

Central America—Continued.

Physical geology—Continued.

San Miguel Salvador, eruption: Termer, 8.

Tectonics: Sonder, 1.

Volcanoes, 1932: Jagger, 22; Wolff, von, 1; Zies, 2.

Physiographic geology.

General: Müllerried, 30; Sorre, 1.

Cephalopoda. See also Mollusca.

Actinoceras, Minn.: Flower, 4; Sardeson, 6.

Actinoceroids: Foerste, 13; Teichert, 5, 7.

Akpatok Is., Quebec: Foerste, 27.

Alberta: Buckman, 1; McLearn, 12; Warren, P. S., 4; Williams, M. Y., 3.

Allegheny fauna, Ohio: Sturgeon, 1.

Ammonites: Adkins, 6; Albritton, 4; Elias, 21; Hutchison, A. G., 2; Imlay, 8, 11; Lupper, 1; Plummer, F. B., 11, 21, 22; Schindewolf, 2; Schuchert, 47; Spath, 5; Stoyanow, 8; Warren, P. S., 16.

Correlation of Carb. and Perm. by: Plummer, F. B., 19, 20.

Ammonoid zones: Miller, A. K., 45, 46.

Ammonoidea, N. Am.: Croneis, 6, 30; Elias, 20; McLearn, 1, 26, 27; Miller, A. K., 21, 22, 31, 37, 40, 41-a, 45, 46; Plummer, F. B., 25-a; Smith, J. P., 3.

Anthraceras, Okla.: Miller, A. K., 43.

Apparatus to reproduce suture lines of ammonites: Lupper, 1.

Aptychus, Cuba: Trauth, 1.

Arctic Am. faunas: Teichert, 12.

Arizona, Toroweap, Kaikab fms.: McKee, 11.

Arkansas: Miller, A. K., 38.

Artinskia, Kans.: Miller, A. K., 28.

Aturia: Miller, A. K., 36, 42; Schenck, 5; Stenzel, 8.

Aturoidea: Miller, A. K., 19.

Barroisiceras: Reeside, 11.

Belemnites: Crickmay, C. H., 18.

Big Horn, Wyo.: Foerste, 21.

Brevicones: Flower, 6.

British Columbia: McLearn, 1, 6, 7; Miller, A. K., 24, 26.

California: Anderson, F. M., 14; Crickmay, C. H., 12; Vokes, 12; Wheeler, 8.

Cameroceras: Sardeson, 7.

Carboniferous ammonoids: Croneis, 6.

Cherry Valley, N. Y.: Flower, 2.

Color patterns: Foerste, 10.

Cretaceous: Adkins, 6; Anderson, F. M., 14; Renz, 1; Stephenson, 22.

Cuba: Bermúdez y Hernández, 10; Trauth, 1; Vermunt, 4.

Cyrtendoceras: Foerste, 17.

Devonian: Flower, 1, 6; Miller, A. K., 7, 18.

Discosorus: Teichert, 2.

Dryoceras for Sagittoceras: Miller, A. K., 15.

Cephalopoda—Continued.

Earliest: Foerste, 16; Ulrich, 17.

Endoceroid, Chazy: Flower, 5-b.

Eumorphoceras: Wiedey, 2.

Fagesia: Anderson, F. M., 5.

Gastropolites and Neogastropolites: McLearn, 14.

Goniatite phylogeny: Bisat, 2.

Gonloceras: Sardeson, 21.

Greenland: Røsgvad, 2; Frebold, 4, 13;

Mayne, 3; Poulsen, 4; Spath, 1;

Teichert, 5, 11; Troedsson, 1.

Illinois: Bretz, 10.

Indiana: Shrock, 11, 12.

Iowa: Foerste, 19, 25.

Kansas: Morrow, 2; Williams, J. S., 12.

Lea Park sh. fauna: Warren, P. S., 14.

Manitoba: Foerste, 7; Leith, E., 1.

Manticoceras vs. Gephyroceras: Chadwick, 20.

Mexico: Anderson, F. M., 9; Imlay, 6, 7;

Jones, T. S., 1; Kellum, 13.

Minnesota: Stauffer, 17, 18.

Missouri: Bisat, 1; Branson, 37; Miller,

A. K., 20; Ulrich, 6.

Mixochanites: Miller, A. K., 14.

Mollusca: Palmer, K. E. V. H., 2; Stauffer, 17.

Mortoniceras Meek genotype: Stanton, 5.

Münsteroceras: Miller, A. K., 20.

Nautiloids: Flower, 5; Miller, A. K., 10,

16, 32, 41; Sturgeon, 2; Vokes, 7.

Nelly Bly fm.: Miller, A. K., 13.

Nephriticerina: Foerste, 11.

New Mexico: Miller, A. K., 6.

New York: Flower, 5, 6; Sproule, 1.

Oelandoceras: Foerste, 17.

Ohio: Bucher, 21; Chappars, 3; Flower,

8; Foerste, 19; Laird, W. M., 1;

Sturgeon, 3.

Oklahoma: Miller, A. K., 33, 38; Six, 3;

Smith, H. J., 1.

Ontario: Caley, 1; Foerste, 1, 19; Oku-

litch, 18; Shaw, E. W., 2; Sproule, 1.

Ordovician: Foerste 9; Little, 1.

Oregon: Anderson, F. M., 14.

Orthoceras: Sardeson, 11.

Earliest use: Teichert, 13.

Orthochoanites, internal structure: Flower, 5-a.

Ozarkian and Canadian: Ulrich, 24.

Parashumardites, N. Am.: Ruzhencev, 1.

Parentoceras for Saffordoceras: Ulrich, 28.

Pennsylvanian: Miller, A. K., 8, 25, 34; Newel, 3; Willard, 47, 49, 56, 59.

Phosphoria fm.: Miller, A. K., 14, 17.

Pierre fm.: Elias, 6.

Port Byron: Foerste, 12.

Primitive forms: Foerste, 23.

Propinoceras: Miller, A. K., 11.

Pseudorthoceratidae (Nautiloiden): Flower, 3, 9.

Quebec: Foerste, 28, 30; Laverdière, 6;

Okulitch, 3; Twenhofel, 31; Wilson,

A. E., 8.

Rachophyllites genotype: Muller, 13.

Cephalopoda—Continued.

- Schistochoanites: Ulrich, 22.
 Schuchertoceras: Miller, A. K., 9.
 Silurian: Foerste, 9, 26, 28.
 South Dakota: Miller, A. K., 35.
 Sporadoceras: Miller, A. K., 27.
 Structure: Foerste, 22.
 Texas: Adkins, 1; Albritton, 5, 8;
 Croneis, 34; Miller, A. K., 3; Smith,
 J. P., 2; Williams, J. S., 7.
 Timanites: Miller, A. K., 29.
 Triassic: Mathews, A. A. L., 1; Muller,
 11; Smith, J. P., 3.
 Triassic marine faunas, succession:
 Muller, 11.
 Trinidad: Hutchison, 2; Rutsch, 6.
 Tritropidoceras: Schenk, 4.
 United States, SW., Trinity group: Scott,
 G., 8.
 Utah: McKee, 11.
 Virginia: Bates, R. L., 4; Holden, 14.
 Washington Land, Greenland: Teichert,
 5.
 Wisconsin: McKelvey, 1.
 Wyoming: Crickmay, 26; Miller, A. K.,
 5, 30.
 Zittloceras: Fritz, 1; McKelvey, 1.
 Cetacea. See Mammalia.
 Chakachamna-Stony area, Alaska: Capps, 3.
 Chalcopyrite, Mo.: Gleason, 3.
 Chalk.
 Industrial minerals and rocks: A. J.
 M. E., 2.
 South Dakota: Rothrock, E. P., 3.
 Chandalar-Sheenjek area, Alaska: Mertie, 1.
 Changes attending an ice age: Lombard, 1.
 Changes of level. See also Beaches; Shore
 lines; Terraces.
 Atlantic coast: Cheney, W. F., Jr., 1;
 Johnson, D. W., 2-a, 33-b; Towns-
 end, C. W., 1.
 Bathymetric, orogenic movements:
 Gillson, 4.
 British Columbia: Peacock, 8; Williams,
 M. Y., 15.
 California: Grant, 17.
 Coal, Permo-Carb. and sea level: Shep-
 ard, 43.
 Drainage evolution, S. Appalachians:
 Thompson, H. D., 2.
 Drowned forests: Lyon, C. J., 1.
 Fossils in deep-sea cores: Henbest, 12.
 Greenland: Odell, 3; Vogt, T., 1.
 Hawaii: Jones, A. E., 1; Stearns, 22;
 Waesche, 6; Wentworth, 47.
 Idaho: Capps, 14.
 Knickpoints and valley-in-valley forms:
 Johnson, 34.
 Lagoon deposits: Lucke, 3.
 Louisiana: Russell, R. J., 11, 16, 28.
 Maine: Chadwick, 33; Sayles, 7.
 Manitoba: Johnston, W. A., 14.
 Marine terraces, nonglacial: Antevs, 1.

Changes of level—Continued.

- Massachusetts: Brown, T. C., 6; Gold-
 thwait, J. W., 3, 5; Horner, 1;
 Macar, 2.
 Michigan: Evans, O. F., 8.
 New England: Jones, W. F., 1.
 Newfoundland: Betz, 1; Flint, 25.
 New Jersey: Kummel, 1; Lucke, 2, 4.
 North America, late-glacial: Wright, W.
 B., 3.
 Offshore bars: Price, 22.
 Oregon: Barr, 2.
 Pensacola shore line: Leverett, 10.
 Pleistocene: Cooke, C. W., 10.
 Polar elevation and last ice age: Hills,
 G. F. S., 2.
 Preglacial sea levels, determination:
 Miller, A. A., 1.
 Regressive sandstones: Sears, J. D., 1.
 Salt-marsh border and coast stability,
 Mass.: Goldthwait, J. W., 3.
 Sea level changes: Daly, R. A., 3; John-
 son, D. W., 4, 25; Lane, 8; Marmer,
 3; Shepard, 39; Wanless, 13.
 Sea level and climatic changes: Wanless,
 13.
 Submarine canyons, origin: Shepard, 23.
 Continental shelves: Treasher, 4.
 Swinging sea level of ice age: Daly,
 R. A., 3.
 Tidal inlets: Hitchcock, C. B., 1.
 Tilting from glacial melting: Gutenberg,
 8.
 Utah: Adams, T. C., 1.
 Washington: Reagan, 2.
 West Virginia: Friddle, 4.
 Charophyta, Rocky Mt. continental fms.:
 Peck, 15.
 Chattanooga shale, Okla.: Leatherock, 2.
 Cheek teeth of rodents: Wood, A. E., 12.
 Chelonia. See also Reptilia.
 Turtle, Cret., Mont.: Case, 24.
 Chemical composition, meteorite accretions:
 Watson, F. G., Jr., 2.
 Chert. See also Flint.
 Arkansas: Giles, 10.
 California: Taliaferro, 10.
 Depositional environment: Gunnell,
 E. M., 6.
 Formation: Gunnell, E. M., 6; Laird, 6;
 Roy, C. J., 2; Runner, D. G., 8;
 Taliaferro, 10; Tarr, 6, 22; Wood-
 ward, 7.
 Illinois: Schultz, J. R., 1.
 Michigan: Dustin, 2.
 Missouri: Bastin, 5.
 Nature, origin, Ontario: Laird, 6.
 Ohio: Westgate, 4.
 Oklahoma: Gardner, J. H., 2; Giles, 10.
 Ontario: Laird, 6.
 Paleozoic: Woodward, 7.
 Tennessee: Wilson, C. W., Jr., 16.
 TVA area: Spain, 4.
 Tri-State mining dist.: Fowler, C. S., 4,
 8, 10; Roy, C. J., 2.

- Chert and flint: Gunnell, E. M., 6; Tarr, 5.
- Chetopa fm.: Keyes, 118.
- Chlorite, Calif.: Durrell, 1.
- Chordata, Wyo.: Branson, C. C., 14.
- Chrome ores, X-ray exam.: Clark, G. L., 1.
- Chromite.
- California: Maxson, 5; Swartley, 1.
 - Composition: Fisher, L. W., 2.
 - Crystallization: Ross, C. S., 3; Sampson, E., 2; Singewald, J. T., Jr., 4.
 - Cuba: Allende, 1.
 - Dominican Republic: Lengweiler, 1.
 - General: Brewer, Q. L., 1.
 - Georgia: Hunter, C. E., 3.
 - Industrial minerals and rocks: A. I. M. E., 2.
 - Klamath Mts.: Maxson, 4.
 - Klamath River: O'Farrell, 1.
 - Montana: Jones, V. E., 1; Salo, 1; Schaffer, 3.
 - Newfoundland: Cooper, J. R., 1; Snelgrove, 3.
 - North Carolina: Bryson, 7-a; Hunter, C. E., 3.
 - Ontario: Graham, A. R., 1, 4; Hurst, 6, 8; Kidd, 4.
 - Oregon: Allen, J. E., 2; Oregon Dept. Geology, 1; Swartley, 1.
 - Origin: Fisher, L. W., 3; Keep, 1; Ross, C. S., 10; Sampson, E., 3.
 - Quebec: Cooke, H. C., 16, 18, 22; Denis, 2, 5.
 - Tennessee Valley area: Eckel, E. C., 8.
 - Varieties of deposits: Sampson, E., 4.
 - Wyoming: Beckwith, 5.
 - Zinc-bearing: Donath, 1.
- Chronology, strat. basis: Schuchert, 46.
- Chrysoberyl, Colo.: Waldschmidt, 6.
- Cincinnati arch: Lockett, 3; McFarlan, 21.
- Cirripedia. See also Crustacea.
- Balanus, N. J.: Pilsbry, 2.
 - Missouri, Camb.: Lochman, 6.
 - Newfoundland: Richards, 17.
 - Scalpellum, Cret.: Pilsbry, 5.
 - Vermont, Champlain Sea: Howell, 29.
 - Zeugmatolepas, Ala.: Withers, T. H., 1.
- Clark Fork district, Idaho: Anderson, A. L. 3.
- Classification.
- Ammonoids, Carb.: Keyes, 438; Plummer, 21.
 - Arcidae: Reinhardt, 2.
 - Carboniferous sequence, N. Am.: Water-shoot van der Gracht, 13.
 - Cephalopoda, Dev., N. Am.: Kindle, 39.
 - Civets: Gregory, 31.
 - Clays: Kallender, 1; Kerr, P. F., 21.
 - Coal: Cady, G. H., 5; Fieldner, 1, 2, 3, 7; Freeman, B. C., 6; Hendricks, 14; Stansfield, 2; White, C. D., 5-a.
 - Dual, in paleontology: Cronels, 31.
 - Elements, sulfides, and salts: Ber-man, 11.
 - Fusulina: Henbest, 9; Westheimer, 1.
 - General: Wadell, 10.
- Classification—Continued.
- Genetic: Keyes, 9.
 - Geologic fms., limitations: Keyes, 388.
 - Geologic, and correl.: Chamberlin, 9.
 - Glacial deposits: Flint, 3; Kay, G. F., 14; Leighton, 8.
 - Homotaxial principle in geol. classns.: Keys, 346.
 - Igneous rocks: Mathews, E. B., 9; Parker, 6; Peacock, 1.
 - Limestone caverns: Swinnerton, 8.
 - Metamorphic rocks: Mathews, E. B., 9; Van Tuyl, 19.
 - Minerals: Butler, 14; Goldschmidt, 2; Staples, 4.
 - Minnesota, St. Croixian: Stauffer, 21.
 - Nebraska Tertiary: Lugn, 14.
 - Notoungulata, by brain casts: Patterson, 9.
 - Oceans and seas: Giles, 11.
 - Opossums: Simpson, 29.
 - Oil fields: Kossyguin, 1; Ver Wiebe, 1.
 - Ore deposits: Howe, H. V., 4; Loughlin, 6.
 - Paleozoic, late, N. Am.: Moore, 36.
 - Pennsylvanian, Kans.: Moore, 34.
 - Pre-Cambrian rocks: Lawson, 2.
 - Rocks: Ashley, 15; Chadwick, 2; Hoover, W. F., 3.
 - Sand: Tuck, 1.
 - Sedimentary rocks: Van Tuyl, 19.
 - Shore lines, marine: Howard, A. D., 9; Lucke, 9; Shepard, 36, 51; Smith, P. A., 2.
 - Silicates: Berman, 5, 8; Swartz, C. K. 5.
 - Soils: Bushnell, T. M., 3.
 - Sponge spicules: Scott, H. W., 11.
 - Streams, flood plain: Melton, 22.
 - Trilobita, Centropleurinae: Howell, B. F., 8.
 - Utilitarian, fragmentary fossils: Cronels, 35, 40.
 - Clastic sediments: Fraser, H. J., 4; Muskat, 2.
 - Clay. See also Fire clay.
 - Alabama: Jones, W. B., 13-a, 16; McVay, 1, 3; Mansfield, G. R., 19.
 - Alberta: Worcester, W. G., 2.
 - Anauxite: Machatschki, 1.
 - Attapulgit: Bradley, W. F., 2.
 - Bentonite: Bates, R. L., 3; Hauser, 1; Maynard, T. P., 2; Rosenkrans, 5; Silica Products Co., 1.
 - Bleaching: Bay, H. X., 4; Grove, C. S., 1; Mansfield, G. R., 21; Nutting, 5, 7; Worcester, W. G., 4.
 - British Columbia: Cairnes, 17; Richmond, A. M., 2.
 - California: Allen, 22; Bradley, W. W., 7; Dudley, 1; Fosbarg, 16; Hertlein, 11; Sampson, R. J., 5; Sutherland, J. C., 1.
 - Canada: Kindle, 40; McMahon, 1; Spence, 12.
 - Ceramic: Grim, 8; Kallender, 1; Mansfield, G. R., 21.

Clay—Continued.

- Classification, ceramic: Kallender, 1.
Colloidal fractions, Pacific: Revelle, 1.
Colorado: Green, T. H., 1; Van Tuyl, 18.
Columbia River Basin, Wash.-Oreg.: Landes, H., 1.
Compaction: Hedberg, 1.
Composition, properties: Grim, 16.
Deep-sea, hot springs, weathered rock: Merwin, 4.
Dickite structure: Hendricks, S. B., 2.
Florida: Nutting, 5.
General: Gardner, J. H., 5; Hodge, 24; Kerr, P. F., 21; Montgomery, R. J., 2; Parmlee, 3; Ries, 9; Smith, R. W., 1.
Geologic distrib., U. S.: Chelikowsky, 1.
Georgia: Bay, H. X., 3; Henry, 1; Kerr, P. F., 19; Munyan, 2; Nutting, 5; Smith, R. W., 1, 2.
Great Salt Lake, Utah: Eardley, 11.
Hawaii: Wentworth, 46.
Idaho: Tullis, 1, 2, 3; Wilson, H., 1.
Illinois: Allen, V. T., 8; Bradley, W. F., 1; Bray, R. H., 1; Ekblaw, 10, 11; Grim, 4, 13, 14; Lamar, 5, 16.
Indiana: Logan, W. N., 4; Whitlatch, 4, 5.
Industrial minerals and rocks: A. I. M. E., 2.
Iowa: Tarr, 25.
Kansas: Landes, 24; Pierce, 9.
Kaolins: Hendricks, S. B., 5; Machatschki, 1; Tarr, 25.
Kentucky: Mayfield, 4; Roberts, J. K., 8.
Laboratory fm. of: Norton, F. H., 2.
Louisiana: Huner, 1; Whittemore, 1, 2, 3.
Maine: Perkins, 13.
Manitoba: Hutt, 3.
Massachusetts: Hyyppä, 1; Sayles, 9.
Mexico: Hernández, 3.
Mica in: Grim, 10.
Mineralogy of, Europe and U. S.: Grim, 12.
Minerals: Fabianic, 1; Grim, 3; Insley, 1; Ross, C. S., 6, 14.
Mississippi: Bay, H. X., 4; Foster, 5; Mellen, F. F., 2, 3; Vestal, 1; Works Prog. Ad., 1.
Missouri: Allen, 11, 14, 17, 18; Farrar, 1, 2; Keller, 11; McQueen, 2; Moore, G. E., 1; Smith, A. F., 1; Swartzlow, 1-a; Tarr, 25; Zvanut, 1.
Montana: Warde, 2.
Montmorillonite: Kerr, P. F., 6; Tomlinson, W. H., 1.
Nebraska: Condra, 19.
New Brunswick: Fréchette, 1.
New Jersey: Hawkins, 7; Stephenson, 15.
New Mexico: Richard, 1.

Clay—Continued.

- North Carolina: Bryson, 7-a; Rabianic, 1; Greaves-Walker, 1, 2; Grove, C. S., 1; Hornbeck, 1; Hunter, C. E., 1; Murray, G. E., Jr., 4.
North Dakota: Anonymous, 70.
Ohio: Bognar, 1; Lamborn, 1, 4; Stout, 2, 4, 8, 19.
Oklahoma: Ham, 2; Sheerar, 1, 2; Wilson, C. W., Jr., 13.
Ontario: Coleman, 9, 10; Crozier, 1; Dyer, 13, 15, 19; Hilder, 1; Montgomery, R. J., 1, 2; Satterly, 4; Wright, J. F., 17.
Oregon: Smith, W. D., 11; Wilson, H., 4.
Origin, composition: Runner, 11.
Pennsylvania: Bascom, 6; Butts, 10, 13; Detrick, 2; Grim, 5; Krynine, 10; Leighton, H., 3, 5, 6; Miller, B. L., 15; Tomlinson, W. H., 1.
Prince Edward Is.: Fréchette, 2.
Properties of: Grim, 15.
Quebec: McGerrigle, 6, 8; Osborne, 21; Ross, S. H., 1.
Salt dome deposits: Steinmayer, 3.
Saskatchewan: Hamelin, 1; Henwood, 1; McLearn, 5, 8, 16; Worcester, W. G., 1, 5.
Sedimentary: Neumann, F. R., 1.
Sink, cave deposits, Ozark area: Buehler, 10.
Solution, dispersion of minerals in water: Nutting, 4.
South Carolina: Bryson, 8; Cooke, C. W., 17; Taber, 18.
South Dakota: Schwartz, 21.
Structure, composition: Bradley, W. F., 3.
Structure, water layers in: Hendricks, S. B., 4.
Synthesis experiments: Ewell, R. H., 1.
Tennessee: Caldwell, R., 1; Collins, R. E. L., 1; Eckel, E. C., 6; Roberts, J. K., 2; Whitlatch, 7, 9, 10, 16, 19, 20.
Tennessee Valley: Laurence, 1; Spain, 2.
Tertiary, Idaho, Wash.: Tullis, 1, 2.
Texas: Albritton, 3; Hagner, 1; Phillips, D. M., 1; Plummer, 17; Potter, A. D., 1; Schoch, 1.
Tuscaloosa white, origin: Adams, G. I., 5.
United States: Greaves-Walker, 4; Lloyd, S. J., 1.
Varved, deposition, alteration: Burwash, 10.
Vermont: Doll, 2.
Virginia: Brown, C. B., 3; Furcron, 9; Rosenkrans, 4.
Washington: Tullis, 1, 2; Wilson, H., 1, 2.
Water transp.: Miller, E. B., 1.
Weathering: Hind, 1.
West Virginia: Galpin, 3; Price, P. H., 8-a, 17; U. S. Comm., 1.
Wyoming: Heathman, 1.

Clay galls, origin: Burt, F. A., 3.
 Clays and oil-bearing strata: Taylor, E. M., 1.
 Clearwater Lake, British Columbia: Davis, N. F. G., 1.
 Cleating in coal: Dapples, 1.
 Cleavage.
 Appalachians: Fourmarier, 7.
 Granites: Bell, J. F., 1; Osborne, 25.
 Ionic minerals: Shappell, 1.
 Virginia: Lammers, 1, 3; Rowland, R. A., 1.
 Climate, geologic. See Paleoclimatology.
 Climates, Pleist.: Flint, 13.
 Climatic cycles: Douglass, 1; Gillette, H. P., 1.
 Coal. See also Lignite.
 Alabama: Blair, C. S., 2, 4; Cudworth, 1; Eckel, E. C., 9; Jones, W. B., 2; Poor, 6.
 Alaska: Capps, 6; Knappen, 1; Richards, R. W., 1; Smith, P. S., 3, 12; Tuck, 7, 8; Waring, 2, 6.
 Alberta: Allan, 11; Jones, I. W., 10; Kidd, G. L., 1; MacKay, 4, 9, 10; Sanderson, 4; Williams, M. Y., 2.
 Anthracite: Ewing, 6; Hudson Coal Co., 1.
 Appalachian fields, correl.: Wanless, 16-a.
 Appalachian Plateau, Miss. Valley: Butts, 12.
 Arkansas-Oklahoma fields: Fisher, D. J., 8; Hendricks, T. A., 2, 6, 7, 8, 13.
 Bases of classn. by type: Cady, G. H., 5.
 British Columbia: Cairnes, 17; Dickson, 1; MacKay, 5, 6, 10.
 Canada: Gray, F. W., 2; MacKay, 11.
 Carboniferous, Kans.-Okla.: Kans. G. Soc., 10.
 Carbon-ratio theory: Bell, A. H., 15.
 Classification: Cady, G. H., 5; Campbell, M. R., 5, 6; Fieldner, 1, 2, 3, 7; Francis, 1; Freeman, B. C., 6; Hendricks, 14; Stansfield, 2; Thiessen, R., 4; Thom, 4, 8; White, C. D., 5-a.
 Cleating in: Dapples, 1.
 Coal balls: Cady, G. H., 4; Reed, F. D., 2; Schopf, 8, 9.
 Coalification, geol. dating: Fisher, D. J., 6.
 Colorado: Carpenter, C. B., 2; Dapples, 8, 6; Erdmann, 1; Green, T. H., 1; Hancock, 1; Helmke, 1; May, 1; Orr, 1.
 Composition: Fisher, D. J., 3.
 Constitution: Demorest, D. J., 1; Fieldner, 3; Thiessen, R., 2, 6.
 Correlations by cyclothem: Young, C. M., 2.
 Correlations, minable coals, Ill.-Ind.-Ky.: Weller, 35.
 Cuba: Bruscantini, 1.
 Distribution: Giles, 4.
 Effects of geophys. factors on: White, 24.
 Evolution of: White, 24.

Coal—Continued.
 Fuels, U. S. reserves: Garflas, 1.
 Mineral: Bengston, 1.
 Fusain: Crickmay, C. H., 24.
 General: Thom, W. T., Jr., 1.
 Genesis: Lewis, J. V., 3.
 Geological criteria in classn.: Cady, G. H., 1.
 Greenland: Frebold, 5; Miner, 4.
 Humic: Buddhue, 21.
 Ingneous metamorphism: McFarlane, 1.
 Illinois: Ball, C. G., 2, 3; Bement, 1; Benson, E. T., 1; Boley, 1; Cady, G. H., 3, 4, 7, 8, 9; Ekblaw, 11; Henbest, L. G., 1; McCabe, 3, 4, 5; McGehee, 1; Prescott, 1; Wanless, 1, 5, 8; Anonymous, 59.
 Indiana: Logan, W. N., 5.
 Iowa: Keyes, 333, 380; Lees, J. H., 3; Wilson, L. R., 5, 9.
 Kansas: Kans. G. Soc., 10; Landes, 24; Moore, R. C., 1; Pierce, 9; U. S. Bur. Mines, 2.
 Kentucky: Averitt, 1; Chisholm, 1; Hunt, C. B., 3; Jillson, 9; Jones, D. Jonathan, 3; Mayfield, 4; Robinson, L. C., 3; Stith, 1; Thiessen, 5.
 Lowlands, S.-cent., Ouachita prov.: Ruedemann, P., 3.
 Manitoba: Hutt, 3.
 Maryland: Fieldner, 4; Mathews, E. B., 3.
 Metamorphism: Heck, E. T., 5; White, 26.
 Mexico: Cumming, 4; Flores, 10.
 Michigan: Bergquist, 11.
 Microscopic inv.: Ball, C. G., 11.
 Mineral matter and coalification: Ball, C. G., 4.
 Mississippi: Works Prog. Adm., 1.
 Mississippi Valley: Butts, 12.
 Missouri: McQueen, 2.
 Monongahela ser.: Thiessen, 3.
 Montana: Baker, A. A., 2; Bass, 3; Collier, 3; Dobbin, 3, 8; Knappen, 2; Miner, 4; Parker, F. S., 1, 2; Perry, 15; Pierce, 6; Thom, 14.
 Nature, origin: Cady, 10.
 New Brunswick: Wright, W. J., 3.
 New Foundland: Bryan, A. M., 1; Hayes, 8.
 New Mexico: Dane, 8; Ellis, R. W., 7; Hunt, C. B., 2; Sears, J. D., 3.
 North America: Dannenberg, 2; Waters, 13.
 North Carolina: Berry, 16.
 North Dakota: Andrews, D. A., 1, 6.
 Northwest Territories: Kidd, 3.
 Nova Scotia: Newman, W. R., 1; Norman, 5.
 Ohio: Bownocker, 1, 2; Lamborn, 1; Ray, F. A., 1; Stout, 3, 17, 19.
 Oklahoma: Borden, 2; Dane, 12; Ham, 2; Hendricks, 9; Kans. G. Soc., 10; Knechtel, 5; Moose, 1; U. S. G. S., 7, 8, 9, 10, 11; Wilson, C. W., Jr., 13.

Coal—Continued.

- Oregon : Libbey, 1; Oregon Dept. Geology, 1.
 Origin : Berl, 1; Van Tuyl, 8.
 Pacific Coast : Hodge, 16.
 Pennsylvania : Ashley, 31, 32; Austin, A. C., 1; Detrick, 2; DeWolf, 1; Hughes, H. H., 1; Itter, 1; Johnson, M. E., 1; Leighton, H., 6; Linton, 1; Rama Rao, B., 1; Richardson, G. B., 2, 3, 4; Robinson, J. F., 2; Rogers, R. D., Jr., 1; Sisler, 6; Stone, 8; Thomas, J. P., 1; Turner, H. G., 1; Willard, 57.
 Permo-Carboniferous coal : Shepard, 17, 43.
 And sea-level changes : Shepard, 43.
 Petrography : Stadnichenko, 5, 6.
 Pittsburgh coal bed : Eavenson, 3.
 Portraying coal fields structure : MacKay, 7.
 Post-Carboniferous coals : Stansfield, 1.
 Recorder of incipient rock metamorphism : Campbell, M. R., 7.
 Research, terminology : Thiessen, R. 1.
 Role of water in fm. differentiation : White, C. D., 15.
 Romance of : Sisler, 4.
 Sappropel : Buddhue, 25.
 Saskatchewan : Fraser, F. J., 6; Hastings, 1; McLearn, 5, 8.
 Sink, cave deposits, Ozarks : Buehler, 10.
 South Dakota : Connolly, 3; O'Harra, 3; Searight, 1, 2, 3, 4.
 Spores : Darrab, 14; Schopf, 4, 6; Sprunk, 1.
 Studies : Thiessen, R., 7.
 Taylor's genesis theory, coal, petroleum : Gale, H. S., 1.
 Temperature during fm. : Thiessen, G., 1.
 Texas : Plummer, 17.
 Thin secs., preparation : Thiessen, R., 10.
 Transformation, vegetal matter to coal : Carpenter, C. B., 1.
 Types : Stadnichenko, 7.
 United States : Campbell, M. R., 4; Lloyd, S. J., 1.
 Utah : Fisher, D. J., 7; Gregory, H. E., 4; Spieker, 4.
 Virginia : Cooper, B. N., 2; Edmundson, 5; Fieldner, 8; McGill, 7; Woodward, 13.
 Vitreous, refractive indices : Quirke, 15.
 Washington : Ash, 1; Daniels, J., 1.
 West Virginia : Eavenson, 1; Fieldner, 5, 6; Heck, E. T., 4; Krebs, 1; Maxwell, C. W., 1; Morris, L. M., 1; Price, P. H., 1, 7, 8-a, 17; Tucker, R. C., 1; U. S. Comm., 1.
 Western Interior Prov. : Young, C. M., 2.
 Wyoming : Dobbin, 1, 6; Swann, 1; Veatch, 1.
 Yukon : Bostock, 6, 10, 12.

Coal balls.

- Carboniferous, Ill. : Cady, G. H., 5; Reed, F. D., 2.
 Illinois, Psaronius : Moon, 1.
 North Am., strat. distrib. : Schopf, 8, 9.
 Coal Measures. See Carboniferous.
 Coal plant structures : McCabe, L. C., 1.
 Coal studies : Cothurn, 2.
 Coastal erosion, Va. : Bevan, 13.
 Coastal Plain, Atlantic, N. Am. : Boesch, H. H., 3.
 Coastal sands, eastern U. S. : MacCarthy, 4.
 Coatesville-West Chester folio, Pa.-Del. : Bascom, 3.
 Cobalt.
 Colorado : Cooke, S. R. B., 2.
 Ontario : Bastin, 8; Boydell, 2; Dadson, 3.
 Ores, nickel-cobalt-native silver types : Bastin, 13.
 Cobbles, Pleist., Va. : Sniffen, 1.
 Coelenterata. See also Anthozoa; Hydrozoa; Invertebrates (general).
 Alabama : Stephenson, 19.
 Appalachians, Olenellus zone : Resser, 20.
 California : Crickmay, C. H., 19; Merriam, C. W., 10.
 Indiana, Ord. : Shrock, 11.
 Jellyfish, pre-Camb., Grand Canyon, Ariz. : Carnegie Inst. Wash., 1, 2; Hinds, 27, 31.
 Mississippi, Eogargia : Hickson, 1.
 Newfoundland : Shrock, 15.
 Nova Scotia : Stephenson, 13.
 Paleozoic plankton : Ruedemann, 24.
 Pennsylvania : Cleaves, A. B., 8; Willard, 59.
 Quebec : Kindle, 38; Twenhofel, 31.
 Texas : Albritton, 8; Richards, 22.
 Coffeyville oil field, Kans. : Foster, W. H., 1.
 Collections.
 District of Columbia, minerals : Ulke, 3.
 Fossil exhibits, N. Y. State Mus : Reudemann, 15.
 General : Reimann, 13.
 Georgia mus. : Crickmay, G. W., 14; Mitchell, L., 2.
 Gold, Alaskan School of Mines : Gries, J. P., 1.
 Illinois State Mus., fossil plants : Janssen, 3.
 Mammal types, Am. Mus. Nat. History : Reeds, 15.
 Meteorites : Hamilton, S. H., 1; Nüniger, 41; Reeds, 15.
 Mexican fossils, Univ. Mich. : Kellum, 15.
 Minerals : Baum, 4; Colburn, W. B., 1; Symons, 3; Verrow, 1; Vonsen, 3.
 Mammal Comp. Zoology : Jackson, R. T., 2; Raymond, 3; Romer, 11; Stetson, H. C., 2.
 Pennsylvania, collecting fossils : Seaman, 8.

Collections—Continued.

- Semi-precious stones, San Francisco: D'Arcy, 2.
 South Dakota School Mines Mus.: Bump, 4.
 Type fossils, Colo. Univ. Mus.: Rodeck, 2.
 United States Nat. Mus. Repts., Dept. Geology, 1929: Merrill, 4; 1930-1939: Bassler, 3, 5, 9, 11, 17, 21, 27, 28, 30.

Collophane, Miocene brown sh., Calif.: Gal-
 liber, 2.

Color charts: Behre, 5.

Color markings on fossils.

- Brachiopods, Missn.: Rowley, R. R., 1.
 Cretaceous pelecypod: Reeside, 7.
 Insecta, Perm.: Dreyermann, 1.
 Patterns, Paleozoic fossils: Foerste, 10.
 Trilobites, Miss.: Williams, J. S., 1.

Colorado.

- Cooperative Geol. Survey, rept., 1932:
 Butler, 11.
 Folsom culture evidence: Cook, H. J., 5.
 General: Parker, B. H., 3.
 Geological Survey: Butler, B. S., 1.

Areas described.

- Alma dist.: Singewald, Q. D., 7.
 Bonanza mining dist.: Burbank, W. S., 4.
 Book Cliffs coal field: Erdmann, 1.
 Carter Lake area: Stagner, H. R., 1.
 Galena Mtn.: Vanderwilt, 2.
 Golden area: Johnson, J. H., 9.
 Jamestown dist.: Hill, E. B., Jr., 1.
 Lake Albion area: Wahlstrom, 1.
 Logan mine, Boulder County: Van Be-
 veren, 1.
 Magnolia mining area: Wilkerson, 5.
 San Juan Mts.: Atwood, W. W., 1.
 San Juan area: Cross, C. W., 2.
 Table Mtn. area: Waldeschmidt, 7.

Economic geology.

- Alma dist.: Singewald, Q. D., 7.
 Anticlines, Hiawatha gas field, Colo., and
 Baggs, Wyo.: Bradley, W. H., 12.
 Arrastre Basin vein systems: Burbank,
 7.
 Aspen mining dist.: Rohlfing, 1.
 Batholith, Twin Lakes: Chapman, E. P.,
 2.
 Beryl-molybdenite deposit: Landes, 19.
 Bonanza mining dist.: Burbank, W. S., 2.
 Book Cliffs coal field: Erdmann, 1.
 Boulder area: Green, T. H., 1.
 Boulder Co. coal: Helmke, 1.
 Breckenridge mining dist.: Behre, 18;
 Lovering, 15.
 Building stones: Balcom, 1.
 Calumet dist.: Rainwater, 1.
 Calumet iron mine: Behre, 21.
 Camp Bird mine: Boydell, 3.
 Caribou magnetite deposits: Henderson,
 C. W., 1.
 Climax molybdenum deposits: Butler,
 B. S., 4, 5, 9; Staples, L. W., 1;
 Vanderwilt, 3.

Colorado—Continued.

Economic geology—Continued.

- Coal: Carpenter, C. B., 2; Dapples, 3, 6;
 Helmke, 1; Orr, 1.
 Colorado Plateau ore deposits: Butler,
 B. S., 3.
 Colusite: Nelson, R. 1.
 Continental Divide area: Behre, 16.
 Copper: Burbank, 11; Eckel, E. B., 10;
 Lovering, 16.
 Copper and platinum, La Plata area:
 Eckel, E. B., 10; Anonymous, 165,
 176.
 Copper-silver veins: Fischer, R. P., 1.
 Correlation, synchrony, ore deposits:
 Finch, J. W., 1.
 Creede dist.: Larsen, E. S., 1.
 Cretaceous, Colo. geosyncline: Harris,
 G. W., 1.
 Cripple Creek dist.: Behre, 19; Koba-
 nowski, 1; Koschmann, 6; Loughlin,
 11, 12; Salsbury, 1.
 Diatremes and ore-bearing pipes: Em-
 mons, W. H., 13.
 Ferberite and gold telluride ores: Lov-
 ering, 31.
 Florence oil field: De Ford, 1.
 Front Range area: Goddard, 5; Lov-
 ering, 7, 20, 30.
 Galena bearing silver and bismuth:
 Chapman, E. P., 1.
 Gas structure, Pt. Lookout: Hendrick-
 son, V. J., 2.
 Gem collecting, Nathrop: Pearl, 2.
 General: Henderson, C. W., 2.
 Gold, crystallized: Caplan, 5.
 Gold in Juratrias: Burdick, 1.
 Golden area: Van Tuyl, 18.
 Greasewood area: Aurand, 1.
 Hiawatha gas fields: Nightingale, 3.
 Jamestown dist.: Goddard, E. N., 1, 2.
 Kerogen, oil shales: George, R. D., 1.
 La Plata mining dist.: Eckel, E. B., 5.
 Lead and zinc dists.: Sminnov, 1.
 Lepidolite deposit: Eckel, E. B., 3.
 Limonite, Orient mine: Stone, J. B., 1.
 Localization of ore: Collins, G. E., 1;
 Lovering, 6.
 London fault: Singewald, Q. D., 11.
 McCallum anticlines: Miller, J. C., 1.
 Magnetic survey, Ralston dike: Lev-
 ings, 1.
 Magnetometer survey, gold placers,
 Golden: Heiland, 2.
 Magnolia mining area: Wilkerson, 5.
 Manganese minerals: Burbank, 10.
 Meeker quad.: Hancock, 1.
 Mineral belt: Rohlfing, 1.
 Mineral resources: Henderson, C. W., 4.
 Mineralization: Behre, 4; Boyd, J., 1.
 Minerals, White Raven mine: Wahl-
 strom, 3.
 Molybdenite, Climax: Coulter, C. C., 1;
 Kisson, 1.
 Montezuma quad.: Buddington, 12; Love-
 ring, 17.
 Mosquito gold dist.: Dyrenforth, 1.

Colorado—Continued.

Economic geology—Continued.

- Mosquito Range and Leadville dist.: Behre, 2, 32.
- Mt. Lincoln, Russia mine: Singewald, Q. D., 3.
- Natural gas and oil fields, and poss.: Dane, 4; Hendrickson, V. J., 2; Krampert, 1; Nightingale, 1; Van Tuyl, 5, 6; Winchester, 4.
- Neglected Mine, La Plata area: Eckel, E. B., 8.
- Oil shale, Grand Valley: Savage, H. K., 1.
- Ore deposits: Burbank, 8; Loughlin, 9; Lovering, 8, 25; Moehlman, 6; Walker, S. M., 1.
- Paradox Penn. basin: Prommel, 1.
- Paragenesis, Ward dist.: Wahlstrom, 4.
- Petroleum and natural gas fields, and poss.: Behre, 6; Brainerd, 2, 6; Dane, 4; Heaton, 1; Ingram, T. R., 1; Kans. G. Soc., 11; Krampert, 1; Lavington, 2; Lerke, 1; Mohr, 2; Nightingale, 4; Osborne, 1; Schoenfeldt, 2; Van Tine, 1; Van Tuyl, 5, 6, 17; Waldschmidt, 4.
- Platinum and copper, La Plata area: Eckel, E. B., 10; Anonymous, 165, 176.
- Porphyrines and ore deposition: Singewald, Q. D., 9.
- Pseudo-eutectic textures: Schwartz, G. M., 6.
- Quartzite gold deposits: Landon, 7.
- Red Arrow mine: Root, 1.
- Rocky Mtn. area: Brainerd, 6; Uren, 2.
- San Juan area: Burbank, 12; Seaman, D. M., 2.
- Silification types, Mosquito Range: Butler, R. D., 2.
- Snowmass Mtn. area: Vanderwilt, 11.
- Tellurides, associated minerals: Caplan, 2; Wilkerson, 4.
- Tincup mining dist.: Goddard, E. N., 3.
- Tungsten ores: Loomis, F. B., Jr., 1; Marmaduke, 1; Wilkerson, 4.
- Vermilion Creek gas area: Nightingale, 1.
- Wilson Creek dome: Hunt, E. H., 1.
- Yampa coal field: McFarlane, 1.
- Zoning, Mosquito Range, San Juan Mts.: Loughlin, 14.

Historical geology.

- Adit tunnel, Columbian mine: Murray, C. R., 1.
- Algal reef, Perm.: Johnson, J. H., 16.
- Alma mining dist.: Singewald, Q. D., 1.
- Anticlines, Hiawatha gas field, Colo., and Baggs, Wyo.: Bradley, W. H., 12.
- Arrastre Basin vein systems: Burbank, 7.
- Aspen dist.: Vanderwilt, 9.
- Bent Co.: Mohr, 3.
- Benton fm.: Johnson, J. H., 6.
- Benton paleogeog.: Johnson, J. H., 5.

Colorado—Continued.

Historical geology—Continued.

- Bentonite beds in mapping structure: Rankin, C. H., Jr., 2.
- Bonanza mining dist.: Burbank, W. S., 2.
- Boulder area: Green, T. H., 1.
- Box Elder, Sand Creeks area: Coke, 1.
- Breckenridge dist.: Behre, 18; Lovering, 15.
- Buckskin Gulch stock: Singewald, Q. D., 6.
- Calumet dist.: Rainwater, 1.
- Calumet iron mine: Behre, 21.
- Canyon City embayment: Kessler, F. C., 1.
- Caribou stock, Front Range: Smith, Ward C., 1.
- Carter Lake area: Stagner, H. R., 2.
- Chinle fm.: Keyes, 276.
- Climax dist.: Butler, B. S., 5.
- Columbia, Dew Drop vein systems: Walker, S. M., 1.
- Continental divide area: Behre, 16.
- Correlation by heavy minerals: Singewald, Q. D., 10; Stark, 11.
- Cretaceous: Harris, G. W., 1; Reeside, 6; Waldschmidt, 3.
- Cripple Creek dist.: Behre, 19; Koschmann, 6; Loughlin, 5, 11, 12.
- Dawson and Laramie fms.: Dane, 10.
- DeBeque anticline: Hendrickson, V. J., 1.
- Denver Mtn. Parks area: Boos, M. F., 15.
- Denver quad.: Johnson, J. H., 10.
- Devonian: Kirk, E., 9.
- Divide Creek anticline: Lavington, 3.
- Dotsero area: Bassett, 3.
- Eastern Colo.: Dane, 4; Kans. G. Soc., 11; Rankin, C. H. Jr., 1; Van Tuyl, 17.
- Fish horizons: Behre, 10.
- Florissant beds: MacGinitie, 5.
- Folsom culture, antiquity: Bryan, 45.
- Foraminifera, Pierre sh.: Kimball, E. W., 1.
- Fox Hills fm.: Dorf, 10; Lovering, 11.
- Front Range: Boos, 4; Brainerd, 3; Goddard, 5; Kans. G. Soc., 2, 3, 11; Lovering, 3, 20, 22, 26, 30; Thompson W. O., 3; Van Tuyl, 3, 4-a, 12.
- Front Range, Rocky Mts.: Kans. G. Soc., 2, 11.
- General: Henderson, C. W., 2; Johnson, J. H., 2; Kans. G. Soc., 7.
- Geologic map: Lovering, 9; U. S. G. S., 6.
- Golden area: Johnson, J. H., 19; Van Tuyl, 18.
- Granby anticline: Lovering, 5.
- Grand Lake-Estes Park area: Heaton, 5.
- Grand Valley dist.: Nygren, 1.
- Greasewood oil field: Lavington, 2.
- Greenhorn lms.: Keyes, 225.
- Green Mtn. dam site: Heaton, 8.
- Green River fm.: Bradley, W. H., 8.
- Harding ss.: Kirk, E., 8.
- Fish: Ulrich, 32.

Colorado—Continued.

Historical geology—Continued.

- Hermosa fm.: Roth, 13; Vanderwilt, 10.
 Hlawatha gas fields: Nightingale, 3.
 High plains north of Ark. River: Dane, 11.
 Hostetter oil well: Lerke, 1.
 Huerfano Park, and Sangre de Cristo Mts.: Burbank, 16.
 Hygiene ss.: Murphy, R. E., 1.
 Independence Pass dist.: Burbank, W. S., 13.
 Indian Creek pluton: Boos, 14.
 Jurassic fms.: Baker, A. A., 6; Reeside, 10.
 Kiowa, Bent Cos.; Waldschmidt, 4.
 Lake Uinta, Eocene: Bradley, 15.
 La Plata mining dist.: Eckel, E. B., 5, 10.
 Laramide fault pattern, Front Range: Goddard, 5.
 Laramide lg. sequence: Lovering, 26.
 Lead and zinc dists.: Sminnov, 1.
 Leadville area: Loughlin, 4.
 London fault: Singewald, Q. D., 11.
 Longs Pk.-St. Vrain batholith: Boos, 5.
 Lykins fm.: Schoewe, 6.
 Lyons fm.: Maxwell, J. M., 1; Thompson, W. O., 4.
 McCallum anticlines: Miller, J. C., 1.
 Magnolia dist.: Wilkerson, 4, 5.
 Mapping method: de Margerie, 1.
 Marmaton, Cherokee fms.; Roth, 7.
 Maroon, Weber fms.: White, C. D., 10.
 Marshall dist.: Johnson, J. F., 1.
 Meeker quad.: Hancock, 1.
 Mesa Verde group: Keyes, 238.
 Migmatites: Stark, 9.
 Miocene Lake, Creede: Caplan, 1.
 Mississippian: Brainerd, 4; Johnson, J. H., 14.
 Monarch Valley: Ives, 9.
 Montana group: Lavington, 1.
 Montezuma quad.: Buddington, 12; Lovering, 17.
 Mosquito Range area: Behre, 2, 32; Johnson, J. H., 17.
 Northeastern Colorado: Rankin, C. H., Jr., 3.
 Ouray dist.: Burbank, W. S., 2; Moehlman, 6.
 Paleozoic unconformities: Lovering, 10.
 Paradox Basin: Prommel, 1.
 Paradox fm.: Baker, A. A., 4.
 Parting quartzite: Singewald, Q. D., 4.
 Permian corals: Baker, A. A., 1, 8.
 Petroleum poss., E. Colo.: Mohr, 2.
 Phosphoria fm.: Branson, C. C., 1.
 Pikes Peak quad.: Loughlin, 13.
 Point Lookout gas structure: Hendricks, V. J., 2.
 Porphyries, ore deposition: Singewald, Q. D., 9.
 Pre-Camb. corals: Jahns, 2.
 Prowers County: Van Tine, 1.
 Rabbit Mtn.: Quam, 2.

Colorado—Continued.

Historical geology—Continued.

- Recent volcanism, date: Landon, 5.
 Rio Grande depression: Bryan, 36.
 Rocky Mtn. Nat. Park: Effinger, 3; Traupe, 1; Uren, 2.
 Salt Creek area: Gould, D. B., 5, 6.
 Sangre de Cristo Range: Burbank, W. S., 5; Johnson, J. H., 2, 3; Kans. G. Soc., 3.
 San Juan Mts.: Larsen, 4.
 San Juan area: Burbank, W. S., 12; Cross, C. W., 2.
 San Louis Valley: Upson, J. E., 2.
 Sawatch Range: Barnes, F. E., 1, 2; Stark, J. T., 5, 8.
 Shales, Miocene, Florissant: Cockerell, 3.
 Shinarump, eastern: Keyes, 270.
 Snowmass Mts. area: Vanderwilt, 11.
 South Park: Behre, 15; Howland, A. L., 1, 4; Johnson, J. H., 21, 24, 28; Powers, W. E., 9; Stark, 10, 15.
 Steamboat Springs area: Blackmer, 1.
 Stock, granodiorite, Jamestown: Goddard, 6.
 Table Mtn. area: Waldschmidt, 7.
 Tincup mining dist.: Goddard, 3.
 Tomichi dome flow: Stark, 12.
 Two Buttes dome: Parker, 4; Sanders, C. W., Jr., 2.
 Uinta Mts. area: Forrester, 1; Spieker, 9.
 Uncompahgran, Beltian deposits: Hinds, 21.
 Unconformities: Johnson, J. H., 2; Lovering, 14.
 Varves and climate, Green River epoch: Bradley, W. H., 2.
 Vermillion Creek gas area: Nightingale, 1.
 Wasatch-Great Basin area: Eardley, 12.
 Wilson Creek dome: Hunt, E. H., 1.
 Yule Creek fms.: Vanderwilt, 8.
 Zoning, Mosquito Range, San Juan Mts.: Loughlin, 14.

Mineralogy.

- Amethysts: Caplan, 3; Longyear, 1.
 Asbestos: Wahlstrom, 2.
 Aspen mining dist.: Rohlfing, 1.
 Barite: Howland, 8.
 Calaverite: Goldschmidt, 1; Short, M. N., 5.
 Canyon City embayment: Kessler, F. C., 1.
 Cerite: Goddard, 4.
 Chalk Mt.: Pearl, 1.
 Chrysoberyl: Waldschmidt, 6.
 Coals: Dapples, 6.
 Colusite: Berman, 9; Nelson, R., 1.
 Copper-platinum ores: Eckel, E. B., 10.
 Copper-silver veins: Fischer, R. P., 1.
 Corvusite: Henderson, E. P., 5.
 Crystal Peak area: White, G. M., 1.
 Eight Mile Park: Landes, 29.
 Estes Park "meteorite": Van Valkenberg, H. B., 1.
 Ferberite genesis: Lovering, 31.

Colorado—Continued.

Mineralogy—Continued.

- Fervanite: Hess, F. L., 3.
 Fluorine minerals and deposits: Ives, 1; Seaman, 5.
 Front Range mineral belt: Lovering, 30.
 Galena: Chapman, E. P., 1; Wahlstrom, 5.
 Gem collecting: Pearl, 2.
 Gold, crystallized: Caplan, 5.
 Gold telluride ores: Lovering, 31.
 Granite: Reno, 1.
 Granite pegmatites: Switzer, 3, 4.
 Heavy minerals: Stark, J. T., 6.
 Johannite: Peacock, 6.
 Krennerite: Short, M. N., 5.
 Laumanite: Henderson, E. P., 6.
 Lead dists.: Sminnov, 1.
 Leadville minerals: Caplan, 4.
 Magonia mining area: Wilkerson, 5.
 Manganese minerals: Burbank, 10.
 Meteorite, Adams County: Nining, 4.
 Mineral belt: Rohlfing, 1.
 Minerals: Larsen, 16; Wahlstrom, 3.
 Mineralization, pre-Camb.: Boyd, James, 1.
 Molybdenite ore: Staples, L. W., 1.
 Montezuma quad.: Lovering, 17.
 Mosquito Range minerals: Behre, 32.
 Mt. Antero, White Mts.: Over, 1.
 Ohio City area: Seaman, D. M., 1.
 Oligonite, Leadville: Mayo, 8.
 Opal, Specimen Mtn.: Seaman, D. M., 3.
 Opalized wood: Minor, W. C., 2.
 Ore deposits, Central City-Idaho Springs: Lovering, 25.
 Paragenesis, Leadville: Chapman, E. C., 3.
 Pegmatites: Landes, 21; Switzer, 3, 4.
 Pinnacle Bed coal: May, 1.
 Pisanite: Eckel, E. B., 4.
 Quartz: Hurlanek, 1; Reitsch, 1; Rogers, 27.
 Radium area: Ives, 6.
 Rilandite: Henderson, E. P., 5.
 Snowmass Mts.: Vanderwilt, 11.
 Stainierite: Cooke, S. R. B., 2.
 Steigerite: Henderson, E. P., 9.
 Sylvanite: Short, 5; Tunell, 8.
 Telluride-tungsten mineralization: Wilkerson, 4.
 Tetrahedrite, chalcocopyrite: Seaman, 4.
 Thomsonite: Henderson, E. P., 6.
 Topaz: Peacock, 9; Wulff, 1.
 Tungsten: Ives, 3; Loomis, F. B., Jr., 1; Macphaduke, 1; Wilkerson, 4.
 Uncompagrite: Larsen, 7.
 Zinc dists.: Sminnov, 1.

Paleontology.

- Algae, algal lms.: Johnson, J. H., 26.
 Amphibia: Branson, E. B., 2.
 Ancient artifacts: Cook, 8.
 Astraspis: Bryant, 8.
 Barroisleras: Reeside, 11.
 Barylambda for Titanoides faberi: Patterson, 8.

Colorado—Continued.

Paleontology—Continued.

- Benton fauna: Johnson, J. H., 18.
 Berberis caplani: Cockerell, 16.
 Bird remains: Koerner, 2; Mehl, 6; Toepelman, 3.
 Brachiopoda: Girty, 2.
 Cephalia caplani: Cockerell, 11.
 Cercidiphyllum: Brown, 24.
 Chadron fm.: Alf, 1.
 Chrysopidae: Carpenter, 3.
 Coals, resins, and waxes: Dapples, 4.
 Conodonts: Branson, E. P., 16; Kirk, S. R., 1.
 Coprolites: Johnson, J. H., 20.
 Cretaceous fauna: Reeside, 6, 7.
 Crocodilians: Schmidt, K. P., 1.
 Crustaceans, phylloped: Johnson, J. H., 15.
 Cynodesmus: Wilson, J. A., 1.
 Denver flora: Knowlton, 1.
 Denver quad.: Johnson, J. H., 10.
 Diatryma plumage: Wetmore, 14.
 Dinocerata: Patterson, 11.
 Dinosaurs: Brown, B., 16; Russell, L. S., 4.
 Gizzard stones: Minor, W. C., 1.
 Tracks: MacClary, 2.
 Diptera, Florissant: James, M. T., 2.
 Ephedra miocenica: Wodehouse, 2.
 Erinaceids: Patterson, 10.
 Eriptychius: Bryant, 8.
 Eulithomyrmex for Lithomyrmex: Carpenter, 13.
 Fish: Bryant, 9; Ulrich, 32.
 Floras: Brown, R. W., 14; Dorf, 8, 10; MacGinitie, 5.
 Florissant area: Henderson, C. W., 2; MacGinitie, 5.
 Footprints: Toepelman, 4.
 Fox Hills, Medicine Bow fms.: Dorf, 10.
 Foxtail pine: Cockerell, 13.
 Fresh-water algae: Bradley, W. H., 6.
 Gastropoda: Girty, 2; Russell, 39.
 General: Toepelman, 1.
 Goldenrod: Cockerell, 10.
 Goniopholis lucasii Cope: Mook, 6.
 Graptolites: Bassett, 2; Johnson, J. H., 22.
 Grasses, Tert.: Elias, 5, 10.
 Green River flora: Brown, R. W., 1, 5.
 Green River fm., microfossils: Bradley, W. H., 8.
 Hallopus: Schuchert, 53.
 Helisoma: Henderson, J., 12.
 Hemiptera: Oman, 1.
 Holcorpa: Carpenter, 7.
 Insecta: Carpenter, 22; Cockerell, 8, 18.
 Ischyromys: Friant, 1.
 Lygaeidae: Usinger, 1.
 McCoy fm.: Roth, 8.
 Mammals and birds: Koerner, 2.
 Mammoths: Cook, H. J., 3, 6.
 Miocene lake, Creede: Caplan, 1.
 Mollusca: Henderson, J., 8.
 Mosquito Range: Johnson, J. H., 17.
 Moth, Eocene: Forbes, W. T. M., 2.
 Multituberculata: Granger, 1.

Colorado—Continued.

Paleontology—Continued.

- Nanosaurus: Schuchert, 55.
- Nemestrinidae: Bequaert, 1.
- Opalized wood: Minor, W. C., 2.
- Paleozoic: Bassett, 3.
- Pantodonta: Patterson, 11.
- Pelecypod, colored: Reeside, 7.
- Peratherium: Gazin, 13.
- Phyllopod crustaceans: Johnson, J. H., 15.
- Plants: Berry, 40; Hollick, 1.
- Plesiadapis: Simpson, 28.
- Pliocene rhinoceroses: Cook, 4.
- Pollen, Green River: Wodehouse, 1.
- Pottsville, flora: Read, 6.
- Procaenophus: Figgins, 3.
- Pseudocrocodi: Denison, R. H., 2.
- Rails: Wetmore, 16.
- Resins: Dapples, 4.
- Rhinoceroses: Barbour, 26; Cook, 4; Figgins, 5; Wood, H. E., 2d, 5.
- Sequoiioxylon: Andrews, H. N., 1.
- Soricids: Patterson, 10.
- Staffella: Thompson, M. L., 2.
- Sterculaceous fruit: Berry, E. W., 30.
- Syrphus (?): James, M. T., 1.
- Termites: Snyder, 1.
- Tertiary plants: Hollick, 1.
- Tiffany fauna: Simpson, 28.
- Titanoides: Patterson, 4, 5, 6, 7.
- Trachodont jaw: Toepelman, 2.
- Triassic Amphibia: Branson, E. B., 2.
- Trichopitys: Read, C. B., 5.
- Trout Creek flora: Johnson, J. H., 11.
- Type fossils, Colo. Univer. Mus.: Ro-deck, 2.
- Upper Cret. dinosaurs: Russell, L. S., 4.
- Vertebrate locs.: Stark, 13.
- Vertebrates with artifacts: Hay, 6.
- Water bug: Hungerford, 1.
- Waxes: Dapples, 4.
- Wild County: Figgins, 2.

Petrology.

- Algal lms., South Park: Johnson, J. H., 26.
- Alma dist.: Singewald, Q. D., 5.
- Analcite-bearing intrus.: Jahns, 1.
- Batholith, Twin Lakes area: Chapman, E. P., 2.
- Bentonite, correl. by mech. analysis: Dorrell, 2.
- Buckskin Gulch stock: Singewald, Q. D., 6.
- Calumet iron mine: Behre, 21.
- Caribou Stock: Smith, Ward C., 1.
- Chadron fm.: Alf., 1.
- Chalk, Mtn.: Pearl, 1.
- Copper-silver veins: Fischer, R. P., 1.
- Correlation by heavy minerals: Singewald, Q. D., 10; Stark, 11.
- Dikes, amygdaloidal: Moehlman, 5.
- Front Range granites: Boos, M. F., 8, 6, 8.
- Golden area: Van Tuyl, 18.
- Granites: Boos, M. F., 8, 6; Reno, 1; Schwartz, 11.

Colorado—Continued.

Petrology—Continued.

- Heavy minerals: Boos, M. F., 8; Singewald, Q. D., 10; Stark, 11.
- Hygiene ss.: Murphy, R. E., 2.
- Iron Hill rocks: Larsen, 13.
- Log Cabin batholith: Boos, 7.
- Minerals: Larsen, 16; Sandberg, 3.
- Ore minerals: Sandberg, 3.
- Paleozoic: Bassett, 3.
- Pegmatites: Switzer, 3, 4.
- Phenacite: Pough, 5.
- Pierre and Fox Hills: Osborne, P. F., 1.
- Poorman dike, Front Range: Van Valkenberg, A., Jr., 1.
- Porphyries and ore deposition: Singewald, Q. D., 9.
- Quartz: Hurianek, 1; Reitsch, 1; Rogers, 27.
- Sawatch Range: Stark, J. T., 5, 8.
- Silicification, London fault: Butler, R. D., 2.
- Spanish Peaks area: Knopf, 11.
- Stock, Jamestown: Goddard, 6.
- Table Mts. area: Waldschmidt, 5, 7.
- Treasury Mtn. granite: Bain, 19.
- Uncompagrite: Larsen, 7.
- Volcanic rocks: Conn, A. A., 1; Larsen, 16.

Physical geology.

- Abrasion, wind: Powers, W. E., 8.
- Algal reefs and oolites: Bradley, W. H., 3.
- Alteration, Loveland Mtn.: Singewald, Q. D., 5.
- Analcite beds, Green River: Bradley, W. H., 1.
- South Park: Jahns, 1.
- Arkansas, Eagle Rivers: Behre, 12.
- Aspen dist.: Rohlfing, 1; Vanderwilt, 9.
- Batholiths: Boos, 10; Chapman, E. P., 2.
- Boulder area: Green, T. H., 1.
- Bull Mtn. thrust fault: Thomas, H. D., 3.
- Calumet iron mine: Behre, 21.
- Calumet stock: Howland, 5.
- Caribou stock: Smith, Ward, C., 1.
- Chalk Mtn.: Pearl, 1.
- Coal metamorphism: Dapples, 3.
- Collapsed dome: Burbank, W. S., 1.
- Concretions, Fox Hills: Mathias, 4.
- Continental Divide: Behre, 16.
- Cripple Creek dist.: Carstarphen, 1; Loughlin, 7, 11, 12; Koschman, 5, 6.
- Cripple Creek volcano: Carstarphen, 1; Loughlin, 7.
- Denver Mtn. Parks area: Boos, 15.
- Divide Creek anticline: Lavington, 3.
- Eagle Mtn.: Toppan, 3.
- Eocene ig. sequence: Lovering, 22.
- Faulting, Tert., Quart., San Luis Valley: Upton, J. E., 1.
- Folding, shallow, in massive rocks: Has-kel, 2.
- Fox Hills fm., concretions: Mathias, 2.
- Florissant depression: Barbour, G. B., 1.

Colorado—Continued.

Physical geology—Continued.

- Front Range: Boos, 9, 13; Lovering, 20, 22, 24; Kans. G. Soc., 1; Thompson, W. O., 7; Van Tuyl, 4-a.
- Golden area: Van Tuyl, 18.
- Grand Lakes-Estes Park area: Heaton, 5.
- Granite weathering: Boos, 11; Reno, 1.
- Granite pegmatites: Switzer, 4.
- Huerfano Park: Burbank, 16.
- Igneous intrus., La Platta Mts.: Eckel, E. B., 9.
- Independence Pass dist.: Burbank, 13.
- Indian Creek plutons: Boos, 9, 12, 14.
- Intrusions, Tert.: Graham, J. R., Jr., 1.
- Jamestown dist. ore deposits: Goddard, E. N., 2.
- Laccoliths, Crested Butte area: Cady, 6.
- La Plata mining dist.: Eckel, E. B., 5.
- Laramide fault pattern: Goddard, E. N., 5.
- Laramide lg. sequence: Lovering, 26.
- London fault: Singewald, Q. D., 11.
- Magnolia mining area: Wilkerson, 5.
- Migmatites, Sawatch Range: Stark, 9.
- Mineral belt: Rohlfing, 1.
- Montezuma quad.: Lovering, 17.
- Mosquito Range: Behre, 32.
- Mt. Antero area: Switzer, 4.
- Ore deposits, Ourey: Mochlman, 6.
- Paleozoic, Dotsero area: Bassett, 3.
- Paragenesis, Ward dist.: Wahlstrom, 4.
- Pikes Peak quad.: Loughlin, 13.
- Poorman dike: Van Valkenburg, A., Jr., 1.
- Rabbit Mts. area: Quam, 1.
- Recent volcanism, date: Landon, 5.
- Rio Grande depression: Bryan, 36.
- Rockslide, Durango: Vanderwilt, 6.
- Rocky Mts., middle, structure: Chamberlin, 19.
- Sangre de Cristo Mts.: Burbank, 16.
- San Juan area: Burbank, 12.
- San Luis Valley: Upson, J. E., 2.
- Sawatch Range: Barnes, F. F., 2; Stark, J. T., 7, 9.
- Silverton caldera: Burbank, 18.
- Sink holes, fossil: Dane, 5.
- Snowmass Mts. area: Vanderwilt, 11.
- South Park, origin: Powers, W. E., 9.
- Spanish Peaks area: Knopf, 11.
- Steamboat Springs area: Blackmer, 1.
- Stock, Jamestown: Goddard, 6; Lovering, 23.
- Structural features: Burbank, 6.
- Structure map: Anonymous, 41.
- Table Mtn. area: Waldschmidt, 5, 7.
- Talus behavior above timber line: Behre, 11.
- Telluride-tungsten mineralization: Wilkerson, 4.
- Tomichi dome flow: Stark, 12.
- Treasury Mtn. intrusive: Bain, 10.
- Uinta Mts.: Forrester, 1; Spieker, 9.
- Uncompahgre Plateau: Dane, 2.
- Ventifacts, fossil: Schoewe, 17.

Colorado—Continued.

Physical geology—Continued.

- Viscosity of lavas, San Juan area: Ross, C. S., 20.
- Volcanic rocks: Conn, A. A., 1; Larsen, 16.
- Volcanism, recent, date: Landon, 5.
- Wasatch-Great Basin area: Eardley, 12.
- Weathering, pre-Camb. contact: Reno, 2.
- Physiographic geology.*
- Arkansas, Eagle Rivers: Behre, 7, 12.
- Arkansas River, Royal Gorge: Powers, W. E., 4, 5.
- Book Cliffs: Rich, 19.
- Colorado River terraces: Blackwelder, 39.
- Colorado Valley area: Glock, 10.
- Copeland Lake Basin: Boos, M. F., 2.
- Eastern Colorado: Van Tuyl, 17.
- Erosion surfaces, South Park: Powers, 15.
- Florissant depression: Barbour, G. B., 1.
- Front Range: Atwood, W. W., 6; Lovering, 4; Ray, L. L., 2; Van Tuyl, 11.
- Glaciation: Ives, 13; Patterson, R., 1.
- Glaciers, past and present: Ives, 4.
- Golden area: Van Tuyl, 18.
- Grand Lake-Estes Park area: Heaton, 5.
- Green Mtn. dam site: Heaton, 8.
- Huerfano Park area: Burbank, 16.
- Indian Creek pluton: Boos, M. F., 12.
- Medicine Bow and Park Ranges: Atwood, W. W., Jr., 5.
- Mesas near Boulder: Worcester, P. G., 2.
- Monarch Valley glacial geology: Ives, 9.
- Multiple glaciation: Powers, W. E., 3.
- Park Range: Atwood, W. W., Jr., 2, 4, 10.
- Pediments, Front Range: Worcester, 3.
- Peneplanation and base leveling: Worcester, P. G., 1.
- Premontory planation: Glock, 10.
- Rio Grande depression: Bryan, 36.
- Rock glaciers, Front Range: Ives, 12.
- Royal Gorge: Kessler, F. C., 2.
- Sand dunes: Wegemann, 3.
- Sangre de Cristo Mts.: Burbank, 16.
- San Juan Mountains: Atwood, W. W., 1, 6.
- San Luis Valley: Upson, J. E., 2.
- Sink holes: Johnson, J. H., 13.
- Snowmass Mts.: Vanderwilt, 11.
- Soil drifting, Great Plains: Leighton, 29.
- South Park: Powers, W. E., 6, 10.
- Steamboat Springs area: Blackmer, 1.
- Stream piracy: Schoewe, 4.
- Tertiary history, High Plains: Van Tuyl, 2.
- Underground water.*
- Cripple Creek dist.: Loughlin, 11.
- Ground water: Robinson, T. W., Jr., 3, 4.
- High Plains, southern grand water: Theis, 2.
- Rio Grande depression: Bryan, 36.
- San Luis Valley: Robinson, T. W., Jr., 3, 4.

Colorado—Continued.

Underground water—Continued.

Steamboat Springs area : Blackmer, 1.

Water from wells : Waring, 4.

Colorado Plateau ore deposits : Butler, B. S., 3.

Columbite, morphology of crystals : Taylor, E. D., 1.

Colusite, Colo. : Berman, H., 9 ; Nelson, R., 1.

Compaction.

Clays and shales, gravitational : Hedberg, 1.

Oil migration : Athy, 2.

Comstock Lode, Nev. : Knochenbauer, 1 ; Milton, 4.

Concretions.

Arizona : Bryan, J. J., 1 ; Campbell, I., 4.

Arkansas, Fayetteville shale : Giles, 12.

Barite, Yazoo clay, La. : Hanna, M. A., 9.

Calcareous : Mathias, 4 ; Stow, 1.

California, sand : Edwards, S. C., 1 ; Hyde, E. M., 1 ; Schenck, 8.

Cave : Stone, R. W., 12.

Centripetal : Brown, W. H., 2.

Clay rhizoconcretions : Rousseau, 1.

Colorado, Fox Hills fm. : Mathias, 2, 4.

Cone-in-cone : Schaub, 11.

Connecticut : Tarr, 18.

Cylindrical structures : Hawley, 11.

Fayetteville sh., Ark., Okla. : Giles, 9, 12.

Formative processes : Burt, F. A., 7.

General : Bassler, 20 ; Reed, R. D., 5 ; Tarr, 5, 6.

Georgia : Cooke, C. W., 5.

Kansas : Carpenter, A. C., 1 ; Shaffer, H. L., 1 ; Ward, H. K., 1.

Kentucky, phosphatic : Edmundson, 3.

Lacustrine manganese : Kindle, 19.

Limonite, Iowa : Bates, R. L., 2.

Massachusetts : Tarr, 18.

Mexico, Lower California : Garner, 1.

Missouri, septarian : Swartzlow, 6.

Mt. Signal, Calif. : Hyde, E. M., 1.

New Hampshire : Kindle, 24 ; Tarr, 18.

New York, Onondaga : Schwartz, F. W., 1.

North Dakota, Black Hills : Hamilton, R. G., 1 ; Runner, J. J., 4.

Nova Scotia : Kindle, 24.

Ohio : David, A., 1 ; Greene, G. U., 1 ; Rogers, M., 1.

Oklahoma, Fayetteville sh. : Giles, 9, 12.

Ontario : Hawley, 11 ; Walker, 10.

Pyrite in : Mathias, 3.

Radial calcite, Ga. : Cooke, C. W., 5.

Romney sh., septaria, Va. : Allen, R. M., 1.

South Dakota, metamorphosed : Runner, J. J., 3.

Sphalerite in ironstone : Greene, G. U., 1.

Texas : Burt, 8.

Vermont : Tarr, 17.

Virginia : Allen, R. M., 1 ; Stow, 1.

Vishnu schist, Ariz. : Campbell, I., 4.

Concretions—Continued.

Wyoming : Cassinet, 1 ; McConnell, D., 2, 3.

Cone-in-Cone.

Concretions : Schaub, 11.

Fox Hills fm., Colo. : Boos, C. M., 1.

General : Tarr, 6.

Kansas : Carpenter, A. C., 1.

Louisiana : Tarr, 13.

Manganiferous siderite : Hendricks, 12.

Origin and bearing on concretions and septaria : Schaub, 11.

Conglomerate. See also Sedimentation.

Alberta : Warren, 21.

California : Edwards, E. C., 2 ; Simonson, 2.

Greenland : Wegmann, 10.

Illinois : Willman, H. B., 2.

Massachusetts : Billings, 18.

Montana : Lammers, 4.

Nevada : Sharp, R. P., 4.

New York, Catskill facies : Mencher, 2.

Ontario : Pettijohn, 5.

Pennsylvania : Stose, 20.

Texas : Bay, H. X., 2.

Virginia : Stow, 10.

Wyoming : Knight, S. H., 11 ; Lammers, 4.

Conglomerite : Willard, 5.

Congresses. See also Associations.

16th International Geological : Fabiani, 1 ; Keyes, 312 ; Mendenhall, 2, 6.

Connate waters.

In sands : Pyle, 1 ; Schilthius, 1.

Oil and gas accumulation by : Gardner, J. H., 5.

Relation to oil and gas sands : Bignel, 7.

Connecticut.

General : Longwell, 12.

State Survey biennial reports, 18th—17th : Britton, W. E., 1, 2, 3, 4.

Economic geology.

Hodges nickel prospect : Agar, 3.

Marbles and lms. : Moore, Fred H., 1.

Historical geology.

Beckert gneiss : Agar, 2.

Connecticut Valley : Kitson, J. E., 1.

Danbury gneiss : Agar, 7.

Fifteen Miles Falls Dam : Crosby, 9.

General : Cook, T. A., 1.

Granites and other intrusives : Agar, 9.

Pomperaug Basin : Meiner, 2.

Post-glacial climatic chronology, pollen-analysis : Deevey, 1.

Quinnipiac-Farmington lowland : Lougee, 7 ; Ward, F., 6.

Salisbury dist. : Agar, 5, 8.

Stiles clay pit sec. : Brown, R. W., 2.

Triassic belt : Longwell, 14.

Triassic fossils : Thorpe, 1.

Mineralogy.

Albite : Schaub, 10.

Beryl : Schaub, 10.

Collecting localities : Ewell, W. J., 1.

Gillette quarry minerals : Gillette, S. G., 1.

Manganotantalite : Foye, 1.

Connecticut—Continued.

Mineralogy—Continued.

- Minerals: Brown, S. C., 1; Schaller, 1.
 Monazite: Fenner, 6.
 Prochlorite: Agar, 13.
 Strickland quarry minerals: Zodaq, 24.
 Uraninite: Ingerson, 5.

Paleontology.

- Concretions, Champlain fm.: Tarr, 18.
 Dinosaur tracks: Perry, K. P., 1.
 Fossil wood in glacial drift: Dunbar, 20.
 General: Cook, T. A., 1.
 Lake sediments, pollen: Deevey, 1.
Littorina irrorationata: Knight, J. B., 9.
 New Milford marl: Cooper, G. A., 1.
 North Branford Trias. field: Thorpe, 1.
Semiotus fultus: Thorpe, 6.
 Triassic fossils: Thorpe, 1, 6.

Petrology.

- Becket gneiss: Agar, 2.
 Concretions: Tarr, 18.
 Danbury gneiss: Agar, 7.
 Diorite, metamorphosed: Agar, 10.
 Garnet rock: Agar, 6.
 Granites and other intrusives: Agar, 9.
 Limestones: Moore, 35.
 Marbles: Agar, 12; Moore, 35.
 Mt. Prospect intrusive: Cameron, E. N., 3.
 Pegmatites: Jenks, W. F., 2; Agar, 12.
 Prospect, gneiss: Stewart, L., 1.
 Quartzite: Agar, 4.
 Quinnipiac-Pequabuck lowland: Kry-nine, 5.
 Salisbury district: Agar, 5, 8.

Physical geology.

- General: Cook, T. A., 1.
 Gravity anomalies and geology: Long-well, 24.
 Mt. Prospect intrusive: Cameron, E. N., 3.
 Pegmatites: Jenks, W. F., 2.
 Spatter cone, trap sheet: Foye, 7.
 Volcanic vent: Foye, 3.

Physiographic geology.

- Connecticut Valley: Flint, 9; Troxell, 6.
 Dam, Fifteen Miles Falls: Crosby, 9.
 Deglaciation, Connecticut Valley: Flint, 7.
 Delta, ice-contact: Krynine, 7.
 Drainage changes and flood control, Conn. Valley: Troxell, 6.
 Fifteen Miles Falls Dam: Crosby, 9.
 Fossil wood in glacial drift: Dunbar, 20.
 General: Cook, T. A., 1.
 Glacial geology: Flint, R. F., 2.
 Periglacial phenomena: Denny, 1.
 Quinnipiac-Farmington lowland: Flint, 10; Goldthwait, R. P., 4; Howard, A. D., 15; Lougee, 7; Ward, F., 6.
 Quinnipiac-Pequabuck lowland: Krynine, 5.
 Sedimentation, Pleist.: Krynine, 8.
 Shore line: Sharp, H. S., 1, 5.

Connecticut—Continued.

Physiographic geology—Continued.

- Stiles clay pit sec.: Brown, R. W., 2.
 Terraces: Flint, 7, 15-a; Hitchcock, C. B., 4.
 Varves: Lougee, 1.

Underground water.

- Connecticut River valley; bibliography: New England Reg. Plann. Commission, 1.
 Pomperaug Basin: Meinzer, 2.
 Wells, springs, ground-water levels: Conn. Ground Water Survey, 1.

Conodonts.

- Actinopterygian jaws: Cooper, C. L., 9.
 Affinities, geol.: Branson, 29.
 Arkansas, Caddo Gap: Cooper, C. L., 7.
 Assemblages: Branson, 31.
 Caddo Gap, Ark.: Cooper, C. L., 7.
 Carboniferous: Branson, 36, 38; Cooper, C. L., 11, 12; Ellison, 1.
 Cincinnati fauna: Shideler, 17.
 Colorado: Branson, E. B., 16; Kirk, S. R., 1.
 Correlation by: Branson, 32; Gunnell, F. H., 5-a.

Decorah sh.: Stauffer, 3, 5, 14.

Devonian: Branson, E. B., 17, 18; Huddle, 3.

Ecology: Branson, 21.

Gastropods, relation to: Loomis, 12.

General: Holmes, G. B., 1.

Glenwood beds, Minn.: Stauffer, 11.

Iciodorus, range: Branson, 30.

Illinois, Niagara: Croneis, 16.

Indiana, Dev.: Huddle, 3.

Iowa, Decorah sh.: Stauffer, 14.

Johns Valley sh., Okla.: Harlton, 7.

Kansas: Ellison, 2; Gunnell, F. H., 8; Stauffer, 5; Williams, J. S., 12.

Ligonodina, *Prioniodus*, revision: Cooper, C. L., 6.

Mesozoic: Gunnell, F. H., 4.

Methods, studies: Branson, 27.

Minnesota: Stauffer, 3, 14, 24.

Glenwood beds: Stauffer, 11.

Mississippi Valley, upper: Furnish, 3.

Mississippian: Branson, E. B., 19, 36;

Branson, E. R., 1; Cooper, C. L., 3,

4, 7, 9; Gunnell, F. H., 1; Scott,

H. W., 4.

Missouri: Bailey, W. F., 4; Branson,

E. B., 7, 17, 18, 36, 38; Branson,

E. R., 1; Cullison, 4; Ellison, 1;

Gunnell, 1, 2, 8.

Montana: Knechtel, 7; Scott, H. W., 4.

New York, Dev.: Branson, E. B., 17.

Ohio, Dev.: Branson, E. B., 17; Cooper,

C. L., 9; Stauffer, 19, 20.

Oklahoma: Bush, 1; Cooper, C. L., 4, 9,

11, 12; Harlton, 7; Harris, R. W.,

1, 2, 6, 11; Jones, D. John, 2, 3;

Stauffer, 19, 20.

Ontario: Branson, E. B., 17.

Conodonts—Continued.

- Ordovician : Branson, E. B., 16, 17; Culison, 4; Furnish, 2, 3; Harris, R. W., 1, 2; Jones, D. John, 2; Kirk, S. R., 1; Shideler, 5; Stauffer, 3; 5, 14.
- Paleozoic plankton : Ruedemann, 24.
- Pennsylvanian : Bailey, W. F., 4; Gunnell, F. H., 1, 2, 3, 4; Harris, R. W., 6; Stauffer, 4.
- Possibly gastropods : Loomis, 12.
- Pravognathus for Heterognathus : Stauffer, 15.
- Preparation for study : Gunnell, F. H., 5.
- Quebec, Ord. : Branson, E. B., 17.
- Relation to petroleum : Gunnell, F. H., 7.
- Silurian : Branson, E. B., 13; Cronels, 16.
- Simpson group, Okla. : Harris, R. W., 11.
- South Dakota, Ord. : Furnish, 2.
- Texas, Penn. : Stauffer, 4.
- Value as index fossils : Branson, E. B., 14, 26.
- Wyoming : Branson, C. C., 3; Branson, E. B., 38.
- Zoological relationships : Scott, H. W., 3.
- Conrad's type fossil localities : Keyes, 309.
- Conservation, engineering and geology : Nichols, M. L., 1.
- Contact, Glenwood and Platteville fms. : Elder, 1.
- Continental borders collaborative study : Thom, 24.
- Continental drift and drifting.
 - Atlantic rift : Baker, H. B., 2, 3.
 - Continental and suboceanic seismic waves : Landsberg, 11.
 - Continents, oceans, origin : Bowie, 20
 - Continents, form, drift, rhythm : Watts, 1, 2.
 - Cuba, connection with N. Am. : Corral y Alemán, 8.
 - Deformations, gradual type : Gutenberg, 10.
 - Earth's crust : Gutenberg, 22, 24.
 - Faunas, Tert., tropical America : Rutsch, 4.
 - General : Chamberlin, 18; Douglas, G. V., 2; Huebner, 1; Longfellow, 1, 4; Longwell, 27; Rice, A. W., 2; Shand, 3; Waterschoot van der Gracht, 1.
 - Greenland : Oepik, A. A., 1.
 - Ice ages and drift : Coleman, 6.
 - Moon, origin : Nissen, 1.
 - Oil fields, distrib. : Wade, 1.
 - Power to move continents : Munroe, G. W., 1.
 - Pre-Devonian zones, Scotland and N. Am. : Jonas, 8.
 - Wegener theory, proof or disproof : Huene, F., 2.
- Continental fragmentation : Barrell, 1.
- Continental genesis : Willis, B., 4.

Continental and oceanic structure : Field, 24.
Contingents.

- And oceans, origin : Bowie, 20.
- Continental borders, collaborative study : Thom, 24.
- Convection and the form of continents : Hills, G. F. S., 1.
- Cuba, connection with N. Am. : Corral y Alemán, del, 3.
- Earth's crustal structure : Gutenberg, 24.
- Form, drift, rhythm : Watts, 1.
- General : Thom, 17.
- Geophysical, geol. study : Thom, 17.
- Meteoric origin : Bartlam, 1.
- Origin : Corninboeuf, 1.
- Origin and motion : Bowie, 20; Gunn, 2.
- Stratigraphic evidence on tectonics : Moore, R. C., 35.
- Contributions to geol. science by economic geologists : Tolman, C. F., 5.
- Convection and the formation of continents : Hills, G. F. S., 1.
- Copley oil pool, W. Va. : Reger, 1.
- Copper.
 - Ages of deposits : Butler, 15, 17, 19, 20.
 - Alabama : Adams, G. I., 4.
 - Alaska : Bateman, 4; Buddington, 1; Capps, 10; Moffit, 6, 8, 10.
 - Appalachians : Fenner, 13; Ransome, 7; Ross, C. S., 23, 27.
 - Arizona : Gilluly, 17, 20; Hansen, M. G., 2; Hernon, 1; Joralemon, 4; Kanla, 4; Kuhn, 1; Ransome, 3; Reber, 1; Rubly, 1; Schwartz, 9; Short, M. N., 6; Tenney, 2, 4, 25; Trischka, 4; Wilson, E. D., 5; Anonymous, 179.
 - Arsenical and argentiferous : Gregg, 1.
 - Arsenides, natural vs. artificial texture : Schwartz, 23.
 - Bornite, intergrowth : Schwartz, G. M., 1, 7.
 - British Columbia : Armstrang, J. E., 2; Cairnes, 12, 13, 14, 15, 17; Dolmage, 4, 6; Ebbutt, 2; Gunning, 1, 4; Hanson, 1, 11; Hedley, M. S., 2; Horwood, 2, 4; James, H. T., 1; Kanla, 4; Kerr, F. A., 18, 20; Kindle, E. D., 2, 3, 4; Lay, 4; Nelson, H. E., 1; Rice, H. M. A., 5; Sargent, H., 2; Schofield, 2; Stevenson, J. S., 4; Warren, H. V., 6.
 - California : Anderson, C. A., 2; Averill, 3, 7; Donnay, 8; Johnston, W. D., Jr., 8; Knopf, A., 2, 8; Maxson, 5; Shenon, 7; Tolman, C. F., 3; Van Amringe, 10.
 - Canada : Alcock, 12; Burwash, L. T., 1; Collins, W. H., 12; Duncan, G. C., 1; Ransome, 7.
 - Canadian Shield : Ransome, 7.
 - Central America : Ross, C. P., 24.
 - Chalcoite, relations, types : Bastin, 6; Bateman, 1, 8; Schwartz, 14.

Copper—Continued.

- Colorado: Boyd, J., 1; Burbank, W. S., 4, 11, 12; Chapman, E. P., 2; Cross, C. W., 2; Eckel, E. B., 10; Fischer, 1; Loughlin, 11, 12; Lovering, 16; Vanderwilt, 11; Wahlstrom, 4; Anonymous, 165, 176.
- Columbia River Basin, Wash.-Oreg.: Landes, H., 1.
- Colusite, Colo.: Berman, 9; Nelson, R., 1.
- Coppermine River: Gilbert, G., 1.
- Covellite-chalcocite relationships: Bateman, A. M., 1, 8.
- Cuba: Allende, 2; Van der Veer, 1.
- Curacao, West Indies: Molengraaff, G. J. H., 1.
- Development of industry: Furness, 1.
- Discovery of ore bodies: Joralemon, 1.
- Disseminated deposits: Locke, 4.
- Ducktown dist., Tenn.: Kendall, 1.
- Eastern U. S.: Ross, C. S., 22.
- Erratics: Crook, A. R., 1.
- General: Joralemon, 2.
- Geophysical explor. for: Broderick, T. M., 1.
- Glacial till containing: Glock, 14.
- Idaho: Anderson, A. L., 3, 4, 5, 23; Bell, R. N., 1; Dickey, F. H., 1; Ross, C. P., 4, 22, 23, 31; Shenon, 16, 18.
- Iron and copper sulphides, hydrothermal expts.: Foreman, 1.
- Lake Superior region: Fisher, J., 1; Hotchkiss, 4; Nishio, 2; Ransome, 7.
- Limonite types: Blanchard, R., 1.
- Manitoba: Brownell, G. M., 2; Bruce, E. L., 2, 3; Wright, J. F., 1, 2, 3, 13.
- Mesothermal veins and replacement: Hart, L. H., 1.
- Mexico: Bastin, 13; Edelen, 1; Flores, T., 7, 9; Kelley, 3; Locke, 6; Perry, V. D., 2; Ransome, 7; Santillán, 10, 14; Tenney, 5; Touwaide, 1; Wandke, 2.
- Michigan: Broderick, T. M., 2, 4, 5, 7, 10; Butler, B. S., 1; Eddy, G. E., 2; Fisher, J., 3; Hoffman, R. D., 1; Klein, 1; Kraskovsky, 1; Lamey, 8; Leith, 10; Rama Rao, B., 1; Seaman, W. A., 1; Spiroff, 2.
- Microscopy in assaying: Frobes, 1.
- Mineral pipes and disseminations: Weed, 1.
- Missouri: Bridge, 2, 4; Gleason, C. D., 3; Rust, 1; Tarr, 21.
- Montana: Dickey, F. H., 2; Hart, L. H., 2; Lovering, 1; Pardee, 4; Perry, E. S., 4; Ransome, 7; Ray, J. C., 3; Sahinen, 4; Schafer, 1; Spiroff, 3.
- Native copper: Broderick, 3; Glock, 13; Anonymous, 152.
- Nevada: Bateman, 5; Callaghan, 13; Crawford, A. L., 1, 3; Ferguson, H. G., 1; Hewett, 4; Knopf, A., 9; Nolan, 7; Pennebaker, 1; Schrader, 6; Vanderberg, 3, 4; Westgate, 6.

Copper—Continued.

- New Brunswick: Alcock, 2; Low, 2; Papenfus, 1.
- Newfoundland: Cooper, J. R., 1; Espen-shade, 1; George, P. W., 2; Snelgrove, 2, 8.
- New Mexico: Butler, 16; Dunham, 3; Harley, 1; Koschmann, 1; Lasky, 10, 12, 13, 16; Paige, 1; Ransome, F. L., 3; Spencer, A. C., 1; Stauber, 1.
- North Carolina: Bryson, 2, 7-a; Butler, 16; Waters, 13.
- Northwest Territories: Burwash, L. T., 2; Drybrough, 1; Duncan, G. G., 2; Kidd, D. F., 1, 5, 7; Riley, C., 2.
- Nova Scotia: Beaton, 1; Cox, E. J., 1; Papenfus, 1.
- Ontario: Bannerman, 2; Bartley, 2; Bell, L. V., 2; Burrows, 2; Dadson, 3, 4; Gledhill, 1; Graham, A. R., 2, 5; Moore, E. S., 6; Moorhouse, 1; Tanton, 6; Watson, R. J., 2.
- Ore deposits: Butler, G. M., 4.
- Oregon: Bell, R. N., 1; Callaghan, 10; Gilluly, 4, 10; Oregon Dept. Geology, 1; Shenon, 3, 6, 7; Smith, W. D., 11.
- Pacific Coast region: Ransome, 7.
- Paragenesis of oxidized ores: Schwartz, 12.
- Pennsylvania: Butler, R. D., 3; Stose, 8.
- Pipe deposits: Weed, 1.
- Pitch ore: Guild, 1.
- Porphyry coppers: Parsons, A. B., 1.
- Puerto Rico: Meyerhoff, 10.
- Quebec: Alderson, 1; Bell, L. V., 14, 16; Butterfield, 1; Cooke, H. C., 1, 6, 7, 8; Dresser, 6; Faessler, 16; Goodwin, W. M., 2; Hawley, 5; Jones, I. W., 3, 14, 15; Lang, A. H., 5; Mawdsley, 6; Norman, 1, 9; Peale, 1; Stevenson, J. S., 2; Wilson, M. E., 14.
- Replacement minerals: Ward, T. W., 5.
- Reserves, world: Notman, 1.
- Rhode Island: Quinn, 5.
- Schistose sulfide ores: Newhouse, 2.
- South Dakota: Connolly, 3; Tullis, 6.
- Stromeyerite: Schwartz, 14.
- Sulfide minerals, identification: Gaudin, 6.
- Sulfide sols: Kania, 3.
- Tennessee, Ducktown: Blakemore, P. B., 1; McNaughton, 1; Rama Rao, B., 1.
- United States, eastern: Ross, C. S., 22.
- Southwestern: Fischer, R. P., 2; Koerberlin, 3; Ransome, 7.
- Utah: Baker, H. B., 1; Boutwell, 2; Gilluly, 11; Green, J., 1; Gregory, H. E., 4; McEuen, 1; Nolan, 6; Park, C. F., Jr., 3.
- Vermont: Buerger, N. W., 4.
- Virginia: Moore, C. H., Jr., 8.
- Washington: Pardee, 7.
- Western States: Finch, J. W., 6.
- West Indies: Meyerhoff, 10; Ross, C. P., 24.
- World reserves: Barbour, 19.

Copper—Continued.

- World resources: Bayley, 4.
Wyoming: Abbott, L. V., 1.
X-ray identification, ore minerals:
Waldo, 1.

X-ray study, antlerite: Richmond, 6.

Coprolites.

- Faecal pellets in marine sediments:
Moore, H. B., 1.
New Mexico, ground sloth: Eames, 1.
South Dakota, Oligocene: Stovall, 8.
Washington, pseudomorphs: Major, 1.

Coral islands and reefs.

- Elevated fringing reefs, erosion: Hoff-
meister, J. E., 2.
General: Daly, 6; Lloyd, E. R., 3.
Glacial control theory: Ladd, H. S., 3.
Ohio, Sil. reefs: Cumings, 2.
Origin: Davis, 26; Hoffmeister, J. E., 3.
Pennsylvania, Dev.: Willard, 38.

Corals. See Anthozoa.

Cordierite: Winchell, 14.

Core analysis: Pyle, 3.

Core drill, large, geol. study: Moneymaker, 6.

Core samples, ocean bottom: Piggot, 5, 7.

Coronadite redivivus: Lindgren, 10.

Correlations. See also Geologic formations,
tables; Historical geology.

Alaska: Martin, G. C., 1; Waring, 6.

Alberta: Moore, P. D., 3.

American paradigms for European gla-
ciations: Keyes, 304.

Ammonite zones, Russia and Midconti-
nent: Plummer, 20.

Ammonites, Carb., Tex.: Plummer, 22.

Appalachian coal fields, sou. Pennsyl-
vanian: Wanless, 16-a.

Appalachians, Talladega ser.: Crickmay,
G. W., 18.

Olenellus zone fauna: Resser, 20.

Arizona: Galbraith, F. W., 3d., 1;
Schmitt, 5; Stoyanow, 5.

Arkansas: Decker, 13; Hazzard, R. T.,
2; Hendricks, 4, 5, 7.

Ash falls as criteria: Keyes, 285.

Atlantic Coastal Plain: Mansfield, W. C.,
15; Richards, 14.

Atlantic and Gulf Coastal Plains: Steph-
enson, 24.

Bainbridge and Henryhouse fms.: Ball,
17.

Benton Cret.: Keyes, 504.

Bentonite, Ord.: Rosenkrans, 4, 5, 6.

Bentonites, mech. analysis: Keyes, 2.

Birdsong sh., Tenn.: Wilson, C. W., Jr., 8.

Bluejacket ss., Okla.: Dane, 9.

British Columbia, Cache Creek Perm.:
Crockford, 1.

Burlington lms., Iowa-Mo.: Laudon, 12.

By heavy minerals: Graham, W. A. P., 2.

California: Atwill, 2; Clark, B. L., 5;

Corey, 2; Grant, U. S., IV, 3; Haz-
zard, 7; Kleinpell, 8; Laiming, 1;

Rankin, W. D., 1; Reed, 26; Rich-
ards, G. L., Jr., 3; Schultz, J. R.,

5; Siegfus, 1; Vokes, 12; Wheeler,

8; Wyatt, 1.

Correlations—Continued.

Callaway lms., Mo., Iowa: Keyes, 477.

Cambrian: Atwater, 4; Bridge, 7; Deiss,
7, 10; Raasch, 3.

Cambrian faunas, N. Am.: Howell, 34.

Canada: Legraye, 2; Moore, E. S., 23;

Pettijohn, 11; Wilson, M. E., 20.

Canada and Congo: Legraye, 2.

Canadian Shield: Wilson, M. E., 20.

Capay fm., Calif., Oreg.: Merriam, C. W.,
10.

Carboniferous, America and Europe:

Bertrand, 2; Bisat, 2; Darrach, 8;
Moore, 37.

Kansas and Oklahoma: Kans. G.
Soc., 10.

Carboniferous and Perm., by ammonites:
Plummer, 19.

Catskill name, history and value: Chad-
wick, 31.

Cenozoic, Calif. and Europe: Gale,
H. R., 2.

Central America and Mexico: Dorr, 2.

Centropleura fauna, Vt.: Howell, 30.

Chamberlin's philosophy: Schuchert, 5.

Chesapeake and Delaware Canal area:
Carter, C. W., 1.

Chester beds, Ill.-Ind.-Ky.: Stouder, 1.

Claiborne, Tex.-La.: Ellisor, 1.

Cloverly conglomerate, Mont.-Wyo.:
Lammers, 4.

Coals: Averitt, 1; Weller, 35; Young,
C. M., 2.

Coastal terraces: Cooke, C. W., 4;
Flint, 4.

Coincidence, climatic and sea level
cycles: Gillette, 5.

Colorado: Ives, 9; Singewald, Q. D., 10;
Vanderwilt, 8; Waldschmidt, 4.

Comanche-pre-Comanche, Ark-La-Tex
area and Mexico: Hazzard, R. T., 3.

Conodonts as index fossils: Branson, 30,
32; Gunnell, F. H., 5-a.

Cretaceous: Anderson, F. M., 9; Cush-
man, 15; Elias, 2; Osborn, H. F., 1;

Stephenson, L. W., 4, 22, 23;
Thompson, S. A., 1.

Criteria for Pleist.: Leverett, 8.

Cross section, Forest City, Mo., to Du
Bois, Nebr.: Condra, 12.

Crude oils: Barton, 50.

Crustal movements, late-glacial, N. Am.:
Lougee, 4.

Curaçao, West Indies: Molengraaff,
G. J. H., 1-a.

Deformation, Paleozoic: Moore, 30.

Des Moines area, Iowa-Mo.: Cline, 4.

Devonian: Chadwick, 30; Miller, A. K.,
40; Newcombe, 4; Pohl, 1, 4, 7;

Weller, 31.

Illinois-Missouri: Weller, 31.

Dunes, Lake Michigan Basin: Scott,
I. D., 4.

Earthquakes: Landsberg, 2; Stetson,
H. T., 1.

Earth resistivity, geol. structure and
age: Card, 2.

Correlations—Continued.

- Electrical logging: Gillingham, W. J., 1; Sawdon, 1.
 El Paso lms., Ord.: Kirk, 14.
 Eocene, marine, western N. Am.: Clark, 20, 21.
 Erosion surfaces, Ohio-Pa.: Ver Steeg, 31.
 Faunas, late Camb., northern hemisphere: Howell, 26, 40; Wissler, 1.
 Faunizones: Muller, 12.
 Fernvale: Shideler, 18.
 Floras: Axelrod, 4; Chaney, 30; Harris, T. M., 2; Jongmans, 4, 5; Oishi, 1.
 Carboniferous, U. S. and Europe: Jongmans, 4, 5.
 Florida, deep wells: Cole, 15.
 Foraminifera: Dunbar, 10; Nuttall, 5.
 Forrest City Basin cf. Ill. Basin: Hotchkiss, H. G., 1.
 Fossils in petroleum geology: Schenck, 33.
 Galena lms., Minn.: Sardeson, 41.
 Gamma-ray well logging: Howell, L. G., 1.
 Gaspé and New York Dev.: Kindle, 38.
 General: Keyes, 26, 497.
 Geobotanical, by selenium-bearing plants: Beath, 4.
 Geology and geophysics: Haseman, 2.
 Glacial epochs: Antevs, 8; Blackwelder, 15; Coleman, 7; Cooke, C. W., 8; Grant, U. S., IV, 3; Keyes, 298, 401.
 Glenwood shs.: Sardeson, 20.
 Gogebie iron district, Mich.-Wis.: Atwater, 5.
 Gosport fm., Ala. Ga.: Blanpied, 1; Cooke, C. W., 22.
 Gotiglacial broadmapping, Europe-N. Am.: De Geer, G. J., 3.
 Granites, pre-Camb., Colo.: Stark, 11.
 Greenland: Harris, T. M., 2; Kranck, 4; Noe-Nygaard, 5; Oepik, A. A., 1; Oishi, 1; Parat, 2; Spath, 4; Stauber, H., 2; Teichert, 11.
 Grenville ser., Quebec-Ontario-N. Y.: Bain, 20.
 Gulf Coast subsurface paleont.: Kornfeld, M. M., 1.
 Gulf Coast and Miss. Valley: Price, W. A., 17.
 Hamilton: Cooper, 22; Willard, 45.
 Heavy minerals method: Dryden, 10; Eisenhart, 1.
 Heavy minerals and oil: Tyler, 6.
 Hinge-lines, Conn. Valley-Great Lakes: Lougee, 4-a.
 Homonymy: Keyes, 15, 120.
 Horizon of extinction aid: Thomas, 14.
 Hull and Decorah fms., Ontario and Iowa: Kay, G. F., 15.
 Huron-Erie Basins: Leverett, 24.
 Illinois, Penn. coals: Young, C. M., 2.
 Illinois Basin fields: Workman, 9.
 Illinois coal basin: Cady, 11.
 Illinois-Michigan Basins: Weller, 28.
 Illinois, Ste. Genevieve lms.: Hoover, W. F., 4.

Correlations—Continued.

- Insoluble residues in: Andrews, T. G., 2; Hoover, W. F., 4.
 Invertebrates, Carb., Tex.: Williams, J. S., 11.
 Iowa: Keyes, 212; Stookey, 2; Wood, L. W., 9; Young, C. M., 2.
 Jacksonburg lms., Pa.-N. J.: Miller, R. L., 2.
 Jordan ss.: Keyes, 201.
 Jurassic: Baker, F. C., 1, 13; Luper, 7; Schuchert, 39.
 Kansas: Johnston, L. A., 1; Ockerman, 3; Smith, H. T. U., 6; Ver Wiebe, 17.
 Kentucky, Ord.: McFarlan, 16, 17.
 Labrador and S. Greenland: Kranck, 4.
 Lake Superior region and India: Rama Rao, B., 1.
 Lance-Ft. Union, Mont.-N. Dak.-S. Dak.: Andrews, D. A., 3.
 Lea Park sh., Alberta, Saskatchewan: Warren, P. S., 14.
 Lead and zinc, Europe-N. Am.: Behre, 33.
 Lepidocyclina texana horizon, Tex.-La.: Gravel, 4.
 Louisiana, Claiborne foraminiferal zones: Israelsky, 6.
 Florida Parishes terraces: Fisk, 5, 16.
 Louisiana-Tex. Gulf Coast: Deussen, 4.
 Lower Chester, Ky., Ill.: Sutton, 8.
 Magnesian lms.: Keyes, 241.
 Mammals, Fort Union, Mont.: Simpson, 28.
 Pliocene: Stirton, 16.
 Tertiary in holarctic: Stirton, 22.
 Marker horizons: Newcombe, 1.
 Maryland: Jonas, 11; Whitcomb, 7.
 Mechanical sand analyses: Gardescu, 1.
 Methods: Foerste, 8.
 Mexico: Anderson, F. M., 9; Dorr, 2; Imlay, 2, 5, 7, 8; Jones, T. S., 1; Keller, B. M., 1; Kellum, 9; Miller, 37; Muir, 3; Schmitt, 5; Singewald, Q. D., 12.
 Michigan: Dickey, 3; Warthin, 11.
 Miocene, Calif. and Europe: Kleinpell, 9.
 West Indies: Maury, 3.
 Mississippi: Eocene: Grim, 7.
 Mississippian: Caster, 5; Martin, H. G., 1; Roth, 2; Stockdale, 16.
 Mississippi River terraces and Gulf Coast shore lines: Price, W. A., 21.
 Mississippi Valley, upper: Leith, A., 1.
 Missouri: Ball, 20; Bridge, 7; Keyes, 342, 304; McQueen, 9.
 Mohawkian, Kans.: Kay, G. M., 2.
 Mollusca as basis: Clark, 25.
 Montana: Clapp, C. H., 1; Deiss, 11; Howell, 25; Sabinen, 4.
 Nebraska: Condra, 18, 19, 20; Johnson, F. W., 1; Lugin, 15; McGrew, 6; Reed, E. C., 1.
 Nevada: Longwell, 22; Sharp, R. P., 3.
 New Albany sh., Ind.-Ohio-Ky.-Tenn.: Campbell, G., 1.

Correlations—Continued.

- Newfoundland: Espenshade, 1; Twenhofel, 29.
 New Hampshire: Billings, 13.
 New Jersey: Jennings, P. H., 1.
 New Mexico: Lasky, 15; McCann, 1; Needham, 6, 10.
 New Mexico, Ariz. and Mexico: Schmitt, 5.
 New York: Chadwick, 23, 28.
 Niagaran, Michigan Basin: Cumings, 1.
 Niobrara fm., Kans.-Nebr.-S. Dak.: Loetterle, 1.
 North American Camb. faunas: Howell, 34.
 North America and Europe: Moore, 33.
 Ohio: Frye, 1.
 Oil sands: Melbase, 10; Russell, R. D., 12; Sisler, 2.
 Oklahoma: Brant, 1; Bridge, 6; Decker, C. E., 13; Dott, 2, 8; Pitts, 1; Gardner, J. H., 3; Hendricks, T. A., 4, 5, 7, 9; Lucas, E. L., 2; Wilson, C. W., Jr., 6, 13; Young, C. M., 2.
 Ontario: Fritz, 9; Pettijohn, 9; Rittenhouse, 3; Shaw, E. W., 2; Warthin, 7; Wilson, A. E., 6.
 Oologah lms., Okla.-Kans.: Keyes, 353.
 Ordovician: Ulrich, E. O., 4; Whitcomb, 2, 3; Wilson, A. E., 6.
 Ordovician, Ontario-Quebec: Wilson, A. E., 6.
 Oregon Eocene: Turner, F. E., 5.
 Orogenic movements, China-British Columbia: Schofield, 4.
 Paleozoic: Decker, 14; Dunbar, 16; Noé, 13; Ulrich, 18.
 Paleozoic, Europe and N. Am.: Waterschoot van der Gracht, 14.
 Peat, U. S. and Europe: Dachnowski-Stokes, 1.
 Pennsylvania: Butts, 10; Cathcart, 12; Cleaves, 8; Darrah, 3; Fettke, 4; Hills, J. M., 1; Miller, R. L., 4; Sisler, 2; Swartz, F. M., 10; Whitcomb, 7; Willard, 51, 59, 60.
 Pennsylvanian: Condra, 2; Keyes, 497; Keyte, 1; Knight, J. B., 8; Moore, R. C., 7; Newton, 1; Wanless, 12, 14, 16; Weller, 6; White, 27.
 Percentage method: Keen, 4.
 Permian: Baker, A. A., 1; Baker, C. L., 1; Chamberlin, 9; King, P. B., 27; King, R. E., 3; Lang, W. T. B., 6; Lloyd, A. M., 1; Mohr, 4; White, 27; Willis, R., 1.
 Nebraska-Texas: Mohr, 4.
 New Mexico-Texas: Lang, W. T. B., 6.
 Texas: King, P. B., 27.
 Petroleum cores: Landsberg, 10.
 Phase sampling of sediments: Apfel, 4.
 Platystrophia, evolutionary stages: Willard, 4.
 Pleistocene: Allison, 7; MacClintock, 6, 11; Richards, H. G., 21.
 Port Huron moraines: Taylor, 13.

Correlations—Continued.

- Prairie du Chien fm.: Powers, E. H., 2.
 Pre-Cambrian: Atwater, 4; Chamberlin, 9; Hinds, 23; Kranck, 3; Lawson, 2.
 Greenland-Laborador: Kranck, 3.
 North America, west.: Hinds, 23.
 Pre-Devonian, Scotland and N. Am.: Jonas, 8.
 Quartz deformation: Fairbairn, 13.
 Quaternary, Alaska and Russia: Saks, 1.
 Atlantic and Gulf Coastal Plains: Cooke, C. W., 26.
 By glacial varves: Anteys, 18.
 Quebec: Clark, T. H., 6; Kindler, 38; Faessler, 22; Wilson, A. E., 8.
 Radioactive method: Foye, 6; Landsberg, 14.
 Radioactivity variation in strata: Klepper, 1.
 Reef Ridge-Kreyenhagen Hills, Calif.: Siegfus, 1.
 Residues, insoluble, as guides: Burpee, 2; Hills, J. M., 1; Ireland, 4; McQueen, 4; Mitchell, 5; Shrock, 7; Singewald, Q. D., 10.
 Richmond fm.: Jones, J. A., 1.
 River terrace remnants: St. Clair, D., 1.
 Rocky Mts., red beds: Branson, E. B., 1; Heaton, 7; Reeside, 2.
 Russia and America: Elias, 12.
 St. Peter ser.: Edson, F. C., 8.
 Sedimentary rocks, Guadeloupe and Martinique: Barrabé, 1.
 Seismographing for oil, correl. method: Pirson, 8.
 Seleniferous soils, by plants: Beath, 4.
 Sespe, Calif.: Stock, 68.
 Shawnee group, Nebr.-Iowa-Mo.-Kans.: Condra, 16.
 Silurian: Ball, J. R., 32; Foerste, 24; McFarlan, 18.
 Illinois-Missouri-Tennessee: Ball, 23.
 Indiana-Kentucky-Ohio: McFarlan, 18.
 South Carolina, Coastal Plain: Cooke, C. W., 17.
 South Dakota: Rothrock, 15; Seabright, 5.
 Sparta-Wilcox Trend, Tex.-La., Todd, J. D., 3.
 Standards: Eaton, J. E., 3.
 Structural bearing and time determinations: Burwash, 5.
 Sylvan sh.: Decker, 11; Thomas, H. S., 1.
 Polk Creek, Cason, Maquoketa shs.: Husband, E. M., 1.
 Sylvania ss., Ohio: Carman, 6.
 Teleconnection, geol. and hist. time: De Geer, E. H., 1.
 Temperature measurements in drill holes: Deussen, 10.
 Tertiary: Carpenter, J. T., 1; Gravell, 5; Moody, C. L., 2; Osborn, H. F., 1.
 Zones, Miss.-Ala.-Fla.: Gravell, 5.

Correlations—Continued.

- Texas: Adams, J. E., 6; Albritton, 8, 9; Bridge, 7; Cartwright, 1; Deussen, 4, 11, 13; Ellisor, 4; Israelsky, 6; Miller, 39; Stenzel, 14; Stephenson, L. W., 4, 16.
- Texas-Alabama, faunal zones: Stephenson, L. W., 16.
- Texas-Louisiana Gulf Coast: Deussen, 4.
- Texas-Russian ammonoid zones: Miller, 39.
- Tilting and tides, Chesapeake Bay: Merritt, G., 1.
- Trenton group: Kay, G. M., 19.
- Triassic: Camp, 3.
- Tully lms., Pa.-N. Y.: Willard, 47.
- Uncompahgran-Beltian beds, west N. Am.: Hinds, 21.
- United States, west: Billingsley, P. R., 6.
- Utah: Nolan, 6.
- Vermont: Foyles, 2; Howell, 45.
- Virginia: Bates, R. L., 1, 4; Cooper, B. N., 1; Currier, 2.
- Volcanic ash-falls: Keyes, 181.
- Warsaw shs.: Keyes, 438.
- Washington drift border: Flint, 18.
- Waters, oil well, spectrographic: Hasler, M. F., 1.
- West Indies, Miocene: Maury, 3.
- West Virginia: Heck, E. T., 2; Martens, 12.
- Wisconsin: Bays, 1; Johnson, 36; Karges, 1.
- Wyoming: Branson, C. C., 18; Dobbin, 7; Howell, 25; Miller, B. M., 2; Neely, 4; Thomas, H. D., 8.
- X-ray crystal analysis and petroleum: Reynolds, D. H., 1.
- Yellowstone Canyon basalts: Howard, A. D., 6.

Tables.

- Alabama: Bailey, W. F., 3; Cooke, C. W., 9.
- Alaska: Smith, P. S., 3, 12.
- Alberta: Allan, 11; MacKay, 4; Slipper, 2; Webb, J. B., 1.
- American paradigms for European glaciations: Keys, 304.
- Antillean-Caribbean region: Schuchert, 31.
- Appalachian oil and gas fields: Ashley, 28.
- Appalachian Plateau and Miss. Valley: Butts, 12.
- Arizona, Paleozoic: Hernon, 3; Stoyanow, 5.
- Arkansas: Cronels, 23; Giles, 10; McKnight, 2; Spooner, 4.
- Atchison vs. Wabaunsee shs., Iowa-Kans.: Keyes, 393.
- Atlantic and Gulf Coastal Plains: Gardner, 14; Stephenson, 24.
- Belt ser., northern: Fenton, 54.
- Bendian, Ouachita Mts.: Harlton, 9.

Correlations—Continued.

Tables—Continued.

- Boundary, Oligocene-Miocene: Cooke, C. W., 23.
- California: Anderson, F. M., 6, 8; Barbat, 6; Clark, B. L., 5, 28; Gester, 2; Grant, U. S., IV, 3; Hinds, 18, 33; Kleinpell, 8; Livingston, A. Jr., 1; McMasters, 2; Reed, 25, 26.
- Cambrian: Deiss, 10, 11, 12; Keyes, 481; Stose, 14.
- Alberta and British Columbia: Deiss, 12.
- Cordilleran trough: Deiss, 11.
- Mississippi Valley: Keyes, 481.
- United States and Scotland: Stose, 14.
- Canada, Lake Superior area: Pettijohn, 11.
- Canadian Shield: Willson, M. E., 20.
- Capay fm., Calif.-Oregon: Merriam, C. W., 10.
- Carboniferous: Blsat, 2; Harlton, 8; Jongmans, 1, 2; Kans. G. Soc., 10; Keyes, 322, 410; Levorsen, 2; Moore, 87; Romer, 13; Waterschoot van der Gracht, 10.
- Faunas: Keyes, 410.
- Kansas-Oklahoma: Kans. G. Soc., 10.
- North America-Europe: Moore, 37.
- Claborn, Tex.-La.: Ellisor, 1.
- Cloverly conglomer., Mont.-Wyo.: Lambers, 4.
- Coals, minable, Ill.-Ind.-Ky.-Ohio: McFarlan, 19.
- Colorado: Branson, E. B., 16; Lovering, 17, 26, 30.
- Cretaceous: Bartram, 8; Cushman, 15; Gardner, J. A., 2; Nace, 1; Wells, J. W., 3.
- Decorah sh.: Stauffer, 14.
- Devonian: Bassler, 13; Branson, E. B., 18; Chadwick, 30; McFarlan, 19; Newcombe, 4; Pohl, 7; Stainbrook, 1; Willard, 40, 41.
- Eocene, Ala.-Miss.: Mellen, F. F., 3.
- Sequence, west N. Am.: Clark, 21.
- Floras, Tert., west Am.: Axelrod, 4.
- Florida, gastropods and scaphopods: Mansfield, W. C., 11.
- Geologic fms., N. Am.: Shimer, 3.
- Glacial ages: Grant, U. S., IV, 3.
- Glenwood beds, upper Miss. Valley: Thiel, 12.
- Greenland: Aldinger, 3; Koch, 10; Spath, 4.
- Idaho: Ross, C. P., 21, 31.
- Illinois: Moore, 27; Weller, S., 3.
- Illinois Basin: Wasson, 3.
- Iowa: Condra, 8; Lugn, 4; Moore, 27; Scooby, 1.
- Jurassic: Baker, A. A., 6.
- Kentucky: Bailey, W. F., 3; Hunter, C. D., 1.
- Lake Superior region: Leith, 10.
- Lake Superior region and Mysore, India: Rama Rao, B., 1.

Correlations—Continued.

Tables—Continued.

- Louisiana: Fisk, 2; Shreveport G. Soc., 2.
 Lowlands, S.-cent. and Ouachita Prov.: Reudemann, P., 3.
 Mammal-bearing fms., Cenozoic: Simpson, 30.
 Maryland: Jonas, 11; Willard, 41.
 Mexico: Diaz Lozano, 5; Gibson, J. B., 1; Imlay, 2, 4, 8, 10, 12; Jones, T. S., 1; Kane, 1; Kellum, 7, 10; Muir, 3.
 Mexico-Texas secs.: Jones, T. S., 1.
 Michigan: Leith, 10; Newcombe, 7; Zinn, 2.
 Minnesota: Leith, 10; Powell, L. H., 1.
 Mississippi: Bailey, W. F., 3; Cooke, C. W., 9.
 Mississippi Valley, upper: Kans. G. Soc., 8; Kay, G. F., 16.
 Mississippian: Bassler, 13; Branson, E. B., 18; Cooper, C. L., 12; Moore, 27.
 Missouri-Oklahoma-Texas: Cooper, C. L., 12.
 Missouri: Branson, E. B., 16, 18; Cooper, C. L., 12; Moore, 27.
 Montana: Deiss, 11; Gibson, R., 3; Perry, 15, 18.
 Nebraska: Lugin, 4.
 Nevada: Longwell, 22; Muller, 14.
 New Brunswick: Hayes, 7.
 Newfoundland: Betz, 1; Heyl, 1.
 North America: Antevs, 27; Grabau, 5; Ulrich, 33.
 North Carolina Coastal Plain: McCampbell, J. C., 1.
 Oklahoma: Atchison, 1; Brandenthaler, 1; Cooper, C. L., 12; Decker, 22; Dott, 14; Floyd, 1; Giles, 10; Hilseweck, 1; Ireland, 4; McCoy, 4; Mills, 12.
 Ontario: Caley, 1; Harkness, 4; Laird, 6; Pettijohn, 9; Rittenhouse, 3; Shaw, E. W., 2; Sproule, 1.
 Ordovician: Bassler, 13; Branson, E. B., 16; Kay, G. M., 7, 13; Ulrich, E. O., 4, 34.
 Missouri-Arkansas-Tennessee: Ulrich, E. O., 34.
 Oregon: Thayer, 5.
 Ouachitas: Harlton, 8.
 Paleozoics: Decker, 14; Noé, 13.
 Pennsylvania: Butts, 10; Cleaves, 8; Sisler, 8; Swartz, F. M., 10; Willard, 31, 40, 41, 53, 59.
 Pennsylvanian: Bessler, 13; Longwell, 22; Wanless, 16; White, 27; Willard, 41.
 Permian: Bassler, 13; Lang, W. T. B., 6; Longwell, 22; Mohr, 4; Schuchert, 32; White, 37.
 Pre-Cambrian: Brock, R. W., 2.
 Metamorphism: Keyes, 485.
 Pre-Pennsylvanian: Leyorsen, 2.
 Quebec: Clark, T. H., 11; Kindle, 38; Northrop, 10.

Correlations—Continued.

Tables—Continued.

- Reef Ridge-Kreyenhagen Hills, Calif.: Slegfus, 1.
 Region between Baltimore and Hudson River: Knopf, E. F. B., 3.
 Rocky Mts. region: Heaton, 3, 7; Reeside, 2.
 Rodents, Pliocene, western N. Am.: Wilsson, R. W., 15.
 St. Peter ser.: Edson, 8.
 Saskatchewan: Edmunds, 2.
 Silurian: Ball, 21; Bassler, 13; Branson, E. B., 16; McFarlan, 18; Poulsen, 3; Sutton, 11.
 South Carolina, Coastal Plain: Cooke, C. W., 17.
 South Dakota: Runner, J. J., 5; Simpson, 22.
 Sparta-Wilcox, Tex.-La.: Williams, N., 6.
 Tennessee: Bailey, W. F., 3.
 Tertiary: Carpenter, J. T., 1; Cooke, C. W., 9, 25; Gravel, 5; Mansfield, W. C., 12; Moody, C. L., 2; Nace, 1; Shreveport G. Soc., 1; Wendlandt, 1, 2.
 Atlantic and Gulf Coastal Plains: Cooke, C. W., 25.
 Mississippi-Ala.-Fla. zones: Gravel, 5.
 Texas: Adkins, 8; Albritton, 8; Claypool, 1; Cooper, C. L., 12; Cotner, 2; Deussen, 13; Ellisor, 4; King, 16; Lee, W., 1, 2; Ley, 4; Miller, 39; Nickel, C. O., 1; Plummer, 14; Stephenson; L. W., 4; Wendlandt, 1, 2.
 Trenton group: Kay, G. M., 19.
 Trinidad: Hutchison, 1; Lehner, 1.
 Uncompahgran, Beltian, west. N. Am.: Hinds, 21.
 United States: Ballard, 1; Reeside, 12.
 Utah: Gregory, H. E., 1.
 Vermont: Foyles, 2.
 Vicksburg group: Cooke, C. W., 16.
 Washington, Gries Ranch fauna: Effinger, 7.
 Wisconsin: Leith, 10.
 Wyoming: Branson, C. C., 18; Nace, 1, 2; Neely, 4.
 Yukon: Bostock, 6.
 Corsair Gorge, New England submarine valley: Shepard, F. P., 5.
 Corundum, Pa.: Tomlinson, W. H., 2, 3.
 Cosalite, British Columbia: Warren, H. V., 12.
 Canada: Berry, L. G., 1.
 Costa Rica. See also Central America.
 General: Schaufelberger, 4, 7.
Historical geology.
 General: Sapper, 5.
 Highlands: Lohmann, 2.
 Rio Grande de Tarcoles: Schaufelberger, 5.
 Section, Pacific to Atlantic: Schaufelberger, 1.

Costa Rica—Continued.

Paleontology.

Cypraea, Tert.: Ingram, W. M., 2.

Noetinae, Tert.: MacNeil, 7.

Physical geology.

Parasitic craters: Schaufelberger, 3.

Talamanca Mts. and Reventazon Valley: Lohmann, 1.

Volcanoes, active: Jaggar, 21.

Underground water.

Mineral and warm springs: Schaufelberger, 2, 6, 8.

Thermal springs: Schaufelberger, 2.

Cranbrook area, British Columbia: Cairnes, 12.

Craters.

Meteoric, formation: Wylie, 2.

Texas, air blowers: Price, W. A., 8.

Creedite: Foshag, 9.

Cretaceous. See also Paleontology, Cretaceous.

Aeolian deposits: Branson, E. B., 24.

Alabama: Johnston, W. D., Jr., 6; Jones, W. B., 11, 13, 16, 20, 21; Stephenson, 23.

Alabama-Mississippi, corals.: Stephenson, 23.

Alaska: Buddington, 1; Capps, 4, 10, 12, 13; Chaney, 28; Knappen, 1; Martin, G. C., 1; Mertie, 4, 7, 14, 15, 16, 20; Moffit, 1, 7, 8, 10, 11; Park, 2; Smith, P. S., 12; Tuck, 7; Waring, 2, 6.

Alberta: Allan, 7, 8, 9; Ball, M. W., 1; Clark, C. M., 1; Evans, C. S., 1, 2, 3; Hake, 1, 2; Heiland, 19; Howell, W. C., 1; Hume, 1, 13, 18, 23, 25, 26, 27, 28, 29, 31, 32; Irwin, J. S., 1; Link, 6, 8, 12; MacKay, 4, 8, 10, 12; McLearn, 3, 13; Michener, 1; Moore, P. D., 3; Powers, D. L., 1; Rowe, R. C., 2; Russell, L. S., 10, 12, 31, 34-a, 34-b, 36; Rutherford, R. L., 3, 9; Sanderson, 3, 4; Slipper, 1; Spratt, 1; Sproule, 4; Telfer, 1; Warren, P. S., 10, 21; Webb, J. B., 1; Williams, M. Y., 2; Yarwood, 1, 2.

Annona chalk: Thomas, N. L., 6.

Antillean-Caribbean region: Schuchert, 31.

Appalachia: Nelson, 6.

Arctic regions: Reeside, 3.

Arizona: Brown, W. H., 4; Butler, 17, 18, 19, 20, 21; Gilluly, 19, 20; Harrell, 2; Holm, D. A., 1; Keyes, 250, 260, 261; Mackay, 2; Reagan, 4; Reeside, 1; Stoyanow, 8; Trischka, 4.

Arkansas: Bramlette, 5; Dane, 1; Easton, 8; Hazzard, R. T., 2, 4; Meier, 1; Reed, J. C., 16; Schmidt, K. A., 1; Shearer, 3; Spooner, 2, 3, 4; Thomas, N. L., 3, 5; Weeks, W. B., 2.

Aruba, W. Indies: Westermann, J. H., 1. Assiniboine sedimentation cycle: Keyes, 311.

Cretaceous—Continued.

Atlantic and Caribbean: Groeber, P., 1.

Atlantic and Gulf Coastal Plain: Stephenson, 24.

Benton shs.: Keyes, 219, 504.

Big Horn Basin: Stow, 12; Anonymous, 117.

Bonaire, W. Indies: Pijpers, 1, 4.

British Columbia: Bancroft, 1; Cairnes, 15; De Béthune, 3; Gunning, 6; Hanson, 11, 13; Horwood, 4; Hume, 18; Kerr, F. A., 21, 22, 23; Kindle, E. D., 2, 3, 4; MacKay, 5, 6, 10; Olsson, 1; Telfer, 1; Webb, J. B., 2; Williams, M. Y., 4.

British Honduras: Dickerson, 1.

Brownstown fm.: Israelsky, 1.

Calcium carbonate, Calif. sediments: Trask, 39.

California: Anderson, F. M., 1, 3, 7, 8, 14; Bailey, I. L., 2; Canfield, 1; Clark, B. L., 5, 19; Conkling, 1; Eckis, 1; Glendinning, 1; Henny, 4, 5, 7; Hertlein, 11; Hinds, 14, 18; Hoots, 3, 6; Jenkins, 12; Livingston, A. Jr., 1; Mielenz, 1; Miller, W. J., 11; Nomland, 1; Popenoe, 2, 5; Reed, R. D., 9, 25; Reiche, 1; Soper, 4; Stalder, 2; Stockman, 1; Sutherland, J. C., 1; Taft, 3; Tallaferro, 13; Trask, 39; Williams, H., 1; Woodford, 8.

Canada: Dannenberg, 1; Goodman, 4; Kindle, 40; Warren, 20; Williams, M. Y., 6.

Carolina Bays, origin: Melton, 26-a.

Chesapeake-Delaware Canal area: Carter, C. W., 1.

Clays, fire, U. S.: Chellkowsky, 1.

Cloverly conglom., Mont., Wyo.: Lammers, 4.

Colorado: Behre, 32; Blackmer, 1; Burbank, W. S., 3, 12, 16; Dane, 5, 10, 11; Eckel, E. B., 5; Effinger, 3; Erdmann, 1; Green, T. H., 1; Hancock, 1; Harris, G. W., 1; Heaton, 1, 8; Hendrickson, V. J., 1; Hunt, E. H., 1; Johnson, J. H., 6, 9, 19, 23; Kans. G. Soc., 7, 11; Kessler, F. C., 1; Knopf, A., 11; Lavington, 1, 3; Lerke, 1; Lovering, 4, 5, 11, 14, 15, 17, 26, 30; Miller, J. C., 1; Mohr, 3; Murphy, R. E., 1; Nightingdale, 1, 3, 4; Parker, B. H., 4; Rankin, C. H., 1; Reeside, 6; Reisdorf, 1; Sanders, C. W., Jr., 2; Vanderwilt, 2, 11; Van Tine, 1; Van Tuyl, 17, 18; Waldschmidt, 3, 4, 7; Wilkerson, 4.

Columbia River basin. Wash.-Oreg.: Landes, H., 1.

Comanche, pre-Comanche, Ark-La-Tex area: Hazzard, R. T., 3.

Comanche, terranall title: Keyes, 258.

Connecticut: Cook, T. A., 1.

Cretaceous, first Am. discovery: Keyes, 249.

Cretaceous—Continued.

- Cross section, Ark.-La.: Purzer, 1.
 Cuba: Bermúdez y Hernández, 10; Dickerson, 3; Douvillé, 1; Lewis, J. W., 1; Ortega y Ros, 1, 2; Palmer, R. H., 3; Rutten, M. G., 4, 6; Sánchez Roig, 4; Schürmann, 2; Taber, 7, 13; Thiadens, 3, 5; Vermunt, 4.
 Curaçao, West Indies: Molengraaf, G. J. H., 1-a, 2; Vermunt, 1.
 Dakota stage: Tester, 3.
 Delaware: Stephenson, L. W., 6.
 District of Columbia, Washington area: Cloud, P. E., Jr., 3.
 Early recognition: Keyes, 136, 249.
 Exogyra cancellata zone: Stephenson, L. W., 7.
 Florida: Blanchard, W. G., 1; Campbell, R. B., 3; Cole, 15; Cooke, C. W., 24; Thomas, P., 2.
 Fox Hills-Lance contact: Dobbin, 4.
 Fuson-Cloverly fm.: Brown, B., 4.
 General: Keyes, 12, 46; Miller, B. L., 10.
 Geologic fms., La.-Ark.: Weber, 1.
 Georges Bank canyons: Stetson, 8, 10.
 Georgia: Cooke, C. W., 21; Munyan, A. C., 2.
 Greenland: Bentham, 2; Bøgvad, 2; Bierther, 1; Frebold, 11, 13; Koch, L., 1, 2, 10, 12; Krueger, H. K. E., 1; Maync, 1, 2, 3; Odell, 5; Rittman, 1; Rosenkrantz, 5; Schaub, H. P., 11; Stauber, H., 2, 11; Teichert, 8, 14; Vischer, 1, 2; Wager, 3; Wegmann, 8.
 Guadalupe: Barrabé, 2.
 Guatemala: Termer, 6.
 Gulf area: Moody, C. L., 6.
 Gulf and western interior: Stephenson, 22.
 Idaho: Capps, 14; Mansfield, G. R., 2; Reed, J. C., 14; Ross, C. P., 22; Stearns, 27.
 Illinois Basin: Moulton, 4; Weller, J. M., 25.
 Illinois: Weller, S., 4.
 Illinois-Missouri sec.: Kans. G. Soc., 12.
 Iowa: Keyes, 60, 213, 231; Tester, 2, 18; Wood, L. W., 7.
 Jamaica: Kùchler, 1; Trechmann, 9.
 Kansas: Bunte, 2; Elias, 2, 19; Gordon, G. H., 1; Kans. G. Soc., 7, 11; Koester, 2; Landes, K. K., 2, 26, 28; Moss, 2; Russell, W. L., 3; Ver Wiebe, 18, 22; Wilhelm, C. J., 1; Wing, 1.
 Kentucky: McFarlan, 16; Roberts, J. K., 4; Wesley, 3.
 Louisiana: Clark, C. C., 1; Crider, 1, 2, 3, 4; Easton, 7; Fergus, 1; Gordon, D., 2; Grage, 1; Howe, 19, 21; Huner, 1; Ivy, 1; Mix, 1; Ross, J. S., 1, 2; Tarr, 13; Taylor, R. E., 3; Teas, 2; Thomas, E. D., 1; Woodruff, 4.
 Lowlands, s.-cent. and Ouachita Prov.: Ruedemann, P., 3.

Cretaceous—Continued.

- Manitoba: Hume, 18; Kirk, S. R., 2; Wickenden, 3, 11.
 Maryland: Berry, E. N., 9; Cooke, C. W., 7; Darton, 14, 15; Jonas, 4; Stephenson, L. W., 6.
 Massachusetts: Chute, 1; Woodworth, 2.
 Mexico: Anderson, F. M., 9; Burckhardt, 1, 2; Dias Lozano, 4; Flores, T., 1, 5; Foshag, 12; Gibson, J. B., 1; González, J., 1; Hisazumi, 1; Imlay, 2, 3, 4, 5, 7, 10, 12; Jones, T. S., 1; Keller, B. M., 1; Keller, W. T., 1; Kelley, W. A., 7, 10; Kellum, 4, 7, 10, 11, 13; Keyes, 250; King, P. B., 26; King, R. E., 6; Moore, 45; Müllerried, 16, 25, 34; Muir, J. M., 3, 5; Santillán, 5, 15, 16; Singewald, Q. D., 8; Staub, 3; Taliaferro, 7; Tatum, 1, 2; Vivar, 2; Waitz, 6; Watson, 9; Woodford, 6, 8.
 Minnesota: Allison, 1; Sardeson, 45; Thiel, 13.
 Mississippi embayment: Lamar, 4.
 Mississippi: Easton, 10; Foster, V. M., 1, 5; George, W. O., 1; Mellen, F. F., 2; Monroe, 3, 8; Morse, H. M., 1; Morse, W. C., 9, 10; Needham, 4; Toler, 1.
 Missouri: Farrar, 1, 2; Matthes, 18.
 Montana: Barksdale, J. D., 1; Bartram, 7; Bevan, 3; Collier, 1, 3; Dickey, F. H., 2; Dobbin, 3; Emery, W. B., 3; Hall, G. M., 1; Knappen, 2; Lammers, 2; Lorain, 1; Neely, 2; Perry, E. S., 3, 12, 14, 15, 18; Pierce, W. G., 7; Reeves, F., 1, 3; Renick, 1; Romine, 1; Rouse, 7; Simpson, 38; Skeels, 1; Spiroff, 3; Thom, 14; Vhay, 2; Wilson, C. W., Jr., 2, 11, 15.
 Mowry sh., origin: Rubey, W. W., 2.
 Nebraska: Condra, 14, 19; Cook, H. G., 15; Noble, E. B., 2; Reed, E. C., 1.
 Nevada: Cameron, E. N., 2; Campbell, D. F., 1; Jenny, 1.
 Newfoundland: Twenhofel, 40.
 New Jersey: Hawkins, 7; Kùmmel, 2; Moldenke, 1.
 New Mexico: Bryan, 35; Ellis, R. W., 7; Hansen, G. H., 3; Hunt, C. B., 2, 4; Kans. G. Soc., 7; Lasky, 12, 14, 15, 16; McCann, 1; Matthew, 17; Needham, 9; Pike, W. S., Jr., 1; Renick, 3; Schmidt, 10; Sears, J. D., 3; Spencer, A. C., 1; Talmage, 7; Winchester, 3.
 New York City area: Keys, C. A., 1.
 New York: Sanford, J. H., 1; Strzygowski, 2; Thompson, 16.
 North America: Butler, 16; Reeside, 13; Schuchert, 57; Waters, 13.
 North Carolina: McCampbell, 1; Murray, 5; Prouty, 20.
 North Dakota: Andrews, 6; Hard, H. A., 1.

Cretaceous—Continued.

- Northwest Territories: Cameron, 5; Hume, 18.
- Nuttall's first recognition in America: Keyes, 314.
- Oklahoma: Bullard, 1; Daugherty, C. G., Jr., 1; Gould, 2; Ham, 1; Kans. G. Soc., 7; Melton, 4; Redfield, J. S., 2; Schoff, 1; Sheerar, 1; Six, 1, 2; Wrather, 1.
- Ontario: Dyer, 9, 13, 15, 19.
- Oregon: Buwalda, 19; Hodge, 22; Moore, B. N., 8; Oregon Dept. Geology, 1; Packard, 1.
- Pennsylvania: Watson, E. D., 6; Willard, 55.
- Pierre sedimentation, Canada: Williams, M. Y., 6.
- Post-Keweenaw age by helium: Urry, 8.
- Puercan ser.: Keyes, 135.
- Puerto Rico: Meyerhoff, 2, 3, 4, 5, 10.
- Recent literature, west. Am.: Adkins, 5.
- Restorations, landscapes: Reid, G. A., 1.
- Rhode Island: Woodworth, 2.
- Rio Grande depression: Bryan, 36.
- Rocky Mts. region: Bartram, 8, 10; Erdmann, 3; Heaton, 3; Keyes, 236; Parker, 7; Uren, 2; Warren, P. S., 1.
- Rodessa field, Ark.-La.-Tex.: Clark, C. C., 2; Ivy, 1.
- Sabine uplift: Easton, 6.
- Saskatchewan: Edmunds, 2; Fraser, F. J., 6; Hume, 18; McLearn, 16, 17; Warren, P. S., 2; Wickenden, 7, 13-a, 14; Williams, M. Y., 2; Worcester, W. G., 5.
- Sedimentation, Mesa Verde fm.: Hendricks, T. A., 1.
- South Carolina: Cooke, C. W., 17; Glenn, 4.
- South Dakota: Connolly, 3; Gries, J. P., 1; Littlefield, 1; Moxon, 1; Pugsley, 1; Rothrock, 5, 15, 16; Seairight, 2, 3, 4, 5; Wing, 2.
- Southwestern U. S.: Effinger, 4.
- Tennessee: Born, 3, 4, 5; Jewell, 1; Piper, 3; Spain, 1; Thels, 4; Wells, F. G., 2.
- Texas: Adams, J. E., 8; Adkins, 4, 8, 9; Albritton, 3, 7, 8, 9; Alexander, J. A., 1; Blackburn, W. C., 1; Bullard, 2, 3; Carsey, 1; Cartwright, 3; Curry, W. H., Jr., 1; Cuyler, 1, 6; Dally, 1; Dalton, 1; Decker, C. L., 2; Denison, A. R., 2; Deussen, 1; Ellisor, 4; Fiedler, 4; Getzendaner, F. M., 1; Hawley, J. B., 1; Hill, H. B., 1; Hill, R. T., 2; Ivy, 1; Jones, C. T., 1; Jones, R. A., 2; Kansas G. Soc., 7; Kidd, 1; King, P. B., 5, 17, 19, 29; Ley, 4; Liddle, 3; Logan, J., 3; Lonsdale, 7; McCallum, 1; McCol-lum, L. P., 1; Maley, 1; Meyer, W. G., 1; Morrison, T. E., 1; Patton, L. T., 1; Ross, C. P., 27, 28, 30; Sayre, 4; Schoffelmayer, 1; Scott,

Cretaceous—Continued.

Texas—Continued.

- G., 2, 6, 7; Smith, E. R., 2; Stephenson, L. W., 4, 5, 16; Stenzel, 17; Tatum, E. P., 1; Thomas, N. L., 3; Thompson, S. A., 1; Vanderpool, 1; Weeks, A. W., 1; Wilson, E. B., 1; Wilson, J. M., 1; Woodruff, E. G., 1; Wrather, 1; Zavolco, 7.
- Trinidad: Gunther, A. E., 1; Hutchison, 1; Illing, 1; Jarvis, 1; Kugler, 2; Lehner, 1; Skelton, 1; Trechmann, 7.
- Utah: Baker, A. A., 3, 5, 7; Dane, 7; Dobbin, 17; Eardley, 12; Fisher, D. J., 7; Forrester, 1; Gilluly, 1; Gregory, H. E., 1, 4, 5, 6; Hinds, 26; Mathews, A. A. L., 4; Schoff, 2; Spieker, 4, 7; Thorpe, 14; Tolmachoff, 3.
- Virginia: Cederstrom, 2; Roberts, 15; Stephenson, L. W., 6.
- West Indies: Ruttan, 9.
- Wyoming: Bauer, C. M., 4; Beath, 1; Beckwith, 4, 5; Brainerd, 5; Dobbin, 1, 2, 7; Dorf, 10; Effinger, 2; Emery, 3; Fanshawe, 1; Horberg, 1; Johnson, G. D., 1; Jones, C. T., 2; Knight, S. H., 12; Love, 1, 4, 6; Lovering, 2; Nace, 1; Nightingale, 1, 2, 3; Shoenfelt, 1; Stevens, E. H., 2; Thom, 7; Thomas, H. D., 8; Tillotson, 1; Veatch, 1; Wilson, C. W., Jr., 18.
- Yellowstone Nat. Park: Howard, A. D., 6.
- Yukon: Bostock, 6, 11; Johnston, J. R., 1; Lees, E. J., 1.
- Crinerville oil field, Okla.: Powers, S., 1.
- Crinoidea. See also Echinodermata.
- Alaska, *Cristocrinus*: Kirk, 16.
- Allagocrinus: Kirk, 15; Peck, 5.
- Arizona, Utah, Toroweap and Kaibab fms.: McKee, 11.
- California, McCloud fms.: Wheeler, 8.
- Caraboerinus and Strophocrinus: Sarseson, 44.
- Carboniferous, Ark., Okla., Tex.: Moore, 44, 48.
- Cedar Valley fm., Iowa: Laudon, 8.
- Cithrocrinus for *Clistrocrinus*: Kirk, 17.
- Comatulids: Gislén, 1.
- Corynecrinus*, Ind.: Kirk, 13.
- Cryphocrinus*: Kirk, E., 3.
- Delocrinus*: Burke, 1.
- Dimeroocrinus*: Witmer, 1.
- Edriocrinus*: Ehrenberg, H., 1.
- Eupachycrinus*: Kirk, 18.
- Evolution and extinction: Keyes, 465.
- Faunal migrations: Keyes, 460.
- Graphocrinus* in America: Keyes, 472.
- Illinois, Chester fossils: Sutton, 5.
- Niagaran nodules: Grubbs, 1.
- Inadunata, reclassn.: Kirk, 19.
- Index fossils: Moore, 46.
- Indiana, *Lebetocrinus*: Kirk, 21.
- Iowa: Laudon, 5, 8, 14; Thomas, A. O., 5.

Crinoidea—Continued.

- Kentucky, Chester fossils: Sutton, 5.
- Larviform crinoids: Weller, J. M., 5.
- Lebetocrinus, Ind.: Kirk, 21.
- Lichenocrinus: Faber, 1; Fenton, M. A., 2.
- Linobrachlocrinus for Linocrinus: Goldring, 20.
- Mariocrinus: Kirk, 5.
- Micro-crinoids: Peck, 6.
- Minnesota: Sardeson, 44.
- Missouri: Branson, 34, 37; Clark, E. L., 1; Keyes, 479; Peck, 14.
- New York: Goldring, 9, 12, 13, 14, 18; Ruedemann, R., 1.
- Northwest Territories, Dev.: Goldring, 16.
- Ohio: Bucher, 21; Laird, W. M., 1; Stauffer, 20.
- Ohio Valley: Bassler, 10.
- Oklahoma: Laudon, 11, 13, 18; Strimple, 1, 2, 3; Williams, J. S., 9.
- Ontario: Goldring, 9.
- Ontario and New York, Cobourg fm.: Sproule, 1.
- Pagecrinus: Kirk, E., 1.
- Pellecrinus: Kirk, E., 2.
- Pelmatozoan root-forms: Ehrenberg, K., 1.
- Pennsylvania: Cleaves, 8; Goldring, 15-a; Willard, 57.
- Pennsylvanian: Bailey, W. F., 4.
- Platycrinus: Weller, 9.
- Pterotocrinus: Sutton, 10.
- Quebec: Jones, I. W., 12; Laverdière, 6; Northrop, 10.
- Rhodocrinus: Goldring, 8.
- Silurian: Foerste, 29.
- Stems on fossil wood: Wickwire, 1.
- Syndetocrinus: Kirk, E., 12.
- Texas: Moore, 45-a, 47; Williams, J. S., 11.
- Trachelocrinus: Ulrich, E. O., 2.
- Trophocrinus: Kirk, E., 7.
- Vasocrinus: Kirk, E., 2.
- Vermont: Howell, 30.
- West Virginia: Price, P. H., 17.
- Wyoming: Branson, C. C., 14.
- Yukon: Bostock, 11.
- Zeacrinus, Ill., Ky.: Sutton, 15.
- Cripple Creek, Colo.: Salisbury, 1.
- Volcano: Carstarphen, 1.
- Cristoballite, Montserrat: McGregor, 2.
- Yellowstone Nat. Park.: Howard, A. D., 13.
- Criteria.
 - Gold quartz mines: Anderson, J. C., 2.
 - Origin of inclusions, plutonic rocks: Grout, 20.
 - Stratified beds, tops: Belyea, 2.
- Crocodiles. See Reptilia.
- Cromwell oil field, Okla.: Langworthy, 1.
- Cross bedding and fm. thickness: Corbett, 1.
- New York, Catskill facies: Mencher, 2.
- Cross lamination, Casper ss.: Knight, S. H., 4.
- Coconino ss.: Reiche, P., 4.
- Crushing strength of rocks: Holdredge, 4.
- Crustacea. See also Cirripedia; Ostracoda; Trilobita.
 - Arctic Canada: Teichert, 12.
 - Bonaire, W. Indies: Van Straelen, 2.
 - Callanassa: Rathbun, 4.
 - California: Rathbun, 2, 7, 9; Van Straelen, 4.
 - Cambrian: Resser, 2, 6, 22; Ulrich, 7.
 - Cancer: Rathbun, 7.
 - Cretaceous: Rathbun, 10.
 - Decapoda: Rathbun, 2, 3, 12; Stenzel, 5; Van Straelen, 1, 2, 3.
 - Hoploparia: Rathbun, 5.
 - Indianites: Ulrich, 11.
 - Mexico: Rathbun, 3.
 - Nomenclature, Camb.: Resser, 22.
 - North Carolina: Murray, G. E., Jr., 2.
 - Oklahoma: Cooper, C. L., 5.
 - Palinurid: Rathbun, 6.
 - Panama: Rathbun, 13.
 - Pennsylvania: Willard, 27.
 - Phyllocarid: Ruedemann, 33.
 - Phyllopods: Johnson, J. H., 15.
 - Raninidae: Rathbun, 8.
 - Rhinocaris: Stewart, 6.
 - Tertiary: Rathbun, 10; Stenzel, 7.
 - Texas: Richards, H. G., 22.
 - Utah: Resser, 6.
- Cryptogams. See Paleobotany.
- Crystal City quad., Mo.: Pike, R. W., 1.
- Crystallography. See also Mineralogy.
 - Adamite, Calif.: Murdoch, 6.
 - Agate fm.: Cassirer, 1.
 - Albite-beryl crystallization: Shaub, 10.
 - Albite-fayalite system: Bowen, 15.
 - Allaganyite: Rogers, 17.
 - Alunite and jarosite: Hendricks, S. B., 1.
 - Ammonium molybdo-ditellurates: Donnay, 11.
 - Anapaite, alnigmatite, and eudidymite: Palache, 20.
 - Anthophyllite: Winchell, A. N., 15.
 - Antlerite: Richmond, 6; Waldo, 2.
 - Apatite: McConnel, 4, 5.
 - Apparatus, determination of lattice constants: Buerger, 23.
 - Arsenopyrite group: Buerger, 15.
 - Asterism: Walcott, A. J., 2, 3.
 - Atoms, arrangement in crystals: Buerger, 14.
 - Models, Buerger, 28.
 - Attapulgit: Bradley, W. F., 2.
 - Augelite, Calif.: Lemmon, 1.
 - Autonomous and singular nodes: Goldschmidt, 3.
 - Axes, cyclic permutation: Peacock, 12.
 - Axinite: Peacock, 15, 17.
 - Barium and strontium carbonates: Cork, 1.
 - Basalt, crystallization process: Barth, 13.
 - Beryl-albite crystallization: Shaub, 10.

Crystallography—Continued.

- Biaxial crystals, models: Rogers, 13.
 Minerals, determination: Lane, J. H., Jr., 1.
 Rays: Tunell, 11.
 Bixbyite on topaz: Pabst, 14.
 Block structure in crystals: Buerger, M. J., 4.
 Boracite: Gruner, 3.
 Brochantite: Waldo, 2.
 Bustamite: Berman, 6.
 Caesium molybdo-tellurates: Donnay, 12.
 Calaverite: Goldschmidt, 1; Tunell, 4, 7, 9; Short, M. N., 5.
 Calcite: Hawkins, 9; Parsons, 14; Patton, 10; Whitlock, 2.
 Calcium sulfate crystal forms: Ramsdell, 1.
 California: Murdoch, 12; Pabst, 5; Peacock, 10.
 Cassiterite: Gruner, 18.
 Castanite: Donnay, 5.
 Cavities in crystals: Casperson, 3.
 Celestite: Thibault, 2.
 Cell to determine refractive indices: Saylor, 1.
 Century of prog.: Whitlock, 7.
 Chalcopyrite-cubanite relations: Buerger, N. W., 1.
 Chiastolite: Brown, W. L., 1.
 Chlorite system: Winchell, 11.
 Chloritoid: Barth, 10.
 Choice of elements: Peacock, 7.
 Classification: Fisher, D. J., 5; Goldschmidt, 2.
 Claudetite: Palache, 25.
 Colorado: Peacock, 6.
 Columbite: Taylor, E. D., 1.
 Constants, triclinic system: Parsons, A. L., 1.
 Copper ore minerals, X-ray identification: Waldo, 1.
 Crystallographic presentation: Peacock, 4.
 Crystals:
 Chemistry: Stillwell, 1.
 Classification: Fisher, D. J., 5; Goldschmidt, 2.
 Etching: Honess, 2.
 Forms: Ramsdell, 1; Rogers, 20; Wherry, 3.
 Growth and solution: Russell, G. A., 1.
 Habit significance: Donnay, 17.
 Orientation and classn.: Buerger, 20.
 Plasticity: Knopf, E. F. B., 7.
 Space-group determination: Donnay, 19.
 Structure types: Gruner, 4.
 Twisted: Frondel, 10.
 Vectoral chemical action: Frondel, 9.
 Cubanite: Buerger, M. J., 24; Peacock, 11.
 Cubanite and chalcopyrite relations: Buerger, N. W., 1.
 Structure: Buerger, M. J., 16.
 Definition by zones: Rogers, 24.

Crystallography—Continued.

- Deformation, calcite: Griggs, 6.
 Delafosite: Pabst, 13.
 Derivation, 230 space groups: Donnay, 20.
 Development: Pabst, 7.
 Diameters, unique: Burfoot, 2.
 Dickite: Hendricks, S. B., 2; Honess, 4; Ksanda, 1.
 Diopside crystals: Dunham, 4.
 Dolerophanite: Richmond, 7.
 Drawing technique: Schaller, 28.
 Equilibrium studies: Schoenlaub, 1.
 Etch figures: Honess, 5, 6; Wherry, 5.
 Etching and amphisymmetry: Honess, 6.
 Face symbols: Peacock, 14.
 Fayalite: Bowen, N. L., 1; Ford, E. W., 1.
 Feldspar twinning: Chapman, W. M., 1.
 Feldspar twins, determination: Emmons, R. C., 12.
 Fluorite: Whitlock, 4.
 Forms and relations: Palache, 27; Ramsdell, 1; Wherry, 3.
 Galena: Wahlstrom, 5.
 Garnets: Murdoch, 10; Parsons, 15; Schürmann, 4.
 General: Adams, L. H., 3; Kraus, 6; Lazell, 1.
 Glauberite twinning: Hawkins, 11.
 Glauconite-mica relationships: Gruner, 22.
 Gordonite: Pough, 7.
 Growth of crystals: Whitlock, 8.
 Gudmundite: Buerger, 29.
 Gypsum, Okla.: Merritt, C. A., 3.
 Hanksite: Ramsdell, 7.
 Herderite: Yatsevitch, 1.
 Hexagonal system: Parsons, 16.
 History, condensed: Colcord, 1.
 Hypersthene, monoclinic: Verboogen, 2.
 Ice symmetry: Rogers, 23.
 Illinois, in geodes: McKinley, 3.
 Inclusions, oriented: Frondel, 12, 14.
 Indices of refraction measurements: Quirke, 20.
 Jarosite and alunite: Hendricks, S. B., 1.
 Johannite: Peacock, 6.
 Kaolin and talc-pyrophyllite hydrates: Hendricks, S. B., 4.
 Kaolinites and anauxites: Gruner, 30; Machataschki, 1.
 Krennerite: Short, 5; Tunell, 5, 6.
 Large crystals: Palache, 18.
 Lattice vibrations, polar crystals: Lydane, 1.
 Laue symmetry: Barnes, W. H., 3.
 Law of complication: Bueger, 19.
 Leightonite and polyhalite: Peacock, 16.
 Linnaeite group, sulfides: Tarr, 17.
 Lithium molybdo-tellurate: Donnay, 10.
 Livingstonite: Richmond, W. E., Jr., 2.
 Magmatic differentiation: Fenner, 15.
 Magnetite metacrysts: Schwartz, 18.
 Maine, herderite: Yatsevitch, 1.
 Manganosite: Frondel, 16.

Crystallography—Continued.

- Merosymmetry vs. merohedrim: Rogers, 26.
 Meteorites, iron structure: Derge, 1.
 Meyerhofferite: Palache, 36.
 Micas, polymorphism: Hendricks, S. B., 6.
 Microscope, polarizing, use: Fox, W. A., 1.
 Mineral classn.: Seaman, W. A., 2; Staples, 4.
 Minerals, biaxial, angles: Smith, H. T. U., 3.
 Introduction to study of: Pabst, 10.
 Minerals, metals and gems: Verrill, 1.
 Modification, crystal habit: Frondel, 8.
 Models: Balinkin, 1; Fisher, D. J., 12; Gordon, S. G., 2; Smith, H. T. U., 9.
 Morphology: Donnay, 15.
 Narsarsukite: Graham, W. A. P., 8; Warren, B. E., 1.
 Natrolite: Poltevin, 5.
 Nepheline-albite-silica in fayalite: Bowen, 19.
 New Jersey, Franklin Furnace minerals: Palache, 28; Schaller, 16.
 Nomenclature: Boldyrev, 1; Landero, 1.
 Optical analysis of immersion methods: Saylor, 2.
 Optic angle determination: Dodge, T. A., 1.
 Ontario: Chapman, W. M., 1; Peacock, 11.
 Orthoclase: Drugman, 1; Rutherford, 15.
 Orthopyroxene: Hess, H. H., 14.
 Pectolite: Peacock, 5.
 Phenacite: Pough, 3; Thibault, 3.
 Piedmontite: Simonson, 1.
 Plane groups to interpret Weissenberg photographs: Buerger, 11.
 Plazolite: Pabst, 9.
 Polyhalite and leightonite relations: Peacock, 16.
 Polymorphic phenomena: Barth, 9.
 Polymorphous forms, genesis: Bloom, 1.
 Porphyroblasts, quartz: Goodspeed, 9.
 Potassium tetrathionate: Tunell, 10.
 Powellite: Pough, 6.
 Prehnite: Fraser, 13.
 Pseudobrookite: Palache, 31.
 Pucherite: De John, 1.
 Quartz: Fairbairn, 14; Walker, 16; Thompson, M. R., 1.
 Rammelsbergite: Peacock, 19.
 Realgar type crystals: Buerger, 17.
 Rock crystal: Zodac, 18, 21.
 Rock rigidity: Birch, 4.
 Rockville granite: Tatge, 1.
 Römerite: Wolfe, C. W., 1.
 Roselite: Peacock, 13.
 Schaferrite: Foshag, 5.
 Searlesite: Foshag, 11.
 Sections, polished, oriented: Buerger, 18.
 Selective incrustation: Frondel, 2.
 Series of Baumbauer and Ungemach: Donnay, 13.

Crystallography—Continued.

- Silica framework: Buerger, 10.
 Silicate structure, models: Dorris, 1.
 Size of crystals: Frondel, 7.
 Sodium molybdo-tellurate: Terpstra, 1.
 Spheue: Prince, 1.
 Spherulites: Morse, H. W., 1.
 Standardizing names of forms: Wherry, 3.
 Staurolites: Currier, 1; Roberts, 21.
 Stereoscopic crystal drawings: Fisher, 14.
 Stillwater lg. complex: Hess, H. H., 17.
 Stibnite and orpiment: Palache, 8.
 Stilpnomelane: Gruner, 31.
 Structural crystallography: Rogers, 12.
 Structural petrology: Lovering, 29.
 Structure of crystals: Wyckoff, R. D., 2; Wyckoff, R. W. G., 1.
 Sulfo salts studies: Palache, 37.
 Swedenborgite: Pauling, 1.
 Sylvanite: Tunell, 12.
 Symbols, axes and symmetry: Donnay, 9.
 Symbols for point symmetry groups: Soler, 1.
 Syngony: Rogers, 18.
 System CU_2S-CUS , solid: Buerger, N. W., 5.
 Thenardite: Heine, 1.
 Theory and methods, text-books: Tunell, 2.
 Theory of determinants: Aloisi, 1; Donnay, 6, 8.
 Thin secs., color determination: von Huene, R., 2.
 Tourmaline: Barnes, W. H., 2; Buerger, 25; Frondel, 11; Stow, 8.
 Triclinic system: Parsons, A. L., 1.
 Twinning: Barnes, W. H., 4; Bell, J. F., 2.
 Uranium oxides: Palache, 26.
 U-stage axial angle apparatus: Fisher, 15.
 Valentinite and andorite: Schaller, 23.
 Veatchite: Murdoch, 9.
 Vermiculite: Hendricks, S. B., 3.
 Vesuvianite: Pabst, 5.
 Vivianite group: Barth, 12.
 Wardite: Pough, 8.
 Weissenberg photographs: Buerger, 26.
 Wollastonite and parawollastonite: Peacock, 10.
 X-ray studies: Barnes, W. H., 1; Bragg, 1; Buerger, 22; De Jong, 1; Peacock, 18; Ramsdel, 5; Richmond, 6; Waldo, 2.
 Zincite: Frondel, 16.
 Zoisite: Waldbauer, 1.
 Zones, zone-bundles: Rogers, 31.
 Cuba. See also West Indies.
 Bibliography of geology: Bermúdez y Hernández, 9.
 General: Lewis, J. W., 1.
 Geologic mapping: Corral y Alemán, 1.
 Province Habana, Pinar del Río excursions: Herrera y Fritot, 1.
 Río Cauto dam site: Montouilleu, 1.

Cuba—Continued.

Areas described.

Carco mine area: Ortega y Ros, 1.

Economic geology.

Aguas Claras and Guabajales mines: Brodermann, 1.

Carco mine: Ortega y Ros., 1.

Chromite: Allende, 1.

Coal: Bruscantini, 1.

Copper: Allende, 3; Van der Veer, 1.

Geophysical prospecting: Dickerson, 4.

Gold: Quirke, 16.

Macagua mine: Ortega y Ros, 2.

Mineral resources: Cayado, 1.

Petroleum: Ageton, C. N., 1; Bermúdez y Hernández, 10; Dickerson, 3; Lewis, J. W., 2; Williams, E. R., 1.

Historical geology.

Aptychus-bearing fms., age: Lewis, J. W. 3.

Camaguey Prov.: MacGillavry, 4.

Carco mine area: Ortega y Ros, 1.

Connection with N. Am.: Corral y Alemán, 3.

Dutch geol. inv.: Rutten, L. M. R., 2.

Eastern Prov.: Palmer, R. H., 5.

Eocene fms.: Bermúdez y Hernández, 3.

General: Bermúdez y Hernández, 3; Morales y Pedroso, 1; Sánchez Roig, 4.

Guantanamo Bay area: Meinzer, 8.

Guidebook, geol. excursions: Palmer, R. H., 6.

Habana area: Palmer, R. H., 3.

History of devel.: Ramos, D. F., 1.

Isla de Pinos: Rutten, L. M. R., 4.

Jovellanos anticlinal: Ageton, C. N., 1.

Jurassic: Dickerson, 2.

Macagua mine area: Ortega y Ros, 2.

Massif: Schürmann, 2.

Pinar del Rio Prov.: Rutten, M. G., 6.

Santa Clara Prov.: Rutten, M. G., 4, 6; Thiadens, 3, 5.

Sierra Maestra: Taber, 7, 13.

Mineralogy.

Aguas Claras and Guadajales mines: Brodermann, 1.

Carco mine: Ortega y Ros., 1.

History of devel.: Ramos, 1.

Ilumenite: Torre, R., de la, 1.

Lawsonite: Schürmann, 2.

Macagua mine: Ortega y Ros., 2.

Pyrite crystals: Huerta, 1.

Serpentinization: Chawner, 1.

Paleontology.

Aptychus species: Trauth, 1.

Birds: Wetmore, 6.

Bulimina and Buliminella: Parker, F. L., 1.

Camerina petri cf. Nummulites straito-reticulatus: Barker, 5.

Caprinids and monopleurid: Thiadens, 2.

Cepolis: Clench, 1.

Clypeaster: Lambert, J., 3.

Corals: Vaughan, 21, 22.

Cuba—Continued.

Paleontology—Continued.

Echinodermata: Lambert, J., 1, 2; Sánchez Roig, 1, 2.

Faunas, Cret.: Douvillé, 1; Sánchez Roig, 3.

Floras: Berry, 62; León, 1.

Foraminifera: Bermúdez y Hernández, 1, 3, 4, 5, 7; Cushman, 1; Hadley, W. H., Jr., 1; Hanzawa, 1; Palmer, D. B. K., 1, 2, 4, 5, 6, 7, 8; Thalmann, 5; Thiadens, 4; Vaughan, 25; Voorwijk, 1.

Gallowayina: Palmer, D. B. K., 1.

General: Bermúdez y Hernández, 10; Sánchez Roig, 4.

Ground sloths: Matthew, 11.

Gümbelina: Palmer, D. B. K., 2.

Hantkenina: Bermúdez y Hernández, 2.

Ichthyosaurus: Torre, R. de la, 2.

Lanieria: Jeannet, 2, 3.

Mammalia: Torre, C. de la., 1.

Manati: Duelo, 1.

Mecolotia: Clench, 2.

Mollusca: Aguayo, 1, 2; Richards, 9.

Nerenia: Knipscheer, 1.

Orbitocyclina cf. Lepidorbitoides: Rutten, M. G., 6.

Orbitoids: Ellis, B. F., 1; Gravell, 1.

Pachodonts: Mülleried, 13.

Pinar del Rio Prov.: Vermunt, 4.

Plants, Pleist.: Berry, 47.

Planulina: Palmer, D. B. K., 9.

Radiolaria: Palmer, D. B. K., 3.

Rudistids: Boissevain, 1; MacGillavry, 4; Palmer, R. H., 2; Rutten, M. G., 5; Thiadens, 1; Vermunt, 5.

Santa Clara Prov.: Rutten, M. G., 4, 6.

Seabrookia: Bermúdez y Hernández, 8.

Textulariidae: Lalicker, 4.

Uvigerinia: Cushman, 1.

Petrology.

Lawsonite: Schürmann, 3.

Massif: Schürmann, 2.

Pinar del Rio Prov.: Vermont, 4.

Santa Clara Prov.: Rutten, M. G., 4, 6; Thiadens, 3, 5.

Physical geology.

Camaguey Prov.: Mac Gillavry, 4.

Carco mine area: Ortega y Ros, 1.

Earthquakes: Duque de Estrada, 1;

Jover y Anido, 1; Montoulieu, 3;

Morales y Pedroso, 2, 4; Taber, 11;

Villa, 1.

Eastern Prov.: Palmer, R. H., 5.

Massif: Schürmann, 2.

Pinar del Rio Prov.: Vermont, 4.

Santa Clara Prov.: Rutten, M. G., 4, 6.

Santiago de Cuba: Montoulieu, 2.

Seismic belt: Taber, 9.

Seismology: Jover y Anido, 1.

Sierra Maestra: Morales y Pedroso, 3; Taber, 7.

Volcano, extinct: Herrera y Fritot, 2.

Physiographic geology.

Eastern Prov.: Palmer, R. H., 5.

General: Ralsz, 2.

Karst topography: Meyerhoff, 25.

Cuba—Continued.

Underground water.

- Ground water: Queral, 1.
- Karst topography: Meyerhoff, 25.
- Relief: Portella, 1.
- Sierra Maestra: Taber, 13.

Cubanite, Ont.: Peacock, 11.

Cuesta vs. peneplain, Wis.: Martin, L., 4.

Cuprobismuthite: Palache, 41.

Curacao, West Indies.

General: Rutten, 10.

Historical geology.

- Central area: Vermunt, 1.
- Northern area: Vermunt, 3.
- Ronde Klip area: Pijpers, 2.
- St. Martha and St. Krins area: Vermunt 2.
- Seroe di Cuba lms.: Rutter, M. G., 1.

Paleontology.

- Foraminifera: Koch, R., 1, 2.
- Rudistids: Mac Gillavry, 1.
- Seroe di Cuba lms. fauna: Rutten, M. G., 1.

Petrology.

- Central Curacao: Vermunt, 1.
- Northern area: Vermunt, 3.
- Ronde Klip: Pijpers, 2.

Physical geology.

- Central area: Vermunt, 1.
- St. Martha and St. Krins area: Vermunt, 2.

Cushing oil and gas field, Okla.: Weirich, 1.

Cusps. See also Shore Lines.

- Illinois: Needham, 1.
- Quebec, Lake Olga: Evans, 16.

Cyanite, N. C.: Fessler, 1; Stuckey, 9; Taber, 15; Vitz, 1.

Cycads. See Paleobotany.

Cyclothem: Abernathy, 1; Keyes, 368; Newton, 1; Wanless, 7.

Cylindrical structures in ss.: Hawley, 11.

Cyrtolite: Muench, 5.

Cystoidea.

- Classification: Bassler, 18.
- Edrioasteroidea: Bassler, 24.
- Indiana, Kentland area: Sbrock, 12.
- Ohio, Cincinnati area fauna: Bucher, 21.

Daemonehelix, Tex.: Wood, H. E., 7.

Dakelke cf. schroekingierite: Nováček, 1.

Dakota stage, type sec.: Tester, 3.

Daly's hypothesis, submarine canyons: Shepard, 30.

Damariscotta shell heaps and coastal stability: Goldthwait, R. P., 1.

Dams, and dam sites.

- Arizona: Berkey, 17; Richter, R., 4.
- Beaver dams as geol. agents: Ruedemann, 45.
- Bonneville, location: Hodge, 20.
- California: Berkey, 9.
- Colorado: Heaton, 8.

Dams—Continued.

Columbia River basin, Wash.-Oreg.: Landes, H., 1.

Core drill, large, for explor.: Money-maker, 6.

Engineering geology of sites: Mead, 3, 4, 5.

General: Jelliff, 1.

Geological foundations: Woodruff, E. G., 5.

Geology, sites in hard rocks sh., and earth: Mead, 3, 4.

Geophysical inv.: Helland, 22; Stipe, 1.

Illinois: Ekblaw, 13, 16.

Maryland: Eckel, 12.

Mexico: Arnold, R., 2; Perera Castillo, 1.

Missouri: Wentworth, 12, 13.

New Mexico: Crosby, 15; Eckel, 14.

Oregon: Berkey, 18.

Pennsylvania: Philbrick, 3.

South Carolina: Taber, 14.

Tennessee: Berkey, 17; Wentworth, 3.

Washington: Berkey, 18; Flint, 23; Irwin, W. H., 1.

Wyoming: Bradley, 13.

Danburite, La.: Hurlbut, 8.

Dating, mammal-artifact locs.: MacClintock, 8.

Death Valley: Lee, B., 1.

Decomposition of rocks. See Weathering.

Deductions from thermal equations: De Lury, R. E., 1.

Deep-focus earthquakes: De Lury, J. S., 23; Stechschulte, 4, 6; Thom, 18.

Deep-sea sedimentation: Kuenen, 1.

Deep wells. See Borings.

Definitions: Evans, 10; Gillson, 3; Osborne, F. F., 1; Sederholm, 1; Anonymous, 161.

Definitions vs. concepts: Anonymous, 161.

Deflation in deserts: Blackwelder, 10.

Deformation.

Appalachian: Woodward, 14.

Arizona: Butler, 18; Fowler, 14; Reber, 1.

Arkansas: Branner, 17.

Big Horn Basin-Yellowstone Valley area: Anonymous, 117.

British Columbia: Rice, 5.

California: Mayo, 14; Oakeshott, 1; Soper, 4; Webb, 9; Woodring, 20.

Canada: Dougherty, 5.

Colorado: Burbank, 16.

Continents: Moore, 35.

Correlation, quartz deformation: Fairbairn, 13.

Creep of rocks: Griggs, 10.

Crystal plasticity: Knopf, E. F. B., 7.

Crystalline schists, Pa. and Md.: Jonas, 12.

Earth, crust: Bucher, 19.

Experimental inv.: Griggs, 4, 8; Mott-Smith, M. C., 1.

Deformation—Continued.

- Fault-vein intersection: Murphy, P. R., 1.
 Flotation of mts.: Lawson, 10.
 Folding, small adjustments: Straley, 6.
 General: Hubbert, 12.
 Gogebic Iron dist.: Atwater, 5.
 Geologic materials: Lovering, 27.
 Great Smoky fm.: Moneymaker, 5.
 Greenland: Odell, 5; Wegmann, 8.
 Idaho: Ross, C. B., 31.
 Kansas: Keith, B. A., 2.
 Kentucky: Russell, W. L., 15; Wesley, 3.
 King's Mtn. area, N. C. and S. C.: Frink, J. W., 1.
 Kyanite. See Cyanite.
 Maryland: Broedel, 1; Marshall, J., 1.
 Michigan: Dickey, R. M., 5.
 Montana: Lammers, 2; Skeels, 1.
 Nevada: Callaghan, 13; Cameron, E. N., 2.
 New England: Wheeler, G., 1.
 Newfoundland: Cooper, J. R., 2; Heyl, 2; Wheeler, G., 1.
 New Mexico: Church, F. S., 1; Hunt, 4, 4-a.
 North America: Grabau, 5; Keith, B. A., 4.
 North Carolina: Frink, 1.
 Northwest Territories: Furnival, 3, 5.
 Ontario: Bateman, J. D., 2; Harding, 4; Horwood, 12; Pettijohn, 15; Thomson, James E., 13.
 Oregon: Gilluly, 16.
 Plastic creep of solids: Nádai, 2.
 Quebec: Osborne, 29.
 Rio Grande depression: Bryan, 36.
 Snake River Canyon: Freeman, O. W., 8.
 South Carolina: Frink, 1.
 Structural, magmatic processes: Hoffman, 8.
 Tennessee: Born, 10.
 Texas: Albritton, 8; King, 29.
 Three-dimensional exper.: Link, G. A., 1.
 Utah: Baker, F. C., 12; Dobbin, 17.
 Virginia: Brown, C. B., 3; Stose, A. J., 1.
 Wyoming: Baker, C. L., 26; Chamberlin, 21; Fanshawe, 1; Horberg, 1; Rouse, 6.

Delaware.

Areas described.

- Coatesville-West Chester quad.: Bascom, 3.

Economic Geology.

- Atlantic Coastal Plain, oil and gas poss.: Postley, 4.

Historical Geology.

- Baltimore & Ohio Routes: Grimsley, 1.
 Chesapeake and Delaware Canal: Carter, C. W., 1.
 Chesapeake Bay area: Stephenson, L. W., 6.

Mineralogy.

- General: Hawkins, 8.

Delaware—Continued.

Paleontology.

- Chesapeake and Delaware Canal area: Carter, C. W., 1.
 Fauna, Pamlico: Richards, H. G., 14.

Petrology.

- Quartzites: Fluhr, 5.

- Delaware Extension oil pool: Lewis, J. O., 1.
 Deltas.

- Alaska: Eardley, 8.
 Arizona: Keyes, 450.
 Channel-like deposits: Tanner, W. F., 3.
 Colorado River: Lougee, 6; McKee, 14; Sykes, 1, 2, 3, 4.
 Connecticut: Krynine, 7.
 Gulf Coast: Price, 25.
 Isostasy: Lawson, 9.
 Louisiana: Dohm, 1; Foster, 4; Howe, H. V., 30; Krumbein, 23; Price, W. A., 19; Russell, R. J., 13, 18, 21, 26.
 Minisink Valley: Happ, 4.
 Mississippi River: Dohm, 1; Foster, 4; Krumbein, 23; Price, W. A., 19; Russell, R. J., 13, 13-a, 16, 21, 26, 28; Trowbridge, A. C., 8.
 New York: Berry, G. W., 1.
 Rio Grande: Price, W. A., 18, 23.
 Texas: Price, W. A., 14.
 Vermont: Jacobs, 2.

Dendrites: Swartzlow, 5.

- Dendrochronology and geochronology: De Geer, E. H., 1.

- Dennison Fork dist, Alaska: Mertie, 7.

- Densities, rocks: Daly, 13.

- Density anomalies, Great Plains: Melton, 1.

- Denudation. See Erosion.

- Depew area, Okla.: Martin, H. M., 1.

- Deposition. See Sedimentation.

- Deposition of ores. See Ore deposits, origin.

- Desertification: Landon, 4.

Deserts.

- Arizona: Sykes, 6.
 California: Chapman, E. W., 2.
 Border region, Tex.-Mex.: Hill, 8.
 Denudation: Keyes, 137; Russell, R. J., 12.

- General: Pickwell, 1.

- Gemorphogeny: Davis, 24.

- Geomorphology: Davis, 28.

- Mineralogy of sands: White, W. A., 1.

- Mountains, slopes, plains: Field, R., 1.

- North American, sandy areas: Shreve, F., 1.

- Regolith of deserts: Sykes, 5.

- Varnish: Lauder milk, 2; Miller, B. L., 12.

- Desiccation features, humid climate: Krynine, 2.

- Detrital grains, handling: Partridge, 1.

- Devonian. See also Paleontology. Devonian.

- Alabama: Johnston, W. D., Jr., 6.

- Alaska: Buddington, 1; Capps, 6; Kirk, E., 4; Mertie, 1, 4, 10, 13, 14, 15, 16; Moffit, 8, 11; Smith, P. S., 3, 12.

Devonian—Continued.

- Alberta: Allan, 7, 8; Calder, 2; Hake, 2; Helland, 19; Hume, 28; Kelly, W. A., 11; Kindie, E. M., 4; MacKay, 8; Moore, P. D., 1, 3; Raymond, 4; Russell, 36; Sproule, 4; Sur, 1; Telfer, 1; Warren, P. S., 10, 11, 18.
- Antillean-Caribbean region; Schuchert, 31.
- Appalachian oil and gas fields: Ashley, 28.
- Appalachian Plateau and Miss. Valley: Butts, 12.
- Arctic America: Kindie, E. M., 3, 40.
- Arizona: Brady, 6; Brown, W. H., 4; Butler, 17, 18, 19, 21; Galbraith, 1; Holm, 1; Keyes, 64, 412; Reber, 1; Roe, H., 1; Short, 6; Stoyanow, 2; Trischka, 4; Wilson, E. D., 8; Anonymous, 179.
- Arkansas: Croneis, 2; Kans. G. Soc., 6; Miser, 1.
- Beauvais ss., Mo.: Croneis, 8.
- Bradford field, Pa.-N. Y.: Fettke, 9, 11.
- British Columbia: De Bethune, 3; Evans, O. F., 4; Telfer, 1; Williams, M. Y., 4.
- California: Averill, 7; Hazzard, 7, 8; Hinds, 11, 14, 33; Hopper, 3; Jenkins, 12; Noble, L. F., 3; Stauffer, 2; Anonymous, 60.
- Canada: Goodman, 4; Kindie, 40; Weeks, L. J., 5.
- Catskill, name, history, value in geology: Chadwick, 31.
- Cedarian series, Iowa: Keyes, 106.
- Chaleur Bay area, New Brunswick-Quebec: Alcock, 13.
- Chattanooga black shs.: Keyes, 444.
- Chemung fm., Iowa, N. Y.: Tester, 1.
- Cincinnati arch devel.: McFarlan, 21.
- Clays, U. S.: Chelkowsky, 1.
- Colorado: Bassett, 3; Behre, 10, 32, Brainerd, 3; Burbank, W. S., 3, 4, 16; Cross, C. W., 2; Effinger, 3; Johnson, J. H., 17; Kirk, E., 9; Lovering, 4, 14; Rohlfing, 1; Singewald, Q. D., 4, 10; Vanderwilt, 8, 11.
- Connecticut: Cook, T. A., 1.
- Cordilleran area: Keyes, 505.
- Correlation: Pohl, 1.
- Cross section, Ky.-W. Va.: Krebs, 2.
- Deformation earth's crust: Moore, 30.
- Devono-Mississippian boundary: Swartz, J. H., 3.
- Distribution and thickness: Ver Wiebe, 6.
- Eastern N. Y., western New England: Longwell, 14.
- Gaspé and New Brunswick: Alcock, 4.
- Georgia: Georgia G. S., 1.
- Greenland: Backlund, 1; Büttler, 1, 2, 3, 4, 5; Cleaves, 3; Johansson, 1; Koch, L., 1, 2, 10, 12; Kulling, 1, 2; Maync, 1; Moos, A. von, 1, 2; Noe-

Devonian—Continued.

- Greenland—Continued.
- Nygaard, 3, 5; Orvin, 1; Rittman, 1; Silve-Söderbergh, 1, 4, 6; Schaub, H. P., 1; Stauber, H., 1, 2; Teichert, 3, 8, 14; Wegmann, 1, 8.
- Guidebook, Pa. geologists conf., 1938: Bevan, 34.
- Hackberry stage: Belanski, 1.
- Hamilton correls.: Willard, 45.
- Hamilton group, N. Y.: Cooper, G. A., 2.
- Helderberg group: Swartz, F. M., 1, 2, 3.
- Idaho: Mansfield, G. R., 2; Ross, C. P., 21.
- Illinois: Bell, 23, 27, 28; Bretz, 10; Cady, 8; Keyes, 430; Ross, C. P., 31; Sloan, 1; Spitznagle, 1; Wanless, 1; Weller, 24, 25, 28, 31; Workman, 3, 5.
- Illinois-Missouri correls.: Kansas G. Soc., 12.
- Illinois-Missouri sect.: Weller, 31.
- Indiana: Logan, 8; Shrock, 3; Sutton, D. G., 1; Whitlatch, 3.
- Iowa: Keyes, 13, 106, 176, 496; Stookey, 2, 3, 4; Wood, L. W., 2.
- Kansas: Dalrymple, 1; Hall, R. H., 3; Johnston, L. A., 1; Koester, 2; Ockerman, 3; Osborn, W. G., 2; Ver Wiebe, 16; Wilhelm, C. J., 1.
- Kentucky: Freeman, L. B., 3; McFarlan, 16, 19; Savage, T. E., 2, 6, 7; Twenhofel, 4; Wesley, 1, 3.
- Kinderhook ser.: Keyes, 434.
- Linnean ser.: Keyes, 476.
- Lowlands and Ouachita Prov.: Ruedeman, P., 3.
- Maine: Chadwick, 33; Keith, Ar., 5; Philbrick, 2.
- Manitoba: Wickenden, 11.
- Maryland: Eckel, 12; Stose, 11.
- Mexico: Santillán, 15.
- Michigan: Bassett, 1; Eddy, G. E., 1; Eddy, G. F., 1; Ehlers, 5; Hake, 5, 6; Hard, E. W., 2; Newcombe, 3, 4, 7, 9; Newman, E. A., 1; Pohl, 4; Pringle, 1; Riggs, C. H., 1, 2; Warthin, 8, 11; Wellman, 1; Zavolco, 5.
- Michigan Basin: Newman, E. A., 2.
- Midwest fossils: Cooper, 24.
- Minisink Valley, N. Y., Pa.: Happ, 3.
- Minnesota: Thiel, 14.
- Mississippi: Foster, 5; Morse, W. C., 1, 9; Morse, H. M., 1.
- Mississippi Basin: Pohl, 7.
- Mississippi Valley: Kans. G. Soc., 8; Stainbrook, 1; Tester, 13; Workman, 7.
- Missouri: Condra, 12; Conselman, 1; Grohskopf, J. G., 3; Keyes, 479, 491; McQueen, 10.
- Montana: Bevan, 3; Deiss, 3, 6; DeWolf, 4; Lammers, 2; Lovering, 1; Perry, 18; Romine, 1; Sahinen, 4; Shenon, 1; Skeels, 1; Spiroff, 3; Wilson, C. W., Jr., 2.

Devonian—Continued.

- Nebraska: Condra, 12, 18, 19; Lugin, 4; Reed, E. C., 1.
- Nevada: Glock, 1; Hewett, 4; Merriam, C. W., 5, 13; Westgate, 6.
- New Albany sh.: Huddle, 2; Savage, 4.
- New Brunswick: Alcock, 18; Caley, 2; Hayes, 7; Shaw, E. W., 1.
- Newfoundland: Schuchert, 28; Snelgrove, 5; Twenhofel, 40.
- New Hampshire: Billings, 5, 7, 9, 10, 13, 15; Chapman, C. A., 1; Chapman, R. W., 2, 3; Fowler-Lunn, 1; Hadley, J. B., 1; Quinn, 4; Shaub, 9, 13; Williams, C. R., 2.
- New Jersey, Hamilton group: Willard, 21.
- New Mexico: Dunham, 3; Harley, 1; Lasky, 12; Talmage, 7; Winchester, 3.
- New York: Berry, G. W., 1; Bradley, 13, 19; Caster, 2; Chadwick, 15, 16, 17, 18, 19, 22, 23, 27, 28, 30; Cooper, G. A., 7, 10, 15, 18, 19; Fettke, 2; Fox, I. W., 1; Goldring, 11; Mencher, 2; Newland, 9, 20; Payne, T. G., 1; Pepper, 1; Reeves, J. E., 3; Rodgers, 5; Ruedemann, 7; Schuchert, 22; Sheldon, P. G., 1; Smith, B., 2, 4; Thwaites, 8; Torrey, P. D., 5, 8; Torrey, R. H., 1; Trainer, 3; Wedel, 1; Willard, 21.
- North America: Butler, 16; Lecompte, 1; Schuchert, 57; Vokes, 11; Waters, 13; Waterschoot van der Gracht, 15.
- Northwest Territories: Cameron, 5.
- Nova Scotia: Cox, E. J., 1; Wilson, J. T., 4.
- Ohio: Bucher, 10, 15-a; Carman, J. E., 1, 2, 6; Cushing, 1; David, A., 1; Harper, J. L., 1; Lamborn, 3, 4; Lockett, 2; Rogers, J. K., 2; Stout, 18; Ver Steeg, 23; Westgate, 7.
- Oklahoma: Atchison, 1; Boyd, W. B., 1; Bradenthaler, 1; Cram, 2; Hendricks, 10; Hoffman, M. G., 1; Hyatt, 1; Ireland, 4; Maxwell, R. A., 1; Melton, 4; Millison, 1; Rau, 1; Whiteside, 3; Wrather, 1.
- Ontario: Dyer, 1, 6, 9, 12, 15; Harkness, 5; Laird, 6; Warthin, 10.
- Oregon: Oregon Dept. Geology, 1.
- Oriskany ss.: Hamilton, S. H., 2, 3; Stow, 3, 11.
- Ostracoda, photography of: Swain, 1.
- Ozark Mts. area: Schottenloher, 2.
- Pennsylvania: Arnold, 8; Ashley, 8; Behre, 9; Burroughs, 4; Butler, R. D., 3; Butts, 10, 13; Caster, 3, 5, 6; Cathcart, 2, 3, 4, 6, 7, 8, 9, 12; Claus C. R., 1; Cleaves, 1, 4, 5, 6, 8; Detrick, 2; Fettke, 2, 3, 12; Foose, 1; Laird, W. M., 2; Leggette, 9; Linton, 1; Lohman, S. W., 4; Miller, B. L., 4, 7; Moyer, 1; Piper, 7;

Devonian—Continued.

Pennsylvania—Continued.

- Reeves, J. R., 2, 3; Richardson, G. B., 3, 4; Rogers, R. D., Jr., 1; Sherrill, 5; Sisler, 8; Stose, 11; Swartz, C. K., 6; Swartz, F. M., 10; Torrey, 8; Ward, F., 5; Willard, 10, 16, 17, 18, 20, 21, 22, 24, 26, 31, 32, 34, 36, 40, 41, 44, 47, 49, 50, 55, 56, 57, 59, 62.
- Petroleum developments, Ill.: Bell, 27.
- Platteville fms.: Bays, 2.
- Post-Keweenaw age by helium: Urry, 8.
- Quebec: Burton, F. R., 1; Clark, T. H., 11; Cooke, H. C., 22; Crickmay, G. W., 2; Jones, I. W., 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15; Kindle, C. H., 3; Kindle, E. M., 6, 38; La-verdière, 4; McGerrigle, 3, 4, 9; Northrop, 10; Parks, 4; Schuchert, 9; Tolman, 12.
- Restorations, geol. landscapes: Reid, G. A., 1.
- Rio Grande depression: Bryan, 36.
- Rockford shs., Mo.: Keyes, 436.
- Rocky Mts.: Bartram, 10; Warren, P. S., 1.
- St. Lawrence River, history: Gill, 6-a.
- Saskatchewan: Fraser, F. J., 6; McLearn, 17; Wickenden, 7.
- Sedimentation cycles: Keyes, 475.
- Southern Appalachians: Butts, 4.
- Southwestern U. S.: Effinger, 4.
- Tennessee: Born, 5; Jewell, 1; Peoples, 1; Piper, 3; Pohl, 6, 9; Theis, 4; Wilson, C. W., Jr., 7.
- Texas: Arick, 2; Darton, 1; King, P. B., 7, 21, 29; Lowman, 2; Schoffelmayer, 1; Sellards, 28, 36, 38.
- Traverse-Hamilton ostracode correl.: Warthin, 4.
- United States, E.-cent.: Ballard, 1.
- Utah: Gilluly, 5; Nolan, 3, 6.
- Vermont: Church, M. S., 1; Doll, 2.
- Virginia: Bates, R. L., 1, 4; Bevan, 9; Butts, 5, 14; Cady, R. C., 4; Cooper, B. N., 1, 7; Edmundson, 5; Holden, 6; Powell, S. B., 1; Richardson, W. E., 1; Stose, 13; Woodward, 8, 11, 13.
- Washington: Park, 9.
- West Virginia: Billingsley, J. E., 2, 3; Fridley, 4; Lafferty, 1, 3; McCue, 1; Martens, 11, 12; Price, P. H., 1, 8-a, 12, 14, 17; Reeves, F., 5; Reger, 3, 9; Sherrill, 4; Stephenson, E. E., 1; Tilton, 3.
- Wisconsin: Pohl, 11; Raasch, 2; Shrock, 14.
- Wyoming: Dorf, 2; Horberg, 1; Johnson, G. D., 1; Love, 6; Stevens, E. H., 2.

Diabase.

- Greenland: Wegmann, 10.
- Minnesota: Schwartz, 29.

Diamonds. See also Precious stones.

Arizona, Canyon Diablo meteorite: Ksanda, 2; Nininger, 61.

Arkansas: Branner, 4.

Drill cores: Wisser, 1, 3.

Deposits of magmatic origin: Ball, S. H., 3.

General: Blank, 4.

Hardness variation: Kraus, 11.

Multiple twins: Palache, 17.

North America: Kunz, 3.

Diaphorite sulfo salts: Palache, 32.

Diaspore, Mo.: McQueen, 3.

Diastrophism.

Alaska: Mertie, 22.

Antillean-Caribbean area: Schuchert, 31.

Arizona: Keyes, 185.

California: Reed, 25; Shepard, 55; Woodford, 8.

Carboniferous, Mid-continent: Keyes, 322.

Colorado: Forrester, 1.

General: Brodshaug, 1.

Geologic chronology by: Keyes, 455.

Greenland: Odell, 5.

Lowlands and Ouachita Prov.: Ruedemann, P., 3.

Mexico: Kellum, 7; Woodford, 8.

New Mexico: Keyes, 334.

North America: Waters, 13.

Oscillation theory: Longwell, 9.

Ontario: Moore, E. S., 18.

Rocky Mts., S.: Keyes, 361.

Texas: Leyendecker, 1; Price, W. A., 7.

Uinta Mts.: Forrester, 1.

Wyoming: Chamberlin, 21; Horberg, 1.

Diastrophism and intrusion: DeLury, 16.

Diastrophism and terrace levels: Hubbard, 8.

Diatomaceae. See also Diatomaceous earth.

Artistry: Mann, 1.

Barbados: Fuge, 1; Robinson, J. H., 1, 2.

Bering Sea: Hanna, G. D., 2.

California: Deflandre, 4; Hanna, G. D., 1, 16, 19, 20, 29, 32-a; Hendy, 1; Laporte, 1; Lohman, K. E., 1, 2, 5; Mulryan, 1; Phleger, 9; Woodring, 17.

Cedarville fm.: LaMotte, 9.

Core-samples, Atlantic Ocean: Cushman, 34.

Diatomées du monde entier, 2d ed., dates of pub.: Hanna, G. D., 11.

Dismal Swamp: Cocke, 1.

Florida: Hanna, G. D., 26.

Greenland: Iversen, 1.

Hyrax mounting medium: Hanna, G. D., 14.

Lithodesmium cornigerum: Hanna, 4.

Maryland: Deflandre, 2.

Massachusetts: Hyypää, 1.

Mexico: Diaz Lozano, 3; Hertlein, 6.

Diatomaceae—Continued.

New Hampshire: Kindle, 24.

New Mexico: Lohman, K. E., 4; Patrick, R., 1.

New York: Lohman, K. E., 6.

North Carolina: Henbest, 11.

Nova Scotia: Kindle, 24.

Omphalotheca growth: Hanna, G. D., 5.

Oregon: Lohman, K. E., 3.

Petroleum source: Phleger, 9.

Porosity, lack: Hanna, G. D., 7.

Pyritized: Schenck, 3.

Replaced by calcite in concretions: Schenck, 8.

Rouxia: Hanna, G. D., 3.

Shell structure: Conger, 1.

South Carolina: Cooke, C. W., 20.

Utah: Hasler, J. W., 1.

Wisconsin: Conger, 3.

Diatomaceous earth. See also Diatomaceae.

British Columbia: Richmond, A. M., 2.

California: Lewis, W. S., 1; Mulryan, 1; Phleger, 9; Talliaferro, 9.

Florida: Gunter, 6.

General: Calvert, R., 1; Conger, 2; Greig, J. W. D., 1.

Nature, occurrence, use: Melhase, 1.

New York: Cannon, R. S., 1.

Nova Scotia: Messervey, 4.

Oregon: Smith, W. D., 1, 4.

Pacific Coast: Mulryan, 2.

Peat deposit: Conger, 4.

Shell structure: Conger, 1.

Utah: Wimber, 1.

Virginia: Roberts, 20.

Diatomite.

Arizona: Trischka, 1.

British Columbia, Kettle River area, W.: Cairnes, 17.

California: Mulryan, 1.

General: Eardley-Wilmot, 1; Greig, J. W. D., 1.

Industrial minerals and rocks: A. I. M. E., 2.

North America: Waters, 13.

Oregon: Lazell, 3; Moore, B. N., 5, 8.

Pacific Coast: Mulryan, 1.

Diatryma: Troxell, 4.

Dickite.

Missouri: Allen, 15; Grobshkopf, J. G., 2; Tarr, 19.

Pennsylvania: Honess, 4.

Differential compacting: Nevin, 1.

Differentiation, traps and ore deposition: Lane, 30.

Diffusion and ore deposition: Duffell, 1.

Dikes. See also Intrusions.

Alaska: Reed, J. C., 11, 18; Smith, P. S., 12.

Alberta: Russel, 37.

Arizona: Butler, 21; Fowler, 14; Gilluly, 20; Hernon, 1; Rubly, 1; Smith, H. T. U., 11.

Dikes—Continued.

- British Columbia: Cairnes, 15; Cockfield, 15; Kindle, E. D., 2, 3, 4; Lang, A. H., 6; Nelson, H. E., 1; O'Grady, 1; Rice, 4.
- California: Andrews, P., 2; Chapman, R. W., 4; Daly, J. W., 1; Kelley, 10; Miller, W. J., 12, 17; Reiche, 1; Webb, 14.
- Canada: Collins, 12.
- Clastic: Jenkins, 1; McMillan, J. M., Jr., 1.
- Colorado: Behre, 32; Boos, 4; Knopf, 11; Lovering, 30; Moehlman, 5; Van Valkenburgh, A., Jr., 1; Waldschmidt, 5; Wilkerson, 5.
- Connecticut: Cameron, E. N., 3.
- Curacao, W. Indies: Vermunt, 2.
- Diachstic and ore deposits: Spurr, 1.
- Dilation and replacement: Goodspeed, 19.
- Georgia: Lester, J. G., 1.
- Greenland: Odell, 5; Wager, 1, 8, 5; Wegmann, 6.
- Hawaii: Stearns, 28.
- Idaho: Anderson, 23; Capps, 14; Ross, C. P., 29; Shenon, 17.
- Illinois: Cady, 8.
- Kansas: McMillan, 1.
- Kentucky: McFarlan, 13.
- King's Mtn. area, N. C. and S. C.: Frink, 1.
- Labrador: Kranck, 3; Wheeler, E. P., 2; Wheeler, H. E., 2.
- Maine: Fisher, L. W., 9; Haff, 4; Philbrick, 2.
- Manitoba: Baker, W. F., 1; Stockwell, 10, 11; Tanton, 6-a; Wright, 21.
- Maryland: Broedel, 1; Cohen, 1; Hershey, H. G., 1; Marshall, J., 1.
- Massachusetts: Billings, 18.
- Mexico: Moehlman, 4; Singwald, Q. D., 12; Watson, 9.
- Michigan: Ayres, 1; Dutton, C. E., 5; Lamey, 1; Newcombe, 12.
- Minnesota: Sleight, 1.
- Missouri: Graves, 1.
- Montana: Dickey, F. H., 2; Dyson, 3; Gibson, R., 4, 5; Larsen, 15; Wolff, 6.
- Nevada: Callaghan, 6, 8; Campbell, D. F., 1; Campbell, I., 9; Kerr, P. F., 14, 17, 20.
- New Brunswick: Caley, 2.
- Newfoundland: Bain, 18; Betz, 1; Cooper, J. R., 1; Foley, F. C., 1; George, P. W., 2; Heyl, 1, 2, 3; Jewell, 2; Vhay, 1.
- New Hampshire: Billings, 9, 13; Chapman, R. W., 2; Fowler-Lunn, 1; Kruger, 2; Modell, 3; Quinn, 4; Williams, C. R., 2.
- New Jersey: Milton, 3, 5.
- New Mexico: Hunt, 4; Lasky, 14; Parker, B. H., 2; Schmitt, 10.

Dikes—Continued.

- New York: Blank, H. R., 1; Buddington, 17, 23; Filmer, 1; Hudson, G. H., 2, 3; Larrabee, 1; Newland, 5; Smith, B., 3.
- North Carolina: Frink, 1; Johnson, W. R., 2.
- Northwest Territories: Furnival, 3, 5; Henderson, J. F., 3, 5, 6; Jolliffe, F. J., 3; Kidd, 7.
- Nova Scotia: Cameron, H. L., 1.
- Oklahoma: Merritt, 7.
- Ontario: Bartley, 2; Bateman, J. D., 2, 3; Burrows, 3; Bruce, 16, 21, 26; Collins, 7; Dyer, 21, 22; Frohberg, 3; Horwood, 12; Hurst, 10; Lindner, 1; Moore, E. S., 18; Moorhouse, 1, 2; Pettjohn, 15; Plemister, 1; Prest, 1; Quirke, 18-a; Thomson, James E., 8; Thomson, R., 3, 4; Yates, 1; Anonymous, 121, 149.
- Oregon: Gilluly, 16; Goodspeed, 20.
- Pegmatites: Hess, F. L., 8.
- Pennsylvania: Price, P. H., 5; Tomlinson, W. H., 2; Willard, 58.
- Quartz: Tolman, C., 5.
- Quebec: Auger, 2; Bannerman, 4; Bell, L. V., 12; Denis, 6, 8; Faessler, 22; Gussow, 1, 2; Hawley, J. E., 10; Henderson, J. F., 1, 2; Laverdière, 4; Longley, 4; Lowther, 1; McGerrigle, 4, 8; MacKenzie, 1, 4; Mawdsley, 6; Norman, 7, 8; Northrop, 10; O'Neill, 4, 6; Osborne, 15, 21, 22, 29; Quirke, 18-a, 18-d; Shaw, G., 1; Sproule, 1-a; Suffel, 3; Wilson, M. E., 16.
- Saganaga batholith, Minn. - Ontario: Grout, 18.
- Saskatchewan: Alcock, 16, 17.
- South Carolina: Frink, 1; Taber, 18.
- South Dakota: Gardner, E. D., 2; Stobbe, 1; Tullis, 7.
- Texas: Kelsey, M., 1; Kramer, 3; Stenzel, 9.
- Utah: Farmin, 2; Gregory, H. E., 4; Schoff, 2.
- Vermont: Balk, 12; Doll, 2; Kreiger, M. H., 1; Larrabee, 1.
- Virginia: Campbell, H. D., 4; Furcron, 9; Glass, J. J., 1.
- West Virginia: Price, P. H., 5.
- Wyoming: Beckwith, 5; Irwin, W. H., 1; Parsons, W. H., 1, 2; Rouse, 6.
- Yukon: Johnston, J. R., 2.
- Dinosauria. See Reptilia.
- Dinosaur hunting: Sternberg, C. H., 1.
- Diopside, Calif.: Merriam, R., 1.
- Dip needle in explor.: Stearns, 2.
- Dipping strata in resistivity explor.: Al-dredge, 1.
- Dip problems simplified: Fisher, D. J., 11.
- Directional ore instruments, geophys. prosp.: Rose, R. B., 2.

- Discovery rates in oil: Campbell, F. F., 1;
Pratt, W. E., 2.
- Discrepancies, time, fossil animals and plants:
Cockerell, 24.
- Dislocations. See Faulting.
- Dissertations.
Petroleum in Mexico: Alvarez, 1.
- Distribution. See Geographic distribution.
- District of Columbia.
Geologist's paradise: Bassler, 16.
- Historical geology.*
Washington area: Cloud, P. E., 3.
- Mineralogy.*
Minerals: Ulke, 3, 4.
Vivianite: Benn, 3.
- Paleontology.*
Plants, Pleist.: Berry, 38.
- Physiographic geology.*
Terraces and overlap: Darton, 6.
- Divining rod: Gregory, J. W., 1.
- Dolomite.
Illinois: Grim, 11; Lamar, 15.
Metamorphism: Bowen, 22.
Minnesota: Stauffer, 6; Thiel, 14-a.
New York, Staten Is.: Pough, 9.
Nova Scotia: Messervey, 5.
Ohio: Lord, R. C., 1; Stout, 18.
Oklahoma: Hickock, 1; Merritt, C. A., 1.
Origin of: Knopf, 13.
Polysynthetic twinning: Rogers, A. F., 1.
Pseudomorphs, castellated: Merritt, C. A., 4.
Texas: Cunningham, W. A., 1.
Utah: Eardley, 11.
Virginia: Stose, 19.
Washington: Park, 9.
- Dolomitization: Murray, A. N., 2.
- Domes. See also Salt domes.
California: Bartosh, 3; Putnam, 4.
Colorado: Hunt, E. H., 1.
Discovered by geophysics: Eby, J. B., 1.
Hawaii, ash fms.: Wentworth, 44.
Kansas: Landes, 17; Rutledge, 2.
Maryland: Broedel, 1.
Nevada: Coats, 3.
New Hampshire: Chapman, C. A., 1.
Oklahoma: Bass, 12.
Structure: Balk, 9.
Tennessee: Wilson, C. W., Jr., 7.
Texas: Brace, 8; King, 29; Speed, 1;
Stenzel, 17.
United States, Nashville-Ozark; Wilson,
C. W., Jr., 19.
Volcanic: Williams H., 5.
- Dominica, Leeward Is.: Maury, 1.
- Dominican Republic.
Economic geology.
Carib fm.: Lengweiler, 1.
Gold placers: Lengweiler, 2.
- Historical geology.*
Carib fm.: Lengweiler, 1.
Tertiary fms.: Maury, 3.
- Dominican republic—Continued.
Mineralogy.
Carib fm.: Lengweiler, 1.
- Paleontology.*
Amber, Miocene: Lengweiler, 1.
Antilophyllia: Vaughan, 19.
Cypræidae: Ingram, W. M., 3.
Foraminifera, Tert.: Palmer, D. B. K., 8.
Noetinae: MacNeil, 7.
Spondylii: Palmer, K. E. H. V., 4.
- Drainage alignment, W. Great Plains: Rus-
sell, W. L., 2.
- Drainage changes. See also Glacial geology;
Physiographic geology, general.
Alaska: Eardley, 9; Lowenstein, 1;
Tuck, 6.
Appalachian area: Ashley, 21, 34; John-
son, D. W., 8, 12; Mackin, 11;
Meyerhoff, 6, 14, 17; Thompson,
H. D., 2; Woodward, 14; Wright,
F. J., 4, 7.
Arizona: Blackwelder, 37; Reiche, 8.
Border region, Tex.-Mexico: Hill, 8.
California: Dudley, 2; Eaton, 9; Kes-
sell, 1; Putnam, 5.
Canada: Cox, 3; Kindie, 40; Zernitz, 2.
Canyons, Rocky Mts.: Atwood, W. W.,
Jr., 12.
Colorado: Behre, 12.
Colorado River Delta: Sykes, 2, 4.
Columbia River Basin: Hodge, 25;
Landes, H., 1; Lawrence, D. B.,
1, 2.
Connecticut Valley: Troxell, 6.
Des Moines River: Keyes, 297, 328, 432.
Drainage during deglaciation: Keyes,
446.
Eastern N. Am.: Johnson, W. D., 23.
Forests, drowned, Columbia River
Gorge: Lawrence, D. B., 1, 2.
General: Johnson, 42.
Greenland: Orvin, 2.
Hudson - Delaware - Susquehanna:
Mackin, 1.
Idaho: Anderson, 19; Livingston, D. C.,
4; Mansfield, G. R., 22, 24; Reed,
J. C., 19; Stearns, 19.
Illinois: Bretz, 10; Caldwell, L. T., 1;
Carroll, 4; Ekblaw, G. E., 1; Leigh-
ton, 25; Workman, 10.
Indiana: Fix, P. F., 1.
Iowa: Keyes, 217, 331, 381.
Karst valleys, Ind.-Ky.: Malott, 11.
Kentucky: Cole, 11; Desjardins, 1; Hunt,
C. B., 3; McFarlan, A. C., 11-a; Wes-
ley, 2.
Lake Ponchatrain, La.: Steinmayer, 4.
Lake Superior area: Merrill, J. A., 1.
Larto Lake, Miss. River channel: Rus-
sell, R. J., 6.
Louisiana: Chawner, 3; Fisk, 2; Howe,
30; Kniffen, 4; Russell, R. J., 16, 21,
25; Steinmayer, 4.
Maine: Sayles, 7.

Drainage changes—Continued.

- Massachusetts: Brown, T. C., 8.
 Mature lands: Johnson, 42.
 Michigan: Bay, J. W., 1, 3; Bergquist, 8; Case, 15.
 Minisink Valley, N. Y., Pa.: Happ, 3.
 Minnesota: Sardeson, 17, 18, 31, 45; Schwartz, 16; Anonymous, 199.
 Mississippi River: Matthes, 9, 10, 17; Robertson, P., 4; Trowbridge, 12.
 Missouri: Greene, 6.
 Nevada: Penrose, R. J., 1.
 New England: Wheeler, G., 1.
 Newfoundland: Heyl, 2.
 New Hampshire: White, G. W., 12.
 New Jersey: Hubbert, 7; Miller, R. L., 3.
 New Mexico: Bryan, 31, 35; Ray, L. L., 3.
 New York: Buddington, 17; Burroughs, 3; Cannon, R. S., 1; Cressey, 1; Fairchild, 5, 18; Payne, T. G., 1; Ruedemann, 14; Stoller, 2; Thompson, H. D., 1.
 Niagara area: Taylor, F. B., 2.
 North Carolina: Wright, F. J., 1.
 Northwest Territories: Cameron, 5.
 Ohio: Brand, 3; Braun, 1; Carman, 3; Coffey, 1; Cole, 11; Desjardins, 1, 1-a; Frye, 2; Happ, 1; Lamborn, 2; Leverett, 7, 25, 26; Perry, E. S., 1; Rich, 18; Scranton, 1; Stout, 6, 15; Ver Steeg, 5, 8, 20, 25, 26, 27; White, G. W., 7, 16.
 Ohio River: Fowke, 1; Frye, 2; Leverett, 7, 26.
 Oklahoma: Hendricks, T. A., 3, 11; Williams, A. J., 2.
 Ontario: Quirke, 12; Stanley, 6; Thompson, R., 4.
 Oregon: Gilluly, 16; Kelly, J., 1; Piper, 17; Smith, J. E., 14; Thayer, T. P., 4, 5.
 Pediments, fm.: Bryan, 29.
 Pennsylvania: Burroughs, 3; Itter, 1; Leggette, 9; Miller, W. J., 13; Shaffner, 1; Stone, 16; Ward, F., 5; Willard, 53; Anonymous, 143, 171, 186.
 Polar elevation and last ice age: Hills, G. F. S., 2.
 Quebec: Crosby, 3, 4; Faessler, 14, 22; Laverdière, 6; McGerrigle, 8-a.
 Rio Grande depression: Bryan, 36.
 Rocky Mtn. area: Atwood, W. W., 7, 10; Knight, S. H., 13.
 St. Lawrence River, history: Gill, 6-a.
 South Carolina: Taber, 18.
 Southern Appalachians: Thompson, H. D., 2.
 Spokane River: McMacken, 2.
 Stream capture methods: Crosby, 12, 14.
 Tectonics and erosion: Bailey, E. B., 2.
 Texas: Blakemore, E. F., Jr., 2; King, 19.
 Utah: Baker, H. B., 1; Bradley, W. H., 9-a, 14; Gregory, H. E., 4, 5.
 Vermont: Eggleston, 1; Jacobs, 2.

Drainage changes—Continued.

- Virginia: Bates, R. L., 4; Brown, C. B., 3; Wright, F. J., 6, 8, 9.
 Washington: Chappell, 2; Coombs, 3; Fernquist, 7; Flint, 19; Freeman, O. W., 4; Treasurer, 1.
 West Virginia: Cole, 11; Flint, 19; Fridley, 3, 6; Happ, 1; Maxwell, C. W., 2; Nolting, 1.
 Wisconsin: Bates, R. E., 4.
 Wyoming: Mackin, 7.
 Drainage patterns and their significance: Zernitz, 1.
 Drainage systems, devel.: Glock, 7.
 Dreikanter, Wyo., Mont.: Delo, 2.
 Drift deposits. See Glacial geology; Ice ages, ancient.
 Massachusetts: Crosby, 10.
 Drumlines.
 Distribution and origin: Taylor, F. B., 5.
 New York: Fairchild, 3; Payne, T. G., 1.
 Nova Scotia: Wilson, J. T., 4.
 South of Lake Ontario: Slater, 1.
 Dumortierite, Ariz.: Wilson, E. D., 1.
 Dunes.
 Arizona: Talmage, 4.
 California: Cooper, W. S., 5; Shepard, 54.
 Central plains: Van Royen, 2.
 Colorado: Upson, J. E., 2; Wegemann, 3.
 Florida: Cooke, C. W., 24; Sayles, 6.
 High Plains: Melton, 25.
 Idaho: Stearns, 27.
 Kansas: Smith, H. T. U., 8, 12.
 Lake Michigan: Scott, I. D., 1, 2, 4.
 Lee dunes, new names: Melton, 28.
 Massachusetts: Chute, 1.
 Michigan: Bergquist, 7, 8; Dow, 1; Evans, O. F., 8; Gates, 1; Riggs, C. H., 2; Scott, I. D., 1, 2, 3, 4; Stevenson, E. B., 1.
 Minnesota: Cooper, W. S., 9.
 New Mexico: Gould, 18; Keyes, 339; Robinson, T. W., Jr., 6.
 New York: Howard, A. D., 12.
 Oregon: Cooper, W. S., 5; Thomson, J. P., 3.
 Parabolic: Melton, 19.
 Regolith of deserts: Sykes, 5.
 Sand sorted by wind: McCarthy, 14.
 Structure, original: Thompson, W. O., 6.
 Texas: Sidwell, 5; Tanner, W. F., 1, 2.
 Washington: Treasurer, 5.
 Wind-deposition shore lines: Bryan, 41.
 Wind erosion: Brodsbaug, 2.
 Dunite: Bowen, 13.
 North Carolina: Greaves-Walker, 3.
 Dust-bowl reclamation: Keyes, 489.
 Dust falls and storms.
 Border area, Tex., Mexico: Hill, 8.
 Cause and remedy: Throckmorton, 1.
 District of Columbia: Hand, 1.
 General: Mattice, 1; Throckmorton, 1.

Dust falls and storm—Continued.

- Great Plains area : Choun, 1; Hovde, 1; Leighton, 29; Miller, E. R., 1, 2.
 Louisiana : Russell, P. G., 8; Russell, R. J., 9.
 Nebraska : Lugin, 15.
 New York : Alexander, A. E., 2, 4, 5.
 Oklahoma : Murphy, H. F., 1.
 Ontario : Lloyd, H., 1.
 Southwest : Boon, 1; Choun, 1.
 Texas : Sidwell, 4.
 United States : Martin, R. J., 1, 2, 3, 4, 5, 6.

Dynamic geology. See Physical geology.

Eagle-Circle area, Alaska : Mertie, 4.

Earth.

- Earth and its life : Seers, 1.
 Earth and man : Huxley, 1.
 Earth patterns in N. Mex. : Turley, 1.
 Ellipticity : Lambert, W. D., 9.
 Engineering structure : Lambert, W. D., 2.
 Figure : Lambert, W. D., 4.
 General : Bradley, J. H., Jr., 3.
 History and crustal movements : Reed, 27.
 Isostasy and figure : Heiskanen, 2.
 Layered, vibrations : Slichter, 5.
 Magnetic anomalies : Jenny, 3.
 Moon, origin : Nissen, 1.
 Origin : Bartlam, 1; Fairchild, 21; Hoffman, 5; Jeffreys, H., 1; Mather, 8; Whitney, 8.
 Origin and history : Chamberlin, 14-a.
 Planetary deformation of : Dennis, C. E., 1.
 Resistivity interpretations : Watson, R. J., 4.
 Rigidity : Daly, R. A., 2.
 Shape and dimensions, 98th meridian : Sanchez, 11.
 Structure and origin : Mather, 29.
 Structure by seismology : Hodgson, 16.
 Tilting : Denison, F. W., 1.

Age.

- Absolute scale, geol. ages : Keyes, 347.
 Age of matter ; potassium-rubidium radioactivity : Brewer, A. K., 2.
 Astronomical data : Brown, E. W., 1.
 Canadian cyrtolite : Muench, 1, 2, 3, 4, 5.
 Continental genesis : Willis, B., 4.
 Correlation, earth resistivity with geol. structure and age : Card, 2.
 Determination : Kovarik, 3, 4, 6.
 Florida anhydrite age by helium : Urry, 9.
 General : Hevesy, 1; Ives, 7; Knopf, A., 3, 7; Lane, A. C., 2, 13; Larsen, 12; Morse, P. M., 1; Reeds, 8; Rowley, E. B., 1; Whitney, 4, 5, 7.
 Geological periods : Gillette, 7; Ward, T. W., 3.
 Geologic chronology : Keyes, 178, 182.
 Geologic time and age of earth : Gries, 4.

Earth—Continued.

Age—Continued.

- Granites, age by helium : Keevil, 1.
 Helium methods of determination : Lane, 29; Mead, 6; Urry, 3, 5, 7, 9.
 Keweenawan age by helium : Lane, 29.
 Lead, radiogenic, isotopic constitution : Rose, J. L., 1.
 Maine, Fitchburg granite : Lane, 19.
 Measuring Pleist. time : Osborn, 21.
 Methods of determination : Kovarik, 3, 4, 5; Lane, 29; Mead, 6; Spicer, 1; Urry, 3, 5, 7, 9.
 Monazite crystal, Conn. : Fenner, 6.
 Plant distrib., age guide : Chaney, 25.
 Postglacial time calculation : Hotchkiss, 5.
 Post-Keweenawan age by helium : Urry, 8.
 Potassium disintegration : Anonymous, 157.
 Pre-Ordovician age by helium : Lane, 29.
 Radioactive disintegration : Evans, R. D., 2; Anonymous, 157.
 Radioactive minerals : Kovarik, 2.
 Radioactivity data : Fowler, H. M., 1; Holmes, A., 1; King, D. W., 1; Kovarik, 3, 4, 6; Whitney, D. J., 6.
 Radon condensation : Keevil, 2.
 Rubidium accumulation : Whitney, D. J., 2, 4.
 Sedimentary rec. : Schuchert, 14.
 Sedimentation : Louderback, 8.
 Sierra Nevada granodiorite, Calif. : Urry, 6.
 Sodium accumulation : Lane, 4.
 Temperature changes : Gutenberg, 15.
 Thorium minerals, age indicators : Wells, R. C., 7.
 Traps, by helium : Lane, 26.
 Uraninites and age determination : Khlopin, 1.
 Uranium method : Lane, A. C., 23.
- Crust.**
 Anomalies, heavy : Heiskanen, 1.
 Asthenolith theory : Willis, 16.
 Asthenosphere, viscosity : Haskell, 1.
 Bending by Boulder Dam : Anonymous, 72.
 California : Byerly, 45-a; Leopoldt, 1.
 Constitution : Lawson, 4.
 Continental borders, gravity studies : Swick, 3.
 Continental drifting : Douglas, G. V., 2; Longfellow, 4.
 Continents, meteoric origin : Bartlam, 1.
 Continents, evidence on tectonics : Moore, 35.
 Convection and fm. of continents : Hills, G. F. S., 1.
 Crustal movements : Teichert, 1.
 Deformation : Bucher, 8, 19; Gutenberg, 10; Moore, 30; Quirk, 1.
 Differential rotative stresses : Keyes, 66.
 Displacement theory : Johnson, J. H., 1.

Earth—Continued.

Crust—Continued.

- Earthquakes, deep-focus and earth strength: Leith, A. 2; Thom, 20.
 Earth shells, elasticity: Adams, L. H., 8; Chamberlin, 17; Daly, R. A., 1.
 Elasticity of materials: Adams, L. H., 8; Daly, R. A., 1.
 Electrical currents in: Gish, O. H., 1.
 Electrical stratification: Lee, F. W., 11.
 Elevation and depression, causes: De Lury, 18.
 Energy sources of movements: Heim, 2.
 Estimation, moderate depth temperatures: Van Orstrand, 11.
 Evolution: Gutenberg, 1; Keyes, 7.
 Face of the earth: Schuchert, 41.
 Flow of heat: Van Orstrand, 5.
 Forces in: Gutenberg, 34.
 General: Barrera, 4; Bowie, 7; Daly, 7, 12, 16; De Lury, 13; Gauntlett, 1; Stetson, H. T., 3; Whitney, 7.
 Ground motion measurement: Gardner, D. H., 1.
 Hypotheses on devel. of: Gutenberg, 34.
 Intrusions, magmatic: Miller, W. J., 7.
 Land surfaces, origin: Beckner, 4.
 Law of symmetry in devel.: Fourmarier, 4, 6.
 Magmas: De Lury, 26.
 Motion, deep focus earthquakes: Sharpe, J. A., 1.
 Movements: Bowie, 26; De Lury, 7; Stetson, H. T., 3.
 Mountain-building theory: Griggs, 11.
 New England, seismic studies: Slichter, 7.
 North America, deformation: Keith, B. A., 4.
 Late glacial movements: Lougee, 4.
 Observed temperatures: Van Orstrand, 13.
 Oklahoma, Ouachita Mts.: Knechtel, 2.
 Periodicity epeirogenic movements: Born, A., 1.
 Polar elevation and last ice age: Hills, G. F. S., 2.
 Radioactivity: Evans, R. D., 3.
 Reflection waves: Westland, 6.
 Relation to interior: Washington, 6.
 Rock bursts: Hodgson, 17.
 Rock temperatures, deep Ontario mines: Cleland, R. H., 1.
 Roots-of-mountains theory: Longwell, 21.
 Seismic maps, major earthquakes: Reeds, 7.
 Seismographic structure determination: Gutenberg, 7.
 Slotted templet to show movement: Eardley, 13.
 Stability of surface: Bowie, 14.
 Strength: Daly, 14, 17.
 Stress conditions: Hobbs, 3.
 Structural, magmatic processes: Hoffman, 8.

Earth—Continued.

Crust—Continued.

- Structure: Gutenberg, 5, 11, 17, 22, 24, 34; Macelwane, 15; Mather, 29.
 Tension: Washburne, 2.
 Thermal distortion: De Lury, R. E., 1.
 Thermal history: De Lury, J. S., 8.
 Tilt-measurements, Buffalo, N. Y.: Delaney, 2.
 Tiltmeter, recording: Eller, W. H., 1.
 Transformation, face of earth: Ysalgue de Massip, 1.
 Variations, horizontal: De Lury, J. S., 12.
 Warping, U. S.: Glennie, 1.
 Zones of cavities and continuity: Chamberlin, 4.
 And interior: Hodgson, 4.
Interior.
 Constitution: Marsh, 1.
 Cooling and internal heat: Gutenberg, 34.
 Core: Lynch, 5, 6.
 Density: Lambert, 9.
 Depth changes: Gutenberg, 36.
 Depths of the earth: Daly, R. A., 8; Friedlaender, C., 1.
 Discontinuities in: Daly, R. A., 3, 5.
 Earthquakes, deep-focus: Gutenberg, 34.
 Earth shells concept: Chamberlin, 17.
 Elastic constants: Gutenberg, 34.
 General: Adams, L. H., 1, 5; Daly, R. A., 12, 16, 20; De Lury, 13; Gauntlett, 1; Gutenberg, 33, 34; Heck, 46; Mather, 5; Whitney, 7; Anonymous, 137.
 Gravity field, exterior, interior: Lambert, 7.
 Heat: Ward, T. W., 1.
 Inferred from terrestrial magnetism: McNish, 1.
 Magmatic wedge: De Lury, 17.
 Model, internal structure: Anonymous, 129.
 Nature and composition: Adams, L. H., 4.
 P' and earth's core: Gutenberg, 30.
 Plasticity of rocks: Nádai, 1.
 Present knowledge: Macelwane, 3.
 Relation to crust: Washington, 6.
 Seismic evidence on: Macelwane, 27; Neumann, 10.
 Structure: Hodgson, 7, 16; Anonymous, 129, 131.
 Temperature in sinking xenoliths: Lovering, 28.
 Viscosity, strength and friction: Gutenberg, 34.
 Waves, seismic: Gutenberg, 28.
Temperature.
 Bore hole inv., Yellowstone Nat. Park: Fenner, 14.
 California, Grass Valley: Johnston, W. D. Jr., 4.
 Cooling and internal heat: Gutenberg, 34.
 Correlation, isogeothermal surfaces with rock strata: Van Orstrand, 3.

Earth—Continued.

Temperature—Continued.

- Drill hole measurements: Deussen, 10; Leonardon, 3.
- Estimation, moderate depths: Van Orstrand, 11.
- General: Daly, 20; Van Orstrand, 1, 13.
- Geothermal data, Calif.: Carlson, A. J., 3.
- Geothermal gradients: De Lury, 21; Fisher, J., 2; French, 1; Heald, 4; Ingersoll, 1; Lane, 25; Lang, W. T. B., 1, 2, 7; Van Orstrand, 7, 10.
- Geothermics applied to geology: Van Orstrand, 8.
- Geotherms: Lane, 11.
- Heat conduction, dissimilar rocks: Lovering, 21.
- Heat flow in crust: Ehrenburg, 1; McCutchin, 5.
- Internal, crust: Gentry, 1.
- Irregularities, isothermal surfaces: Thom, W. T., Jr., 3.
- Measurements: Hawtof, 1; Hotchkiss, 5; Spicer, 1; Van Orstrand, 2, 6.
- Methods of determination: Spicer, 1; Van Orstrand, 2.
- Michigan, copper mines: Fisher, J., 3; Kraskovsky, 1.
- Oil fields: Carlson, A. J., 1; Heald, 2; McCutchin, 3, 4.
- Oklahoma: McCutchin, 2.
- Oregon lava beds: Van Orstrand, 12.
- Radioactivity and geothermal gradients: De Lury, 20.
- Rock temperatures and depths: Spicer, 1.
- Structure, effect on: McCutchin, 6.
- Succession of minerals and temperature of fm.: Lindgren, 15.
- Texas: Barnes, V. E., 3; Plummer, F. B., 10.
- Thermal history: Holmes, A., 2.
- Earth figure: Lambert, W. D., 5.
- Earth for Sam: Reed, W. M., 1.
- Earth movements. See Changes of level; Landslides.
- Energy sources: Heim, 1.
- Earth physics and geog. papers: Fleming, J. A., 1.
- Earthquakes. See also Seismology.
- Acadian-Newfoundland: Johnstone, 1; McIntosh, D. S., 1.
- Action: Macelwane, 13.
- Alaska: Bramhall, 1; Jones, A. E., 3; Scott, F. P., 1.
- America, N. E.: Leet, 14.
- Appalachian Mts. area: Heck, 24; Neumann, F., 1.
- Arkansas: Branner, 11; Walter, E. J., 1.
- Belts: Heck, 36.
- Boulder Dam area: Bodle, 4.
- Brunner focal depth-time-distance chart: Brunner, 4.
- California: Allen, M. W., 2; Benloff, 5, 6; Blackwelder, 2; Bois, 1; Byerly, 2, 3, 4, 6, 8, 9, 10, 11, 12, 13, 19, 22, 23, 25, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 45, 45-a, 46, 47; Chick, 1;

Earthquakes—Continued.

- Clements, T., 2; Dahm, 1; Davis, 25; Dyk, 2; Eaton, 5; Gutenberg, 6, 9; Heck, 14, 18, 29, 33; Hillis, 2; Hoskins, E. E., 1; Huber, 1; Mitchell, G. D., 1; Neumann, 11; Reeds, 11; Sparks, N. R., 1; Spitaler, 2; Stechschulte, 1; Stonely, 1; Swartzlow, 8; Ulrich, F. P., 1; Willis, 17; Wimmer, J., 3; Wilson, J. T., 1, 2, 3; Wood, H. O., 3, 4, 5, 6, 7, 11, 12, 13, 15, 16.
- Canada: Hodgson, 14.
- Central America: Müllerried, 30.
- Characteristics, deep-focus: Brunner, 5.
- Colorado Delta: Fox, 1.
- Correlation, deep and shallow: Landsberg, 2.
- Cuba: Duque de Estrada, 1; Jover y Anido, 1; Montouilleu, 2, 3; Morales y Pedroso, 2, 4; Taber, 9, 11; Villa, 1.
- Deep-focus: Davis, C., 3; De Lury, 14; Gutenberg, 21, 27, 34; Leith, A., 2; Slichter, 4, 6; Sohn, 3; Stechschulte, 5, 6; Stetson, H. T., 1; Thom, 20.
- Definition and classn.: Macelwane, 5.
- Distribution: Eickelberg, 3; Gutenberg, 27, 34; Heck, 23; Lynch, 3.
- Diurnal periodicity: Davison, C., 2.
- Dynamic causes: Brunner, 6.
- Earth, interior, deep-focus evidence: Gutenberg, 34.
- Epicenter work: Bodle, 3.
- Fall of columns: Clements, 5.
- Fault-noise indications: Patterson, W. D., 1.
- Focal depth estimation: Blake, 5; Neuberger, 1.
- Focus conception: Reid, 7.
- Forecasting: Keyes, 165.
- General: Córdova, 1; Gianella, 10; Heck, N. H., 5, 7, 9, 32, 37; Jaggar, 1; Jeffreys, 6; Leet, 6, 7-a; Lynch, J. J., 1; Macelwane, 21; Mather, 5; Richter, C. F., 3; Sanchez, 11; Scott, H. W., 9; Wimmer, 2.
- Geologis phenomena of 1918: Plá, 1.
- Georgia: Crickmay, G. W., 8, 10.
- Grand Banks: Hodgson, 3; Keith, Arthur, 1.
- Grand Canyon: Donald, E. M., 1.
- Hansel Valley, Utah, 3/12/34: Walter, H. G., 2.
- Hawaii: Brown, C. W., 4; Jaggar, 7, 10, 24; Jones, A. E., 2, 4, 5, 7, 9; Waesche, 1; Anonymous, 162.
- History of, in U. S.: Heck, 42.
- Illinois: Dahm, 1; Heinrich, 3; Westland, 2.
- Impact or rock-fall: Macelwane, 8.
- Implication of deep-focus: Macelwane, 23.
- Indiana: Schmitt, A. R., 1.
- Intensity, different floors of houses: Lansberg, 3.

Earthquakes—Continued.

- Intensity and surface geology: Wood, H. O., 10.
 Investigations: Gilmore, M. H., 1.
 Isostasy and deep-focus: Stechschulte, 4; Thom, 18.
 Iowa: Seeburger, 1, 4.
 Jamaica: Brennan, 1.
 June 24, 1935: Blum, 1.
 Magnetic effects: Reid, H. F., 5.
 Magnitude and energy: Gutenberg, 18.
 Magnitude scale, instrumental: Richter, C. F., 2.
 Maine: Perkins, E. H., 2.
 Major, 25-year map: Reeds, 12.
 Massachusetts: Leet, 8.
 Mechanics, elastic rebound theory: Reid, H. F., 6.
 Mexico: Díaz, 1; Lacoste, 1; Muñoz Lumbier, 1; Ordoñez, 1, 3; Robertson, F., 1; Salazar Salinas, 6, 7; Sánchez, 2, 8.
 Mississippi Valley: Macelwane, 2.
 Missouri: Bradford, D. C., 3, 5; Macelwane, 16; Pusey, 1; Ramirez, 1; Robertson, F., 1, 3.
 Missouri, Tennessee: Robertson, F., 3.
 Montana: Gutenberg, 29; Heck, 31, 38; Landsberg, 5; Scott, H. W., 6, 7, 10; Ulrich, F. P., 4; Anonymous, 79.
 Montserrat: Lenox-Coyngnam, 2; Perret, 8.
 Moon phases and deep-focus: Stetson, H. T., 1.
 Motion, compressional phase, deep-focus: Sharpe, J. A., 1.
 Nebraska: Lugin, 6.
 Nevada: Byerly, 23; Callaghan, 5; Gianella, 1, 3, 4; Wood, H. O., 11.
 New England: Collins, M. P., 1, 2; Leet, 16.
 Newfoundland Banks: Gregory, J. W., 3, 5.
 New Hampshire: Collins, M. P., 2.
 New Jersey: Lynch, W. A., 1.
 New York: Lynch, J. J., 7; Lynch, W. A., 1; Newland, 11.
 Noises of: Landsberg, 8.
 North America, Pacific area: Richter, C. F., 4.
 Notes: Seismol. Soc. Am., 2.
 Ocean basins, seismol. data: Gutenberg, 23.
 Ohio: Rouse, 8; Stechschulte, 7.
 Oklahoma: Sellards, 31.
 Ontario: Hodgson, 12.
 Oregon: Hodge, 15; Treasher, 10, 11.
 Origin and occurrence: Landsberg, 4, 6.
 Pacific Basin structure: Gutenberg, 35; Heck, 19.
 Pacific Coast 1769-1928: Townley, 1.
 Panama: Bodle, 2; Kirkpatrick, 2.
 Pennsylvania: Landsberg, 9, 12; Anonymous, 183.
 Periodicity: Bayley, 9; McMurtry, 1.
 Plutonic earthquakes: Macelwane, 7.

Earthquakes—Continued.

- Prediction: De Montalk, 1; Heck, 30, 43; Landsberg, 1; Wood, H. O., 14.
 Puerto Rico: Meyerhoff, 4.
 Quebec: Hodgson, 11, 13, 15; Anonymous, 113.
 Recorded in artesian wells: Leggette, 3.
 Recording strong motion: Heck, 20.
 Report, 1933-34: Lynch, J. J., 2.
 Rhode Island: Brown, C. W., 5.
 Seaquake, Hawaii: Brown, C. W., 4.
 Seismologic research, southern Calif.: Wood, H. O., 12.
 Seismoscope: Jaggard, 41.
 September 6, 1933: Brunner, 1.
 State-line. Wash.-Oreg.: Brown, B. H., 1.
 Tectonic: Macelwane, 6.
 Telesismic recording, Iowa: Seeburger, 1.
 Texas: Byerly, 20; Sellards, 19, 20, 31, 34.
 Tidal factor in: Allen, M. W., 1.
 Travel-time tables: Joliat, 2.
 United States: Heck, N. H., 2, 6, 13; Montouliou, 2; Neumann, 6, 7.
 Utah: Carlston, G. M., 1; Shenon, 13; Taylor, G. H., 3; Walter, H. G., 2.
 Washington: Bradford, D. C., 1.
 Water level in wells, effect on: Blanchard, F. B., 2.
 Wells, artesian, recs. of: Leggette, 3.
 Wyoming: Fryxell, 4.
 Earthquakes and moon angles: Stetson, H. T., 2.
 Earthquakes and submarine geology: Heck, 44.
 Earthquakes and western mtn. area: Heck, 41.
 Earth resistivity and geol. structure: Card, 1.
 Earth tides: Wyckoff, R. W. G., 1.
 Earth-tides shown by well water: Robinson, T. W., Jr., 5.
 Earthworm, Paleocene, Wyo.: Hazen, 1.
 Echinodermata. See also Asteroidea; Blastoida: Crinoidea: Cystoidea: Echinoidea: Invertebrata (general).
 Appalachians, S. Camb.: Resser, 20, 21.
 Astrodapsis, Calif.: Richards, G. L., Jr., 1.
 Auluroid, Calif.: Phleger, 3.
 Carboniferous, Iowa: Beane, 1.
 Clypeaster, Cuba: Lambert, J., 3.
 Cretaceous, Calif., Oregon: Anderson, F. M., 14.
 Crinoidea: Barbour, 16; Moore, 46.
 Cuba, Tert.: Lambert, J., 1, 3.
 Florida: Mansfield, W. C., 23.
 Fossil, Mus. Comp. Zoology, Harvard: Jackson, R. T., 2.
 Georges Bank: Stephenson, 13.
 Illinois, sea balls: Cronets, 46.

Echinodermata—Continued.

- Iowa: Keyes, 216; Laudon, 6; Stainbrook, 3.
- Jamaica: Arnold, B. W., 1.
- Kansas coal field: Williams, J. S., 12.
- Lanieria, Cuba, Mex.: Jeannet, 3.
- Lumbricaria, Wash.: Fenton, 34.
- Mexico: Jeannet, 3; Jordan, E. K., 1; Lambert, J., 4.
- Missouri: Branson, 33; Lochman, 6.
- Olenellus zone, Appalachians: Resser, 20.
- Ophiuroidea: Berry, C. T., 3, 11, 12.
- Pennsylvania: Berry, C. T., 14; Cleaves, 8; Willard, 59.
- Prairie Bluff chalk, Owl Creek fm., Ala.-Miss.: Stephenson, 19.
- Quebec: Kindle, 38; Twenhofel, 31.
- Sea balls, Ill.: Croneis, 46.
- Spence sh., Utah, Idaho: Resser, 23.
- Texas: Albritton, 8; Gardner, 8; Richards, H. G., 22.
- Virginia: Cullison, 6.
- Wyoming: Branson, C. C., 14.
- Echinoidea.** See also Echinodermata.
- Alabama: Clark, H. L., 4.
- Arizona and Utah: McKee, 11.
- Barbados: Bather, 1.
- Briaster, Oregon: Clark, H. L., 5, 6.
- Brissopsis, Miss.: Grant, 13.
- California: Clark, H. L., 1; Grant, 14; Klempell, 8; Woodring, 19.
- Chelonechinus: Bather, 1.
- Cuba: Jeannet, 2; Lambert, J., 2; Sánchez Roig, 1, 2; Weisbord, 1.
- Curaçao, W. Indies: Molengraaf, 1-a.
- Echini, ancestry: Clark, H. L., 2.
- Fauna, Choctaw Bluff, Ala.: McGlamery, 3.
- Florida: Cole, W. S., 7; Mansfield, W. C., 20.
- Illinois: Geis, 3.
- Koninkócidaris, N. Y.: Sanford, 9.
- Lanieria, Cuba: Jeannet, 2.
- Lepidochinoides, Dev.: Cooper, G. A., 4.
- Lepidisthes: Cooper, G. A., 6.
- Mexico: Israelsky, 3; Jackson, R. T., 3; Jones, T. S., 1; Lambert, J., 5; Müllerried, 22.
- Missouri: Geis, 3.
- Morphology, Paleozoic: Croneis, 32.
- Pamlico fm., S. C.: Cooke, C. W., 20.
- Pedicellariae: Geis, 3.
- Porpitella, Ala.: Clark, H. L., 4.
- Tertiary faunas: Croneis, 28.
- Texas: Adkins, 3; Smiser, 2, 4; Williams, J. S., 11.
- Trinidad: Jeannet, 1; Trechmann, 7.
- Washington, Astoria fm.: Etherington, 2.
- Wyoming: Miller, A. K., 1.
- Ecologic interpretations of biostratigraphic nomenclature:** Wheeler, H. E., 1.
- Ecology of sand areas:** Twenhofel, 17.
- Economic application, insoluble-residue methods:** McQueen, 9.
- Economic aspects of drilling:** Pogue, 1.

- Economic geology (general).** For areal see under the various States and Countries. See also Ore deposits, origin; and the particular products.
- Aerial photography and mapping for geol. explor.:** Bowen, R. A., 1; Gardner, L. W., 1; Logan, J., 3; Olson, L. V., 1; Rice, 2.
- Alkali sulphide solutions action on minerals:** Lindner, 2.
- Alteration, pyrite to pyrrhotite:** Stevens, R. E., 2.
- American mining:** Rickard, 1.
- Appalachian Plateau and Miss. Valley:** Butts, 12.
- Application of geology to mining:** Schmitt, 4.
- Arsenic:** Tyler, P. M., 1.
- Asbestos:** Bowles, O., 4.
- Asphalts and allied substances:** Abraham, 1; Woodruff, E. G., 2.
- Atlantic and Gulf Coastal Plains:** Stephenson, 24.
- Atlantic Coastal Plain oil and gas poss.:** Postley, 4.
- Bentonites:** Maynard, T. P., 2; Silica Products Co., 1.
- Beryl and ceramics:** Luks, 1.
- Beryllium ores:** Brinton, 1; Hill, J. M., 1.
- Bibliography, annotated:** Miller, R. B., 1; Nickles, 2.
- Biogenesis of petroleum hypothesis, status:** Thayer, L. A., 2.
- Birmingham, Ala., area:** Blair, C. S., 1.
- Black shs., ecology:** Twenhofel, 35.
- Bleaching clays:** Nutting, 7.
- Bornite-chalocite microtextures:** Schwartz, 28.
- Bottom-hole pressure:** Wright, H. F., 1.
- Boulder Dam area minerals:** Lee, 7.
- Bureau of Mines Exper. Sta.:** Finch, J. W., 8.
- Caliche:** Runner, D. G., 9.
- Capillary phenomena in oil reservoirs:** Plummer, 27.
- Carbonates in veins:** Charlewood, 1.
- Cartography for mining geology:** Schmitt, 4.
- Chalcocite-stromeyerite-argentite relations:** Schwartz, 14.
- Chert, origin, road uses:** Runner, D. G., 8.
- Chrome ores, X-ray exam.:** Clark, G. L., 1.
- Classification, ore deposits:** Loughlin, 6.
- Clays:** Chelikowsky, 1; Gardner, J. H., 5; Grim, 8, 12, 16; Hind, 1; Kallender, 1; Kerr, P. F., 21; Parmelee, 3; Ries, 8; Runner, 11; Worcester, W. G., 4.
- Coal and coal seams, nature and origin:** Cady, 10.
- Coal and oil, evolution:** White, 24.
- Coal classn.:** Freeman, B. C., 6.
- Colorado Plateau ore deposits:** Butler, B. S., 3.

Economic geology—Continued.

- Connate water, oil and gas sands: Big-nel, 7; Dunlap, 1; Gardner, J. H., 5; Ginter, 5; Schilthuis, 1.
- Contour mapping, ore bodies: Conolly, H. J. C., 1.
- Contributions to geol. science by econ. geologists: Tolman, C. F., 5.
- Copper: Bayley, 4; Butler, 15; Finch, J. W., 4; Furness, 1; Gaudin, 6; Joralemon, 2; Locke, 4; Page, L. R., 3.
- Copper sulfide minerals: Gaudin, 6.
- Core analysis: Hornkol, 1; Pyle, 3.
- Core orientation: Roberts, D. C., 2; Vacquier, 1.
- Cores, side-wall samples: Leonardon, 5.
- Correlation, crude oils: Barton, 50.
- Geology and geophysics: Haseman, 2.
- Seismographing for oil: Pirson, 8.
- Subsurface paleont., Gulf Coast: Kornfeld, M. M., 1.
- Criteria, gold-quartz mines: Anderson, J. C., 2.
- Crude oil metamorphisms: Ginter, 4.
- Cycles in metal production: Hewett, 1.
- Deep-well drilling: Heald, 5.
- Degree of reduction and volatility, source beds: Trask, 24.
- Deseritization: Landon, 4.
- Deuteric, use of term: Gillson, 3; Osborne, F. F., 1; Sederholm, 1.
- Diamond drill cores, interpretation: Wissner, 1, 3.
- Diaschistic dikes and ore deposits: Spurr, 1.
- Diatomaceous earth: Conger, 2.
- Diatomaceous peat: Conger, 4.
- Diatomite: Greig, J. W. D., 1; Mulryan, 2.
- Diatoms, significance of shell structure: Conger, 1.
- Diatremes and ore-bearing pipes: Emmons, W. H., 13.
- Diffusion, relation to ore deposits: Duffell, 1.
- Dip-needle surveys: Brant, A. A., 1.
- Dip shooting calculation methods: Pirson, 7.
- Directional radio ore instruments for geophys. prosp.: Rose, R. B., 2.
- Domes discovered by geophys. prosp.: Eby, J. B., 1.
- Domes, fracture system: Balk, 9.
- Drill cuttings, micr. exam.: Lukert, 1.
- Drill hole explor.: Leonardon, 6.
- Drilling time data: Hiestand, 4.
- Earths, phys. properties: Griffith, 1.
- Economic application, insoluble-residue method: McQueen, 7.
- Economic aspects of drilling: Pogue, 1.
- Economic geology limitations: Porter, C. A., 3.
- Economic geology in ancient times: Sagul, 1.
- Electrical explor. of drill holes: Anonymous, 163.

Economic geology—Continued.

- Electrical explor. of drill holes—Con.
- Logging: Gillingham, W. J., 1; Sawdon, 1.
- Mapping oil structures: Jakosky, 6.
- Prospecting: Lundberg, 1, 2; Randolph, 8.
- Epithermal antimony deposits: Schrader, 4.
- Epithermal precious metal deposits: Nolan, 4.
- Eötvös torsion balance mapping geol. structures: Barton, D. C., 1.
- Exploration of oil fields: Bernatche, 1.
- Exploring down: Kelly, S. F., 11.
- Faults, econ. importance: Behre, 22; Eby, J. H., 2.
- Feldspars: Parmelee, 1.
- Ferroalloys, origin: Burchard, 7.
- Flow through porous media: Muskat, 3; Plummer, 18; Reid, L. S., 1.
- Flow, oil-gas mixture through sands: Reid, L. S., 1.
- Fluid phenomena, porous strata: Boatright, 1.
- Fluids, flow through porous media: Muskat, 3; Plummer, 18; Reid, L. S., 1.
- Fluorescence of oil sands, correl. aid: Melhase, 10.
- Fluorspar, W. United States: Burchard, 9.
- Foraminifera, guide fossils: Ellis, B. F., 4.
- Formation of ore deposits: Bastin, 19.
- Frontiers, petroleum geology: Levorsen, 12.
- Galena and pyrrhotite, deformation: Osborne, 12.
- Gas fluids, flow through porous media: Muskat, 4.
- Gas in oil: Buell, 1.
- Gas surveys, prosp. method: Sokolov, 1.
- General: Bruce, 9; Burbank, 17; Fitzhugh, 1; Hewett, 10; Meiklejohn, 1; Ries, 6; Sánchez, 7; Tarr, 26.
- Geochemical prosp.: Rosaire, 15.
- Geologic advance, rev.: Vogt, J. H. L., 1.
- Geologic basis for agr. and mining: Corral y Alemán, 2.
- Geologic factors in mine valuation: McLaughlin, 9; Thurlow, 1.
- Geologic fms., relation to road materials: Runner, D. C., 2.
- Geologic limitations to oil law: Porter, 7.
- Geologist and well-spacing: Kraus, 1; Porter, 9.
- Geology and geophysics, interrelationships: Brace, 4; Kannestine, 1; Rosaire, 10.
- Geology and industry: Jillson, 20.
- Geology, application to ore-finding: Parker, 5.
- Geology in nonmetallic mining industries: Miller, B. L., 2.
- Geology in petroleum explor.: Herold, S. C., 1.
- Geomagnetic explor.: Stearn, 12.

Economic geology—Continued.

- Geometrical pattern of contacts, determinative paragenesis: Harvey, R. D., 2.
- Geomorphology, Gulf coast salt structures: Ritz, 1.
- Geophysical data, interpretation: Blau, 3.
- Geophysical delineation of structure: Kelly, 22.
- Geophysical methods: Barton, 6; Lee, F. W., 2.
- Geophysical prosp.: Barton, 6; Eby, 7, 9; Gabriel, 9; Gilchrist, 8; Karcher, 3, 5; Kelly, S. F., 4, 8, 14, 15, 16, 20; McFayden, 1; Mason, M., 1; Rogers, A. H., 1; Rosaire, 11; Rose, R. B., 3; Sawdon, 2; Triplett, 1; Tucker, M., 2; Uren, 1.
- Geophysical surveys, practical results: Lundberg, 9.
- Geophysics discloses minerals: Kelly, 13.
- Geophysics, non-metallic field: Helland, 15.
- Geothermal gradients, U. S.: Van Orstrand, 10.
- Geothermics, application to geology: Van Orstrand, 8.
- Goethite, hematite, stability relations: Tunell, 1.
- Gold deposits, placers and ores: Bain, G. W., 2; Crampton, 2; Douglas, 7, 8; Crawford, 8; Fetzner, 1; Gardner, E. D., 1; Graton, 13; Haycock, 4; Henderson, C. W., 5; McKinley, 1; Storms, 1.
- Government surveys and mining industry: Sales, 2.
- Gravel channels, buried, location: Crampton, 1.
- Gravel, Tennessee River: Spain, 3.
- Gravimeter for ore prosp.: Hedstrom, 3.
- Ground-gas survey: Pirson, 9.
- Ground-water and oil production: Lahee, 19.
- Gulf border salt deposits: Brown, L. S., 4; Russell, R. J., 14.
- Gulf Coast, datum contour planes: Houston, G. S., 3.
- Deep oil reserves: Mills, 10.
- Geophysical prosp.: Charrin, 1; Mills, 11; Rosaire, 9; Zwerger, 2.
- Geosyncline: Howe, 29.
- Oil fields: Barton, 24; Elffer, 1.
- Structural features: Clark, R. P., 2.
- Tertiary: Russell, R. J., 22.
- Heaving shs.: Halbouty, 10.
- Heavy minerals and oil: Tyler, 6.
- Hydrocarbons, concentration in earth: McDermott, 5.
- Extraterrestrial and petroleum genesis: Van Tuyl, 10.
- Hydrothermal exper. with copper: Park, 1.
- Hydrothermal leaching of iron ores: Royce, 4.
- Hydrothermal oxidation and leaching experts.: Dick, L. E., 1.

Economic geology—Continued.

- Inclusions, dislocated, in veins: Douglas, C. B. E., 1.
- Industrial minerals and rocks: A. I. M. E., 2.
- Influence of replaced rock: Butler, 7.
- Iron, chromite, and nickel, Tennessee Valley area: Eckel, E. C., 8.
- Iron, native and alloys: Buddhue, 2.
- Iron ores of U. S.: Cooke, S. R. B., 3.
- Iron ores, origin: Burchard, 5.
- Jamesonite, sphalerite, tetrahedrite, oxidation: Anderson, A. L., 10.
- Late gold, implications: Mawdsley, 8; Oedman, 1.
- Leached outcrops, Manitoba: Gwilliam, 1.
- Lead ores, primary, origin: Wells, R. C., 13.
- Lead and zinc: Jackson, C. F., 1; Loughlin, 8.
- Limestone, origin and road uses: Runner, 10.
- Limonite: Blanchard, R., 3; Boswell, 1.
- Liquid inclusions: Yuster, 1.
- Localization of ore, Front Range, Colo.: Lovering, 6.
- Logging, electrical and oil prospecting: Anonymous, 123.
- Lowlands and Ouachita provs.: Ruedemann, P., 3.
- Magmas and their products: Singewald, J. T., 13.
- Magnetic prosp.: Helland, 24; Royce, 3.
- Magnetometers in geophys. prosp.: Schmidt, K. H., 1.
- Manganese: Hewett, 9; Savage, W. S., 2.
- Mapping, geol., from aerial photos.: Desjardins, 8; Gardner, L. W., 1; Logan, J., 3.
- Mapping, oil industry: Lahee 16.
- Mapping, oil pools: Sanders, T. P., 1.
- Mapping underground geology: Schmitt, 8.
- Mechanical sand analysis for correls.: Gardescu, 1.
- Mechanics of metasomatism: Bain, 15.
- Mercury in native silver, origin: Newhouse, 7.
- Mesothermal copper veins and replacements: Hart, L. H., 1.
- Mesothermal gold deposits: Connolly, 6.
- Mesothermal silver-lead-zinc deposits: McKnight, 1.
- Metalliferous deposits, southwest U. S. and Mexico: Schmitt, 5.
- Metallogenesis and crustal theory: De Lury, 10.
- Metamorphism; organic sediments and derived oils: White, 26.
- Methods of prosp.: Helland, 23.
- Micromagnetic surveys: Jenny, 10.
- Microscopic determination, ore minerals: Short, 3.
- Methods, Gulf Coast: Kornfeld, 4.
- Mineralogic analysis: Ravitz, 1.
- Subsurface work, U. S. oil fields: Reed, R. D., 8.

Economic geology—Continued.

- Mineral deposits: Behre, 26; Graton, 10; Lilley, 1; Singewald, Q. D., 14.
- Mineral explor.: Leith, C. K., 3.
- Mineral industry devel.: Loughlin, 10.
- Mineral veins, origin: Behre, 17.
- Minerals, commercial: Blair, J. M., 3.
- Conservation: Leith, 11.
- Role in internat. situation: Leith, 12.
- Mining dist., Eastern States: Singewald, J. T., Jr., 7.
- Mining geology: Colony, 2; McLaughlin, 6; Singewald, J. T., Jr., 11.
- Mining hist. and influence west U. S.: Henderson, C. W., 3.
- Mining for oil: Rich, 24.
- Mississippi Valley: Bastin, 20; Graton, 7.
- Molding sands: Casberg, 1.
- Molybdenum: Butler, 22; Petar, 1.
- Monadnocks with minerals: Hafer, 1.
- Mounting polished surfaces in bakelite: Krieger, 4.
- Naming subsurface fms.: DeFord, 4.
- Napthene and methane oils: Hlauschek, 1.
- Natural gas: De Golyer, 9; Hunt, 2; Postley, 1.
- Nevada mining dists: Ferguson, H. G., 1.
- Nickel: Bastin, 18; D'Arcy, 1; Stanley, R. C., 1.
- Nickel, cobalt, native silver ores: Bastin, 18.
- Nonmetallic mineral products: Bayley, 1; Ries, 5.
- North America, natural asphalts: Woodruff, E. G., 3.
- Oil fields: Bentz, 1.
- Nova Scotia ann. mines rept. 1937: Cameron, A. E., 4.
- Oil and gas accumulation, time: Herold, E. C., 4.
- Oil-field estimates by core data: Komarov, 1.
- Oil fields and continental spreading: Wade, 1.
- Oil finding progress: Deussen, 3.
- Oil reserves, recoverable, in sand fields: Brace, 2.
- Oil sands and rocks, current resistivities: Jakosky, 8.
- Oil sh.: Norris, C., 1; Savage, H. K., 1.
- Oil well, econ. spacing: Cheney, 8.
- Olivine as refractory material: Berkelhamer, 1.
- Ore and structure: Bichan, 2.
- Ore bodies: Bruce, 18; Keys, 3; Wisser, 4.
- Ore, definition: Fermor, 1.
- Ore deposition, structural control: Porter, C. A., 1.
- Ore deposits, field studies: Sales, 3.
- Outcrops: Eby, J. H., 1.
- Relation to geol. cycles: Butler, 12.
- Rocky Mts.-Colo. Plateau areas: Tenney, 3.
- Southwestern U. S.: Ransome, 3.

Economic geology—Continued.

- Ore deposits—Continued.
- Succession of minerals: Lindgren, 15.
- Western States: A. I. M. E., 1; Graton, 9; Rastall, 1.
- Ore from magmas or deeper: Graton, 12.
- Ore, future supply: Hubbert, 6.
- Ore guides: Blanchard, R., 2.
- Ore hunting: Locke, 3.
- Ore minerals, study: Haycock, 5; Schwartz, 26; Thomson, J. Ellis, 20.
- Ore research, micr.: Haycock, 5; Schwartz, 26.
- Ore shoots: Schmitt, H., 1, 7.
- Ore solutions chemistry: Schmedeman, 1.
- Organic content of rocks, petroleum: Russell, W. L., 13.
- Origin and accumulation of oil: Bignel, 6.
- Oriskany sand: Appalachian G. Soc., 1; Myers, T. H., 1.
- Outlook for new ore reserves: Locke, 2.
- Ozark Mts. area: Schottenlohr, 2.
- Paleogeology applied to petroleum geology: Levorsen, 11.
- Paleontology, Gulf Coast drilling: Mills, 8.
- Pegmatites: Hess, F. L., 8.
- Pennsylvania, Middletown quad: Stose, 12.
- Permeability: Clough, 1; Nevin, 6; Ryder, 1; Wyckoff, R. D., 1.
- Petrographic microscope in ore finding: Smith, N. C., 1.
- Petroleum, accumulations: Bignel, 5; Ferguson, J. L., 1; Gardner, J. H., 4; Ginter, 2; Rich, 26; Sellards, 35.
- Cores, inv.: Landsberg, 10; Means, 1.
- Development in America: Fanning, 1; White, 25.
- Discoveries: Deussen, 12.
- Electrical logging, Appalachian fields: Gillingham, W. J., 2.
- Exploration for: Bignell, 4; DeGolyer, 11; Goodrich, H. B., 3; Heroy, 2; Hoffman, 6; Karcher, 4; Pratt, W. E., 3; Rieber, 8; Rosaire, 4.
- Formation, time: Van Tuyl, 14.
- Genesis: Van Tuyl, 9.
- Geologic research on: Barton, 43.
- Geology: Hager, D., 2; Lahee, 9; Levorsen, 13; Porter, 6; Ver Wiebe, 12.
- Geophysical prosp. for: DeGolyer, 8, 12.
- History of prosp.: DeGolyer, 12.
- Industry: Hager, 3; Stout, 16.
- Methods for findings: Bignel, 3.
- Migrations: Barton, 37; Bloesch, 3; Clark, 22.
- Origin: Barton, 38; Beal, 8; Brooks, B. T., 4; Carlson, A. J., 4; Ginter, 2; Lind, 2; Snider, 1; Van Tuyl, 16; Ver Wiebe, 23.
- Permeability measurements: Clough, 1.
- Physiography, sedimentation and oil geology: Rich, 17-a.
- Pool levels: Lahee, 6.
- Probable shortage: Snider, 5.

Economic geology—Continued.

Petroleum—Continued.

- Production practice: Stephens, 4; Wrather, 6.
- Reserves: Heroy, 1; Miser, 18; Pew, 1.
- Reservoirs: Plummer, 24; Wilson, W. B., 5.
- Rocky Mts. area: Hunt, E. H., 2.
- Source beds: Trask, 32, 37, 40.
- Stratigraphic vs. structural accumulation: Levorsen, 7.
- Structure, oil and gas pools: Bignel, 8.
- Subsurface sampling: Katz, 1.
- Petroleum and coal, evolution: White, 24.
- Phosphates, field test: Oakes, 1.
- Photographing walls of boreholes: Kelly, 21.
- Photomicrographs, illustrating magnification: Sharpstone, D. C., 1.
- Photomicrography, oil industry: Snelgr, 2.
- Physical chemistry in stratigraphy: Mansfield, G. R., 23.
- Physical methods, oil explor.: Shepard, E. R., 1.
- Physiography, sedimentation, and oil geology: Rich, 17-a.
- Placer deposits: Cockfield, 8; Graves, 1; Pardee, 5.
- Plane-polarized light, micr. ore inv.: Osborne, F. F., 13.
- Porosity and permeability, oil sands: Graton, 8; Talliaferro, D. B., Jr., 1; Tickell, 5.
- Potash: Johnson, B. L., 3; Ramsdell, 5.
- Pressure phenomena in oil fields: Clark, W. A., 1.
- Profile mapping, continuous electrical: Jakosky, 10.
- Prospecting handbook: Goodwin, W. L., 4; Manitoba Dept. Mines, Mines Branch, 1; Walker, J. F., 8.
- Prospects, exam. of: Gunther, C. G., 1.
- Pyrite-marcasite relation: Buerger, 8.
- Quicksilver: Ross, C. P., 13; Schuette, C. N., 4.
- Radioactivity, sed. rocks and petroleum: Goodman, C., 1.
- Rare metals and minerals: Hess, F. L., 12.
- Raw materials, Pacific Coast iron industry: Hodge, 16.
- Recent devel. as applied sci.: Berkey, 14.
- Reserves, method of estimation: Huntington, 1.
- Resistivity methods, stone and gravel: Kurtenacker, 2.
- Reservoirs, lms., Perm. Basin: Bybee, 5.
- Resources, TVA area: Spain, 4.
- Road materials: Runner, D. G., 1; Wilcox, S. W., 2.
- Rock and ore assoc.: De Lury, 27.
- Rock quality, determination: Runner, D. G., 15.
- Sabine uplift importance: Easton, 6.

Economic geology—Continued.

- Salt deposits, origin: Reed, 32.
- Salt domes: Brown, R. V., 1; Shepard, 37; Steinmayer, 3; Taylor, R. E., 2.
- Salt flowage in salt domes: Jones, R. A., 4.
- Salt, rock and potash: Reed, 30.
- Sampling and coring metalliferous deposits: George, H. C., 1.
- Sampling minerals in polished secs.: Haycock, 1.
- Sand and gravel: Runner, 13; Thoenen, 2.
- Sand bodies, location of: Rich, 29.
- Sands, oil-flow and water content: Van Wingen, 1.
- Permeability: Mavis, 1.
- Saturation percentages, oil sands: Gabriel, 6.
- Schlumberger elec. logging: Mathieu, 1.
- Search for mineral deposits: Ebbutt, 1.
- Secondary enrichment theory: Schneiderhöhn, 2.
- Sedimentary manganese: Hewett, 8.
- Seismic mapping of geol. structures: Barton, 3.
- Seismic prosp.: Adler, 3; Heiland, 4; Tracy, 1; Welch, 1.
- Seismograph prosp.: English, W. A., 3; Ittner, 1; Leet, 9.
- Shale, origin and road use: Runner, D. G., 7.
- Silver sulfide minerals, identification: Gaudin, 4.
- Soil surveys: McDermott, 6.
- Source beds, petroleum: Trask, 36, 38.
- Source of metals: Sabsay, 1.
- Sparta-Wilcox trend structures: Barret, 5.
- Stannous oxide, etching iron ore: Hickok, 1.
- Stone industries: Bowles, O., 3.
- Stratigraphic vs. structural prosp.: Ro-saire, 14.
- Stratigraphy vs. structure, Rocky Mts. area: Heaton, 4.
- Structural geology and economic deposits: Gilluly, 14; Stark, 14.
- Structural materials, T. V. A. area: Anonymous, 139.
- Structural trends, Gulf Coast: Jenny, 8.
- Structure delineation in mining: Kelly, 22.
- Structure, oil fields: Howard, W. V., 9, 11.
- Subsurface geology: Adams, J. E., 10.
- Sulfide minerals: Gaudin, 3; Verhoogen, 3.
- Sulfur: Ridgway, 2.
- Surveys, State geol.: Moore, 43.
- System Cu-Fe-S: Merwin, 2.
- Tectonic position, Rocky Mts. ore deposits: Billingsley, P. R., 2, 3.
- Temperature measurements: Deussen, 10.
- Tertiary faunas: Dunbar, 13.

Economic geology—Continued.

- Tetrahedrite and silver in ores: Warren, H. V., 1.
- Texas, waters, Corpus Christi Basin: Price, W. A., 11.
- Textbook: Ries, 4; Tarr, W. A., 4.
- Textures due to unmixing of solid solutions: Schwartz, 8.
- Theories of ore fm., rev.: Cooke, H. C., 14.
- Theory of downward secondary enrichment: Brown, J. S., 6.
- Thorium-uranium ratios and lead origin: Keevil, 3.
- Tin compounds, identification: Gaudin, 5.
- Torsion balance use: Heiland, 6; Weinzierl, 1.
- Tri-State lead and zinc ores: Ridge, 1.
- Tungsten, western States: Lovering, 13.
- Uranium, vanadium, radium, gold, silver, molybdenum sed. deposits: Hess, F. L., 6.
- Use of geology in seeking gold: Jenkins, 14.
- Value in cement manufacturing: Miller, B. L., 1.
- Vein solutions, composition: Newhouse, 5.
- Volatiles, role in ore genesis: Weed, 2.
- Water in geol. processes: Morey, G. W., 4.
- Waters, magmatic and meteoric: Lindgren, 12.
- Western mining, hist. rev.: Ransome, F. L., 4.
- Western States, ore deposits: Finch, J. W., 3.
- Phosphate: Mansfield, G. R., 14.
- Wildcat drilling: Lahee, 17, 20.
- Zinc-bearing chromite: Donath, 1.
- Educational.** See also Textbooks.
- Doctorates in science, 1932-33: Hull, 1.
- Examination tests in geology: Kay, G. M., 11.
- Experimental mine, Colo.: Read, J. B., 1.
- Geological educ.: Swartz, F. M., 6.
- Laboratory manual, hist. geology: Mather, K. F., 1.
- Motion pictures for class rooms: Mather, K. F., 2.
- Paleogeographic wall maps: Patton, L. T., 2.
- Surveys and geol. educ.: Butler, 13; Short, 4.
- Effects of transportation of particles: Russell, R. D., 15.
- Elasticity, rocks, massive minerals: Birch, 5.
- Elastic properties of rocks: Ide, 2, 3.
- Elastic-wave explor.: Rieber, 2.
- Electrical well-logging: Houston, G. S., 2.
- Electric prosp.: Crosby, 1; Focken, 1; Houston, G. S., 2; Lundberg, 1; Sundberg, 1, 2; West, S. S., 1.
- El Dorado oil field, Kans.: Reeves, J. R., 1.
- Elevation and subsidence. See Changes of level.
- Elk Basin oil and gas field, Mont.: Bartram, 1.
- Elk Hills oil field, Calif.: Pemberton, 1.
- Ellenburger lms., Tex.: Dake, C. L., 2.
- Elongation in deformed rocks: Fairbairn, 8.
- Emery, Peekskill area, N. Y.: Butler, J. W., Jr., 2; Gillson, 6.
- Endothermic reactions, radioactive disintegration: Lovering, 19.
- Energy sources, crustal movement: Heim, 2.
- Engineering geology.
- Application to civil eng.: Clark, D., 1.
- Bonneville Dam location: Hodge, 20.
- Bridge sites: Morse, W. C., 7.
- Chicago area: Ekblaw, 8.
- Core drill, large for geol. explor.: Money-maker, 6.
- Criteria, gold-quartz mines: Anderson, J. C., 2.
- Dam sites: Berkey, 3, 5; Bryan, 2, 4; Crosby, 15; Eckel, 12; Fisher, L. W., 1; Hodge, 20; Mead, 3, 4, 5; Money-maker, 6; Philbrick, 3; Ransome, F. L., 1; Wentworth, 1.
- Dams and reservoirs: Bryan, K., 2; Glenn, 1.
- Deep-well drilling: Heald, 5.
- Earthquake action: Macelwane, 13.
- Electrical logging: Gillingham, W. J., 1.
- Faulting effect on dams, Calif.: Louderback, 9.
- Faults, effect on veins: Eby, J. H., 2.
- Foundation eng. by geophysics: Johnson, F. M. S., 1.
- General: Berkey, 14; Ries, 6; Runner, D. G., 6.
- Geologic data in hydraulic projects: Mathes, G. H., 1.
- Geologic exam. of dam sites: Bryan, K., 4.
- Geologic terms for highway eng.: Runner, 12.
- Geologist and well-spacing: Kraus, 1; Porter, 9.
- Geologist in eng.: Berkey, 2, 25; Legget, 1.
- Geology and eng.: Berkey, 2, 25; Legget, 1.
- Geology in agr. and mining: Corral y Alemán, 2.
- Geology in mine valuation: Thurlow, 1.
- Geology in war: Gonzalez, E. M., 1; Portillo, 1.
- Geophysical aid in construction work: Stipe, 1.
- Geophysical prosp. in war: Covarrubias, 2.
- Gorges, buried, Mississippi River system: Glenn, 3.
- Highway eng. geology: Runner, 17.
- Illinois, Vienna City reservoir: Ekblaw, 13.

Engineering geology—Continued.

- Importance: Ries, 2.
 Magnetic prosp.: Heiland, 24.
 Mapping underground geology: Schmitt, 8.
 Methods of prosp.: Heiland, 23.
 Minor geol. details: Terzaghi, C., 3.
 New York City projs.: Fluhr, 4.
 Ore bodies, environment: Wisser, 4.
 Petroleum: Means, 1; Porter, W. W., II., 6; Scott, W. M., 1.
 Placer deposits: Graves, 1.
 Production: Stephens, 4.
 Reservoir and dam sites: Bryan, K., 2.
 Reservoir ground-water conditions: Meiner, 4.
 Reservoirs in basalt: Stearns, H. T., 4.
 Road-material survey, methods: Runner, D. G., 1.
 Stratigraphic vs. structural prosp.: Ro-saire, 14.
 Stream dynamics: Lane, E. W., 1.
 Strike and pitch, intersecting fms., formula: Weir, 1.
 TVA area: Eckel, E. C., 5.
 Water conserv.: Bartlett, 1.
 Enrichment. See Ore deposits, origin.
 Environment, early vertebrates: Romer, 12.
 Eocene. See Tertiary.
 Eötvös torsion balance: Barton, D. C., 1, 2; George, P. W., 1; Heiland, 3.
 Eolian action. See Windwork.
 Eolian sands: McCarthy, 9.
 Eolianites, Bermuda: Schuchert, 21.
 Ep-Archean and Ep-Algonkian intervals: Hinds, 19.
 Epidote, Alaska: Henderson, E. P., 12; Montgomery, A., 3.
 Epsomite, N. Y.: McCulloch, R. B., 1.
 Erosion. See also Floods; Glacial erosion; Sedimentation.
 Abrasion work of river ice and glaciers: Wentworth, 19.
 Accelerated: Lowdermilk, 1, 3.
 Alberta: Crickmay, C. H., 14.
 Allegheny plateau surfaces: Rich, J. L., 32.
 Appalachian Plateaus, Pa., Ohio: Cole, W. S., 12.
 Appalachians: Wright, F. J., 7.
 Arizona: Brady, 13; Brown, W. H., 4; Gilluly, 15, 18; Hack, 1; Maxson, 10; Sharp, R. P., 6; Smith, G. E. P., 2; Werber, 1.
 Assiniboine great sedimentation cycle: Keyes, 311.
 Avalanches, Sierra Nevada, Calif.: Matthes, 27.
 Basin Range hypothesis: Keyes, 256.
 Beach markings, Wichita Mts.: Evans, O. F., 1.
 Beaches: Barden, 1, 2; Brown, E. I., 1; O'Brien, 8; Prat, 1; Schmitt, F. E., 1.

Erosion—Continued.

- Bermuda beaches: Prat, 1.
 Bibliography: Gaines, 1; Wieland, L. H., 1; Williams, G. R., 1.
 Black Hills and Bear Lodge Mts.: Meyerhoff, 21.
 California: Barnes, F. F., 7; Chawner, 2; Davis, 29; Dudley, 2; Grant, 12, 15, 16; Hopper, 2; Kessell, 1; Louderback, 7; Lucke, 10; Macar, 4; Matthes, 25; O'Brien, 3; Putnam, W. C., 2; Rode, 3; Smith, R. L., 1; Troxell, H. C., 1.
 Canyons: Thomson, J. P., 2.
 Central Plains, area: Van Royen, 2.
 Channel-contraction effect on bed: Straub, 4.
 Choking of pore-space in soil: Hendrickson, B. H., 1.
 Cliffs, glaciated, disintegration: Balk, 16.
 Colorado: Glock, 10; Kessler, F. C., 2; Leiter, 1; Powers, 15; Worcester, P. G., 3.
 Colorado River region: Leiter, 1.
 Connecticut Valley, Mass., March flood, 1938: Collins, R. F., 1.
 Continents and oceans, origin: Bowle, 20.
 Control: Nat. Res. Bd., 1.
 Correlation of surfaces, Ohio-Pa.: Ver Steeg, 31.
 Cycles: Atwood, W. W., Jr., 13; Crickmay, C. H., 22; Fenneman, 6.
 Cycles of orogeny and erosion: Baulig, 4.
 Cyclic and non-cyclic: Fenneman, 6.
 Delta, Colorado River: Sykes, 4.
 Denudation and desert rainfall: Russell, R. J., 12.
 Desert cliff recession: Glock, 15.
 Desert rainfall: Russell, R. J., 12.
 Differential erosion: Breeze, 1.
 Dust Bowl area: Anonymous, 102.
 Dust storms: Throckmorton, 1.
 Dynamics, in controlled channels: Ramser, 2.
 Earth rotation and river erosion: Fairchild, 12.
 Fault scarps and fault-line scarps: Johnson, 43.
 Flood control: Eakin, 3.
 Flood erosion: Engeln, von, 9.
 Florida, Everglade keys: Small, 1.
 Forests and stream-flow: Hoyt, W. G., 1.
 Gateways, mountains, stream-cut: Johnson, D. W., 29.
 General: Miller, M. F., 1; Ramser, 1; Reeds, 4; Sharpe, C. F. S., 4; Tharp, 1.
 Geological notes for mtn. climbers: Erwin, 5.
 Geologic rhythms: Wanless, 15.
 Geologic time indicated by: Ashley, 29.
 Geomorphic processes at high altitudes: Bryan, 24.
 Geomorphology, glacial: Engeln, von, 13.
 Mountainous deserts: Davis, 28.

Erosion—Continued.

- Georgia: Crickmay, G. W., 12; Ireland, 6.
 Glacial: Demorest, 4; Engeln, von, 14; Matthes, 12.
 Gradation by ice: Brodshaug, 2.
 Gradation by water: Broadshaug, 3.
 Greenland: Odell, 3; Poser, 2.
 Guatemala: Cooke, C. W., 11.
 Hawaii: Stearns, 30; Wentworth, 38.
 Headward: Rappenecker, 2.
 Hydrologic and hydrog. inv.: Piper, 13.
 Ice jams, sub-Arctic rivers: Wentworth, 17.
 Idaho: Mansfield, G. R., 24; Rockie, 1; Ross, C. P., 33.
 Indiana: Fidler, 1; Visher, 4, 5, 6; Walka, 1.
 Insolation effects, headward erosion: Melton, 23.
 Intermontane region, uncultivated lands: Forsling, 1.
 Intervals, Ontario: Wilson, A. E., 7.
 Investigations: Rittenhouse, 4.
 Iowa: Goshorn, 4.
 Kansas: Robertson, G. M., 5; Ward, H. K., 1.
 Kentucky, karst lands: Dicken, 1.
 King's Mtn. area, N. C. and S. C.: Frink, 1.
 La Jolla sea cliff recession: Vaughan, 14.
 Landslides and related phenomena: Sharpe, C. F. S., 2, 3; Washburn, A. L., 1.
 Limestone caverns: Davis, 10.
 Development of porosity: Howard, W. V., 5.
 Solution and slope effects: Smith, J. F., Jr., 1.
 Littoral drift: Hennebique, 1.
 Los Angeles area, flood hazards: Lamotte, 11.
 Louisiana: Fisk, 4; Russell, R. J., 19.
 Maine, post-glacial consequent streams: Sayles, 7.
 Massachusetts, marine: Stetson, 9.
 Mature lands: Johnson, D. W., 42.
 Mexico: Díaz, 1; Ives, 5; Ordoñez, 6; Waltz, 8.
 Michigan: Dickey, R. M., 5; Dow, 2.
 Mississippi: Tharp, 1.
 Missouri: Wentworth, 30.
 Missouri Valley loess region: Musgrave, 2.
 Mounds, soil, origin: Melton, 16.
 Multiple surfaces: Bates, R. E., 3; Rich, 31.
 Nebraska: Cady, R. C., 6; Condra, 11, 15; Hestbeck, 1.
 Nevada: Blackwelder, 48; Keyes, 177.
 Newfoundland surface: Twenhofel, 39.
 New Jersey: Lucke, 2; Anonymous, 9.
 New Mexico: Bryan, 35; Church, F. S., 1; McCann, 1.
 New York: Cole, 13, 14; Holmes, C. D., 2; Morris, 5; Payne, T. G., 1.
 North Carolina: Frink, 1.

Erosion—Continued.

- Ohio: Reichert, 1; Stout, 9, 15; Ver Steeg, 17.
 Oklahoma: Murphy, H. F., 2; Strain, 1.
 Ontario: Kindle, 20, 34.
 Oregon, lava flows: Fuller, 15.
 Ouachita Mts., Ark.-Okla.: Keyes, 469.
 Pawhuska rock plain, Kans.-Okla.: Melton, 29.
 Pebble wear, Jarvis Is. beach: Wentworth, 17.
 Pediments, fm.: Bryan, 29, 30.
 Penepains: Keyes, 287; Van Tuyl, 13.
 Pennsylvania: Gorman, J. M., 1; Itter, 1; Patrick, 1; Anonymous, 83.
 Physiographic research on: Stewart, C. F., 1.
 Piedmont: Eargle, 4; Fuller, G. L., 1.
 Planational terms: Glock, 6.
 Pothole erosion: Alexander, H. S., 1.
 Preglacial sea levels: Miller, A. A., 1.
 Quantitative study: Bennett, H. H., 1; Musgrave, 1.
 Quebec, Gaspé: Morin, 2.
 Rainfall, absorption and runoff: Lowdermilk, 2.
 Rains, dynamic action: Bennet, H. H., 2.
 Rainstorm types, effects on gullies: Eargle, 3.
 Rates of wear, common minerals: Cozzens, A. B., 1.
 Recent stream incision, Wis.: Thwaites, A. M., 1.
 Rhode Island, hurricane changes: Nichols, 8-9, 14.
 Rio Grande, silt: Flock, 1.
 Rip currents: Shepherd, 5.
 Rock fans and pediments: Rich, 19.
 Rock surfaces, grooved: Blackwelder, 26.
 Rocky Mts. area: Atwood, W. W., 10; Lugn, 8, 9, 10.
 Rocky Mts. and Great Plains, cycles: Lugn, 8, 9, 10.
 Runoff and erosion, comparison: Weaver, J. E., 1.
 Scour, river bed, experts: Wright, C. A., 1.
 Snowslide: Dyson, 2.
 Silt problem: Stevens, J. C., 1.
 Silting of reservoirs: Eakin, 5.
 Slumping and gully fm.: Mitchell, 6.
 Soil, cost in rock and time: Twenhofel, 37.
 Drifting, Great Plains: Leighton, 29.
 General erosion: U. S. Soil Conserv. Serv., 1.
 Kansas, by wind: Throckmorton, 2.
 South Carolina: Frink, 1; Ireland, 5.
 South Dakota: Work, 2.
 Southwest: Bryan, K., 1; Fleming, B. P., 1.
 Stream, flat-bottomed: Stephenson, 18.
 Streams, flood-plain: Melton, 22.
 Structural, magmatic processes: Hoffman, 8.
 Sun symbol markings, lms. and ss.: Lang, W. T. B., 5.

Erosion—Continued.

- Surfaces, recognition in mtn. areas: Atwood, W. W., 8.
- Talsekwe River, British Columbia-Alaska: Kerr, F. A., 16.
- Talus, above timber, Rocky Mts.: Behre, 11.
- Tennessee: Moneymaker, 7.
- Tennessee River channel holes: Money-maker, 8.
- Texas: Geib, 1; Hanna, M. A., 13; Price, W. A., 14; Taylor, T. U., 1.
- Transportation of silt by streams: Leighly, 2; O'Brien, M. P., 1, 2.
- Turbulence and silt transp.: Leighly, 2.
- United States: Boesch, H. H., 1; Morris, F. G., 1.
- Utah: Bailey, R. W., 2, 3; Bradley, W. H., 9-a, 14; Gregory, H. E., 4, 5, 6; Hunt, 8; Okeson, 1; Schneider, 6; Utah Spec. Flood Commission 1.
- Virginia: Cooper, B. N., 7; Fuller, G. L., 2; Holden, 11; Woodward, H. P., 12.
- Washington: Flint, 20; Thomson, J. P., 1; Waters, 11.
- Wave tank study: Evans, 19.
- Weathering cycle: Krumbein, 18.
- West Virginia: Fridley, 4, 6, 7; Galpin, 4.
- Wisconsin: Ball, J. R., 5, 18-a.
- Wyoming: Atwood, W. W., Jr., 7; Baker, 26; Lucke, 7; Mackin, 7.
- Erosion and flood control: Eakin, 3.
- Erratic boulders, Okla.: Gould, 3; Kramer, 1.
- Eruptive rocks. See Igneous and volcanic rocks.
- Eskers.**
- Canada, north: Nichols, D. A., 2.
- Massachusetts, Attleboro area: Goldthwait, L., 1.
- Ontario, Hastings Co.: Wilson, M. E., 6.
- Quebec, NW.: Ross, S. H., 1; Wilson, J. T., 5.
- Essays.** See Addresses.
- Etch figure inv.: Honess, 5.
- Eureka, Alaska, lode deposits: Wells, F. G., 4.
- Eurypterida. See also Arachnida.
- Devonian, N. Am.: Ruedemann, 51.
- Eurypterus: Decker, 17; Kjellesvig, 1.
- Influence on vertebrate history: Romer, 8.
- Labrador: Little, 1.
- Montana: Caster, 11-a.
- New York: Goldring, 11; Kjellesvig, 2; Mencher, 2; Ruedemann, 22; Sanford, J. T., 2.
- Ohio: Caster, 11-a.
- Ontario: Shaw, E. W., 2.
- Ordovician, Labrador: Caster, 11-a; Little, 1.
- Paleozoic plankton: Ruedemann, 24.
- Pennsylvania: Miller, B. L., 13.
- Pterygotus: Caster, 11-a; Ruedemann, 28, 31.
- Strobilopteris for Pterygotus: Ruedemann, 31.
- Wyoming: Ruedemann, 21, 31.

European and N. Am. mtn. systems: Suess, 1.

Eutopotropism: Lane, 16.

Evaporation, high altitudes and latitudes: Church, J. E., 1.

Evolution.

- Age of mammals, beginning: Simpson, 39.
- Alloiometrans and aristogenes, adaptation: Osborn, 39.
- Animal: Reed, W. M., 2.
- Anthozoa, Ord.: Okulitch, 15.
- Antilocapra ancestry: Hesse, 10.
- Arizona, Grand Canyon: Johnson, D. W., 33-a.
- Aristogenesis: Osborn, 32.
- Arthropoda, segmentation: Reynolds, J. M., 1, 2; Tillyard, 3.
- Aspects, new: Pycraft, 1.
- Atlas-axis complex: Evans, F. G., 1.
- Birds, origin: Troxell, 8.
- Brain, fish to man: Gregory, 29.
- Bryozoans: Elias, 17; Sardeson, 42.
- Changing geol. environment and heredity: Fenton, 20.
- Civets: Gregory, 31.
- Crinoidea: Keyes, 465.
- Crocodylia: Mook, 8.
- Darwinism: Ward, H., 1.
- Dinosaurs, ancestors and neighbors: Anonymous, 198.
- Dogs, phylogeny: Matthew, W. D., 5.
- Dual principles: Osborn, 35.
- Elasmotheres: Wood, H. E., 10.
- Elephants and mastodons: Lull, 6.
- Eobippus cf. Hyracotherium teeth: Friant, 2.
- Equine skull mutations: Robb, 1.
- Eurypterid influence, vertebrate history: Romer, A. S., 8.
- Factors in fossil series: Fenton, 39.
- Faunas and floras, coastal N. Am.: Noé, 16.
- Faunas, Tert., tropical America: Rutsch, 4.
- Fish operculum: Eaton, T. H., 1.
- Fish to man: Gregory, 9.
- Floras, Dev., origin vascular plants: Höeg, 3.
- General: Ashley, 24; Bradley, J. H., Jr., 1; Fenton, C. L., 8, 16; Matthew, D. W., 4; Osborn, 20; Shimer, 1; Thom, B. P., 1.
- Geological aspects: Allen, 19.
- Geologic history of mankind: Mather, 2.
- Grand Canyon, Ariz.: Johnson, D. W., 33-a.
- Gulf Coast crude oil: Barton, 46.
- Heteromyid rodents, west. N. Am.: Wood, A. E., 7.
- Horse family: Lull, 5.
- Insecta: Carpenter, 5; Tillyard, 2.
- Irreversibility: Gregory, 24.
- Life, origin: Rehder, 1.
- Life processes: Staley, 1.
- Ligament scars, horses' feet: Smith, N., 1.
- Mammalia: Gregory, 26; Scott, W. B., 4; Simpson, 30.

Evolution—Continued.

- Man: Gregory, W. K., 1, 15, 19, 28; Hooton, 1; Romer, 5; Schlaikjer, 9.
 Man and primates: Gregory, 28.
 Man and the vertebrates: Romer, 5.
 Megalichthys cranium: Eaton, T. H., Jr., 2.
 Merycoidodonts, phylogeny: Thorpe, 8.
 New concept: Osborn, 23.
 New Hampshire, White Mts. magma: Chapman, R. W., 1.
 North American phacopid Trilobita: Delo, 12.
 Ocean: Keyes, 359.
 Orthogenesis: Werner, 4; Wood, H. E., 2d, 17.
 Our face: Gregory, W. K., 1.
 Paleontologic devel. and ecology: Fenton, 13.
 Paleontology and evolution: Keith, Sir A., 1.
 Patterns, phylectic evolution: Simpson, 40.
 Pelecypoda: Schenck, 24.
 Pelvis, fish to man: Gregory, 19.
 Petroleum: Barton, 28.
 Phylogeny, heteromyid rodents: Wood, A. E., 1.
 Vertebrate: Hamlett, 1.
 Plants and evolution: Darrah, 16.
 Plants, seed, descent: Wieland, 5.
 Pollen grains: Wodehouse, 4.
 Principles of paleontology: Osborn, 24.
 Proboscidea: Osborn, 24, 29, 36, 38.
 Reef corals: Gerth, 1.
 Rhinoceroses, amynodont: Wood, H. E., 2d, 17.
 Seed plant descent: Wieland, 5.
 Sirenia: Simpson, 18.
 Skulls, vertebrate: Gregory, 17.
 Spirifer: Fenton, C. L., 10, 12.
 Stage: Schenck, 30.
 Stegocephalia: Case, 11.
 Tempskya: Read, C. B., 14.
 Tetrápods, origin: Westoll, 2.
 Titanotheres: Osborn, 23.
 Trilobita: Delo, 11, 2; Weller, 27.
 Trituberculy: Gregory, 14.
 Up from the ape: Hooton, 1.
 Variation, supra-specific: Simpson, 42.
 Vertebrata: Gregory, 11, 17, 20; Romer, 18.
 White Mts. magma ser., N. H.: Chapman, R. W., 1.
 Yellowstone Nat. Park: Howard, A. D., 8.

Evolution and the moral order: Ashley, 19.

Excursions.

- Angeles Crest highway, Calif.: Van Arminge, 9.
 Bighorn Basin-Yellowstone Valley Conf.: Tomlinson, 10.
 California, San Fernando Valley-Pacoma Canyon: D'Arcy, 5.
 Columbia River Gorge, Wash.: Barr, 1.
 Cuba, field guide: Palmer, R. H., 6.

Excursions—Continued.

- International Geol. Cong., 16th: Pfordte, 1.
 Kansas Geol. Soc. field confs.: Ball, 14; Borden, 1.
 Mexico, mineral localities: Stewart, W. O., 1, 2, 3.
 Michigan, Lake Superior dist.: Michigan Acad. Sci., 3; Anonymous, 118.
 Southern Peninsula: Michigan Acad. Sci., 1, 2.
 Mississippi Valley, Upper: Sutton, 13; Trowbridge, 15; Twenhofel, 15; Weller, 18.
 Moscow, Idaho, area: Scheid, 3.
 New England intercollegiate: Billings, M. P., 2; Fisher, L. W., 8; Foye, 2, 4, 5; Perkins, 13.
 New York: Koenig, 1; Marelli, 1; O'Connell, 1; Reimann, 12; Whitcomb, 8; Anonymous, 30.
 Oregon: Davis, F. L., 1; Smith, W. D., 10.
 Pennsylvania geologists' confs.: Cleaves, 7; Whitcomb, 8; Willard, 14.
 Trinidad geol. confs.: Hedberg, 4; Kugler, 6.
 Tri-State Geol. Field Confs., upper Mississippi Valley: Sutton, 13; Trowbridge, 15; Twenhofel, 15; Weller, 18.
 Exfoliation, hypogene: Farmin, 3.
 Exhibits in geology, importance: McGill, 14.
 Experimental investigations.
 Acmite, fusion relations: Bowen, N. L., 3.
 Agates, fms.: Caben, 1.
 Albite-fayalite system: Bowen, N. L., 15.
 Alkali sulfide solutions action on minerals: Lindner, 2.
 Alteration, pyrite to pyrrhotite: Stevens, R. E., 2.
 Aluminum and silicosis: Emmons, R. C., 11.
 Amphiboles, regeneration: Grigorley, 1.
 Bacterial genesis of hydrocarbon from fatty acids: Thayer, L. A., 1.
 Bentonite and metabentonite: Davis, F. A. W., 1.
 Biochemical reduction of sulfate waters: Thiel, 1.
 Bomb for hydrothermal experimentation: Morey, G. W., 3.
 Chalcocite-stromeyerite-argentite relations: Schwartz, 14.
 Clastic sediments, porosity and permeability: Fraser, H. J., 4; Muskat, 2.
 Clay colloids, cause of bedding: Keller, 6.
 Clay minerals, synthesis: Ewell, R. H., 1.
 Formation in laboratory: Norton, F. H., 2.
 Clay shs., weathering: Hind, 1.
 Clays, structure of water layers in: Hendricks, S. B., 4.

Experimental investigations—Continued.

- Colloids, clay, cause of bedding: Keller, 6.
- Compressibility measurements: Birch, F., 1, 2.
- Connate water in oil and gas sands: Dunlap, 1; Schilthuis, 1.
- Copper arsenides, natural vs. artificial texture: Schwartz, 23.
- Copper, native, deposition: Page, L. R., 3.
- Pyritic, origin: Kania, 4.
- Sulphide minerals: Gaudin, 6.
- Cores, marine, telescoping: Emery, K. O., 2.
- Creep of rocks: Griggs, 10.
- Crystal growth and solution under local stress: Russell, G. A., 1.
- Crystallography, potassium tetrathionate: Tunell, 10.
- Danburite: Morey, G. W., 1.
- Deformation of rocks: Griggs, 4, 8; Mott-Smith, M. C., 1.
- Deformation, single calcite crystals: Griggs, 6.
- Determination, saturation of oil sands: Hillis, 3.
- Differential compacting: Nevin, 1.
- Diffusion and ore deposits: Duffell, 1.
- Earth deformation: Quirke, 1.
- Earthquake, man made: Ulrich, F. P., 3.
- Earth vibrations caused by quarry blasts: Lee, 9; Thoenen, 3.
- Elastic properties of rocks: Ide, 2, 3.
- Elasticity, rocks, massive minerals: Birch, 5.
- Electrical blasting caps for seismog. prosp.: Rolland, 1.
- Equilibrium relationships, iron-oxygen: Greig, 4.
- Erosion, sandy river bed: Wright, C. A., 1.
- Etch figures: Honess, 5.
- Exfoliation of rocks, fatigue: Griggs, 5.
- Explosives for seismog. prosp.: Farren, 1.
- Fail of columns in earthquakes: Clements, 5.
- Feldspars, weathering: Norton, F. H., 1.
- Flow, oil-gas through sands: Reid, L. S., 1.
- Fluids through sands: Plummer, 18.
- Folding: Clark, 23; Mitchell, R. H., 1; Straley, 6.
- Fractures in clay cake: Wisser, 2.
- Freezing soils: Taber, 4.
- Galenite and pyrrhotite, deformation: Osborne, 12.
- Gas-fluids through porous media: Muskat, 4.
- General: Adams, L. H., 3.
- Geophysical Lab. repts.: Day, 1.
- Geysers, origin: Sherzer, 1.
- Glasses, altered to montmorillonite: Hauser, 1.
- Gold: Frondel, 15; Milner, R. L., 1; Ogryzlo, 1.

Experimental investigations—Continued.

- Granite, age by helium: Keevil, 1.
- Ground vibrations near blasts: Leet, 18.
- Heat conduction, dissimilar rocks: Lovering, 21.
- Hydrothermal experiments, copper: Park, 1.
- Hydrothermal oxidation and leaching: Dick, L. E., 1; Gruner, 8.
- Hydrothermal solutions, potassium chloride: Benedict, 1.
- Igneous rocks: Balk, 13; Bowen, 11.
- Iowa, rampart bldg. around lakes: Stookey, D. W., 1.
- Iron and copper sulfides: Foreman, 1.
- Kaolin minerals from feldspar: Badger, 1.
- Laboratory experimentation: Moses, 1.
- Lakes, artificial, shore processes: Evans, 11.
- Lead and zinc minerals: Kristofferson, 1.
- Lightning spalling: Lauder milk, 10.
- Limestones: Howard, H. V., 1, 5.
- Lithium distrib.: Strock, 3.
- Maghemite and ferric oxides: Newhouse, 14.
- Magmas: Bowen, 20.
- Magmatic stoping: Grout, 17.
- Magnetite crystals from meteoric solutions: Spiroff, 4.
- Manganese minerals: Trengove, 1.
- Massachusetts, Quincy granite wave velocity: Leet, 4.
- Matter, behavior under extreme conditions: Bridgman, 2.
- Meteoric iron, fused: Buddhue, 13.
- Mine, Colorado School of Mines: Read, J. B., 1.
- Minerals: Bridgman, 4; Crowley, Arthur J., 1; Staples, 6.
- Missouri Valley loess area: Musgrave, 2.
- Molding sands, durability: Casberg, 1.
- Montmorillonite to feldspar: Gruner, 25.
- Mountain bldg.: Douglas, 9; Griggs, 11.
- Mud crack expts.: Kindle, 35.
- Mud-cracked layers, curvature: Bradley, W. H., 10.
- Muscovite: Gruner, 34.
- Nepheline-albite-silica in fayalite: Bowen, 14.
- Nevada, cinnabar darkening in sunlight: Dryer, R. W., 2.
- New England, earthquake travel times: Leet, 16.
- Seismic studies of crust: Slichter, 7.
- Oil sands, shales and rock: Halbouty, 5; Jakosky, 8; Lockwood, 1; Rand, W. P., 1; Uwatoko, 1.
- Oolitic lms. hydrolytic dissociation: German, F. E. E., 2.
- Ore shoots: Douglas, 1, 3.
- Origin of petroleum: Berl, 3; Rand, W. P., 1; Stadnichenko, 4.
- Orogeny: Link, 5.
- Overburden depth determination: Keys, 4.
- Overthrusts and buttresses: Lammers, 2.

Experimental investigations—Continued.

- Peridotites: Sosman, 1.
 Permeability of rocks: Fraser, H. J., 7; Hassler, G. L., 1.
 Petrographic correl. of oil sands: Russell, R. D., 12.
 Petroleum, core testing: Landsberg, 10.
 Origin: Berl, 2; Carlson, A. J., 4; Rand, W. P., 1; Stadnichenko, 4.
 Physical properties, typical rocks: Griffith, 3.
 Planetary deformation of earth: Dennis, C. E., 1.
 Porosity and permeability: Graton, 8; Tickell, 5.
 Potential-drop ration method: Mitera, 2.
 Pothole erosion: Alexander, H. S., 1.
 Propagation, waves in lms.: Ewing, 5.
 Pyrite oxidation: Bain, 13.
 Pyrrhotite, other sulfides: Hewitt, R. L., 1, 2.
 Quarry blasting: Byerly, 26; Ewing, 5; Thoenen, 4.
 Quartz-cristobalite conversion: Cole, S. S., 1.
 Quartz orientation, deformed rocks: Griggs, 9.
 Radium in granites: Piggot, 1.
 Rates of wear, common minerals: Cozzens, A. B., 1.
 Red bed bleaching: Keller, W. D., 1.
 Reflection patterns: Rieber, 9.
 Reflection seismology: Hollister, J. C., 1.
 Resistivity, curves, interpretations: Manhart, 1.
 Measurements, artificial beds: Swartz, J. H., 5.
 Rigidity, rocks, under pressure: Birch, 4.
 Rock-forming silicates with water components: Goranson, 8.
 Salt domes: Escher, 1; Link, 4; Ritz, 1; Van Tuyl, 1.
 Sand, compressibility: Botset, 1.
 Craters, significance: Macqueen, 1.
 Oil-flow and water content: Van Wingen, 1.
 Permeability: Mavis, 1.
 Transported by wind: O'Brien, 4.
 Seismograms from shaking table: Dyk, 1.
 Serpentine minerals: Gruner, 32; Selfridge, 1.
 Shape-sorting of sand grains by wind: MacCarthy, 14.
 Shearing experts.: Boos, C. M., 2; Bridgman, 1; Larsen, 22; Rand, W. P., 1.
 Silicates: Bowen, 14, 17; Goranson, 5; Morey, G. W., 2.
 Silicate-water systems: Goranson, 5.
 Silicosis, mineralogic study: Emmons, R. C., 9.
 Silver sulfide minerals: Gaudin, 4.
 Soft-rock deformation: Rettger, 3.

Experimental investigations—Continued.

- Soil freezing: Taber, S., 2.
 Solubility of water in granite magmas: Goranson, R. W., 2.
 Solution flow and min. fm.: Newhouse, 16.
 Striations on etched lms.: Dunn, 14.
 Structural relations, converging strata: Ireland, 1.
 Structure inv.: Stone, A. T., 1.
 Sulfides, solubility to 400° C.: Verhoogen, 3.
 Suspension currents and mud slides: Stetson, 14.
 System CaO-MgO-SiO₂ reactions: Taylor, N. W., 1.
 System MgO-FeO-SiO₂: Bowen, 10.
 Thermal expansion, typical rocks: Griffith, 2.
 Thorium-uranium ratios and lead origin: Keevil, 3.
 Three-dimensional experts., earth deformation: Link, T. A., 1.
 Tin sulfides and compounds: Gaudin, 5.
 Transfusion of matter: Adams, F. D., 1.
 Travel times, waves in granite: Birch, 3.
 Varve deposition: Fraser, H. J., 1.
 Velocity determinations: Green, C. H., 1.
 Velocity of sound vs. temperature in rocks and glasses: Ide, 4.
 Velocity variation in earth model: Birch, 4-a.
 Vermiculites: Davis, F. A. W., 1; Hendricks, S. B., 3.
 Visual presentation, wave patterns: Rieber, 6.
 Wave tank study: Evans, 19.
 Well gage as seismograph: Blanchard, F. B., 1.
 Wind-faceted pebbles, fm.: Schoewe, 10.
 Wind transportation effect on min. grains: Marsland, 1.
 Wyoming, Sundance sand porosity: Nichols, H. D., 1.
 X-ray method study, hexagonal system: Barnes, W. H., 1.
 Young's modulus of rocks: Ide, 1.
 Explorations, east Greenland: Schuchert, 29.
 Exploring with explosives: Heiland, 16.
 Fabricated diagrs.: Ives, 10.
 Face of the earth: Schuchert, 41.
 Facetation, Great Basin Mts.: Keyes, 5.
 Facies, strat. paleontology: Kindle, 22.
 Faecal pellets, marine sediments: Moore, H. B., 1.
 Fairbanks area lode deposits: Hill, J. M., 2.
 Fairport oil field, Kans.: Allan, T. H., 1.
 Fake methods, geophys. prosp.: Blau, 1.
 Fanglomerates, Nev.: Sharp, R. P., 4.

Faulting.

- Alabama : Jones, W. B., 16, 21; Park, 5; Wissler, 5.
- Alaska : Capps, 12, 13; Lasky, 1; Reed, J. C., 18; Smith, P. S., 12; Tuck, 7; Waring, 6; Washburn, 4.
- Alberta : Hume, 11, 22, 23, 27, 29, 32; Link, 11, 12; Sanderson, 4; Willis, R., 4.
- Appalachian geosyncline : Ver Wiebe, 14.
- Appalachian Mts. area : Straley, 7.
- Arctic America : Bentham, 2; Downes, 1.
- Arizona : Butler, 17, 18, 19, 21; Davis, W. M., 4; Fowler, 14; Garrett, S. K., 1; Gilluly, 17, 20; Harrell, 2; Hernon, 1; Keyes, 251; Kuhn, 1; Longwell, 23; Peterson, N. P., 1, 2; Reber, 1; Rubly, 1; Short, 6; Smith, H. T. U., 10; Tenney, 6; Trischka, 4; Wilson, E. D., 8; Wilson, R. A., 1; Anonymous, 179.
- Arkansas : McKnight, 2; Rankin, C. L., 1; Reed, J. C., 16; Stearn, 11.
- Atlantic and Gulf Coastal Plain : Stephenson, 24.
- Barite area, Tenn. : Laurence, 3.
- Basin Range hypothesis : Keyes, 256.
- Bathymetric compilation, Calif. coast : Shepard, 33.
- Bedding-planes, econ. importance : Böhre, 22.
- Bighorn Basin-Yellowstone Valley area : Thom, 23; Anonymous, 117.
- Bradford field, Pa.-N. Y. : Fettke, 11.
- Breccia, cuneiform, from faulting : White, C. H., 1.
- British Columbia : Bancroft, 1; Cleveland, 1; De Béthune, 3; Goranson, E. A., 3; Hedley, M. S., 1; Horwood, 3; Joralemon, 3; Kerr, F. A., 20; Nelson, H. E., 1; Peacock, 8; Rice, 4, 5; Sharpstone, David C., 1; Stevenson, 5; Wright, L. B., 5.
- Caliche as a fault indicator : Cuyler, 3.
- California : Anderson, C. A., 8; Andrews, P., 2; Ashauer, 1; Bartosh, 3; Benioff, 5, 6; Callaghan, 15; Canfield, 1; Clark, B. L., 5, 12, 19; Clements, 6; Curry, 3, 4; Davis, 27; De Béthune, 5; Dudley, 2; Eaton, 9; Erwin, 3, 4; Grant, 17; Gregersen, 1; Gutenberg, 13; Henderson, L. H., 3; Henny, 5, 7; Herold, 8; Hewett, 16; Hill, M. L., 1, 2, 4; Hopper, 1; Johnston, W. D., Jr., 7; Kelley, 8, 10; Koch, T. W., 1; Lawson, 12; Louderback, 9, 12; Matthes, 24, 32; Mayo, 12, 15; Mielenz, 1; Miller, R. H., 1; Miller, W. J., 12, 14, 16; Morse, R. R., 1; Nash, 1; Noble, L. F., 2, 4; Oakeshott, 1; Putnam, 5; Raguin, 1; Reed, 25; Reiche, 1; Sanders, 4; Shepard, 31, 33, 47, 53; Soper, 4; Stanton, W. L., Jr., 2; Swartzlow, 5-a; Taft, 3; Taliaferro, 14; Waters, 8; Webb, 4; Willis, 17, 18; Anonymous, 60.

Faulting—Continued.

- Canada : Alcock, 13; Cox, 3; Kindie, 40; Moore, E. S., 23.
- Central America : Sonder, 1.
- Champlain Valley, N. Y., Vt. : Rodgers, 2.
- Colorado : Barbour, G. B., 1; Bassett, 3; Behre, 16, 32; Boos, 15; Burbank, 12, 16; Cross, C. W., 2; Goddard, 5; Green, T. H., 1; Haskell, 2; Heaton, 5, 8; Johnson, D. W., 4; Koschmann, 6; Lavington, 3; Loughlin, 11; Lovering, 20, 26, 30; Moehlmann, 6; Rohlfing, 1; Singewald, Q. D., 11; Stark, 7, 8, 12; Thomas, H. D., 3; Thompson, W. O., 7; Toppan, 3; Upson, J. E., 1, 2; Vanderwilt, 9, 11; Van Tuyl, 18; Walker, S. M., 1; Wilkerson, 4, 5.
- Crystalline schists, Pa., Md. : Jonas, 12.
- Cuba : Ortego y Ros, 1; Schürmann, 2; Taber, 13; Vermont, 4.
- Cumberland thrust block, Va., Ky., Tenn. : Rich, 16.
- Diamond drill cores : Wissler, 3.
- Dip reflections showing : Campbell, F. F., 2.
- Domes : Balk, 9.
- Effects on dams, Calif. : Louderback, 9.
- En échelon faulting : Clark, F. R., 1; Link, T. A., 2; Nevin, 2; Sherrill, 1.
- Epithermal precious metal deposits : Nolan, 4.
- Fault-movement rate : Blackwelder, 41.
- Fault-noise indications of earthquakes : Patterson, W. D., 1.
- Feather joints : Cloos, E., 5.
- Flaws and tear faults : Gill, 5.
- Folding, faulting in ss. through gliding : de Terra, 1.
- Fracturing of rocks without displacement : Sutton, 6.
- General : Bloesch, 4; Reid, H. F., 1; Willis, 1.
- Georgia : Kesler, 4.
- Glaciers, Mt. Crillon area, Alaska : Washburn, 4.
- Gogebic iron dist., Mich.-Wis. : Atwater, 5.
- Gold deposits, Ontario : Mather, W. B., 1.
- Grabens and associated phenomena : Rich, 27.
- Greenland : Bentham, 1; Büttler, 4, 5; Cleaves, 3; Holtedahl, 1; Korh, 12; Maync, 1; Odell, N. E., 5; Schaub, H. P., 1; Wager, 5; Wegmann, 8, 9.
- Gulf Coast oil fields : Kornfeld, Jos. A., 2.
- Hawaii, ash fms. : Wentworth, 44.
- Idaho : Anderson, 15, 23; Capps, 14; Kirkham, 5; Livingston, D. C., 1, 4; Reed, J. C., 19; Ross, C. P., 29; Shenon, 17, 18; Stearns, 27; Wilson, R. A., 5.
- Igneous rocks, structural behavior : Balk, 13.
- Illinois : Cady, G. H., 7, 8; Weller, 23.

Faulting—Continued.

- Indiana: Freed, 1; Shrock, 11; Whitlatch, 1.
 Inertia in low-angle faulting: Stevens, E. H., 1.
 Interpretation, from min. fractures: Fraser, 8.
 Iowa: Keyes, 356, 370.
 Jamaica: Kuchler, 1.
 Kansas: Melton, 12; Rich, 1; Ver Wiebe, 18.
 Kentucky: Jones, D. J., 3; McFarlan, 13; Rhoades, 2; Russell, W. L., 15; Souder, 1; Wesley, 1, 3; Wheeler, G., 5.
 Keystone faults: Crosby, 2.
 King's Mtn. area, N. C. and S. C.: Frink, 1.
 Lake Champlain area: Quinn, A. W., 1.
 Lake Superior area: Merrill, J. A., 1.
 Location by radioactivity: Lane, 22.
 Lowlands and Ouachita Provs.: Ruedemann, P., 3.
 Louisiana, Darrow salt dome: Cook, C. E., 1.
 Maine: Chadwick, 33; Haff, 4.
 Manitoba: Ambrose, 2, 3; Stockwell, 10, 11.
 Mapping: Johnson, C. H., 2; Salvatori, 2.
 Maryland: Broedel, 1; Cloos, 14; Dryden, 4; Jonas, 4.
 Massachusetts: Billings, M. P., 1, 18.
 Mechanics of: Hulin, 8, 9.
 Mexico: Arnold, R., 2; Díaz, 1; Donald, R. T., 1; González, J., 1; Imlay, 2, 7, 10, 12; Kane, 2; Kellum, 10; Kelly, W. A., 10; King, R. E., 6; Perera Castillo, 1; Valentine, W. G., 1; Wisser, 2; Woodford, 6.
 Michigan: Broderick, 12; Dickey, R. M., 5; Dutton, C. E., 5; Lamey, 8.
 Minnesota: Sandberg, 1; Sleight, 1.
 Mississippi Valley area: Bastin, 20.
 Missouri: Farrar, 2; Graves, 1; Grohskopf, J. G., 2; Tarr, 21.
 Montana: Billings, 16; Clapp, C. H., 3; Collier, 3; Dyson, 3; Hart, L. H., 2; Hurlbut, 10; Lammers, 2; Langton, 1; Pardee, 9, 11; Parker, F. S., 2; Perry, E. L., 5; Pierce, 7; Ray, J. C., 3; Reeves, F., 1; Rouse, 7; Sahinen, 4; Skeels, 1; Spiroff, 3; Swanson, R. W., 2; Wilson, C. W., Jr., 4, 11.
 Movement of fault blocks: Ambrose, 1.
 Moyle-Lenia overthrust: Kirkham, 6.
 Nebraska: Condra, 20; Cook, H. G., 15.
 Nevada: Callaghan, 7; Cameron, E. N., 2; Campbell, D. F., 1; Engeln, von, 12; Ferguson, 6, 7, 10; Gianella, 9; Jenny, 1; Kerr, P. F., 16; Longwell, 6, 15, 16, 36; Nolan, 2, 8, 9; Page, B. M., 1; Sharp, R. P., 3, 4, 5.
 New Brunswick: Alcock, 18; Shaw, E. W., 1.
 New England: Wheeler, G., 1.

Faulting—Continued.

- Newfoundland: Bain, 18; Betz, 1; Bryan, A. M., 1; Cooper, J. R., 1, 2; Espenshade, 1; Foley, F. C., 1; Heyl, 1, 2; Jewell, 2; Twenhofel, 29, 39, 40.
 New Hampshire: Billings, 10, 13; Hadley, J. B., 1.
 New Mexico: Bryan, 35; Cabot, 1; Church, F. S., 1; Dake, C. L., 4; Dunham, 3; Hunt, C. B., 2, 4, 4-a; Keyes, 334; Lasky, 14, 16; Needham, 11; Paige, 1; Reich, 5; Schmitt, 10; Smith, H. T. U., 4; Smith, J. F., Jr., 2; Stott, 1.
 New York: Balk, 11; Berkey, 13; Berry, G. W., 1; Bradley, 16, 19; Cannon, R. S., 1; Gallagher, 1; Hudson, G. H., 1; Megathlin, 2, 3; Whitcomb, 11-a.
 Nomenclature: Murray, G. E., Jr., 1; Straley, 1.
 Normal and reverse: Glll, 4.
 North America: Boesch, H. H., 3; Butler, 16; Waters, 13.
 North Carolina: Frink, 1; Goldston, E. F., 1; Murray, G. E., Jr., 4, 6; Prouty, 7.
 Northwest Territories: Cameron, 5; Furnival, 3; Hawley, 13; Henderson, J. F., 5; Kidd, 7; Lord, C. S., 1; Ryan, J. P., 1.
 Nova Scotia: Bailey, H. B., 2; Cameron, H. L., 1; Messervey, 16; Squires, 2.
 Ohio: Bucher, 15-a; Harper, J. L., 1.
 Oklahoma: Boyd, W. B., 1; Cram, 6; Decker, 25; Dott, 6; Hendricks, 9, 10; Hiestand, 2; Hyatt, 1; Knechtel, 2; Kramer, 2; McCoy, 4; Melton, 12; Millison, 2; Nevin, 2; Rau, 1; Sherrill, 1; Tomlinson, 8; Wallace, P. A., 1; Wilson, C. W., Jr., 13.
 Ontario: Bartley, 1; Bateman, J. D., 3; Brenneman, 1; Bruce, 16, 22, 24; Derry, 10; Dyer, 20; Fairbairn, 15; Froberg, 3; Harcourt, 4; Hurst, 10, 11; Kay, G. M., 21; Laird, 10; Mather, W. B., 1; Moore, E. S., 17; Moorehouse, 3; Perdue, 1; Pettijohn, 7, 9; Prest, V. K., 1; Ringsleben, 1; Rittenhouse, 3; Robson, 1; Satterly, 4; Thomson, James E., 7, 11, 14, 15, 16; Anonymous, 149.
 Oregon: Buwalda, 17; Fuller, R. E., 1; Goodspeed, 19; Hodge, 11, 26; Piper, 17; Thayer, T. F., 2; Washburne, 3.
 Origin: Reid, 8.
 Overthrust: Billings, 4; Buwalda, 15; Keyes, 115, 116; Knopf, E. F. B., 6; Link, 5; Lovering, 12.
 Pennsylvania: Bascom, 6; Cleaves, 1; Detrick, 2; Foose, 1; Fraser, 12; Jonas, 4; Miller, B. L., 7, 13, 15, 18; Ross, R. B., 1; Sanders, T. P., 2; Stose, 15, 17, 21, 22; Willard, 56.

Faulting—Continued.

- Pool structures: Bignel, 8.
 Quebec: Auger, 1; Backman, 1, 2; Bannerman, 4; Conolly, H. J., 1; Cooke, H. C., 21; Derry, 10, 11; Faessler, 13; Gunning, 13, 15, 22, 23, 24; Gussow, 1, 2; Hawley, 10; Jones, I. W., 12, 13, 14, 15; Longley, 3; Lowther, 1; McGerrigle, 8; MacKenzie, 4, 5; Malouf, 1; Mawdsley, 6; Norman, 8, 9-a; O'Neill, 4, 6; Osborne, 19; Paige, 3; Ross, S. H., 1; Rousseau, 2; Shaw, G., 1; Sproule, 1-a; Wilson, J. T., 6; Wilson, M. E., 19.
 Redfield anticline, Iowa, Neb.: Condra, 17.
 Rio Grande depression: Bryan, 36.
 Rocky Mts. area: Hares, 6; Raymond, 8.
 Rodessa field, Ark.-La.-Tex.: Clark, C. C., 2.
 Rupture, fm. of: Bridgman, 3.
 Saganaga batholith, Minn.-Ontario: Grout, 18.
 Saskatchewan: Alcock, 16; Cooke, H. C., 24; Wickenden, 13-a.
 Scarps and fault-line scarps: Johnson, 43.
 Sedimentation, relation to: Longwell, 25.
 Shutteridges, characteristic of active faults: Buwalda, 17.
 Sierra Nevada pluton: Mayo, 11.
 South Carolina: Frink, 1.
 Strain ellipsoid theory: Griggs, 2.
 Strike-slip, near International Boundary: Squires, 2.
 Subsequent faulting, Great Basin: Hulin, 6.
 Subsidence and ground movement: Crane, 1.
 Tennessee: Laurence, 8, 4; Wilson, C. W., Jr., 5, 7, 16.
 Texas: Albritton, 8; Baker, C. L., 4, 21; Barton, 24; Beckelhymer, 1; Bell, D. E., 1; Bell, O. G., 1; Blakemore, E. F., Jr., 2; Bryan, F., 1, 2; Cooper, H. H., 1, 2; Earl, 1; Gould, 17; Hager, D. S., 1; Halbouty, 6, 7; Hamner, 1; Hill, H. B., 1; King, P. B., 19, 28, 29; Lasky, 2; Martyn, 1; Melton, 17; Plummer, 17; Renick, 5; Sayre, 4, 6; Schoffemayer, 1; Sellards, 30; Stenzel, 17; Zavolco, 4.
 Three-dimensional exponents, earth deformation: Link, T. A., 1.
 Thrust faults: Billings, M. P., 4; Buwalda, 15; Keyes, 115, 116; Knopf, E. F. B., 6; Link, 5; Lovering, 12; Willis, R., 5.
 Triassic fault-line deflections and warpings: Wheeler, G., 3.
 Trinidad: Illing, 1; Lehner, 1; Wilson, C. C., 1.
 Uinta Mts., Utah-Colo.: Forrester, 1.

Faulting—Continued.

- Underthrusting: Link, 5.
 Utah: Baker, F. C., 12; Becker, H., 4; Beutner, 1; Callaghan, 11; Dane, 7; Dobbin, 16, 17; Eardley, 3, 12; Farmin, 1; Fisher, D. J., 7; Gregory, H. E., 4, 5, 6; Schnelder, 6; Schoff, 2; Thorpe, 14; Walter, H. G., 2.
 Veins, effect on: Eby, J. H., 2.
 Vermont: Doll, 2; Jacobs, 2, 3; Krieger, M. H., 1; Richardson, C. H., 7; Schuchert, 43.
 Virginia: Bates, R. L., 1, 4; Butts, 14; Cederstrom, 2; Cooper, B. N., 1, 4, 7, 8; Currier, 2; Furcron, 9; Mathews, 15; Nelson, 4, 5; Sears, C. E., Jr., 3; Woodward, 10, 11, 13.
 Washington: Irwin, W. H., 1.
 West Indies: Rutten, L. M. R., 6.
 West Virginia: Price, P. H., 17.
 Wisconsin: Behre, 27, 30; Dickey, R. M., 4.
 Wyoming: Beckwith, 2, 3, 4; Bradford, C. E., 1; Bucher, 14; Condra, 13; Fanshawe, 1; Fryxell, 10; Gwynne, 6; Horberg, 1; Jones, C. T., 2; Knight, S. H., 7; Love, 6; Nace, 2; Neely, 1; Parsons, W. H., 1; Rubey, 11; Stevens, E. H., 2; Wilson, C. W., Jr., 3, 14, 18.
 Yellowstone Nat. Park: Howard, A. D., 6.
 Fault scarps, Idaho: Livingston, D. C., 4.
 Fayalite crystal structure: Ford, E. M., 1.
 Feather joints: Cloos, E., 5.
 Feldspar.
 Adirondacks: Barth, 2.
 Authigenic, in sediments: Tester, 11.
 Beach sands: Martens, 3.
 Boulder dam area: Lee, F. W., 7.
 California: Anderson, G. H., 6; Burchfiel, 1; Miller, F. S., 1; Sampson, R. J., 1.
 Canada: Spence, 8.
 General: Parmelee, 1.
 Greenland: Moos, von, 2.
 Industrials minerals and rocks: A. I. M. E., 2.
 Maine: Trefethen, J. M., 1.
 Mexico, Baja Calif.: Flores, 8.
 Michigan: Klein, 1.
 Minnesota: Gruner, 27, 29; Schwartz, 24.
 Missouri: Goldich, 3.
 Molecule: Faust, 1.
 New Hampshire: Megathlin, 1; Page, 5.
 New York: Shaub, 1.
 North Carolina: Bryson, H. J., 7-a, 9; Greaves-Walker, 2.
 Nova Scotia: Cries, 1.
 Ontario: Chapman, W. M., 1; Freeman, B. C., 4; Osborne, 6.
 Pennsylvania: Meier, 3; Stone, R. W., 4, 5.
 Perthites: Alling, 5.
 South Carolina: Bryson, 8.

Feldspar—Continued.

- South Dakota: S. Dak. Plann. Bd., 2;
Stobbe, 1; Tullis, 7.
Twinning: Chapman, W. M., 1; Emmons,
R. C., 12.
Vermont: Mulholland, 1.
Virginia: Brown, C. B., 3; Pegau, 4.
Weathering experts: Norton, F. H., 1.

Felsites: Balk, 12; Meyer, C., 1.

Fensters: Cooper, B. N., 7.

Ferberite: Lovering, 31.

Festoon cross lamination: Knight, S. H., 3.

Field photography for geologists: Thwaites, 9.

Field study of vertebrate fossils: Clark, J., 4.

Field trips in geology: Gwynne, 7; Mitchell, 8.

Field work.

Aerial surveying: Monroe, 4.

Alaska: Smith, P. S., 7.

Field geology: Lahee, 2.

New York City locs: Arnold, H. J., 1.

Photography for geologists: Thwaites, 9.

Strata thickness and depth: Price, W.
A., 9.

Submarine geol. explor.: Herold, S. C., 2.

Finlay River area, Brit. Col.: Dolmage, 3.

Flords.

British Columbia: Carter, F. B., 1; Pea-
cock, 8.

Greenland: Backlund, 1; Boyd, L. A., 1.

Mexican coast, poss. of: Sánchez, 1.

Fire clays. See also Clay.

Alabama: McVay, 1.

Distribution in U. S.: Chelikowsky, 1.

Illinois: Lamar, 5.

Louisiana: Whittemore, 3.

Missouri: McQueen, H. S., 3.

Ontario: Montgomery, R. J., 1.

Pennsylvania: Leighton, H., 2.

Saskatchewan: Hutt, 1, 2.

Texas: Schoch, 1.

United States: Chelikowsky, 1; Lloyd,
S. J., 1.

First geologic work, U. S. Govt.: Finch, E.
H., 3.

Fishes. See Pisces.

Fissures. See Faulting.

Flint. See also Chert.

General: Tarr, 6.

Flood theory of geology: Price, G. M., 3.

Floods.

California: La Motte, 11; Troxell, H.
C., 1.

Connecticut Valley, 1936: Collins, R.
F., 1.

Erosion by: Engeln, von, 9.

Idaho: Humphreys, 1.

Illinois: Carroll, 4.

Mexico: Ives, 5.

Pennsylvania: Anonymous, 83.

Republican and Kansas Rivers, 1935:
Follansbee, 1.

Tasekwe River, Alaska-British Colum-
bia: Kerr, F. A., 16.

Floods and dust storms: Meyerhoff, 16.

Florida.

Geological Survey repts.: Gunter, 1, 7,
7-a, 9.

Magnetic vector study: Jenny, 5.

Melbourne area, explor.: Gidley, 7.

Areal geology.

General: Berger, P., 1.

Economic geology.

Bleaching clays: Nutting, 5.

Diatomaceous earth: Gunter, 6.

Mineral production: Gunter, 2, 8.

Natural gas and oil poss.: Blanchard,

W. G., 1; Gunter, 4; Hill, E. A., 1;

Jenny, 4; Postley, 4; Thomas, P., 2;

Weinzler, J. F., 2.

Nonmetallic minerals: Gunter, 5.

Petroleum and nat. gas poss.: Blanch-

ard, W. G., 1; Gunter, 4; Hill, E.

A., 1; Jenny, 4; Postley, 4; Thom-

as, P., 2; Weinzierl, J. F., 2.

Phosphate: Mansfield, G. R., 1; Roun-
dy, 2.

Historical geology.

Calcareous shallow-water deposits:
Thorp, E. M., 1.

Canal, sea-level, effect on ground-water
level: Boesch, 1, 2; Brown, J. S., 5.

Deep wells, stratigraphy: Cole, 15.

Everglades, dry test: Campbell, R. B., 3.

Faunal zones, Miocene: Mansfield, W. C.,
9.

General: Cooke, C. W., 1, 24.

Geologic map: Cooke, C. W., 2.

Marine Pleist.: Richards, H. G., 18.

Miocene: Cushman, 22.

Oligocene: Mansfield, W. C., 23.

Paleozoic: Campbell, R. B., 2.

Pleistocene: Richards, H. G., 10, 18.

Possibilities, oil and gas: Blanchard,

W. G., 1; Gunter, 4; Hill, E. A., 1;

Jenny, 4; Postley, 4; Thomas, P.,

2; Weinzierl, J. F., 2.

Sarasota County: Stringfield, 1.

Swansee lms.: Cooke, C. W., 18.

Tertiary correl. zones.: Gravell, 5.

Mineralogy.

Hellum ratio, anhydrite: Urry, 9.

Paleontology.

Acline fossils: Tucker, H. I., 4.

Albula, Cret.: Cockerell, 12.

Ancient man: Gidley, 1, 4.

Aphelops, Hawthorne fm.: Colbert, E. H.,
1.

Archaeoceti, Tert.: Kellogg, 9.

Attalea, Eocene: Berry, 27.

Aves, Pleist.: Wetmore, 15.

Bat, Pleist.: Allen, G. M., 2.

Caloosahatchie, Pliocene: Tucker, H. I.,
3.

Choctawhatchee fm. fauna: Mansfield,
W. C., 3.

Crassatellites, Miocene: Mansfield, W. C.,
14.

Cypraea, Tert.: Ingram, W. M., 2.

Deep wells, micropaleontology: Cole, 15.

Diatoms: Hanna, 26.

Florida—Continued.

Paleontology—Continued.

- Dictyoconus and Orbitolina: Davies, L. M., 1.
 Edentates, Pleist.: Holmes, W. W., 1.
 Eocene crab: Rathbun, 1.
 Eucrassatella, Pliocene: MacNeil, 4.
 Faunas, Oligocene, Pleist.: Mansfield, W. C., 21, 23; Richards, H. G., 14.
 Foraminifera: Cole, W. S., 5, 6, 8; Cushman, 1, 7, 22, 23, 26.
 Gastropoda, Miocene: Mansfield, W. C., 11.
 Heteromyid rodents: Wood, A. E., 2.
 Holmesina, extinct armadillo: Simpson, 12.
 Human remains, Vero beds: Sellards, 33.
 Ilynassa: Tucker, H. I., 2.
 Laganum dalli: Cole, W. S., 7.
 Larval chambers, mining bees: Brown, R. W., 7.
 Mammalia: Connery, 1; Gut, 2; Hay, 8; Simpson, G. G., 2, 6, 8, 10, 11, 16, 20, 34.
 Mammoth remains with arrowhead: Connery, 1.
 Mollusca: Gardner, 9, 11; Mansfield, W. C., 5, 19, 20, 22; Smith, M., 1, 2; Tucker, H. I., 5, 6.
 Neotinae, Tert.: MacNeil, 17.
 Orbitoids, Oligocene: Cole, W. S., 9.
 Ostracoda: Howe, 17; Stephenson, M. B., 4.
 Ovoviviparous reproduction, Turritellidae: Sutton, 12.
 Parelephas floridanus: Osborn, 15.
 Pectinidae: Mansfield, W. C., 12; Tucker, H. I., 7, 8.
 Pelecypoda: Mansfield, W. C., 8.
 Pisces: Gregory, W. K., 6.
 Pleistocene faunas: Cole, W. S., 6; Richards, H. G., 10, 18; Wetmore, 15.
 Pliocene fossils, S. Florida: Cole, W. S., 6; Mansfield, W. C., 7.
 Scaphopoda: Mansfield, W. C., 11.
 Schizodelphis, dolphin: Case, 13.
 Sirenia, Tert.: Simpson, 18.
 Snapper: Gregory, W. K., 3.
 Teleost fish: Gregory, W. K., 6.
 Termite pellets: Light, 1.
 Terrapene, Pleist.: Barbour, T., 3.
 Tertiary faunas: Mansfield, W. C., 5; Smith, M., 1; Tucker, H. I., 5, 6.
 Toothed whale: Kellogg, A. R., 2.
 Tortoise, Pliocene: Wark, 1.
 Trachemys sculpta: Gilmore, 3.
 Vertebrata: Gut, 1; Simpson, G. G., 6.
 Vertebrate locs.: Gut, 1.
 Vulsella: MacNeil, F. S., 2.

Petrology.

- Ocala lms. porosity: Lloyd, S. J., 2.
 Sediments: Martens, 10; Tyler, S. A., 2.

Physical geology.

- Beach sands: Martens, 8.
 Erosion, Everglade keys: Small, 1.
 Lime deposition, Tortugas: Gee, 1, 3.

Florida—Continued.

Physiographic geology.

- Beaches: Martens, 2.
 Calcareous marine deposits: Thorp, E. M., 3, 5.
 Dunes, E. coast: Sayles, 6.
 General: Berger, P., 1; Cooke, C. W., 24.
 Pensacola terraces: Howard, A. D., 4-a; Leverett, 11.
 Straits of Florida: Staub, 2.
Underground water.
 Artesian water: Stringfield, 2, 6, 7; Stubbs, 1, 2.
 Canal, sea-level, effect on ground water: Brown, J. S., 5; Calhoun, 2; Paige, 2; Sharp, 10; Thompson, D. G., 17.
 General: Cooke, C. W., 24.
 Ground water: Calhoun, 2; Foster, M. D., 1; Paige, 2; Stringfield, 1, 2, 3, 4, 5, 8; Thompson, D. G., 6, 7, 17.
 Ocala lms.: Gunter, 3.
 Seminole Co.: Stringfield, 5.
 Silver Springs, canal effect: Sharp, 10.
 Flotation of mts.: Lawson, 10.
 Flow cleavage in folded beds: Swanson, 6.
 Flow lines and planes, plastic masses: Fraser, D. M., 3.
 Fluids, homogeneous, flow through porous media: Fettke, 13; Krumbein, 20; Muskat, 3.
 Fluorescence.
 Agate: Dake, 24.
 Bibliography, min. luminescence: Gunnell, E. M., 7.
 Calcites, manganiferous: Brown, W. L., 3.
 California minerals: Melhase, 24.
 General: Melhase, 18, 23; Meyers, 1; Zodiac, 10.
 Minerals: Brock, C. L., 3; Slawson, 5; Smith, E. S. C., 7.
 New England: Shortle, 2.
 New Jersey: Smith, J. L., 1, 5.
 Oil sands, correl. aid: Melhase, 10.
 Opal: Dake, 11.
 Fluorescence and phosphorescence, importance: Zodiac, 10.
 Fluorite.
 Crystallography: Whitlock, 4.
 Greenland: Stoicovich, 1.
 Louisiana: Maher, J. C., 1.
 Missouri: Grohskopf, J. G., 2.
 New Hampshire: Bannerman, 5.
 Fluorspar.
 British Columbia: Dolmage, 1; Richmond, A. M., 2.
 Canada: Wilson, M. E., 1.
 Illinois: Bastin, 2; Carroll, 3; Currier, 5, 7, 8; Pough, 1.
 Industrial minerals and rocks: A. I. M. E., 2.
 Kentucky: Currier, 5, 7; Jillson, 14; Pough, 1.
 Ontario: Brown, W. L., 1; Wilson, M. E., 1.
 United States, W.: Burchard, 4, 9.

Fluviatile sediments, recognition: Rittenhouse, 5.

Folding.

Alabama, Tennessee River Valley area: Jones, 16, 21.

Alaska: Mertie, 16; Moffit, 11; Waring, 6.

Alberta: Sanderson, 4.

Appalachians, N.: Sherrill, 2.

Archean "ripple mark" is drag fold: Maxson, 14.

Arizona: Butler, 18; Harrell, 2; Reber, 1; Stark, 17; Wilson, E. D., 8.

Arkansas: Reed, J. C., 16.

Atlantic and Gulf Coastal Plain: Stephenson, 24.

Bonaire, West Indies: Pijpers, 4.

Bradford field, Pa., N. Y.: Fettke, 9, 11.

British Columbia: Bancroft, 1; De Béthune, 3; Marshall, I. M., 1.

California: Canfield, 1; Clark, 16, 23; Clements, 6; Erwin, 4; Henny, 7; Kelley, 10; Mayo, 15; Oakeshott, 1; Reed, 25; Reiche, 1; Soper, 4; Webb, 6.

Canada: Collins, 12; Dougherty, 5; Kindle, 40.

Colorado: Bassett, 3; Behre, 32; Burbank, 16; Haskell, 2; Lovering, 30; Wilkerson, 5.

Champlain Valley, N. Y., Vt.: Rodgers, 2.

Crystalline schists, Pa., Md.: Jonas, 12.

Cuba: Ortega y Ros, 1.

Curacao, West Indies: Molengraaff, G. J. H., 1-a, 2; Vermunt, 1, 2.

Flowage folding: Bain, G. W., 4.

General: Reid, H. F., 1; Willis, B., 1.

Georgia: Kesler, 4.

Graphic treatment, 3-dimension folds: Eardley, 10.

Greenland: Büttler, 4; Koch, 11; Odell, 5; Teichert, 14; Vischer, 3; Wegmann, 6, 9.

Idaho: Shenon, 18; Stearns, 27.

Illinois: Lee, L. K., 2.

Kansas: Osborn, W. G., 2.

Lowlands and Ouachita Provs.: Ruedeman, P., 3.

Manitoba: Stockwell, 10, 11; Tanton, 6-a.

Maryland: Cloos, 14.

Mexico: Imlay, 2, 4, 7, 10; Kellum, 10, 13; King, 26.

Michigan: Dutton, 5; Newcombe, 12, 13; Pringle, 1; Riggs, C. H., 2.

Mid-continent area: Clark, S. K., 2.

Minor folds and earth deformation: Lowe, W. F., 1.

Missouri: Grohskopf, J. G., 3.

Montana: Brown, R. W., 1; Clapp, 3; de Terra, 1; Parker, F. S., 2; Pierce, 1; Skeels, 1; Wolff, 6.

Nebraska Panhandle: Cook, 15.

Nevada: Cameron, E. N., 2; Ferguson, 7; Sharp, R. P., 4, 5.

New Brunswick: Shaw, E. W., 1.

Folding—Continued.

Newfoundland: Bain, 18; Betz, 1; Bryan, A. M., 1; Cooper, J. R., 2; Espenshade, 1; George, P. W., 2; Jewell, 2; Twenhofel, 40.

New Hampshire: Billings, 9, 10, 13; Fowler-Lunn, 1; Hadley, J. B., 1; Williams, C. R., 2.

New Mexico: Cabot, 1; Hunt, C. B., 4, 4-a; Keyes, 334, 437; Needham, 11; Schmitt, 10; Smith, J. F., Jr., 2.

New York: Balk, 11; Berry, G. W., 1; Bradley, 19; Buddington, 23; Cannon, R. S., 1; Gallagher, 1; Larabee, 1; Whitcomb, 11-a.

Nomenclature: Straley, 2.

North America, copper deposits: Butler, 16.

Cordillera and Caribbean areas: Waters, 13.

North Carolina: Vitz, 1.

Northwest Territories: Cameron, 5; Henderson, J. F., 5; Lord, C. S., 1; Riley, 4.

Nova Scotia: Bailey, H. B., 2.

Ohio, crypto-volcanic structure: Bucher, 15-a.

Oklahoma: Decker, 25; Dott, 6; Hendricks, 9; Rau, 1; Wilson, C. W., Jr., 13.

Ontario: Bartley, 1; Bateman, J. D., 2; Bruce, 16, 26; Cooke, H. C., 27; Derry, 10; Dyer, 20, 21; Fairbairn, 11, 15; Flaherty, 2; Froberg, 3; Harcourt, 4; Harding, 5; Hurst, 11; Macdonald, R. D., 1; Moore, E. S., 17; Moorehouse, 3; Perdue, 1; Pettijohn, 9; Prest, 1; Rickaby, 5; Satterly, 3, 4; Thomson, James E., 11, 14, 15, 16.

Oregon: Buwalda 19; Piper, 17.

Parallel, structural measurements: Mertie, 20-a.

Pennsylvania: Bailey, E. B., 1; Cleaves, 1; Detrick, 2; Foote, H. C., 1; Fraser, 12; Graeber, 1; Miller, B. L., 13, 15, 18; Rogers, R. D., Jr., 1; Shaffner, 2; Sherrill, 5; Stose, 17, 21; Willard, 50, 55, 56, 58.

Pool structures: Bignel, 8.

Quebec: Conolly, H. J., 1; Derry, 10, 11; Freeman, B. C., 7; Gunning, 15, 22, 24; Hawley, 10; Jones, I. W., 15; Longley, 3; Lowther, 1; McGerrigle, 9; MacKenzie, 4; Malouf, 1; O'Neill, 4; Ross, S. H., 1; Tolman, 12; Wilson, M. E., 22.

Redfield anticline, Iowa, Nebr.: Condra, 17.

Shallow-seated in massive rocks: Haskell, 2.

Small-scale, adjustments: Straley, 6.

South Dakota: Tullis, 5.

Structure, Illinois Basin: Cohee, 5.

Tennessee: Wilson, C. W., Jr., 7.

Folding—Continued.

- Texas: Albritton, 8; Jones, C. T., 1; King, 29; Martyn, 1.
 Trinidad oil fields: Illing, 1.
 Uinta Mts., Utah, Colo.: Forrester, 1.
 United States, E., cent.: Ballard, N., 1; Wilson, C. W., Jr. 19.
 Utah: Baker, F. C., 12; Eardley, 12; Gregory, H. E., 4, 5; Schoff, 2.
 Vermont: Jacobs 3; Krieger, M. H., 1; Larrabee, 1; Richardson, C. H., 7.
 Virginia: Bates, R. L., 4; Cooper, B. N., 1, 7; Furcron 9; Mathews, 15; Rowland, R. A., 1; Woodward, 13.
 Washington-Oregon area: Weaver, 11.
 West Edmond oil pool: Wallace, P. A., 1.
 West Virginia: Price, P. H., 8-a; Sherrill, 4.
 Wisconsin: Dickey, R. M., 4.
 Wyoming: Beckwith, 4; Bucher, 16; Chamberlin, 21; Fanshawe, 1; Horberg, 1; Love, 6; Nace, 2.
- Foot prints. See also Tracks and trails.
 Alabama: Aldrich, T. H., 1; Jones, W. B., 5.
 Alberta: Russell, L. S., 6.
 Amphibia, Willard, 6.
 Connecticut: Thorpe, 1.
 Dinosaurs: Brown, B., 16; Sternberg, 6, 10; Swann, 2; Anonymous, 142.
 Eurypterid: Sharpe, C. F. S., 1.
 General: Kindle, 17.
 Mesozoic, Mo., Kans., Wyo.: Branson, E. B., 15.
 Ohio: Mitchell, R. H., 2, 3.
 Paleozoic, Mo., Kans., Wyo.: Branson, E. B., 15.
 Texas: Houston, S. H., Jr., 1; Moodie, 3, 6, 7.
 West Virginia: Happ, 2; Tilton, 9.
 Wyoming: Branson, E. B., 9.

Foraminifera.

- Actinosiphon, Mexico: Vaughan, 5.
 Alabama: Cushman, 1, 35; Harris, 11; McGlamery, 2, 3, 4; Plummer, H. J., 12; Sandige, 1, 2, 3, 4.
 Alberta: Goodman, A. J., 1; Wickenden, 5.
 Algae and algal lms.: Johnson, J. H., 32.
 American: Cushman, 17.
 Ammobaculoides, Tex.: Plummer, H. J., 6.
 Arkansas: Alexander, 16; Cushman, 17.
 Bibliography: Cushman, 1; Silvestri, 2; Thalmann, 4.
 Bitubulogenerina: Howe, H. V., 12.
 Bolivina: Adams, B. C., 1, 2.
 Bollvinella: Howe, H. V., 1.
 Bonaire, West Indies: Pijpers, 6.
 British Columbia: Dunbar, 6.
 Bulimina: Cushman, 1.
 California: Adams, B. C., 1, 1-a, 2; Barbat, 1, 4; Berthiaume, 2; Bush, J. B., 1; Church, C. C., 1, 2, 4, 5; Cushman, 1, 3, 6, 7, 8, 14, 16 30; Dibblee 1; Dorn, 1; Dusenbury, 1;

Foraminifera—Continued.

- California—Continued.
 Hanna, 34; Hobson, 2; Johnson, F. L., 1; Kleinpell, 1, 4, 8; Laiming, 1; Martin, L. T., 3; Natland, 1, 2; Parker, R. W., 1; Rankin, W. D., 1; Schenck, 1, 4, 35; Siegfus, 1; Smith, W. M., 1; Snedden, 1; Stewart, R. E., 1, 2; Ten Eyck, 1; Wheeler, 8; Woodring, 5.
 Camera lucida drawings: Richards, G. S., 1.
 Camerina petri is Nummulites striatoreticulatus: Barker, 5.
 Canada: Nichols, D. A., 3; Wickenden, 6.
 Catalog: Ellis, B. F., 3, 6.
 Ceratobulimina, Tex.: Plumber, H. G., 10.
 Chilostomellidae: Cushman, 1.
 Chrysalogomum, Tex.: Cushman, 1.
 Claiborne, costal domes: Weinzierl, L. L. L., 1.
 Classification and econ. use: Cushman, 24.
 Coastal Plain, United States, E.: Cushman, 23.
 Colorado: Roth, 8.
 Concentration technique: Carson, 1.
 Contributions from Cushman Lab.: Cushman, 1.
 Core samples, Atlantic Ocean: Cushman, 1, 34; Phleger, 11.
 Correlations by: Hills, J. M., 1; Wissler, 1.
 Cretaceous: Cushman, 1, 28; Martin, L. T., 1; Vaughan, T. W., 17.
 Cyclosiphon and Lepidocyclus: Vaughan, T. W., 3.
 Cuba: Bermúdez y Hernández, 1, 2, 3, 4, 5, 6, 7, 8, 10; Cushman, 1; Ellis, B. F., 1; Lalicker, 4; Palmer, D. B. K., 4, 5, 6, 7, 9; Parker, F. L., 1; Rutten, M. G., 3, 4, 6; Thalmann, 5; Thiadens, 3, 4, 5; Vaughan, T. W., 21, 22; Vermunt, 4; Voorwijk, 1.
 Curaçao: Koch, R., 1, 2; Rutten, M. G., 3.
 Cyclosiphon and Lepidocyclus: Vaughan, T. W., 3.
 Data collected by W. P. A.: von Struve, 1.
 Dictyoconus: Davies, L. M., 1; Vaughan, T. W., 15.
 Dimorphism, Perm. fusulines: Dunbar, 11.
 Discocyclus: Schenck, 1, 11; Vaughan, T. W., 1, 31.
 Ellipsinodosaria, Tex.: Cushman, 1.
 Elphidium and related genera: Cushman, 1.
 Endothyranella, Carb.: Galloway, J. J., 3.
 Epostiminoides and Coleites, Tex.: Plummer, H. J., 8.
 Fabularia, Fla.: Cole, W. S., 8.
 Flabellammina, Tex.: Alexander, C. I., 6.
 Flabellina, Cret.: Cushman, 1.

Foraminifera—Continued.

- Florida: Cole, W. S., 5, 6, 16; Cushman, 7, 22; Mansfield, W. C., 21, 22.
 Frondicularia, Cret.: Cushman, 1.
 Fusulinidae: Berry, E. Willard, 7; Dunbar, C. O., 1, 7, 9, 10; Henbest, 4, 9; Thompson, M. L., 1, 3, 4, 5; Westheimer, 1; White, M. P., 2, 3, 4.
 Gallowayina, Cuba: Palmer, D. B. K., 1.
 Gaudryina, Tex.: Plummer, H. J., 3.
 Gaviota fm., Calif.: Schenck, 20.
 General: Cushman, 1, 24, 27; Ellis, B. F., 5; Gould, 8; Kindle, 17; Silvestri, 2; Thalmann, 4; Vaughan, T. W., 8.
 Geographic distrib., W. Am.: Martin, L. T., 2.
 Georges Banks, Tert.: Cushman, 1.
 Girvanella, Pa., N. Mex.: Johnson, J. H., 30-a.
 Glauconite in Foraminifera shells: Dryden, 3.
 Globotruncana, distrib.: Thalmann, 13.
 Grayson fm., Tex.-Okla.: Tappan, 1.
 Greenland; Camb.: Howell, 17.
 Guatemala: Dunbar, 18.
 Gümbelina: Cushman, 1; Palmer, D. B. K., 2.
 Guide fossils, Mexico: Muir, 3.
 Gulf Coast: Cushman, 1; Garrett, J. B., Jr., 2, 3; Hadley, 2; Kornfeld, M. M., 1.
 Hackberry assemblage, Gulf Coast: Garrett, J. B., Jr., 3.
 Haiti: Hanzawa, 1.
 Hantkenina: Howe, 9; Thalmann, 2.
 Helicolepidina: Barker, 1; Vaughan, 30.
 Horizon of extinction, aid to correls.: Thomas, 14.
 Illinois: Dunbar, 17; Grubbs, 1.
 Index, genera and species erected: Thalmann, 4.
 Index fossils, correls. by: Nuttall, 5.
 Iowa, Dev.: Thomas, A. O., 4.
 Jackson Eocene, La.-Tex.-Miss.: Gravel, 2.
 Jamaica: Cushman, 1, 13; Hanzawa, 1; Vaughan, T. W., 7.
 Jurassic: Sandidge, 6; Wickenden, 10.
 Juvenarium, youthful stage of shells: Henbest, L. G., 3.
 Kansas: Merchant, 1; Morrow, 1; Newell, 3, 7.
 Key to genera: Cushman, 25.
 Kypophya, Calif.: Church, C. C., 2.
 Labrador, Camb.: Howell, 18.
 Lepidocyclina: Berry, E. Willard, 10; David, E., 1; Gravel, 4; Taliaferro, 6; Thalmann, 6; Vaughan, T. W., 2, 12, 25.
 Long Is. and New York Harbor: Shupack, 1.
 Louisiana: Chawner, 3, Gravel, 4; Howe, H. V., 4, 26, 30, 31, 32, 34; Huner, J., Jr., 1; Israelsky, 6; Kornfeld, M. M., 5; Rukas, 1; Shreveport, G. S., 2; Stephenson, M. B., 1; Wharton, J. B., Jr., 1.

Foraminifera—Continued.

- Maine: Whitcomb, 10.
 Manual: Galloway, J. J., 5.
 Marginulina: Cushman, 1; Garrett, 5.
 Mexico: Barker, 3, 4, 6; Cabo Roderiguez, 1; Cole, W. S., 3; Dunbar, 19; Galloway, J. J., 4; Harris, 9; Keller, B. M., 1; Kellum, 14; Müllerried, 29; Nuttall, 1, 2, 3, 4; Thalmann, 1, 11; Vaughan, T. W., 36; White, M. P., 1.
 Microfauna, Monmouth, Rancocas groups, N. J.: Jennings, P. H., 1.
 Micro-fossils: Harris, R. W., 9; Stephenson, M. B., 1.
 Micropaleontology: Harlton, 7; Loetterle, 1.
 Micropaleontology Bull.: Anonymous, 1.
 Midway-Wilcox, Tex.: Plummer, H. J., 5.
 Miocene, Calif.: Defandre, 3.
 Mississippi: Cushman, 1; Ellis, A. D., 1; Fisk, 8; Gravel, 6; Howe, H. V., 2; Monsour, 1; Shreveport G. Soc., 3.
 Missouri: Dunn, 9.
 Montana: Sandidge, 5.
 Mounting medium: Galliher, 1.
 Nanicella for Endothyra gallowayi: Henbest, 6.
 Navarro-Taylor fms., Tex.: Plummer, H. J., 9.
 Neoschwagerina, British Columbia: Dunbar, 6.
 New genera since 1928: Cushman, 12.
 New Jersey: Cushman, 1.
 New Mexico: Johnson, J. H., 30-a; Needham, 6.
 New York: Kjellesvig, 3.
 Niagaran, Ohio, Ind.: Priddy, 1.
 Nomenclature, subgeneric: Schenck, 26.
 Nonion: Kjellesvig, 2.
 Nonionella: Garrett, J. B., Jr., 1; Kjellesvig, 2.
 Nonionidae: Cushman, 38.
 North America, Atlantic Coast cores: Cushman, 1; Phleger, 11.
 North Carolina: Henbest, 11.
 Nubecularia, Pa., N. Mex.: Johnson, J. H., 30-a.
 Oklahoma: Galloway, J. J., 2; Harris, R. W., 2, 4; Ireland, 7; Moreman, 3; Skinner, 1; Warthin, 2.
 Oklahoma-Texas, Cret. fauna, Ft. Worth fm.: Constant, W. L., 1.
 Oligocene, Wash.: Frizzell, 4.
 Operculina barkeri for O. tuberculata: Vaughan, 37.
 Operculina and Operculinoides: Vaughan, 28.
 Orbitocyclina: Rutten, M. G., 6; Vaughan, T. W., 6.
 Orbitoididae: Cole, W. S., 9; Dusenbury, 1; Gravel, 1; Vaughan, 23, 24, 26.
 Orbitulina: Lynch, S. A., 1; Silvestri, 1; Vaughan, T. W., 2, 6.
 Ordovician, Sil., Okla.: Moreman, 1.
 Oregon: Berthiaume, 1; Turner, F. E., 1.
 Paleozoic: Dunbar, 16; Moreman, 2.

Foraminifera—Continued.

- Palmula Lea for Flabellina D'Orbigny :
Howe, H. V., 23.
- Palos Verdes Hills, Calif. : Woodring, 17.
- Panama : Coryell, 15.
- Pegidla : Cushman, 2.
- Pennsylvania : Newell, N. D., 3.
- Pennsylvanian, Mo. : Bailey, W. F., 4.
- Petroleum, index fossils : Bermúdez y
Hernández, 10; Ellis, B. F., 4.
- Phylogeny : Barker, 3; Rose, S. L., 1.
- Polylepidina : Vaughan, 2.
- Polymorphinidae : Cushman, 10.
- Pre-Carboniferous : Croneis, 12.
- Preoccupied names : Thalmann, 3.
- Prints of, making : Bakx, 1.
- Pseudorbitoides, Jamaica : Vaughan,
T. W., 5.
- Pyrgaella, Calif. : Cushman, 1.
- Quebec : Jones, I. W., 12, 13.
- Reclassification, Tert. : Geyn, van de, 1.
- Recovery by flotation : Anonymous, 81.
- Recovery, Paleozoic arenaceous : Secrist,
M. H., 1.
- Reef Ridge sh., Calif. : Barbat, 5.
- Relationships, ecology, Paleozoic : Cush-
man, 27.
- Robertina, Tert. : Cushman, 1.
- Rockford, Iowa, Dev. : Miller, A. K., 12.
- Rotaliform, Cret., Ala., Tex., Tenn. :
Cushman, 1.
- Schwagerina vs. Pseudoschwagerina,
Paraschwagerina : Dunbar, 12.
- Silurian : Dunn, 10.
- Siphogenerinoides, Calif. : Cushman, 1.
- South Dakota : Anderson, H. W., 1; Sea-
right, W. V., 6.
- Southeastern U. S. : Cushman, 26.
- Staffella, Colo., Okla. : Thompson, M. L.,
2.
- Stage for sorting : Ellis, B. F., 2.
- Stolon systems, orbitoid : Vaughan, 29.
- Stromatoporoides relationships : Parks,
11.
- Synecological studies : Thalmann, 12.
- Technique in handling : Birch, D. C., 1.
- Tennessee : Berry, E. Willard, 1; Cush-
man, 1, 15.
- Tertiary : Croneis, 28, 34; Gravell, 5;
Hadley, W. H., Jr., 1.
- Texas : Albritton, 1, 3, 8; Alexander,
C. I., 6; Bradfield, 2; Cole, W. S., 1;
Cushman, 1, 5, 9, 11, 21; Davis,
F. E., 1; Dunbar, 15; Ellisor, 3;
Garrett, 4; Gravell, 3; Harris, 10;
Henbest, 10; Israelsky, 6; Korn-
feld, M. M., 2, 3; Milton, 2; Plum-
mer, H. J., 2, 3, 4, 6, 8, 9, 10;
Quesenberry, 1; Schuchert, 47;
Thomas, N. L., 4; Williams, J. S., 11.
- Textulariidae : Coryell, 17; Cushman, 1.
- Thin secs., methods of making : Tolman,
F., 1.
- Trinidad : Cushman, 1, 18; Geyn, van de,
1; Hoffmeister, W. S., 1; Jarvis, 1;
Vaughan, 38.

Foraminifera—Continued.

- Trinity, Okla. : Vanderpool, 4.
- Upper Camb. : Howell, 9.
- Utah, fusulinids : Bissell, 3, 4.
- Uvigerina : Cushman, 1.
- Valvulinidae : Cushman, 29, 32.
- Vaqueros fm., Calif. : Cushman, 36.
- Variability : Cushman, 4.
- Verneullinidae : Cushman, 29, 31.
- Vicksburg group : Mornhinweg, 1.
- Virgulininae : Cushman, 29, 33.
- Vulvulina pennatula, variability : Liebus,
1.
- Wall structure, phylogeny : Galloway,
J. J., 1.
- Washington : Beck, R. S., 1; Berthiaume,
3; Durham, 1; Frizzell, 10.
- Wedekindellina, Kans., Mo. : Newell, 8.
- West Indies : Palmer, D. B. K., 8.
- Wisconsin : Ruedemann, 46.
- Wyoming : Branson, 17; Carman, K. W.,
1; Morey, 1.
- Zones in Cret. clays, Tex. : Albritton, 3.
- Force required to move particles on stream
beds : Rubey, 13.
- Forest fires, geol. importance : Crickmay, C.
H., 4.
- Formation names index : Field, 13; Kindle,
28; Wilmarth, 1, 2.
- Formations. See Geologic formations.
- Formations, chemical composition, and oil
wells : Love, W. W., 1.
- Formations and cross-bedding thickness de-
terminations : Corbett, 1.
- Fortymine dist., Alaska : Mertie, 3.
- Fossil forests. See Petrified forests.
- Compass of the past : Krystofovich, 2.
- Fossilization : Paine, 1; Willard, 8.
- Fossils. See Paleontology.
- Fossils, in deep-sea cores : Henbest, 12.
- Fossils, handling in field and lab. : Camp, 9.
- Fossils, serial sec. apparatus : Zdansky, 1.
- Franklin, Benjamin, geol. dissert. : Garrison,
2.
- Frederick lms., Md. : Keyes, 343.
- Freeport quad., Pa. : Hughes, H. H., 1.
- Freieslebenite Palache, 37.
- Frontiers of geology : Geol. S. A., 1.
- Frontiers, petroleum geology : Levorsen, 12.
- Frost heaving : Taber, 3, 4.
- Fucoids.
- Arizona : McKee, 3.
- Minnesota : Stauffer, 17.
- Fulgurites, Atlantic Coastal Plain : Petty, 5.
- Fuller's earth.
- California : Hertlein, 11; Kerr, P. F., 16.
- Florida : Nutting, 5.
- Georgia : Nutting, 5.
- Illinois : Grim, 2, 6.
- Mississippi : Bay, H. X., 4; Vestal, 2.
- Missouri : Allen, 10.

Fuller's earth—Continued.

- Montmorillonite: Kerr, P. F., 6.
 Nova Scotia: Messervey, 4.
 Texas: Baker, C. L., 11; Broughton, 1;
 Phillips, D. M., 1; Schoch, 1.
 Utah: Crawford, A. L., 4.

Fumaroles.

- Mt. Hood, Oreg.: Phillips, K. N., 1.
 Oregon, near Bonneville: Holdredge, 2.
 Washington, near Bonneville: Holdredge, 2.

Fundian faults of Fundian glaciers: Shepard, F. P., 2.

Fusain, nature and origin: Crickmay, 24.

- Fusulinidae: Berry, E. Willard, 7; Dunbar, C. O., 1, 7, 9, 10; Henbest, 4, 9;
 James, B. L., 1; Thompson, M. L., 1, 3, 4, 5; Westheimer 1; White, M. P., 2, 3, 4.

Gaffney-Kings Mtn. folio, N. C.-S. C.: Keith, A., 2.

Galena.

- Alabama: Andrews, T. G., 1.
 Cleavage surfaces: Buerger, M. J., 6.
 Cyrtolite, analysis: Muench, 5.
 Dolomite: Keyes, 366, 374.
 Illinois: Payne, J. N., 2.
 Incipient oxidation: Anderson, A. L., 6.
 Limestone: Keyes, 119.
 Missouri: Gleason, 3; Smith, W. S. T., 2.

Gallium in zinc minerals: Papish, 3.

Garber oil field, Okla.: Gish, W. G., 1.

Garnet.

- Amygdale min.: Eckel, E. B., 2.
 California: Melhase, 7; Murdoch, 10;
 Schürmann, 4.
 Chemical composition and physical properties: Fleischer, 2.
 Colorado: Pearl, 2.
 Composition and occurrence: Wright, W. I., 2.
 Georgia: Lester, J. G., 2.
 Idaho: Walcott, 5.
 Michigan: Alessi, 4.
 Nevada: Barksdale, J. D., 3; Pabst, 12;
 New Hampshire: Conant, 3; Fowler-Lunn, 1.
 New York: Miller, W. J., 18; Rowley, E. B., 3.
 Oregon: Arneson, 2.
 Pennsylvania: Stose, 20.
 Quebec: Faessler, 13; Osborne, 19;
 Parsons, 15.
 Saskatchewan: Alcock, 19.
 Vermont: Krieger, M. H., 1.

Gas. See Natural gas.

Gases in rocks, related problems: Shepherd, E. S., 1.

Gas-fluids flow through porous media: Muskat, 4.

Gaspé, SE.: Kindle, C. H., 3.

Gastroliths.

- Dinosaur: Minor, W. C., 1.
 Elasmosaurus, Mont.: Riggs, 6.

Gastroliths—Continued.

- Kansas: Schaffner, 2.
 Wyoming: Kemp, 1.

Gastropoda. See also Mollusca.

- Alaqua Creek Valley, Fla.: Mansfield, W. C., 11.

Alaska: Moffit, 11.

Alberta: Russell, L. S., 3, 28.

Appalachians, S.: Resser, 21.

Arctic Canada: Teichert, 12.

Arizona: Brady, 16; McKee, 11.

Arkansas: Girty, 2.

Bahamas: Pilsbry, 3.

Barbados: Trechman, 10.

Bearpaw fm., Saskatchewan: Warren, P. S., 13.

British Columbia: Fenton, 49; Kobayashi, 4; McLearn, 23.

California: Clark, 27, 28; Cockerell, 19, 22, 23; Dusenbury, 1; Hanna, 25, 36; Hertlein, 10; Keen, 8; Merriam, C. W., 10; Popenoe, 4; Vokes, 4, 8, 12; Webb, 5; Willett, 2; Woodring, 7, 13.

Carboniferous: Girty, 5; Knight, J. B., 12; Weller, J. M., 4.

Caribbean area: Harris, G. D., 4.

Carriacou, West Indies: Trechmann, 8.

Cassididae-Ficidae relationships: Gardner, 10.

Cepolis, Cuba: Clench, 1.

Coburg fm., Ontario-N. Y.: Sproule, 1.

Colorado: Girty, 2; Russell, 39.

Conodonts possibly gastropods: Loomis, 12.

Conularia: McKee, 8; Roy, 9.

Cretaceous: Anderson, F. M., 14; Knipscheer, 1.

Cuba: Clench, 1; Knipscheer, 1.

Cypraea, Tert.: Ingram, W. M., 2, 3.

Cypraea, Trinidad: Schilder, 1.

Epitonium: Johnson, C. W., 1; Woodring, 9.

Euglandina: Cockerell, 5.

Euomphalidae, Platyceratidae. Mo.: Knight, J. B., 5.

Euphemus, Ill.: Weller, 8.

Ficidae, Cassididae, relationships: Gardner, 10.

Florida: Gardner, 10; Mansfield, W. C., 3, 11, 20; Richards, 18.

Galeodea, Wash.: Tegland, 2, 3.

Georges Bank and Nova Scotia: Stephenson, 13.

Greenland: Poulsen, 4; Ricketts, 1; Teichert, 11; Treedsson, 2.

Gulf Coast: Gardner, 16; Richards, 21.

Gyrulus, Saskatchewan: Baker, F. C., 11.

Haliotis, Calif.: Vokes, 4.

Hawaii: Stearns, 22.

Helicina, Calif.: Hanna, 33.

Helisoma, Colo.: Henderson, J., 12.

Holopea, Hall: Knight, J. B., 7.

Idaho: Resser, 19.

Gastropoda—Continued.

- Illinois: Baker, F. C., 17; Bretz, 10;
Cronels, 46.
Ilyassa, Fla.: Tucker, H. I., 2.
Indiana: Shrock, 11, 12.
Jackson Eocene: Conrad, 1.
Kansas: Newell, 3; Williams, J. S., 12.
Kettleman Hills, Calif.: Pilsbry, 7.
Land and fresh-water mollusks, Bahamas: Pilsbry, 3.
Lophospira akpatokensis for L. grandis: Wilson, A. E., 9.
Louisiana: Huner, 1; Richards, 19, 20;
Shreveport G. Soc., 2.
Mecolitia, Cuba: Clench, 2.
Mexico: Blásquez L., 1; Collins, R. L., 5; Gardner, J. A., 7; Imlay, 7; Jones, T. S., 1; Jordan, 1; Müllerried, 28.
Michigan: Bassett, 1.
Minnesota: Stauffer, 17.
Mississippi: Richards, 19, 20.
Missouri: Bailey, W. F., 4; Branson, 33, 34, 37; Cullison, 4; Lochman, 6; Knight, J. B., 5; Ulrich, 6.
Mitrospira, Ord.: Kirk, 6.
Natica as a radicle: Mathews, A. A. L., 2.
Neptunea, Calif.: Grant, 6.
Neritidae, Mo.: Knight, J. B., 5.
Newfoundland: Richards, 17.
New Mexico: Girty, 11; McCann, 1.
New York: Knight, J. B., 13; Ruedemann, R., 1.
Nomenclature, Camb.: Resser, 22.
North America: Bowles, E. O., 1; Durham, 2; Schuchert, 53.
North Carolina: Ingram, W. M., 1.
Ohio: Bucher, 18, 21; Sturgeon, 1.
Oklahoma: Newell, 3; Williams, J. S., 9.
Olenellus zone, Camb., Appalachians: Resser, 20.
Ontario: Caley, 1; Fritz, 9; La Rocque, 1; Shaw, E. W., 2.
Opercula, Tenn.: Oder, 2.
Oregon: Smith, W. D., 11; Turner, F. E., 5.
Paleozoic, genotype designations: Knight, J. B., 14.
Pennsylvania: Cleaves, 8; Miller, B. L., 13; Vokes, 9; Willard, 47, 49, 52, 59.
Platyceratidae, Mo.: Knight, J. B., 5.
Pleistocene and recent Mollusca: Shimek, 3.
Pleurotomarid, Oreg.: Schenck, 12.
Polygyra, Say., Ill.: Baker, F. C., 12.
Pomatopsis, Ill.: Baker, F. C., 8.
Protocanites, Miss., Va.: Miller, A. K., 23.
Psammodulus, Mexico: Collins, R. E. L., 3.
Ptarmigania fauna, Wasatch Mts., Idaho, Utah: Resser, 24.
Pulmonate Mollusca: Baker, 9.
Quebec: Jones, I. W., 13; Laverdière, 2, 6; Northrop, 10; Wilson, A. E., 9.
Roemer's Paleozoic types, Tex., redescription: Bridge, 8.

Gastropoda—Continued.

- Saskatchewan: Warren, P. S., 13.
Soleniscus: Knight, J. B., 5.
Spence sh. fauna, Utah, Idaho: Resser, 23.
Strombus, Jamaica: Rutsch, 1.
Subulitidae, Mo.: Knight, J. B., 5.
Tertiary faunas: Cronels, 28; Hanna, 35; Palmer, K. E. H. V., 2.
Texas: Albritton, 8; Nelson, L. A., 1; Richards, H. G., 22; Williams, J. S., 11.
Trails, Camb.: Fenton, 17.
Trinidad: Dietrich, 2; Rutsch, 3; Vokes, 10.
Trocho-Turbinidae, Mo.: Knight, J. B., 5.
Trophosyon: Gale, H. R., 1.
Turritella kellumi for T. subtilis: Stephenson, 27.
Turritellidae: Knight, J. B., 5; Merriam, C. W., 3; Stephenson, 27; Sutton, 12; Woodring, 1.
Utah: Chamberlain, R. V., 1, 2; Schneider, 7.
Velates, Calif.: Vokes, 3.
Vermont: Howell, 30; Schuchert, 43.
Virginia: Bates, R. L., 4.
Washington: Effinger, 7.
Western U. S.: Hanna, 35; Palmer, K. E. H. V., 2.
West Virginia: Price, P. H., 17.
Wisconsin: Ball, 16.
Wyoming: Branson, C. C., 14; Russell, L. S., 9.
Yvania, Ill.: Weller, J. M., 3.
Zygopleurid: Knight, J. B., 3.
Gems. See also Precious stones and individual varieties.
Amethyst, Colo.: Longyear, 1.
Analysis by fluorescence: Ackoff, 1.
Arizona: Ksanda, 2.
Benitoite: Melhase, 21; Van Amringe, 7; Yaeckel, 1.
California: Grieger, 2; McIntosh, F. G., 1; Melhase, 21; Sperisen, 1; Yaeckel, 1.
Canada: Parsons, A. L., 17.
Cat's eye: Hart, G., 2.
Colorado: Longyear, 1; Peacock, 9; Pearl, 2; Wulff, W. W., 1.
Determination of: Martindale, 2.
Diamonds: Kraus, 4, 10; Ksanda, 2.
Emeralds: Randolph, 4.
Garnets: Randolph, 2; Walcott, 5.
General: Clements, 4; Kraus, 4, 9; Whitlock, 9.
Georgia: McKinley, 4.
Historical notes: Ball, S. H., 2.
Idaho: Carpenter, J. T., 2; Fernquist, 3; Walcott, 5.
Jasper: Bell, O. J., 1; Walcott, 4.
Maine: Palache, 23.
Menitoite: Ward, T. W., 6.
Michigan: Dustin, 1, 3.
Minerals, metals, and gems: Verrill, 1.
Montana: Howard, J. W., 1; Murdock, 1.
New Hampshire: Chandler, 1, 2.

Gems—Continued.

- North Carolina: McIntosh, F. G., 2;
 Pratt, J. H., 1.
 Ohio: Schiefer, 1.
 Opal: Melhase, 22.
 Oregon: Dake, H. C., 7; Melhase, 22;
 Randolph, 1.
 Quartz, precious: D'Arcy, 3.
 Sapphires: Howard, J. W., 1; Murdock,
 1.
 South Dakota: Lincoln, 1.
 Topaz: Chandler, 1, 2; Palache, 23;
 Peacock, 9.
 Tourmaline: Randolph, 14.
 Washington: Fernquist, 2.
 Zircon: Randolph, 3.

Genera, methods of comparison: Phleger, 8.

Genesis of ores. See Ore deposits, origin.

Geochemical prosp.: Rosaire, 15.

Geochemistry.

- Alteration, pyrite to pyrrhotite: Stevens,
 R. E. 2.
 Bacterial genesis of hydrocarbon:
 Thayer, L. A., 1.
 Chloride brine concentration: Russell,
 W. L., 9.
 Copper deposits, Mich.: Wells, R. C., 1.
 Dolomite, Ohio cave: Lord, R. C., 1.
 Genesis, elements: Lewis, G. N., 1.
 Geochemical prosp.: Rosaire, 15.
 Glauconite from biotite: Galliber, 12.
 Heat of solution, potash minerals: Rich-
 ardson, L. T., 1.
 Hydrogen-ion concentration from sili-
 cates: Stevens, R. E., 1.
 Hypogene ore deposits and electrode po-
 tentials: Butler, B. S., 2.
 Iron and copper sulfide experts: Fore-
 man, 1.
 Limestone precipitation by submarine
 volcanic action: Kania, 1.
 Minerals deposited from sea water:
 Wells, R. C., 5.
 Potash-rich rocks, origin: Terzaghi,
 R. A. D., 3.
 Potassium occurrence: Urry, 2.
 Present trends: Wells, R. C., 14.
 Prospecting: Rosaire, 15.
 Radium occurrence: Urry, 2.
 Rock sampling for chemical analysis:
 Grout, 8.
 Salinity, Chesapeake Bay water: Wells,
 R. C. 2.
 Solutions and geol. processes: Ingerson,
 1.
 Solvency, organic acids of oxides of iron:
 Harrar, 1.
 Sulfate reduction, deep subsurface
 waters: Ginter, 3.
 Uranium: Urry, 2.

Geo-chronology, internat.: De Geer, G. J., 2.

Geodes.

- Illinois: McKinley, W. C., 2, 3.
 Indiana: Von Osinski, 1.
 Geodesy in geophys. research: Bowie, 27.

Geodetic operation, U. S., 1933-35: Bowie,
 22.

Geodynamics, data: Hixon, 2.

Geographic distribution.

- Continental migrations, Sauropoda,
 Mammalia: Osborn, 26.
 Faunas, Eocene, West Indies, equatorial
 America: Berry, E. Willard, 3.
 Silurian, Ord.: Foerste, 2.
 Tertiary, marine, Pacific Coast: Clark,
 B. L., 3.
 Molluscan provs., west U. S.: Henderson,
 J., 5.

Geoid, spheroid, and isostasy: Lambert, W.,
 D., 3.

Geologic age.

- Appalachian Mts. region: Ashley, 34.
 Ontario, Blue Mtn. intrusive: Keith,
 M. L., 4.
 Uraninite, Beaver Lake, Northwest Ter-
 ritories: Bruner, 2.

Geologic basis for time scale: Keyes, 495.

Geologic climate. See Paleoclimatology.

Geologic educ.: Swartz, C. K., 4.

Geologic evidence of floods: Hinds, 30.

Geologic factors in mine valuation: McLaugh-
 lin, 9.

Geologic field trips: Gwynne, 7.

Geologic formations, tables. See also Corre-
 lation.

- Alabama: Barksdale, J., 2; Jones, 16, 20.
 Alberta: Ball, M. W., 1; Evans, C. S., 1;
 Hake, 2; Heiland, 19; Howells, 1;
 Hume, 1, 25, 26, 29, 31, 32; Link,
 6; MacKay, 4, 8, 9, 12; Moore,
 P. D., 3; Russell, 31, 34-a, 34-b,
 36; Rutherford, R. L., 3; Sande-
 rson, 4; Slipper, 2; Warren, P. S.,
 10; Williams, M. Y., 2.
 Antillean-Caribbean area: Schuchert, 31.
 Appalachians: Boesch, H., 2; Four-
 marier, 7; Resser, 20.
 Arizona: Brown, W. H., 4; Gilluly, 17;
 Hernon, 1; Holm, 1; Keyes, 317,
 320, 428; Lausen, 1; Ransome, 3;
 Stoyanow, 5; Tenney, 4; Wilson,
 E. B., 8; Anonymous, 16.
 Arkansas: Cronis, 2, 23; Hazzard, R.
 T., 2; Hendricks, 8; Kans. G. Soc.,
 6; Keyes, 393; McKnight, 2;
 Spooner, 4.

Atchison sh. vs. Wabaunee, Iowa-Kans.:
 Keyes, 393.

Atlantic Coastal Plain, Pleist.: Richards,
 H. G., 14.

Big Horn Basin-Yellowstone Valley
 area: Anonymous, 117.

British Columbia: Armstrong, J. E., 1,
 2; Bancroft, 1; Bostock, 1; Cairnes,
 13, 15, 17; Davis, N. F. G., 1;
 De Bethune, 3; Evans, C. S., 4;
 James, H. T., 1; Johnston, W. A.,
 11; Kerr, F. A., 21; Kindie, E. D.,
 2, 3, 4; Lang, A. H., 6, 7; Mac-

Geologic formations—Continued.

British Columbia—Continued.

Kay, 5, 6; Marshall, I. M., 1; Rice, 4, 5, 6; Walker, J. F., 1, 4; Williams, M. Y., 5; Wright, L. B., 5.
 California: Beebe, 1; Dudley, 1; Eaton, 9; Eckis, 1; Goudkoff, 2; Hertlein, 11; Hinds, 11, 33; Hoots, 6. Howard, P. J., 1; Jenkins, 11; Oakeshott, 1; Popenoe, 4; Reed, 25, 26; Soper, 4; Stockman, 1, 3; Vallat, 1; Wilmarth, 1; Woodring, 17.

Canada: Alcock, 12, 13; Brock, R. W., 2; Collins, 11; Goodman, 4; Kindie, 40; Williams, M. Y., 5; Wilson, M. E., 20.

Carboniferous: Kansas G. Soc., 10; Keyes, 322, 327.

Chaleur Bay area, Canada: Alcock, 13.
 Clay deposits: Chelikowsky, 1; Hodge, 24.

Colorado: Bassett, 3; Behre, 21; Brainerd, 3; Burbank, W. S., 3; Butler, 9; Cross, C. W., 2; Effinger, 3; Erdmann, 1; Gould, D. B., 6; Hunt, E. H., 1; Johnson, J. H., 10, 17, 19, 23; Kansas G. Soc., 7, 11; Lerke, 1; Lovering, 14; Miller, J. C., 1; Nightingale, 1, 3, 4; Parker, 4; Sanders, C. W. J., 2; Singewald, Q. D., 7, 11; Vanderwilt, 11; Van Tuyl, 17, 18; Waldschmidt, W. A., 7; Winchester, 4.

Columbia River area: Hodge, 25.

Connecticut: Cook, T. A., 1.

Costa Rica: Lohmann, 2.

Cretaceous, Rocky Mts., area: Bart-ram, 8.

Cuba: Palmer, R. H., 3; Rutten, M. G., 4, 6.

Curacao, West Indies: Molengraaff, G. J. H., 1-a, 2.

Deep wells: Norton, W. H., 2.

Delaware: Stephenson, L. W., 6.

Eastern Interior coal basin: Bell, A. H., 13.

Eocene ser., La.-Tex.: Thomas, P., 1.

Eocene oil fields, La.-Tex.: Anonymous, 147.

Ep-Archean, Ep-Algonkian intervals: Hinds, 19.

Florida: Cole, 15; Cooke, C. W., 1, 24; Stringfield, 1, 7; Thomas, P., 2.

Formation names, Ill.-Mo.: Weller, 33.

General: Keyes, 364, 384, 388.

Geologic fms.: Alcock, 7.

Georgia: Munyan, 2; Smith, R. W., 1.

Gogebic iron area, Mich.-Wis.: Atwater, 5.

Grand Canyon Carb.: Keyes, 450.

Greenland: Aldinger, 5; Fiebold, 13; Koch, 10, 12; Sive-Söderbergh, 4, 6; Teichert, 8, 14.

Guidebook, Pa. geologists conf. 1938: Bevan, 34.

Geologic formations—Continued.

Gulf Coast, Tex.-La.: Halbouty, 10.

Idaho: Debler, 1; Kirkham, 14; Ross, C. P., 31; Stearns, 21, 27.

Illinois: Bretz, 10; Collingwood, 4; Currier, 8; Greger, 9; Howard, W. V., 6, 12; Kans. G. Soc., 12; Payne, J. N., 1; Wanless, 5; Weller, 24.

Illinois Basin: Howard, W. V., 6.

Indiana: Harrell, 1; Keyes, 46; Ley, 5; Logan, W. N., 5.

Iowa: Keyes, 107, 170, 247, 262, 352, 393, 496; Norton, 3; Trowbridge, 8; Wood, L. W., 7; Young, C. M., 12.

Kansas: Bass, 1, 9; Dalrymple, 1; Garlough, 1; Jewett, 7; Johnston, L. A., 1; Kansas G. Soc., 7; Keyes, 353; Koester, 2; Lee, W., 3; Ley, 3; Moore, 33; Moss, 2; Newell, 4; Ockerman, 3; Plummer, N. V., 1; Ver Wiebe, 16; Wilhelm, C. J., 1.

Kentucky: Bailey, W. F., 3; McFarlan, 20; Russell, W. L., 8; Stouder, 1; Sutton, A. H., 1, 4; Wesley, 3.

King's Mtn. area, N. C. and S. C.: Frink, 1.

Lake Valley Carb. lms.: Keyes, 410.

Lexicon of names: Wilmarth, 2.

Louisiana: Clark, C. C., 1; Crider, 2; Deussen, 2, 9; Doering, 1; Fergus, 1; Fisk, 4, 5; Fletcher, C. D., 1; Gordon, D., 2; Grage, 1; Halbouty, 3; Howe, 19; Jones, V. H., 2; Ross, J. S., 2; Russell, N. J., 24; Spooner, 1; Todd, J. D., 3; Weber, 1.

Maine: Fisher, L. W., 9.

Manitoba: Brownell, G. M., 2; Wright, 13.

Maryland: Cloos, 14; Eckel, 12; Hershey, H. G., 1; Knopf, E. F. B., 2; Stephenson, L. W., 6; Stose, 11.

Massachusetts: Chute, 1.

Mexico: Díaz Lozano, 4; Imlay, 3, 4, 11; Kellum, 13; Kelly, W. A., 10; Keyes, 354; King, R. E., 6; Muir, 3, 5; Tallaferrro, 7.

Michigan: Butler, B. S., 1; Dickey, R. M., 1; Hard, E. W., 2; Michigan Acad. Sci., 3; Newcombe, 7; Rawlins, 1; Wellman, 1.

Midcontinent region: Moore, R. C., 16.

Minnesota: Couser, 2; Jenks, A. E., 4; Kruger, 1; Schwartz, 16; Stark, 16; Stauffer, 21; Thiel, 10, 14; Trowbridge, 8; Anonymous, 199.

Mississippi: Foster, 5; George, W. O., 1; Meilen, F. F., 3; Monroe, 3; Morse, 6, 8; Toler, 1.

Mississippi Valley, upper: Kay, G. M., 13; Stainbrook, 1; Weller, 32.

Missouri: Brightman, 1; Condra, 12; Farrar, 1, 2; Gleason, 2; Greene, 7; Grohskopf, J. J., 2, 3; Kansas G. Soc., 6; McQueen, 4, 6, 7.

Geologic formations—Continued.

- Montana: Bartram, 7; Blixt, 1; Bucher, 11; Clapp, C. H., 3; Collier, A. J., 3; Corry, 1; Deiss, 4; Emery, W. B., 3; Paul, G. M., 1; Lammers, 2; Langton, 1; Pardee, 9; Parker, F. S., 1, 2; Perry, 10, 13, 15, 18; Pierce, 7; Reeves, F., 1; Rubey, W. W., 3; Sahinen, 4; Simpson, 38; Skeels, 1; Tansley, 1; Thom, 14.
- Nebraska: Condra, 6, 12, 19; Cook, 11; Effinger, 5; Johnson, F. W., 2; Lugin, 5, 12, 14; Meade, 1; Reed, E. C., 1; Schultz, C. B., 4; Wilson, J. H., 2.
- Nevada: Gianella, 9; Glock, 1; Hewett, 4; Jenney, 1; Longwell, 22; Muller, 14; Sharp, R. P., 5.
- New Brunswick: Alcock, 18; Caley, 2; Hayes, 7; Norman, 2; Shaw, E. W., 1; Wright, W. J., 3.
- New England: Bryan, 34.
- Newfoundland: Betz, 1; Cooper, J. R., 2; Espenshade, 1; Foley, F. C., 1; Heyl, 1, 2, 4; Schuchert, 28; Snelgrove, 8; Twenhofel, 40.
- New Hampshire: Chapman, C. A., 1.
- New Mexico: Ellis, R. W., 7; Just, 3; Keyes, 274; Lasky, 6, 14; Matthew, 17; Parker, B. H., 2; Ransome, 3; Rettger, 4; Schmitt, 6, 10; Spencer, A. C., 1; Winchester, 3, 4.
- New York: Cole, 14; Goldring, 7, 11; Kaye, 1; Larrabee, 1; Megathlin, 3; Newland, 9, 20; Payne, T. G., 1; Reeves, J. R., 3; Rogers, J., 5; Ruedemann, R., 1, 7, 40; Sanford, 5, 8; Schuchert, 22; Smith, B., 4; Thwaites, 8; Torrey, 8.
- New York City area: Kaye, 1.
- North America: Grabau, 5; Ruedemann, 52; Shimer, 3; Waterschoot van der Gracht, 15.
- North Carolina: Frink, 1; Murray, 5.
- North Dakota: Abbott, G. A., 2; Leonard, A. G., 2; Wilson, J. H., 2; Anonymous, 66, 67.
- Northwest Territories: Furnival, 5; Henderson, J. F., 3, 5, 6; Jolliffe, A. W., 2; Lord, C. S., 1; Robinson, H. S., 1.
- Nova Scotia: Bell, W. A., 1; Roliff, 1.
- Ohio: Chappars, 3; Harper, J. L., 1; Lamborn, 3, 4; Rogers, J. K., 2; Stout, 7, 17.
- Oil sands, Gulf Coast: Halbouty, 3.
- Oklahoma: Brandenthaler, 1; Bridge, 6; Daugherty, C. G., Jr., 1; Decker, 6, 22, 25; Dott, 7; Floyd, 1; Hendricks, 9, 10; Ireland, 4; Kansas G. Soc., 7; Keyes, 353; Laudon, 16; Lowman, 5; Markham, E. C., 1; Maxwell, R. A., 1; Mills, 12; Patterson, J. M., 1; Sawyer, 1; Schoff, 4; Stovall, 17; Swarts, 1; Travis, 1; Wilson, C. W., Jr., 13.

Geologic formations—Continued.

- Ontario: Bartley, 1, 2; Bateman, J. D., 2, 3; Bruce, E. L., 1, 20, 21, 24; Burwash, 8, 9; Caley, 1; Dyer, 1, 20; Fairbairn, 11, 15; Freeman, B. C., 4; Froberg, 3, 4; Harcourt, G. A., 4; Harding, W. D., 2, 3, 4, 5; Harkness, 4; Hawkins, R. H., 1; Horwood, 12; Hurst, 10, 11, 12; Keith, M. L., 4; Laird, 5, 7, 10; Macdonald, 1; Matheson, 1; Moore, E. S., 16, 17, 18; Perdue, 1; Pettijohn, 5, 7, 9; Prest, 1; Rickaby, 4; Rittenhouse, 3; Robson, 1; Satterly, 4; Savage, W. S., 1; Shaw, E. W., 2; Sproule, 1; Thomson, James E., 3, 8, 11, 15, 16; Thomson, R., 4; Watson, R. J., 2; Wilson, A. E., 7; Anonymous, 149.
- Oologah lms., Okla., Kans.: Keyes, 353.
- Oregon, Gilluly, 16; Moore, B. N., 8; Oregon Dept. Geol., 1; Piper, 17; Smith, W. D., 11.
- Ouachita Mts. area: Miser, 1.
- Ozarkian: Kobayashi, 1.
- Ozark Mts. area: Schottenloher, 2.
- Paleozoic systems: Ver Wiebe, 6.
- Pennsylvania: Ashley, 8, 32; Bascom, 6; Behre, 9; Cathcart, 9; Graeber, 1; Hall, G. M., 5; Hills, J. M., 1; Jonas, 2; Miller, B. L., 4, 8, 15; Moyer, 1; Reeves, J. R., 3; Rogers, R. D., Jr., 1; Sherrill, R. E., 5; Sisler, 8; Stose, 11, 12, 17; Swartz, F. M., 10; Torrey, 8; Ward, F., 5; Willard, 49, 50, 54, 55, 56, 57, 58, 59.
- Pennsylvanian, Mid-continent area: Miller, A. K., 8.
- Permian: Condra, 6; Keyes, 417.
- Pleistocene, N. Y., N. J.: MacClintock, 6.
- Pre-Cambrian rocks: Lawson, 2.
- Pre-Cambrian rocks: Lawson, 2.
- Pulsation theory: Grabau, 3, 4.
- Quebec: Backman, 1; Bannerman, 4; Bell, L. V., 12, 14, 16; Burton, F. R., 1; Clark, T. H., 2, 11; Cooke, H. C., 22; Denis, 4, 6, 7; Douglas, 4; Faessler, 7, 13, 16, 22; Gill, 7; Gunning, 22; Hawley, 10; Henderson, J. F., 1; Jones, I. W., 2, 11, 12, 13, 14; Lang, A. H., 3; Laverdière, 4, 6; Longley, 1, 4; Lowther, 1; McGerrigle, 3, 4, 5, 9; MacKenzie, 1, 4; Mawdsley, 6; Northrop, 10; O'Neill, 4; Osborne, 29; Parks, 3, 4; Retty, 1, 6; Snider, 4; Tolman, C., 2, 12.
- Rocky Mts. area: Uren, 2.
- Sabine uplift: Easton, 6.
- Saskatchewan: Alcock, 16, 17; Edmunds, 2; Fraser, F. J., 6; Keith, M. L., 3; McLearn, 17; Wickenden, 13-a; Worcester, W. G., 5; Wright, 16.
- Sedimentation cycles, Dev.: Keyes, 475.

Geologic formations—Continued.

- Slates, N. Y., Vt.: Larrabee, 1.
 Snake River Valley, Idaho: Debler, 1.
 South Carolina: Frink, 1.
 South Dakota: Gries, J. P., 1; Pugsley, 1; Rothrock, 16; Searight, 5; Wilson, J. H., 2; Wing, 2.
 Sparta-Wilcox trend, Tex.-La.: Todd, J. D., 3.
 State charts: Keyes, 112.
 Structural materials, TVA region: Anonymous, 139.
 Tennessee: Bailey, W. F., 3; Born, 4, 5, 11; Burchard, 8; Jewell, 1; Lusk, 1; Spain, 4; Theis, 4; Wells, F. G., 5; Wilson, C. W., Jr., 10.
 TVA region: Spain, 4.
 Tertiary, N. Am.: Berry, 57.
 Texas: Albritton, 9; Ball, O. M., 2; Bullard, 4; Cooper, H. H., 2; Cuyler, 6; Dalton, 1; Darton, 2; Decker, C. L., 2; Denison, A. R., 1, 2; Deussen, 2, 6; Doering, 1; Eby, 8; Eckel, 11; Ferguson, W. B., 1; Ivy, 1; Kansas G. Soc., 7; King, P. B., 8; King, R. H., 4; Lee, W., 1, 2; Livingston, P. B., 1; Lonsdale, 6, 7, 10; Martyn, 1; Meyer, W. G., 1; Nickell, C. O., 1; Patton, 8; Renick, 5; Rettger, 4; Rogatz, 2; Ross, C. P., 27, 28, 30; Roth, 14; Sayre, 4, 6; Sheldon, I. R., 1; Stamey, 1; Stenzel, 17; Todd, J. D., 3.
 Trenton group: Kay, G. M., 19.
 Trinidad: Illing, 1; Kugler, 1, 2, 6; Lehner, 1.
 Utah: Baker, A. A., 3, 7; Boutwell, 1; Eardley, 2; Fisher, D. J., 7; Giluly, 1; Green, J., 1; Johnson, E. S., 1; Miller, J. C., 2; Nolan, 6; Park, 3; U. S. G. S., 1, 2; Winchester, 4.
 Vermont: Jacobs, 2, 3; Keith, 4; Schuchert, 27, 43.
 Virginia: Brown, C. B., 3; Butts, 5; Cady, R. C., 2, 4, 5; Currier, 2; Stephenson, L. W., 6; Stose, G. W., 6; Woodward, 13.
 Washington: Kirkham, 14; Park, 9; Weaver, 7.
 Western phosphate field: Mansfield, G. R., 1.
 West Virginia: Lafferty, 1; Price, P. H., 8-a; Sisler, 9; Tilton, 5.
 Wisconsin: Bates, R. E., 4; Raasch, 2; Trowbridge, 8.
 Wyoming: Bauer, C. M., 4; Beath, 1; Beckwith, 4; Bradley, W. H., 10; Bucher, 11; Dobbin, 2; Emery, W. B., 3; Fanshawe, 1; Field, R. M., 4; Horberg, 1; Hughes, R. V., 2; Love, J. D., 1, 6; Lovering, 2; McCanne, 1; Nace, 1, 2; Neely, 4; Nightingale, 1, 2, 3; Rubey, W. W., 8; Scott, H. W., 8; Sheets, 1; Stevens, E. H., 2; Thomas, H. D., 8; Tillotson, 1; Veatch, 1; Wilson, C. W., Jr., 18.

Geologic formations—Continued.

- Yellowstone-Beartooth-Big Horn region: Field, R. M., 4.
 Yukon: Bostock, 6, 11; Johnston, J. R., 1, 2; Lees, E. J., 1, 2.
 Geologic history. See also Paleoclimatology; Paleogeography.
 Alabama: Poor, 1.
 Alaska: Eardley, 8; Mertle, 4, 16; Moffit, 7, 11; Smith, P. S., 3; Waring, 6.
 Alberta: Kindle, E. M., 1; MacKay, 4.
 Ancestral Rocky Mts.: Ver Wiebe, 4.
 Antillean-Caribbean region: Schuchert, 31.
 Appalachian Mts. area: Ashley, 34; Billings, M. P., 3; Holden, 4; Johnson, D. W., 8.
 Arizona, Grand Canyon Nat. Park: Anonymous, 16.
 Arkansas: Miser, 1.
 Aruba, West Indies: Westermann, 1.
 Bonaire, West Indies: Pijpers, 6.
 California: Bremner, 1; Buwalda, 7, 16; Canfield, 1; Donnelly, 2; Ferguson, 2, 4; Fox, L. S., 1; Grant, U. S., IV, 3; Hill, M. L., 1; Hoots, 3; Jenkins, 12; Loel, 1; Louderback, 1; Matthes, 5; Oakshott, 1; Reed, R. D., 9; Reiche, 1; Soper, 4; Thompson, D. G., 1.
 Canada: Bell, W. A., 1-a; Hume, 18; Williams, M. Y., 5; Young, G. A., 3.
 Carboniferous: Keyes, 327; Waterschoot van der Gracht, 10.
 Central America: Reed, 34; Schuchert, 31.
 Chart built of rocks and fossils: Crook, 5.
 Cincinnati area, Ky., Ohio: Brand, 4.
 Colorado: Atwood, W. W., 1; Burbank, W. S., 3; Cross, C. W., 2; Erdmann, 1; Johnson, J. H., 2, 8; Larsen, 4; Lovering, 3, 17; Van Tuyl, 18.
 Connecticut: Lougee, 7.
 Correlation by gamma-ray well logging: Howell, L. G., 1.
 Criteria for tops of stratified beds: Bel-yea, 2.
 Cuba: Lewis, J. W., 1; Meinzer, 8; Morales y Pedrosa, 1; Ortega y Ros, 1; Taber, 7.
 District of Columbia, Washington area: Cloud, P. E., 3.
 General: Merriam, 17; Reimann, 4; Anonymous, 167.
 Geological periods and diastrophic circuits: Keyes, 435.
 Georgia: Smith, R. W., 2.
 Greenland: Koch, L., 2; Rothé, 1.
 Gulf of Mexico area: Moody, 6; Staub, 1.
 Hawaii: Palmer, H. S., 2, 3; Stearns, H. T., 5.
 Helium, nitrogen, carbon dioxide, hydrogen sulfide gases: Dobbin, 12.
 Idaho: Anderson, A. L., 1, 3, 9; Capps, 14; Kirkham, 11; Mansfield, G. R., 2; Ross, C. P., 22; Umpleby, 1.

Geologic history—Continued.

- Illinois: Collingwood, 4; Leighton, M. M., 5; Nichols, H. W., 2; Savage, T. E., 3; Wanless, 1.
 Illustration by actual materials: Cook, A. R., 2.
 Iowa: Carman, 4.
 Kansas: Koester, 2.
 Kentucky: Roberts, J. K., 4; Robinson, L. C., 4; Sutton, 1; Twenhofel, 4.
 Lake Superior area: Becker, H., 2.
 Louisiana: Fletcher, C. D., 1; Moody, C. L., 2.
 Maine: Raisz, 1; Toppan, 1.
 Maquoketa sh.: Ladd, H. S., 1.
 Maryland: Knopf, E. F. B., 2.
 Massachusetts: LaForge, 1.
 Mesozoic conglom., Rocky Mts.: Bevan, 1.
 Mexico: Blasquez L., 4; Flores, 5; Imlay, 3, 7; Kellum, 4, 10; Kelly, W. A., 10; Schmitt, H., 2; Tatum, J. L., 1.
 Michigan: Newcombe, 7; Pirtle, 1.
 Mid-continent oil field: Cheney, 3.
 Minnesota: Allison, 4; Sandberg, 4; Stark, 1.
 Mississippi River: Elliott, D. O., 1.
 Mississippi Valley, lower: Berry, 21.
 Missouri: Bridge, 2; Dake, C. L., 1; Farrar, 2; Grawe, 2.
 Montana: Bevan, 3; Blixt, 1; Clapp, C. H., 3; Corry, 1; Lovering, 1; Reeves, F., 3; Thom, 14; Williams, M. Y., 6.
 Nashville dome: Mehl, 2.
 Nevada: Glock, 1.
 New England: Longwell, 14.
 New Hampshire: Billings, 9, 10; King-ley, 1.
 New Mexico: Fiedler, 2; Hendricks, T. A., 1; Just, 3; Sears, J. D., 3; Talmage, 7.
 New York: Balk, 5; Berkey, 13; Cooper, G. A., 13; Reimann, 1; Ruedemann, 7; Sanford, J. H., 1.
 North America: Bassler, 7; Crickmay, C. H., 11.
 North Atlantic area: Gilligan, 1, 2.
 North Carolina: Prouty, 3.
 North Dakota: Hard, H. A., 1.
 Nova Scotia: Bell, W. A., 1; Hayes, A. O., 2; Malcolm, 1.
 Ohio: Cushing, 1; Ver Steeg, 11.
 Oklahoma: Boyd, W. B., 1; Burton, G. E., 1; Clark, S. K., 1; Freie, 1; Hoffman, M. G., 1; Hyatt, 1; Ireland, 2; Powers, S., 1, 4; Travis, 1; Weirich, 1.
 Ontario: Bruce, 8; Fairbairn, 15; Horwood, 10; Kindle, L. F., 2; Moore, E. S., 10; Tanton, 1; Thomson, James E., 11.
 Oregon: Gilluly, 4, 16; Hodge, 3; Piper, 2, 17; Schuette, C. N., 5; Stearns, 7; Thayer, 5.
 Orogeny, cent. Appalachians: Holden, 4.
 Paleozoic systems: Ver Wiebe, 6.

Geologic history—Continued.

- Pennsylvania: Bascom, 1, 3; Butts, 10, 13; Knopf, E. F. B., 3; Lohman, S. W., 4; Miller, B. L., 13, 15; Richardson, G. B., 3; Stose, 12, 21; Willard, 50, 56, 58, 59.
 Pennsylvanian: Knight, J. B., 8; Savage, 5.
 Permian, Tex.-N.Mex.: Willis, R., 3.
 Puerto Rico: Meyerhoff, 4.
 Quebec: Clark, T. H., 2; Parks, 4.
 Rocky Mts. area: Heaton, 3, 6; Raymond, 8.
 Saint Pierre and Miquelon Is.: Aubert de la Rue, 3.
 Sedimentary cycles, Penn.: Savage, 5.
 South Carolina: Cooke, C. W., 17; Taber, 18.
 South Dakota: Connolly, 3; Fillman, 1; Tullis, 5.
 Southwestern U. S.: Eaton, J. E., 4.
 Structural geol. and econ. deposits: Gilluly, 14; Stark, 14.
 Tables: Kelley, V. C., 2.
 Tennessee: Born, 4.
 Texas: Adams, H. H., 1; Albritton, 8; Cuyler, 6; Denison, A. R., 2; King, P. B., 5, 7; Lee, W., 1; Meyer, W. G., 1; Reed, L. C., 2; Scott, G., 6; Sel-lards, 28-a; Shuler, 4.
 Utah: Baker, A. A., 7; Callaghan, 9; Gilluly, 5.
 Vermont: Doll, 2; Perry, E. L., 1.
 Virginia: Brown, C. B., 3; Furcron, 4, 9; Roberts, 15; Woodward, 8, 13.
 Washington: Culver, 6; Hoffman, 3; Weaver, 7.
 West Virginia: Price, P. H., 1; Reger, 3.
 Wisconsin: Aldrich, H. R., 1; Bagg, 1; Thwaites, F. T., 1; Wannenmacher, 2.
 Wyoming: Fowler, K. S., 1; Hughes, R. V., 2; Knight, S. H., 1, 2; Love, J. D., 1, 6.
 Yellowstone canyon: Jones, O. T., 1, 2.
 Geologic interpretations from well cuttings: Whiteside, 1.
 Geologic limitations to oil law: Porter, 7.
 Geologic maps.
 Alabama: Bailey, W. F., 3; McVay, 1; Wisser, 5.
 Alaska: Buddington, 1, 2; Capps, 1, 2, 3, 4, 6, 10, 12, 13; Hill, J. M., 2; Hollick, 9; Knappen, 1; Martin, G. C., 1; Mertie, 1, 4, 7, 10, 14, 15, 16, 20, 21; Moffit, 1, 2, 5, 7, 10, 11; Park, 2; Ray, J. C., 5; Reed, J. C., 3; Richards, R. W., 1; Ross, C. P., 9, 10; Smith, P. S., 3, 12; Tuck, 4, 5, 7; Waring, 2, 6; Wells, F. G., 4.
 Alberta: Allan, 7, 17, 19; Calder, 1, 2; Canada G. S., 1; Evans, C. S., 3; Heiland, 19; Hume, 4, 5, 23, 25, 26, 29, 31, 32, 34; Link, 6, 7, 12; MacKay, 1, 2, 3, 4, 12; Rowe, R. C., 2; Russell, L. S., 10, 34-a, 36; Ruth-

Geologic maps—Continued.

Alberta—Continued.

ford, 1, 3; Sanderson, 4; Spratt, 2; Sproule, 4.

Alidade and plane-table in geol. surveys: Mather, 27.

Antillean-Caribbean region: Baker, 25; Schuchert, 31.

Appalachian oil and gas fields: Ashley, 23.

Appalachians: Boesch, H. H., 3; Crickmay, G. W., 16; Fourmarier, 7; Thompson, H. D., 2; Ver Wiebe, 14.

Arctic America: Kindle, 40; Mathiassen, 2.

Arizona: Andrews, D. A., 4; Brown, W. H., 4; Butler, B. S., 17, 18, 19, 20, 21; Crawford, W. P., 2; Fowler, 14; Galbraith, F. W., 3d, 1; Garrett, 1; Gilluly, 17, 20; Gregory, H. E., 2; Harrell, 2; Keyes, 260, 294, 317, 428; Knechtel, 6; Kuhn, 1; Lausen, 2, 4; Longwell, 23; MacKay, 2; Moore, B. N., 7; Peterson, N. P., 1, 2; Ransome, 3; Reagan, 6, 7; Reber, 1; Reiche, 3; Roe, H., 1; Short, 6; Smith, H. T. U., 10; Tenney, 4; Trischka, 4; Williams, H., 11; Wilson, E. D., 5, 6, 8; Anonymous, 179.

Arkansas: Bramlette, 5; Branner, 3, 10; Dane, 1; Easton, 8; Hazzard, R. T., 4; Hendricks, 8, 13; Jenny, 12; Landes, 9; McKnight, 2; Miser, 1; Parks, B., 1, 2; Reed, J. C., 16; Ross, C. S., 1; Spooner, 4; Stearn, 11; Teas, 1; Weeks, W. B., 2.

Ark-La-Tex oil and gas field: Easton, 8.

Aruba, West Indies: Westermann, J. H., 1, 4.

Atlantic and Gulf Coasts: Gardner, 14.

Auto radio, aid in geol. mapping: Cloos, 7.

Baffin Land-Melville Peninsula: Mathiassen, 2.

Baraboo area, Wis.: Leith, A., 1.

Barite deposits, Va.: Edmundson, 2.

Bartlesville and Burbank sands, Okla.-Kans.: U. S. G. S., 12, 13.

Beartooth-Big Horn-Black Hills area: Woollard, 2.

Belt ser., northern: Fenton, 54.

Big Horn Basin, Mont.-Wyo.: Stow, 12.

Big Horn Basin-Yellowstone Valley area: Anonymous, 117.

Black Hills gold deposits, S. Dak.-Wyo.: Wright, L. B., 4.

Bonaire, West Indies: Pijpers, 1.

Boulder Dam area: Hewett, 12.

Bradford field, Pa.-N.Y.: Fetteke, 11.

British Columbia: Armstrong, J. E., 1, 2; Bostock, 1; Cairnes, 1, 8, 9, 13, 15, 17; Campbell, C. D., 6; Canada G. S., 1; Cleveland, 1; Cockfield, 3, 14, 15, 16; Crockford, 1; Davis, N. F. G., 2; De Béthune, 3; Dol-

Geologic maps—Continued.

British Columbia—Continued.

mage, 2, 6, 7; Evans, C. S., 4; Goranson, E. A., 3; Gray, J. G., 1; Gunning, 2, 3, 11, 17, 18, 19, 20, 21; Hanson, 1, 3, 13; Hedley, M. S., 2; Horwood, 3, 4, 5, 8; James, H. T., 1; Kerr, F. A., 17, 18, 20, 21, 22; Kindle, E. D., 2, 3, 4; Lang, A. H., 6, 7; Lay, 4; MacKay, 5; Mandy, 1, 2; Rice, 4, 5; Sharpstone, David C., 1; Stevenson, J. S., 5; Walker, J. F., 1, 2, 4, 5, 7; Wright, L. B., 5.

Burbank, Bartlesville sands, Okla.-Kans.: U. S. G. S., 12, 13.

California: Anderson, C. A., 2, 3, 6; Andrews, P., 2; Ashauer, 1; Atwill, 2; Averill, 1, 6, 7; Bailey, T. L., 2; Beebe, 2; Blackwelder, 43; Brenner, 1, 2; Calkins, 1; Chapman, R. W., 4; Clark, B. L., 1, 15, 23, 28; Cloos, 13; Conkling, 1; Clements, 6; Daly, J. W., 1; De Béthune, 5; Donnelly, 2; Dudley, 1, 2; Eaton, 9; Eckis, 1; Erwin, 1, 4; Ferguson, H. G., 2, 4; Fitch, 2; Fraser, D. M., 1; Gilbert, C. M., 1; Glendinning, 1; Grant, 17; Hazzard, J. C., 1; Henderson, L. H., 2, 3; Henny, 4, 5, 6, 7; Herold, C. L., 3; Hertlein, 11; Hill, M. L., 1; Hinds, 11, 14, 18; Hobson, 2; Hoots, 2, 3, 6; Howard, P. J., 1; Jenkins, 12, 16, 17, 18, 19, 20, 22; Kelley, 8, 10; Knopf, A., 1; Logan, C. A., 1; Maxson, 5; Mayo, 2, 10, 13; Miller, F. S., 2; Miller, W. J., 11, 12, 17; Moore, B. N., 7; Murphy, E. M., 2, 3; Oakeshott, 1; Osborn, E. F., 1; Piper, 16; Peacock, 2; Post, W. S., 1; Powers, H. A., 7; Putnam, 4; Rand, W. W., 1; Reed, R. D., 25; Reiche, 1; Sampson, R. J., 2; Schroter, 1; Smith, J. P., 1; Soper, 2; Stearns, H. T., 6; Stock, 44; Taff, 3; Thompson, D. G., 1; Tolman, C. F., 3; Uhrig, 2; Williams, H., 2, 4; Willis, 17, 18; Woodring, 12, 17.

Cambrian, thickness in U. S.: Ver Wiebe, 14.

Canada: Alcock, 1, 12, 13; Baulig, 1; Bruce, 19, 23; Collins, 11; Dougherty, 5; Goodman, 4; Hume, 6, 7, 8, 9, 10, 12; Kidd, D. F., 1; Kindle, 40; Moore, E. S., 1, 23; Pettijohn, 11; Teichert, 12; Weeks, L. J., 5; Wilson, M. E., 20; Wright, J. F., 9, 10, 11; Wright, L. B., 2.

Carboniferous: Kans. G. Soc., 10; Levorsen, 2.

Cascade and Coast Ranges: Crickmay, C. H., 10.

Catalog, Va. maps: Roberts, 28.

Cedar Creek anticline, Mont.-S. Dak.: Dobbin, 11; Erdman, 2.

Geologic maps—Continued.

- Central America: Sapper, 5; Sonder, 1; Sorre, 1.
 Chaleur Bay region, Quebec-New Brunswick: Alcock, 13.
 Champlain Valley: Chapman, D. H., 1; Rodgers, 2.
 Chromite deposits, N. C.-Ga.: Hunter, 3.
 Classification of: Koester, 5.
 Coastal Plain inv.: Woollard, 4.
 Colorado: Atwood, W. W., 1; Bebre, 6, 16, 21; Boos, 14; Bradley, W. H., 12; Burbank, W. S., 2, 3, 4, 12, 16; Butler, B. S., 3, 5; Chapman, E. P., 2; Cross, C. W., 2; Dane, 10, 11; Eckel, E. B., 5, 10; Emmons, W. H., 13; Erdmann, 1; Goddard, E. N., 2, 3, 5, 6; Gould, D. B., 6; Hancock, 1; Haskell, 2; Heaton, 5, 8; Henderson, C. W., 2; Hendrickson, V. J., 2; Ives, 9; Kans. G. Soc., 7, 11; Knopf, A., 11; Loughlin, 11, 12, 14; Lovering, 5, 6, 15, 17, 20, 26, 30; Nightingale, 4; Smith, Ward C., 1; Singewald, Q. D., 3, 7, 11; Stark, 8, 9, 11, 12; Traupe, 1; U. S. G. S., 6; Upson, J. E., 2; Vanderwilt, 2; Van Tuyl, 18; Waldschmidt, 7; Wantland, 3; Wilkerson, 5; Anonymous, 41.
 Colorado Plateau: Butler, B. S., 3.
 Connecticut: Agar, 2, 5, 9; Cook, T. A., 1; Crosby, 9; Denny, 1; Krynine, 5; Longwell, 25; Lougee, 7; Meinzer, 2; Stewart, L., 1.
 Costa Rica: Lohman, W., 2; Schaufelberger, 7.
 Cretaceous: Anderson, F. M., 14; Stephenson, 23.
 Crypto-volcanic structures, Mid-continent: Bucher, 15.
 Crystalline schists, Pa., Md.: Jonas, 12.
 Cuba: Corral y Alemán, 3; Lewis, J. W., 1; Ortega y Ros, 1, 2; Rutten, M. G., 4, 6; Thiadens, 3, 5; Vermunt, 4.
 Curaçao, West Indies: Molengraaf, G. J. H., 1-a; Pijpers, 2; Vermunt, 1, 2, 3.
 Decorah fm., upper Mississippi Valley: Ball, 13.
 Delaware: Bascom, 3; Grimsley, 1; Stephenson, L. W., 6.
 Devonian, upper Mississippi Valley: Tester, 14.
 Dresbach fm., upper Mississippi Valley: Thwaites, 5.
 Florida: Berger, P., 1; Boesch, C. E., 1, 2; Cooke, C. W., 1, 2; Paige, 2.
 Galena fm., upper Mississippi Valley: Ball, 13.
 Garland anticline, Wyo.: Dobbin, 13.
 Gaspé: Kindle, C. H., 3.
 General: Thiele, 1.
 Geophysical delineation of structure: Kelly, 22.

Geologic maps—Continued.

- Georges Bank canyons: Stetson, 10.
 Georgia: Cooke, C. W., 21; Crickmay, G. W., 20; Georgia, G. S., 1; Hewett, 13; Kesler, 4; Lester, J. G., 2; Smith, R. W., 1, 2, 6.
 Glacial geology, Europe and N. Am.: Keyes, 298.
 Glacial tills: Keyes, 240.
 Gogebie iron dist., Mich.-Wis.: Atwater, 5.
 Gold-producing areas: Denloux-Dumesnil, 1.
 Gotiglacial broadmapping, Sweden-N. Y.-Manitoba: De Geer, 3.
 Gravity anomalies and geol. structures: Woollard, 1.
 Greenland: Aldinger, 3; Backlund, 4, 5; Bain, 20; Büttler, 2, 4, 5; Frebold, 7; Koch, 1, 5, 6, 7, 9, 11, 12; Kranck, 2; Krueger, H. K. E., 2; Malmquist, 1; Moos, von, 1; Noe-Nygaard, 1, 3, 5; Odell, 5; Orvin, 1; Sjöve-Söderbergh, 4, 6; Schaub, H. P., 1; Stauder, H., 1, 2; Teichert, 3, 8, 14; Vischer, 2; Wager, 3, 5; Wegmann, 6, 8, 10; Wordie, 1.
 Green River fm., Colo.-Utah: Bradley, W. H., 8.
 Grenville ser. Quebec-Ontario: Bain, 20.
 Ground water, N. Am.: Imbeaux, 1.
 Gaudeloupe: Barrabé, 5, 6.
 Gautemala: Deger, 3.
 Guidebook, Pa. Geol. conf., 1938: Bevan, 34.
 Gulf Coast, Tex.-La.: Halbouty, 10.
 Hawaii: Hinds, 7; Stearns, H. T., 5, 28; Stearns, N. D., 5; Wentworth, 44.
 Idaho: Anderson, A. L., 1, 3, 5, 9, 18, 22, 23; Capps, 14; Currier, 4; Dorf, 6; Kirkham, 10, 11; Lorain, 2; Mansfield, G. R., 2; Reed, J. C., 4, 14, 19; Ross, C. P., 1, 4, 18, 21, 22, 23, 29, 31; Shenon, 9, 10, 11, 16, 17, 18; Stearns, 21, 27; Umpleby, 1.
 Illinois: Bell, A. H., 17, 23; Bretz, 10; Currier, 7, 8; Ekblaw, 11; Grimsley, 1; Kans. G. Soc., 12; Lamar, 10; Lee, L. K., 2; Leighton, 22; Newton, 1; Wanless, 1; Wascher, 1; Weller, J. M., 24, 25, 28, 29, 36; Weller, S., 3, 4.
 Illinois Basin: Bell, A. H., 17; Howard, W. V., 6; Weller, 25.
 Indiana: Fidler, 3; Grimsley, 1; Harrell, 1; Levorsen, 2; Ley, 5; Logan, W. N., 4; Malott, 4; Shrock, 3, 11.
 Inyo Range quad., Calif.-Nev.: Anderson, A. H., 5.
 Iowa: Carman, 4; Kay, G. F., 1; Keyes, 247, 421; Laudon, 1; Lees, J. H., 2; Scobey, 1; Wood, L. W., 7, 8.
 Isopach map, upper Mississippi Valley: Tester, 12.
 Jacksonburg lms., Pa.-N. J.: Miller, R. L., 2.
 Jamaica: Küchler, 1; Trechmann, 9.

Geologic maps—Continued.

- Jordan ss., upper Mississippi Valley :
Trowbridge, 10.
- Jurassic fms., Utah-Ariz.-Colo.-N. Mex. :
Baker, F. C., 13.
- Kansas : Bass, 1, 9; Dalrymple, 1; Elias
2; Jewett, 7; Kans. G. Soc., 7;
Kans. G. S., 1, 2, 3; Landes, K. K.,
2, 26, 28; Lee, W., 3; McClellan,
1, 3; Moore, R. C., 9, 13, 33, 39;
Moss, 2; Newell, 4; Norton, G. H., 2;
Ockermann, 3; Pierce, 4; Wing, 1;
Woodruff, E. G., 1; Anonymous, 61.
- Kentucky : Bailey, W. F., 3; Briggs, 1;
Butts, 2; Chappars, 1; Crabb, 1;
Dunn, P. H., 2, 3, 4, 5, 6, 7; Eyl, 1;
Freeman, L., 1; Griffin, 2, 3; Hunt,
C. B., 3; Hunter, 1; Jillson, 4, 19,
31; Kentucky G. S., 1, 2, 6, 7, 8, 10,
11; McFarlan, 1, 2, 3, 4, 5, 6, 7, 8, 11,
16; Mayfield, 1, 2, 3; Meacham, 1;
Miller, A. M., 1; Miller, R., 1, 2, 3,
4, 5, 6, 7, 8, 9, 10; Roberts, J. K.,
5, 6, 7, 9, 10; Robinson, L. C., 1, 2;
Shideler, 1, 2, 3, 4, 8, 9, 10, 11;
Sutton, 2, 3; Theis, 1; Thomas,
R. N., 1; Welch, 1; Weller, J. M.,
2; Weller, S., 1, 2; Wesley, 1, 3;
Withers, F. S., 1, 2, 3; Wolford, 1, 2,
4, 5; Woodruff, J. G., 1, 2.
- Kinderhook group, upper Mississippi
Valley : Tester, 13.
- Labrador : Gill, 6.
- Lake Michigan area : Fuller, G. D., 1.
- Lake Superior area : Becker, H., 2; Hotch-
kiss, 4; Leith, A., 1; Leith, C. K.,
10; Leverett, 2.
- Lehigh Valley : Ewing, 9.
- Limestones, Wash., Idaho, Oreg. : Hodge,
24.
- Louisiana : Chawner, 3; Easton, 2, 3, 8;
Fisk, 2, 4, 5, 7; Huner, 1; Louisiana
Geol. Soc., 1; McGuirt, 2; Mills, 3;
Shaw, J. A., 2.
- Lowlands, S-cent. and Ouachita Provs. :
Ruedemann, P., 3.
- Maine, Chadwick, 33; Haff, 4; Keith,
A. R., 5; Perkins, 11; Philbrick, 2;
Trefethen, H. T., 1; Trefethen, J.
M., 3.
- Manitoba : Ambrose, 2, 3; Canada G. S.,
1; Downie, 1; Horwood, 2, 6; John-
ston, A. W., 1; Johnston, W. A., 3,
12; Norman, 4; Shepherd, F. D.,
1; Stockwell, 7, 9, 10, 11; Tanton,
6-a; Wright, J. F., 1, 12, 13.
- Mapping from the air : Desjardins, 2.
- Maps and mapping : Keyes, 375.
- Maquoketa sh. upper Mississippi Valley :
Ladd, H. S., 2.
- Maryland : Broedel, 1; Cloos, 12, 14;
Cohen, 1; Darton, 15; Eckel, 12;
Grimsley, 1; Jonas, 11; Marshal, J.,
1; Mathews, E. B., 1, 6; Stephenson,
L. W., 6; Stose, 11.

Geologic maps—Continued.

- Massachusetts : Billings, M. P., 1, 18;
Clifford, J. N., 1; LaForge, 1; Prindle,
1; Woodworth, 2.
- Mexico : Barrera, 2; Bastin, 13;
Blásquez L., 3; Cumming, 3; Flores,
9; Gibson, J. B., 1; Gonzalez, E. M.,
1; Hernandez, 1, 2; Hisazuma, 3;
Inlay, 2, 3, 4, 7, 8, 10; Ives, 5;
Kane, 1, 2; Kellum, 4, 8, 10, 13;
Kelly, W. A., 10; King, R. E., 4, 5,
6; Locke, 6; Muir, 3, 5; Muñoz Lum-
bier, 4; Ordóñez, 5; Pastor, 1;
Perera Castillo, 1; Sánchez, 2, 6;
Santillán, 2, 5, 11, 14; Singewald,
Q. D., 2; Sorre, 1; Staub, 3, 4;
Tallaferro, 7; Tatum, 3; Valentine,
W. G., 1; Waitz, 8; Wandke, 2;
Watson, 9; Woodford, 6.
- Michigan : Bay, J. W., 1, 2, 3; Bergquist,
6, 7, 8, 9; Broderick, 7; Butler,
B. S., 1; Dickey, R. M., 1; Hake, 4;
Lamey, 7; Leith, 10; Leverett, 2;
Martin, H. M., 3; Mich. Acad. Sci.,
1, 3; Newcombe, 7, 12; Newman,
E. A., 1, 2; Pringle, 1; Rawlins, 1;
Riggs, C. H., 2; Stanley, G. M., 2, 3;
Zavoico, 5.
- Mid-continent area : Lahee, 8; Miser, 9.
- Minnesota : Clement, 1; Cooper, W. S., 6,
9; Grout, 7, 9, 23; Jenks, A. E., 4;
Kruger, 1; Leith, 10; Leverett, 13;
Sardeson, 23, 31; Schwartz, 16;
Stark, J. T., 2, 16; Thiel, 11, 14;
Anonymous, 199.
- Mississippi : Bailey, W. F., 3; Dane, 1;
Easton, 10; Fisk, 8; Foster, V. M.,
1, 2, 5; Grim, 8; Mellen, F. F., 3;
Monroe, 1; Moody, C. L., 2; Morse,
10; Toler, 1.
- Mississippi River : Cooper, W. S., 6;
Howell, J. V., 6.
- Mississippi Valley : Bastin, 20; Easton,
9; Kans. G. Soc., 8.
- Missouri : Bridge, 2; Conselman, 1; Dake,
C. L., 1; Farrar, 1, 2; Gleason, 2;
Graves, 1; Grimsley, 1; McQueen, 2,
10; Missouri G. S., 1; Tolman, 8, 13.
- Montana : Alden, 3; Baker, A. A., 2;
Barksdale, J. D., 1; Bass, 3; Blixt, 1;
Clapp, C. H., 3; Collier, 3; Dobbin,
3; Dyson, 3; Gibson, 4, 5; Hall, G.
M., 1; Hart, L. H., 2; Howland, 2;
Hurlbut, 10; Knappen, 2; Lammers,
2; Langton, 1; Lorain, 1; Lovering,
1; Neely, 2; Pardee, 2, 4, 9; Parker,
F. S., 1, 2; Peoples, 2; Perry, 12,
14, 15, 18; Pierce, 6, 7; Reeves, F.,
3; Renick, 1; Rouse, 7; Sahinen, 1,
4; Schafer, 1, 3; Scott, H. W., 10,
12; Shenon, 1, 12, 15; Skeels, 1;
Spiroff, 3; Tansley, 1; Thom, 14;
Vhay, 2; Wilson, C. W., Jr., 4, 11,
15; Wolff, 6.
- Nebraska : Condra, 14; Lugn, 5, 11, 14,
15; Nebraska State Plann. Bd., 1.

Geologic maps—Continued.

- Nevada: Bateman, 5; Calkins, 3; Callaghan, 2, 7, 8, 13; Cameron, E. N., 2; Campbell, D. F., 1; Ferguson, 5, 10; Gianella, 9; Hewett, 4; Jenney, 1; Kerr, P. F., 17, 20; Longwell, 23; Muller, 14; Nolan, 1, 2, 8, 9; Schrader, 6; Sharp, R. P., 3, 4, 5; Westgate, 6.
- New Brunswick: Alcock, 18; Caley, 2; Canada G. S., 1; Hayes, 7; Norman, 2; Rose, B., 1; Shaw, E. W., 1; Wright, W. J., 3.
- New England: Bryan, 28, 34; Chapman, V. J., 1; Longwell, 14; Wheeler, G., 1.
- Newfoundland: Bain, 18; Betz, 1; Buddington, 18; Cooper, J. R., 1, 2; Espenshade, 1; Foley, F. C., 1; George, P. W., 2; Hayes, A. O., 3, 6, 8; Heyl, 1, 2; Jewell, 2; Ingerson, 2; Snelgrove, 5, 8; Vhay, 1.
- New Hampshire: Billings, 8, 9, 10, 13; Chamberlain, R. V., 1; Chapman, C. A., 1; Chapman, R. W., 1; Fowler-Lunn, 1; Hadley, J. B., 1; Quinn, 4; White, G. W., 13; Williams, C. R., 2.
- New Jersey: Berkey, 12; Crichtlow, 1; Grimsley, 1; Lasky, 6; Lewis, J. V., 2; Palache, 2; Renick, 3; Thompson, D. G., 9; Winchester, 1.
- New Mexico: Blanchard, W. G., Jr., 1; Bryan, 31, 35; Cabot, 1; Church, F. S., 1; Dane, 8; Dunham, 3, 4; Ellis, R. W., 6; Fiedler, 2; Harley, 1; Hunt, C. B., 2; Hunt, W. F., 2; Just, 3; Kansas G. Soc., 7; Keyes, 334, 339; Lasky, 10, 11, 12, 14, 15, 16; McCann, 1; Miller, J. C., 2; Morgan, A. M., 1; Paige, 1; Ransome, 3; Robinson, T. W., Jr., 6; Schmitt, 10; Sears, J. D., 3; Spencer, A. C., 1; Stock, 55; Stott, C. E., 1; Vanderwilt, 12; Waring, 3; Williams, H., 11; Winchester, 3, 5.
- New York: Balk, 5, 11; Barth, 14; Berkey, 13; Bradley, 13, 19; Brigham, A. P., 1; Brown, J. S., 2; Buddington, 8, 11, 17, 23; Butler, J. W., Jr., 2; Cannon, R. S., 1; Cole, 14; Colony, 1; Dale, N. C., 2, 5; Denny, 2; Goldring, 7, 11; Grimsley, 1; Hudson, G. H., 1; Kay, G. M., 19; Kaye, 1; Larrabee, 1; Longwell, 14; Megathlin, 3; Mencher, 2; Miller, W. J., 1, 18; O'Connell, 1; Reed, R. D., 20; Rich, 17; Ruedemann, 7, 40; Smith, B., 4; Strzygowski, 2; Suter, 1; Swinnerton, 7; Thompson, 16; Wedel, 1; Wheeler, G., 2.
- New York City area: Kaye, 1.
- Niobrara fm., Kans.-Neb.-S. Dak.: Loetler, 1.

Geologic maps—Continued.

- North America: Baulig, 1; Billingsley, P., 5; Boesch, H. H., 3; Butler, 16; Grabau, 5; Keyes, 290; Ruedemann, 52; Waters, 12; Waterschoot van der Gracht, 10, 14, 15.
- North American glaciation: Keyes, 290.
- North Carolina: Brown, C. B., 1; Keith, A., 2; Moneymaker, 2; Murray, 6; Prouty, 20.
- North Dakota: Andrews, 6; Hard, H. A., 1; Voedisch, 1; Anonymous, 67.
- Northwest Territories: Camsell, 14; Canada G. S., 1; Furnival, 3; Henderson, J. F., 3, 4, 5, 6; Hodge, 16; Jolliffe, A. W., 1, 2, 3; Jolliffe, F. J., 3; Kidd, 6, 7; Lord, C. S., 1; Riley, 3; Stockwell, 8; Wilson, J. T., 8, 9.
- Nova Scotia: Bell, W. A., 1; Cameron, H. L., 1; Canada G. S., 1; Douglas, 5; Faribault, 1, 2; Imperial Oil Ltd., 1; Malcolm, 1; Miller, A. H., 8; Newhouse, 15; Norman, 5; Wilson, J. T., 4; Wright, W. J., 1.
- Ohio: Bownocker, 1; Braun, 1; Bucher, 15-a; Chappars, 3; Cushing, 1; Grimsley, 1; Lamborn, 1, 4; Levett, 25; Ley, 5; Meinzer, 16; Rogers, J. K., 2; White, G. W., 11, 17.
- Ohio River Valley: Meinzer, 16.
- Oklahoma: Bass, 6, 12; Boyd, W. B., 1; Boyle, J. P., 1; Bullard, 1; Bunn, 1; Cloud, 4; Cram, 2; Dane, 6, 12; Decker, 4, 25; Harlton, 9; Hendricks, 9, 10; Hoffman, M. G., 1; Hyatt, 1; Ireland, 2; Kans. G. Soc., 7; Knechtel, 1, 5; Lucas, E. L., 2; McClellan, 1; Merritt, 7; Ross, C. S., 1; Sawyer, 1; Schoff, 1; Schwarzenbeck, 1; Sheerar, 1; Six, 1, 2; Stone, J. A., 1; Stovall, 17; Suffel, 1; Swigart, 1; Tarr, R. S., 3; Tomlinson, C. W., 4; Travis, 1; U. S. G. S., 7, 8, 9, 10, 11, 14, 15; Weatherby, 2; Weidman, 2; Wilson, C. W., Jr., 13.
- Ontario: Bartley, 1, 2; Bateman, J. D., 2, 3; Bell, L. V., 2; Bruce, E. L., 1, 8, 16, 21, 22; Burrows, 2, 3; Burwash, E. M. J., 1, 4, 8, 9; Canada, G. S., 1; Coleman, 5, 9; Collins, W. H., 3, 4, 7; Cooke, H. C., 25; Derry, 5, 6, 10; Dyer, 1, 18, 20, 21; Emmons, R. C., 1; Fairbairn, 5, 11, 15; Flaberty, 2; Freeman, B. C., 4; Furse, 2, 3; Goudge, 5; Graham, A. R., 3, 4, 5, 6; Greer, L., 1; Harcourt, 4; Harding, W. D., 2, 3, 4, 5; Harkness, 5, 6; Hawley, 2, 3; Horwood, 9, 10, 11, 12; Hurst, 4, 5, 11, 12; Kay, G. M., 19, 22; Keith, M. L., 4; Kindle, L. F., 2, 3; Laird, H. C., 2, 3, 4, 5, 7, 8, 9, 10; Langford, 1, 4; Macdonald, 1; Maynard, J. E., 1; Merritt, P. L., 2;

Geologic maps—Continued.

Ontario—Continued.

Moore, E. S., 2, 11, 16, 17, 18; Moorehouse, 3; Osborne, 3; Perdue, 1; Pettijohn, 5, 7, 9, 15; Phemister, 1, 3; Quirke, 4, 5; Rickaby, 1, 3, 4, 6; Ringsleben, 1; Rittenhouse, 2; Robson, 1; Satterly, 2, 3, 4; Savage, W. S., 1; Spearman, 3; Suffel, 2; Tanton, 1, 4, 7; Thomson, James E., 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14, 15, 16; Thomson, J. Ells, 1; Thomson, R., 1, 4; Watson, R. J., 2; Wright, W. I., 1; Yates, 1.

Ontario-Manitoba boundary: Derry, 6.
Oregon: Buddington, 14; Gilluly, 4, 6, 16; Goodspeed, 17; Hewett, 5; Hodge, 5; MacGinitie, 1; Mackay, 1; Moore, B. N., 8; Piper, A. M., 4, 17; Reed, J. C., 1; Renick, 2; Shenon, 3, 5, 6; Smith, W. D., 11; Stearns, H. T., 3, 7; Thayer, T. P., 2, 3, 5; Wells, F. G., 7, 11; Williams, H., 6.

Ouchita Mts., Okla., Ark.: Miser, 2.

Ozark Mts. area: Schottenloher, 2.

Ozark Prov.: Cozzens, 2.

Pacific Northwest: Hodge, 24.

Patrician glaciation: Johnston, W. A., 13; Keyes, 235; Martin, L., 3; Tyrrell, J. B., 1.

Pennsylvania: Ashley, 8, 15, 31; Bailey, E. B., 1; Bascom, 1, 3, 6; Behre, 9; Berkey, 12; Butts, 10, 13; Cathcart, 9, 12; Cleaves, 8; DeWolf, 1; Fettke, 4, 6, 7, 10; Foose, 1; Fraser, 9, 12; Graeber, 1; Grimsley, 1; Hall, G. M., 5; Hickok, 5; Hills, J. M., 1; Hughes, H. H., 1; Itter, 1; Johnson, M. E., 1; Knopf, E. F. B., 3; Leggett, 9; Leighton, H., 6; Lohman, S. W., 4, 6, 10; Mackin, 4; McLaughlin, E. B., 3; Miller, B. L., 15; Miller, R. L., 1; Moyer, 1; Piper, 7; Reeves, J. R., 2; Richardson, G. B., 2, 3, 4; Shaffner, 2; Sherrill, 5; Sisler, 1; Smith, L. L., 1; Stone, 5, 8; Stose, G. W., 1, 11, 12, 15, 17, 18, 20, 21; Swartz, F. M., 10; Taylor, 13; Wagner, N. S., 1; Ward, F., 5; Watson, E. H., 6; Willard, 30, 49, 50, 54, 55, 56, 57, 58, 59.

Permian basin, Ark.-La.: Easton, 5.

Petroleum: Hager, D., 2.

Petroleum explor.: Howard, W. V., 10.

Photogrammetry, applied: Anderson, R. O., 1.

Platteville fm., upper Mississippi Valley: Ball, 13.

Pleistocene glaciation: Antevs, 3.

Prairie du Chien fm. and group: Powers, E. H., 1, 2.

Pre-Cambrian buried surface in U. S.: Moss, 3.

Pre-Cambrian structural map, upper Mississippi Valley: Howell, J. V., 4.

Geologic maps—Continued.

Puerto Rico: Meyerhoff, 3, 4.

Quebec: Ambrose, 4; Auger, 1, 2; Backman, 1; Bannerman, 4; Bell, A. M., 1; Bell, L. V., 1, 3, 4, 7, 10, 11, 12, 14, 15, 16; Bruce, 7; Burton, F. R., 1; Canada G. S., 1; Clark, T. H., 5, 6, 7, 11; Conolly, H. J., 1; Cooke, H. E., 3, 19, 21, 22; DeMille, 2; Denis, 1, 2, 3, 4, 6, 7, 8; Derry, 11; Douglas, 4; Faessler, 1, 2, 4, 5, 6, 7, 13, 16, 22; Flaherty, 3; Freeman, B. C., 5, 7; Goudge, 5; Gunning, 13, 15, 16, 22, 23, 24; Gussow, 2; Hawley, 7, 10, 11; Henderson, J. F., 1, 2; James, W. F., 1, 2; Jones, I. W., 1, 2, 3, 4, 6, 8, 11, 12, 13, 14; Kindie, C. H., 3; Laverdière, 1, 4, 6; Longley, 1, 2, 3, 4; Lowther, 1; McGerrigle, 4, 8, 9; MacKenzie, 1, 3, 4; Malouf, 1; Mawdsley, 6; Norman, 6, 7, 8, 9, 9-a, 10, 11, 12; Northrop, 10; O'Neill, J. J., 2, 4, 5; Osborne, 14, 19, 21, 22, 24, 29; Parks, W. A., 1, 3, 4; Price, P., 3; Retty, 1, 2, 3, 4, 5, 6; Ross, S. H., 1; Shaw, G., 1; Sproule, 1-a; Tolman, 12; Weeks, L. J., 5-a, 6, 7, 8; Wilson, H. S., 1; Wilson, J. T., 5, 6, 7; Wilson, M. E., 16; Anonymous, 3.

Quebec and New Brunswick. Chaleur Bay area: Canada, G. S., 1; Kindie, C. H., 3.

Rhode Island: Quinn, 5; Woodworth, 2.
Rio Grande depression, Colo.-N. Mex.: Bryan, 36.

Rocky Mts. area: Atwood, W. W., 10; Bartram, 10; Heaton, 4.

Saganaga batholith, Minn.-Ontario: Grout, 18.

St. Peter ss. fm.: Howell, J. V., 5; Lamar, 11.

Saskatchewan: Alcock, 14, 16, 19; Canada G. S., 1; Cooke, H. C., 24; Fraser, F. J., 6; Hume, 25; Keith, M. L., 3; McMurphy, R. C., 1, 2; Sproule, 2, 3, 5; Stockwell, 1; Weeks, 9; Wickenden, 12, 13-a.

Seismic depth calculations: Beers, 1.

Silica deposits, Calif., Canada, Nev.: Hodge, 24.

Silurian, upper Mississippi Valley: Workman, 6.

Small scale, catalog: Bucher, 9.

South Carolina: Cooke, C. W., 17; Keith, A. R., 2; Kesler, 1; Taber, 18.

South Dakota: Clark, J., 3; Cummings, J. B., 2; Hess, F. L., 14; Kirby, M. E., 1; Moxon, 2; Pugsley, 1; Rothrock, E. P., 4, 8, 10, 13, 16; Searight, 1, 2, 3, 4, 5; Runner, J. J., 5; Wing, 2.

Structure, Illinois Basin: Cohee, 5.

Structure of oil fields: Howard, W. V., 11.

Stull Lake sheet, Manitoba-Ontario: Canada G. S., 1.

Geologic maps—Continued.

Sudbury nickel irruptive, Ontario: Collins, 7, 10.

Tennessee: Amick, 1; Bailey, W. F., 3; Bassler, 8; Born, 3, 4, 10, 11; Eckel, E. C., 3; Jewell, 1; Laurence, 4; Money-maker, 5; Piper, 3; Pond, W. F., 2; Rankin, H. S., 1; Spain, 1; Theis, 4; U. S. G. S., 4; Wilson, C. W., Jr., 7, 10, 12.

Tennessee River basin: U. S. G. S., 4.

TVA region: Eckel, E. C., 3.

Texas: Adkins, 4; Albritton, 8, 9; Baker, 21; Ball, O. M., 2; Brucks, 1; Bullard, 2, 3, 4; Cheney, M. G., 2; Cooper, H. H., 2; Cunningham, W. A., 2; Dake, C. L., 2; Dally, 3; Darton, 10; DeFord, 4; Denison, A. R., 2; Deussen, 1, 6, 13; Easton, 8; Eckel, E. B., 7, 11; Ferguson, W. B., 1; Fiedler, 4; Foster, M. D., 2; Getzendaner, F. M., 1; Hamner, 1; Heath, 2; Jones, C. T., 1; Kansas G. Soc., 7; King, P. B., 5, 29; Kramer, 5; Lee, W., 1, 2; Levorsen, 3; Liddle, 3; Livingston, P. P., 1, 2; Lonsdale, 7, 10; McLellan, 1; Mansfield, G. R., 20; Martyn, 1; Michaux, 1; Mills, 3; Oil and Gas Jour., 1; Patton, L. T., 1; Plummer, 17; Price, W. A., 12; Ralston, 1; Reed, L. C., 2; Renick, 5; Rogatz, 2; Ross, C. S., 1; Sayre, 2, 4, 6; Scott, G., 6; Sellards, 27, 28-a, 30, 39; Stenzel, 9, 10, 17; Stephenson, 16; Tex. Univ. Bur. Econ. Geology, 1; Trowbridge, 6; Turner, S. F., 3; Weeks, A. J., 2, 3, 4; Wendlandt, 1, 2; White, W. N., 4.

Texas-New Mexico potash deposits: Mansfield, G. R., 20.

Toroweap-Kaibab fms., Ariz.-Utah: McKee, 11.

Trempealeau fm., upper Mississippi Valley: Edwards, L., 2.

Triassic Chinle fm.: Camp, 3.

Trinidad: Illing, 1; Kugler, 2, 4, 6; Lehner, 1.

Uinta Basin: Kay, J. L., 1.

Uinta Mts., Utah-Colo.: Bradley, 14; Forrester, 1.

Underground waters, upper Mississippi Valley: Thwaites, 7.

United States: Baulig, 2; Campbell, M. R., 4; Fenneman, 1, 7; Fischer, R. P., 2; Hodge, 24; King, 9; Longwell, 35; Stockdale, 12; Stose, 10; Thom, 17; U. S. G. S., 3; Waterschoot van der Gracht, 16; White, C. D., 18.

Utah: Baker, A. A., 3; Baker, F. C., 12; Baker, H. B., 1; Boutwell, 1, 2; Callaghan, 9, 12; Dane, 7; Dobbin, 17; Eardley, 5, 6, 12; Fisher, D. J., 7; Gilluly, 1, 5; Gilmore, 16; Gregory, H. E., 1, 2, 4, 6; Miller, J. C., 2; Nolan, 6; Peterson, O. A., 3;

Geologic maps—Continued.

Utah—Continued.

Reagan, 3; Spieker, 4; Taylor, G. H., 2; Thorpe, 14; U. S. G. S., 1, 2; Wells, F. G., 10; Williams, H., 11.

Vermont: Bain, 17; Church, M. S., 1; Foyles, 1; Jacobs, 2, 3; Krieger, M. H., 1; Larrabee, 1; McGerrigle, 1; Richardson, C. H., 2, 3, 4, 7; Schuchert, 43; Wolff, J. E., 1, 2.

Virginia: Bates, R. L., 1, 4; Brown, C. B., 3; Butts, 5; Cady, R. C., 2, 4, 5; Cooper, B. N., 1, 6, 7; Currier, 2; Edmundson, 2, 7; Furcron, 4, 9; Jonas, 3, 14; McGill, 12, 13; Park, 6; Pegau, 4; Reeves, F., 4; Roberts, J. K., 28; Stephenson, L. W., 6; Stose, 19; Va. G. S., 1; Woodward, 8, 10, 11, 12, 13.

Wasatch Mts., Utah: Eardley, 4.

Washington: Coombs, 3; Culver, 1, 4, 6; Felts, W. M., 4; Flint, 17, 18, 20; Houghland, 3; Irwin, W. H., 1; Keyes, 242; Page, B. M., 2; Park, 9; Verhoogen, 1; Waters, 4, 11, 12; Weaver, 7.

Western U. S.: Fenneman, 3.

West Indies: Barrabé, 7; Hacquaert, 2; Pijpers, 2; Rutten, L. M. R., 6; Sorre, 1.

West Virginia: Grimsley, 1; Lafferty, 3; McCue, 1; Price, P. H., 1, 9, 14, 17; Reeves, F., 5; Reger, 3; Stose, 9; Tucker, R. C., 2.

Wisconsin: Aldrich, H. R., 1; Fries, 1; Keyes, 243; Leith, A., 1; Leith, C. K., 10; Raasch, 4; Shrock, 14; Thwaites, 6; Voss, 2; Wisconsin G. S., 2; Wisconsin Univ., 1.

Wyoming: Bauer, C. M., 4; Beckwith, 4, 5; Bradley, W. H., 11, 12; Condra, 13; Dobbin, 1, 2, 13, 14; Dorf, 5; Fanshawe, 1; Fryxell, 1; Horberg, 1; Hughes, R. V., 2; Johnson, G. D., 1; Love, J. D., 1, 6; Lovering, 2; Mackin, 5; Nace, 2; Parsons, W. H., 1; Richardson, G. B., 1; Schalkjær, 3; Sheets, 1; Thom, 7; Willson, C. W., Jr., 18.

Yellowstone Nat. Park: Howard, A. D., 6.

Yukon: Bostock, 6, 8, 11; Canada G. S., 1; Cockfield, 3; Howard, A. D., 3; Johnston, J. R., 1, 2; Lees, E. J., 2; Anonymous, 132.

Geologic maps, small scale, catalog: Bucher, 9.

Geologic materials, fundamental constants: Lovering, 27.

Geologic names lexicon: Willmarth, 2.

Geologic notes for mtn. climbers: Erwin, 5.

Geologic periods and diastrophic circuits: Keyes, 435.

Geologic phenomena of 1916: Pfa, 1.

Geologic processes and human activities, Utah: Schneider, 3.

Geologic rhythms: Wanless, 15.

- Geologic sci., birth and devel.: Adams, F. D., 8.
 Development: Reed, 33.
 Geologic-seismologic frontier: Macelwane, 19.
 Geologic structures: Willis, B., 1.
 Geologic surveys. See Surveys.
 Geologic terminology, stability: Keyes, 418.
 Geologic terms for highway eng.: Runner, D. G., 12.
 Geologic terms, pronunciation: Brown, R. W., 6.
 Geologic theory in mine exams.: Smith, N. C., 2.
 Geologic time: Allen, V. T., 19; Alter, 1; Antevs, 7, 18; Ashley, 11, 27, 29; Bain, 20; Baxter, 1; Born, A., 1; Bowman, I., 2; Brewer, A. K., 1, 2; Brown, E. W., 1; Buddhue, 28; Card, 2; Chadwick, 3; Crickmay, C. H., 20; Cockerell, 24; De Geer, E. B., 1; De Geer, G. J., 1, 3; Evans, R. D., 7; Gillette, 4, 7; Gries, 4; Herold, S. C., 4; Holmes, A., 1, 4, 5; Kay, G. F., 12; Keevil, 1, 2, 3, 4-a, 5; Keyes, 174, 182, 273, 327, 340, 347, 351, 435, 455, 495; Khlopin, 1; King, D. W., 1; Kirsch, 1; Knopf, A., 3, 4, 7, 15; Kovarik, 4, 5; Lane, 17, 31, 34, 36, 37, 39, 41; Malott, 4-a; Marble, J. P., 1, 2, 3, 4, 5, 7; Matthes, 7; Mead, 6; Muench, 7; Osborn, 25; Piggot, 2; Price, W. A., 15; Resser, 8; Rickaby, 6; Richarz, 3; Rose, J. L., 1; Sabni, 1; Schuchert, 14; Schulman, 1; Sederholm, 4; Sbaub, 9; Twenhofel, 37; Urry, 3, 10; Wells, R. C., 12; Western, 1, 2; Whitney, 3, 4, 5, 6; Willis, 16; Wilson, A. E., 7; Woodbury, 1; Woodward, H. P., 1; Anonymous, 157, 186.
 Geologic time clock, Buffalo Mus.: Reimann, 9.
 Geological Surveys. See Surveys.
 Geologist and his profession: Bryan, 37.
 Geologist and well-spacing: Kraus, 1; Porter, 9.
 Geologists, distrib. and background: Fairbanks, 1.
 Geologists, future in petroleum industry: Fuqua, 3.
 Geologists need maps: Bowie, 29.
 Geologists' responsibility under Security Act, 1933; Perrine, 1.
 Geology, application to ore finding: Parker, 5.
 Basis for agri. and mining: Corral y Alemán, 2.
 Factor in human life: Fowke, 1.
 Natural gas: Ley, 2.
 Nature and devel. of sci.: Connelly, 9.
 North America, devel. and present status: Mendenhall, 10.
 Possible research program: Fenneman, 8.
 Principles and processes: Emmons, W. H., 14.
 Relation to pedology: Veatch, J. O., 2.
 Source book in: Mather, 28.
 Geology and chemistry: Bowen, 21.
 Geology and civil eng.: Hotchkiss, 6.
 Geology and clay research: Ries, 8.
 Geology and education: Bevan, 23.
 Geology and engineering: Berkey, 25; Hotchkiss, 6; Legget, 1.
 Geology and geophysics: Brace, 4; Longwell, 28-a; Rosaire, 10.
 Geology and history: Merriam, 16.
 Geology and Nat. Park Service: Ludlum, 1.
 Geology as a profession: Ekblaw, 12.
 Geology for the layman: MacLean, 1.
 Geology from original sources: Agar, 15.
 Geology, geography, and soils: Smith, J. E., 12.
 Geology in engineering: Berkey, 25; Hotchkiss, 6; Legget, 1.
 Geology in litigation: Moore, E. S., 25.
 Geology in mine valuation: Thurlow, 1.
 Geology in modern life: Behre, 28; Mansfield, G. R., 28.
 Geology in park devel.: Rothrock, H. E., 1.
 Geology in prospecting, Quebec: Bell, L. V., 15.
 Geology in war: Gonzales, E. M., 1; Portillo, 1.
 Geomagnetism applied to explor.: Stearn, 1.
 Geomorph. geol. structure model: Meyer, A. H., 2.
 Geomorphogeny. See also Physiographic geology.
 Continental genesis: Willis, B., 4.
 Mid-Atlantic ridge: Washington, 3.
 Geomorphology. See also Physiographic geology.
 Continental nuclei: Longwell, 3.
 Deserts, mountainous: Davis, 28.
 General: Cressey, 2; Johnson, 41; Meyerhoff, 28; Worcester, P. G., 5.
 Glacial: Engeln, von, 13.
 Gulf Coast geosyncline: Russell, R. J., 22.
 North America, W.: Penck, 1.
 Oscillation theory of diastrophism: Longwell, 7.
 Permanence of continents and oceans: Raymond, P. E., 2.
 Tropics, humid: Krynlne, 4.
 Virginia: Bevan, 9.
 Geon: Woodward, H. P., 1.
 Geophysical abstracts: Ayvazoglou, 1.
 Geophysical explor.: Broderick, 1.
 Geophysical interpretations: Blackburn, M. S., 1.
 Geophysical Lab. repts.: Day, 1.
 Geophysical measurements, Mich.: Keck, 1.
 Geophysical methods aid in construction work: Stipe, 1.
 Geophysical prospecting.
 Absorption and radiation by rocks: Eve, 1.
 Abstracts: Ayvazoglou, 1; Lee, F. W., 3.
 Adjustable filter, seismic waves: Pirson, 1.
 Aerial photography in geology and geophysics: Logan, J., 3.
 Aids in mining: Kelly, 16.
 Alabama: Adler, 2; Eby, J. B., 6; Jenny, 5.

Geophysical prospecting—Continued.

- Alberta: Heiland, 19.
 Amherst ss., moisture: Born, W. T., 1.
 Analysis, seismic profiles: Roman, 4.
 Anisotropy: Pirson, 4.
 Anomalies, heavy: Heiskanen, 1.
 Anthracite prosp.: Ewing, 6.
 Appalachia: Ewing, 14-a; Thom, 19, 22.
 Appalachian Mts. area: Gillingham, W. J., 2; Straley, 7.
 Applications of potential methods: Leonardon, 1.
 Arbuckle Mts., Okla.: Harding, R. L., 1.
 Areal mapping by refraction shooting: Gardner, L. W., 1.
 Arizona: Lundberg, 10.
 Arkansas: Freeman, L. J., 1.
 Atlantic Coastal Plain: Ewing, 10, 15; Leet, 13; Miller, B. L., 10; Rust, W. M., Jr., 1.
 Barbers Hill salt dome, Tex.: Barton, 19.
 Bibliography: Heiland, 9.
 Bottom-hole data determination: Schlumberger, 3.
 Boulder Dam area: Lee, 7.
 Brunton compass attachment: Wilson, J. H., 1.
 Buried river channels: Ellsworth, E. W., 3; Wilcox, S. W., 1.
 Calculation of ground motion from seismograms: Wilson, H. A., 1.
 California: Dick, J. A., 1; Henderson, J., 12; Jakosky, 7; Jenkins, 18; Mills, 1; Newhouse, 14; Pratley, 1; Salvatori, 1; Uhrig, 2; Vaughan, F. E., 2; Anonymous, 77.
 Canada: Eve, 3; Kelly, 17; Lundberg, 8; Miller, A. H., 6.
 Cap rock, Hoskins dome, Tex.: Barton, 23.
 Carolina Bays: McCarthy, 13; Prouty, 23.
 Carolina Coastal Plain: MacCarthy, 8, 10.
 Choice of geophys. methods: DeGolyer, 3; Rieber, 3.
 Chromite deposits: Oregon: Allen, J. E., 2.
 Coastal plain inv.: Woollard, G. P., 4.
 Colorado: Heiland, 5; Levings, 1; Wantland, 3.
 Continental borders, gravity studies: Swick, 3.
 Continental and oceanic structure: Field, 24.
 Continents: Thom, 17.
 Control of surveys: Barton, 4.
 Correlations: Card, 2; Pirson, 8; Van Orstrand, 3.
 Cuba: Dickerson, 4.
 Dams, earth: Heiland, 22.
 Deep drilling: Eby, 11.
 Depth calculations, seismic: Beers, 1.
 Depth determinations: Harris, S., 1; Rosenweig, 1.
 Depth factors: Evjen, 1.

Geophysical prospecting—Continued.

- Depth of strata: Harris, S., 1.
 Determination of gravity, torsion balance: Barton, 20.
 Developments since 1935: Rosaire, 11.
 Dip-needle surveys: Brant, A. A., 1; Campbell, F. F., 2; Pirson, 7; Rosaire, 8; Stearn, 2; Swanson, 4.
 Dip reflections on faults, Gulf Coast: Campbell, F. F., 2.
 Dipping strata, effect on resistivity: Aldredge, 1.
 Directional radio ore instrument: Rose, R. B., 2.
 Drill holes, explor. and heat measurements: Deussen, 5; Leonardon, 3.
 Earth crust, structure determination: Gutenberg, 17.
 Earth resistivity: Card, 1; Hotchkiss, 2; Hubbert, 3, 4, 5; Keller, W. D., 2; Lee, F. W., 1; Shue, 1; Tagg, G. F., 1; Watson, R. J., 4; Wenner, 1.
 Earth structure: Hodgson, 16.
 Earth transients, elec.: Stratham, 1.
 Elastic properties of rocks: Ide, 2, 3.
 Elastic wave explor.: Rieber, 2, 4.
 Electric explor.: Bruckshaw, 1; Crosby, 1; Fink, 1; Focken, 1; Gilchrist, 1; Karcher, 2; Kelly, S. F., 11; Lundberg, 1, 6; Rust, W. M., Jr., 2; Sawdon, 1; Schlumberger, 1, 2; Sundberg, 1; Anonymous, 163.
 Drill holes: Anonymous, 163.
 Gold: Kelly, S. F., 5; Kihlstedt, 1.
 Petroleum: Jenny, 1; Lundberg, 5; Peters, L. J., 1; Rosaire, 4, 6.
 Ore: Lundberg, 1, 5; Mason, M., 1; Rogers, A. H., 1.
 Electrical well-logging: Houston G. Soc., 2; Sawdon, 1.
 Electric resistance method: Tagg, 1.
 Equipotential surface curvature: Slotnick, 1.
 Eötvös torsion balance: Barton, D. C., 1, 2; George, P. W., 1; Heiland, 3.
 Exploring down: Kelly, S. F., 11.
 Explosives for: Barab, 1; Farren, 1; Heiland, 16; Loving, 1; Rolland, 1.
 Fake methods: Blau, 1.
 Faults, location, mapping: Hubbert, 5; Johnson, C. H., 2; Salvatori, 2.
 Fault-noise indications of earthquakes: Patterson, W. D., 1.
 Field magnetometer: Aguerrevere, 1.
 Field problems, reflection seismology: Pugh, 1.
 Florida: Jenny, 5.
 Foundation eng. by geophysics: Johnson, F. M. S., 1.
 General: Barton, D. C., 1, 2; Belluigi, 1; Bergman, 1; Clark, R. P., 1; DeMille, 1; Eby, 7, 9; Eickelberg, 1; Eve, 5; Fleming, 2; Gabriel, 9; Gonzalez, E. M., 1; Heiland, 7, 12; Henderson, L. H., 1; Isham, 1; Ja-

Geophysical prospecting—Continued.

General—Continued.

- kosky, 1; Kelly, S. F., 3, 4, 7, 9, 14, 15, 20; Longwell, 32; Lovering, 27; McLaughlin, D. H., 1, 4; Mawdsley, 2; Sánchez, 5; Thom, 12; Tripp, 1; Waitz, 4; Weatherby, 1; Wenner, 4; Westby, 4.
- Geodetic surveys, U. S.: Bowle, 22, 24.
- Geo-electric methods for oil: Gish, O. H., 2.
- Geodesy in geophys. research: Bowle, 27.
- Geologic basis, agr. and mining: Corral y Alemán, 2.
- Geologic causes, poor reflections: Rieber, 7.
- Geologic conditions shown: Aldrich, H. R., 2.
- Geologic structures, mapping: Barton, D. C., 1; Longwell, 28-a.
- Geology and geophysics, interrelation: Brace, 4; Rosaire, 10; Wantland, 1.
- Structure determination: Barton, D. C., 1; Longwell, 28-a.
- Geomagnetic explor.: Alexander, J. A., 2; Stearn, 1, 6, 12.
- Geophysical abstracts: Ayvazoglou, W., 1.
- Geophysical mapping from the air: Helland, 17.
- Geophysical surveys, results: McLaughlin, D. H., 2.
- Geophysics: Helland, 15; Houston G. Soc., 1; Kelly, S. F., 6, 8, 13, 23; Lee, 5; Lundberg, 7.
- Geosonograph explor.: Rieber, 8.
- Geothermal gradient, Lake Superior copper mines: Ingersoll, 1.
- Glaciers, sounding, Alaska: Goldthwait, R. P., 3.
- Gold explor.: Kelly, S. F., 5, 8, 10; Kihlstedt, 1.
- Gradiometer, magnetic: Roman, 3.
- Gravimeters: Bryan, A. B., 2; Hedstrom, 3.
- Gravimetric methods: Barton, 48; Mott-Smith, L. M., 1; Slotnick, 2; Sundt, 1; Swick, 1.
- Gravity anomalies: Lee, 11.
- Gravity measurements, U. S. S. Barracuda, West Indies: Ewing, 12.
- Gravity surveys, Gulf States: Baker, W. L., 1.
- Ground gas survey: Pirson, 9.
- Ground-water: Jones, B. S., 4; Meinzer, 24; Tattam, 1; Workman, 8.
- Gulf Coast: Baker, W. L., 1; Barton, 24; Barton and Sawtelle, 1; Charrin, 1; Mills, 4, 11; Rosaire, 5, 7, 8, 9, 13; Todd, J. D., 2; Tucker, M., 2; Williams, N., 2, 4; Zwerger, 2.
- Hawaii: Swartz, J. H., 9.
- Horizon slope calculation: Pentz, 1.
- Horizontal field balance: Helland, 1.
- Illinois: Cohee, 3.
- Illinois Basin: Triplett, 1.
- Individual explor.: Rose, 1, 3, 4.

Geophysical prospecting—Continued.

- Instruments and procedure: Stubbe, 1.
- Interpretation of data: Blau, 2; Ruth-erford, H. M., 2, 6.
- Interrelationship, geology and geophysics: Brace, 4; Rosaire, 9.
- Iowa geol. complex: Osborn, W. G., 1.
- Kentucky: Eve, 2, 3; Lee, 4.
- Lehigh Valley studies: Ewing, 7, 8.
- Limestones: Ewing, 7; Gilchrist, 3.
- Logging, elec., petroleum: Houston G. Soc., 2; Sawdon, 1; Anonymous, 123.
- Louisiana: Barton, 15, 39, 45; Blondeau, 1; Bornhauser, 1; Buchanan, 1, 2; Collingwood, 1; Cook, C. E., 1; Flude, 1; Halbouty, 3; Jenny, 14; Rosaire, 2; Taylor, J., 1.
- Magnetic anomalies in oil fields: Van Weelden, 1.
- Magnetic prosp., surveying: Barret, 2; Collingwood, 2; Eve, 4; Gabriel, 5; Helland, 24; Jenny, 2, 6, 7, 13; Lundberg, 4; Royce, 3; Slichter, 1; Swanson, C. O., 3.
- Magnetometers, use of: Barret, 1; Buehler, 3; Collingwood, 1; De Beck, 1; Helland, 1, 2, 13; Liddle, 2; Schmidt, K. H., 1; Swanson, C. O., 3; Wantland, 4.
- Magnetometer measurements of geol. structures: Keys, 1.
- Magnetometric surveys: Lynton, 1.
- Manual for magnetometers: Joyce, 1.
- Mapping geol. structures: Goldstone, 1; Zuschlag, 1.
- Mapping oil structures: Zuschlag, 1.
- Methods: Barton, 6, 19; Helland, 23; Lee, F. W., 2.
- Michigan: Eddy, G. E., 2; Lamey, 8; Swanson, C. O., 2, 3.
- Micromagnetic explor. for oil: Jenny, 11.
- Micromagnetometer: Rieber, 1.
- Mid-Atlantic Ridge: Heck, 44.
- Misclosures, adjustment: Cowles, 1.
- Missouri: Buehler, 3; Farnham, F. C., 1; Grohskopf, J. G., 1; McQueen, 10.
- Montana: DeWolf, 4; Gutenberg, 14.
- Multiple seismometers, use: McDermott, 4.
- Nebraska: Wilson, J. H., 2.
- Nevada: Lee, 8.
- New Jersey: Hubbert, 7.
- Nomogram for dip computations: Lawlor, 1.
- Nickel deposits, Sudbury, Ontario: Lee, H. E., 1.
- North Carolina: Johnson, W. R., Jr., 1, 3; MacCarthy, 12.
- North Dakota: Wilson, J. H., 2.
- Nova Scotia: Miller, A. H., 8.
- Ocean basins: Field, 16, 17, 21, 23; Gutenberg, 23; Anonymous, 191.
- Ocean bottoms: Anonymous, 191.
- Ohio, survey: Higgy, 1.
- Oil fields: Clifford, 1; Jenny, 9; Weaver, P., 1; Westby, 3; Williams, N., 3.

Geophysical prospecting—Continued.

- Oil industry: Barton, D. C., 8; DeGolyer, 6, 10.
- Oil sands and rocks, resistivities: Jakosky, 8.
- Oil structures, mapping: Jakosky, 6.
- Oklahoma: Clifford, O. C., 1; Harding, R. L., 1; Weatherby, 2.
- Ontario: Ewe, 2; Galbraith, F. M., 1; Hawkins, R. H., 1; Kelly, 18; Lee, H. E., 1; Miller, A. H., 1, 4.
- Ore deposits: Butler, G. M., 4; Keys, 3.
- Overburden depth determination: Keys, 4.
- Overthrust faults study: Buwalda, 15.
- Pegmatite dikes, tracing: Johnson, W. R., Jr., 4.
- Pendulums for gravity measurements: Ising, 1.
- Permian Basin, Tex.-N. Mex.: Williams, N., 5.
- Petroleum: Barton, 5, 8, 49; Bignell, 4; Charrin, 1; DeGolyer, 8, 11, 13; Eby, 12, 13; English, 3, 4; Fanning, 1; Gabriel, 3, 4; Jakosky, 9; Karcher, 3, 5; King, R. H., 5; McFayden, 1; Pirson, 6; Randall, 1; Rosaire, 4, 6; Shepard, E. R., 1; Shumilin, 1; Tripp, 1; Umpleby, 2.
- Phase measurement, elec. prosp.: Hedstrom, 2.
- Placer and water-supply problems: Jakosky, 3.
- Placer exam.: Jakosky, 5.
- Placers, Tert.; location: Duling, 1.
- Plutonic phase, seismic prosp.: Leet, 12.
- Polar charts, magnetic anomalies: Pirson, 5.
- Potential-drop ratio method: Mitera, 2.
- Present status of methods: Lundberg, 2.
- Pressure and volume significance: Adams, L. H., 6.
- Productivity determinations, oil fms.: Martin, M., 1.
- Profile mapping, continuous: Jakosky, 10.
- Prospecting methods: Westland, 4.
- Prospects exam.: Jakosky, 4.
- Quebec: Keys, 2; Mawdsley, 3; Osborne, 21; Shaw, G., 1.
- Radiore process: Guilford, 1.
- Radon, heavy minerals in soil: Clark, R. W., 1.
- Recent trends: Ladner, 1.
- Recording, multiple: Klipsch, 1.
- Reflection methods and instruments: Heiland, 14, 20; Hollister, J. C., 1; McCollum, B., 2; McDermott, 1; Muskat, 6; Rieber, 5, 9; Rutherford, H. M., 2, 5; Wolf, Alfred, 2.
- Reflection waves: Westland, 6.
- Relations to geology: Weaver, P., 2.
- Research in geophysics: Roman, 6.
- Resistivity prosp.: Heiland, 11; Kurtenacker, 1, 2; Manhart, 1; Pirson, 2; Roman, 1, 3; Swartz, J. H., 5; Watson, R. J., 3.

Geophysical prospecting—Continued.

- Resolution of combined effects: Elkins, 1.
- Road materials, search for: Wilcox, S. W., 2.
- Salt domes, oil fields, Gulf Coast: Barret, 3; Eby, 3, 4; Peters, J. W., 1.
- Salt-water bodies location: Sayre, 8.
- Schlumberger elec. logging: Mathieu, 1.
- Sedimentary beds, Utah: Smith, A. L., 1.
- Seismic prosp.: Adler, 3; Allen, T. L., 1; Barton, 3; Bellugi, 2; Dix, 2; Ewing, W. M., 1, 2, 9; Gabriel, 8; Heiland, 4; Houston, C. E., 1; Leet, 9, 15; Lester, 1; McDermott, 1, 3; Macelwane, 24; Marr, 1, 2; Mitera, 1; Partlo, 1; Pirson, 3; Rutherford, H. M., 4; Shepard, E. R., 4; Thompson, R. R., 1; Tracy, 1; Weatherby, 3; Welch, 1.
- Selsmograph prosp.: Ewing, 11; Ittner, 1; Leet, 9; McKinney, 1; Noman, 1.
- Selsmology, status in: Eby, 10.
- Soil analysis method: Ticker, 3.
- Soil dynamics: Bernhard, 1.
- Sonorograph: Sawdon, 2; Uren, 1.
- Sounding the earth: Kelly, S. F., 2.
- South Carolina, Coastal Plain: MacCarthy, 7.
- South Dakota: Wilson, J. H., 2.
- Sparta-Wilcox trend structures: Barret, 5.
- Steep Rock Lake area: Brant, A. A., 2.
- Stoke's formula, gravity anomalies: Lambert, 6.
- Stratified media resistivity: Ehrenburg, 2.
- Stratigraphic vs. structural prosp.: Rosaire, 14.
- Structure delineation in mining: Kelley, S. F., 22.
- Structure determination and mapping: Howard, W. V., 9; Hubbert, 8; Kelly, P. C., 1; Kelly, S. F., 12; Sawdon, 2.
- Structural trends on Gulf Coast: Jenny, 8.
- Subsurface explor. and surveys: Kelly, S. F., 1; Shepard, E. R., 2, 3.
- Superposition, interpretation: Roman, 5.
- Surface potential method: Weaver, W., 1.
- Surveys, subsurface: Kelly, S. F., 1; Shepard, E. R., 2, 3.
- Testing apparatus: Hare, 1.
- Texas: Barton, 9, 39, 45; Deussen, 13; Eby, 5; Flude, 1; Halbouty, 4; Kidd, 1; Liddle, 3; Mills, 7; Singleton, 1, 2; Williams, L. H., 1; Wilson, J. M., 2.
- Text material: Landsberg, 15.
- Theory of seismic prosp.: Dix, 1.
- Three-dimensional reflection control: Rock, 1.
- Three-layer resistivity: Wetzel, 1.
- Time, in crustal studies: Stetson, H. T., 2-a.

Geophysical prospecting—Continued.

- Torsion balance: Barton, 9, 17; Gabriel, 7; Heiland, 6; Klaus, 1; Ku, 1; Weinzierl, J. F., 1; Wright, F. E., 6.
- Tracing basic dike, N. C.: Johnson, W. R., 2.
- Transients in electrical prosp.: Hawley, P. F., 1.
- Underground water, search for: Königsberger, 1; Wood, F. C., 1.
- United States G. S. Sec. of Geophysics: Lee, 10.
- United States, NE., gravity anomalies: Longwell, 28.
- Utilization of wells in seismograph work: McCollum, B. 1.
- Velocity determinations: Green, C. H., 1; Weatherby, 2.
- Virginia, research: Thom, 21.
- Visual presentation, wave patterns: Rieber, 6.
- War uses: Covarrubias, 2.
- Water prosp.: Heiland, 21; Königsberger, 1; Wood, F. C., 6.
- Water table location: Alexander J. A., 2.
- Wave-front diagram: Thornburgh, 1.
- Waves, amplitude, reflection, refraction: Cloud, R. T., 1; Gutenberg, 20; Wolf, Alfred, 1.
- Well surveying: Leonardon, 2.
- West Indies: Hess, H. H., 12.
- West Virginia: Leet, 17.
- Wichita-Arbuckle area: Van Weelden, 2.
- Wisconsin: Shrock, 14.
- Yosemite Valley: Gutenberg, 31.
- Geophysical studies, 1932-36: Heiland, 18.
- Geophysical surveys, practical results: Lundberg, 9.
- Geophysics.
- Abstracts: Ayvazoglou, 1.
- Applied: Lee, 5.
- $\text{Ca}_2\text{SiO}_4\text{-Fe}_2\text{SiO}_4$: Bowen, 7.
- Cores, orientation methods: Vacquier, 1.
- Correlation, earth resistivity with structure and age: Card, 2.
- Deformation and temperature: Nutting, 1.
- Domes discovered by: Eby, J. B., 1.
- Earth, crustal elasticity: Adams, L. H., 8.
- Earth, interior: Daly, 12.
- Electrical well logging: Houston, G. Soc. 2.
- Equilibrium relations, feldspathoids, feldspars, silica: Schairer, 7.
- Factor in world mineral economics: Kelly, 19-a.
- Flow of heat: Van Orstrand, 5.
- Fusion relations, feldspathoids, feldspars, silica: Schairer, 3.
- General: Adams, L. H., 3; Eby, 9; Lovering, 27.
- Geophysical abstracts: Ayvazoglou, 1.
- Geophysical Lab. reports: Day, 1.
- Geophysical prosp. research: Roman, 6.
- Granite, melting: Goranson, R. W., 3.

Geophysics—Continued.

- Gravity determinations, Va.: Swick, 2.
- Historical sketch: Kelly, 19.
- Ill., magnetometer work: McClure, P. S., 1.
- Instruction in: Heiland, 10.
- Interpretation of geophys. data: Blau, 2; Houston, G. Soc., 1; Miller, A. B., 1.
- Magnesian amphibole: Bowen, N. L., 4.
- Nepheline-albite-silica in fayalite: Bowen, N. L., 19.
- Petroleum: Barton, 49; Eby, 7.
- Potash-rich rocks, origin: Terzaghi, R. A. D., 3.
- Radioactivity variation in strata: Klepper, 1.
- Radium, Hawaiian lavas: Piggot, 1.
- Research in: Anonymous, 133.
- Rock bursts: Hodgson, 17.
- Roots-of-mts. or roots-of-continentals: Macelwane, 22.
- Seismic methods: Day, 5; DeGolyer, 4; Gutenberg, 7.
- Seismic waves, paths: Houston, C. E., 1.
- Silica, volatile transfer: Greig, 3; Terzaghi, R. A. D., 2.
- Silica transfer by water vapors: Syromyatnikov, 1.
- Solution and colloidal dispersion, minerals in water: Nutting, 4.
- Structure of continents and ocean basins: Field, 20.
- System CaO-FeO-SiO_2 : Bowen, 8.
- System CaO-MgO-SiO_2 : Taylor, N. W., 1.
- System $\text{K}_2\text{O-Al}_2\text{O}_3\text{-SiO}_2$: Schairer, 2.
- System lime-potash-alumina: Brown-miller, 1.
- System MgO-FeO-SiO_2 : Bowen, 10.
- Tremolite, role of water in: Posnjak, 2.
- Young's modulus of rocks determination: Ide, 1.
- Geophysics and geology, relations: Brace, 4; Hubbert, 11; Landsberg, 7.
- Geophysics and submarine geology: Field, 22.
- Geophysics as a science: Gutenberg, 25.
- Georges Bank.
- Origin: Shepard, 13.
- Paleontology.*
- Cretaceous fossils: Stephenson, 13.
- Foraminifera, Cret., Tret.: Cushman, 28.
- Plethora, Cret.: Bassler, 22.
- Physiographic geology.*
- Canyons: Stetson, 10.
- Submarine valleys: Stetson, 13.
- Georgia.
- Areas described.*
- Graves Mtn. area: Johnston, W. D., Jr., 11; Zodac, 28.
- Stone Mtn. area: Lester, J. G., 1.
- Economic geology.*
- Asbestos: Bowles, O., 4.
- Barite: Crickmay, G. W., 11; Penhalegon, 1.
- Chromite: Hunter, C. E., 8.

Georgia—Continued.

Economic geology—Continued.

Clays: Adams, G. I., 5; Bay, H. X., 3; Kay, G. M., 13; Kerr, P. F., 19; Nutting, 5; Smith, R. W., 1, 2, 4.
Copper: Ross, C. S., 23.
Gold: Anderson, C. S., 1; Crickmay, G. W., 3; Green, F. M., 1; Park, 7; Wilson, R. A., 2, 3, 4; Anonymous, 89.

Graves Mtn. area: Zodac, 28.

Kaolins: Henry, 1; Munyan, A. C., 2; Smith, R. W., 1.

Kyanite: Smith, R. W., 4, 6.

Manganese: Rankin, H. S., 1.

Marble: Prouty, 4.

Metabentonites: Laurence, 1.

Mineral production, 1933: Smith, R. W., 5.

Mineral resources: Furcron, 7; Peyton, 1.

Natural gas: Postley, 4.

Natural resources: Harper, R. M., 1.

Olivine: Smith, R. W., 4.

Petroleum: Munyan, 3; Postley, 4.

Rock wool: Furcron, 8.

Shales and brick clays: Smith, R. W., 2, 4.

Sienna deposits: Kesler, 4.

Structure, marble deposits: Prouty, 4.

Talc: Crickmay, G. W., 18.

Tripoli: Crickmay, G. W., 20, 21.

Tuscaloosa white clays: Adams, G. I., 5.

Vermiculites: Hunter, C. E., 2; Prindle, 2; Smith, R. W., 4.

Historical geology.

Cambrian, restricted: Resser, 21.

Chehaw State Pk.: Griffin, R. H., 1.

Coastal Plain: Cooke, C. W., 21; Munyan, 3; Smith, R. W., 1.

Crystalline rocks: Crickmay, G. W., 22.

Geologic fms.: Smith, R. W., 2.

Geologic map: Georgia G. S., 1.

Kaolins, sed.: Munyan, 2.

Kyanite: Smith, R. W., 6.

Ordovician altered volcanics and clays: Kay, G. M., 13.

Pennsylvanian: Wanless, 17.

Pine Mtn. quartzites: Adams, G. I., 3.

Stone Mtn. area: Lester, J. G., 1.

Taliedega pre-Camb. ser.: Crickmay, G. W., 11.

Southern Appalachians: Crickmay, G. W., 16; Resser, 21.

Mineralogy.

Clay, Attapulgas: Kerr, P. F., 19.

Garnets in granite-gneiss: Lester, J. G., 2.

Gems: McKinley, 4.

General: Hawkins, 10; Mitchell, L., 1.

Graves Mtn.: Johnston, W. D., Jr., 9, 11; Zodac, 28.

Hydrothermal mineralization: Johnston, W. D., Jr., 9.

Kyanite: Crickmay, G. W., 6, 7; Johnston, W. D., Jr., 11; Prindle, 2.

Metabentonite: Laurence, 1.

Mineral resources: Furcron, 7.

Georgia—Continued.

Mineralogy—Continued.

Opal, hyalite: Chapman, J. R., 1.

Rock wool: Furcron, 8.

Sienna deposits: Kesler, 4.

Vermiculites: Hunter, C. E., 2; Prindle, 2; Smith, R. W., 4.

Paleontology.

Archaeoceti, Tert.: Kellogg, 9.

Cambrian, restricted: Resser, 21.

Casteroides: Cahn, 3.

Coral reefs: McGlamery, 1.

Fauna, Pamlico Pleist.: Richards, H. G., 14.

Foraminifera: Cushman, 26.

Loxococoncha, Eocene: Murray, G. E., Jr., 3.

Mammoths, mastodons: Mitchell, L., 3.

Ostrea, large: Howe, 27.

Pectinidae, Tert.: Rowland, H. I., 1; Tucker, 8.

Uvigerina, Eocene: Cushman, 1.

Petrology.

Crystalline rocks: Crickmay, G. W., 5, 19, 22.

Garnets: Lester, J. G., 2.

Graves Mtn. area: Zodac, 28.

Mylonites: Crickmay, 5.

Stone Mtn. area: Lester, J. G., 1.

Physical geology.

Batholith, Elberton: Calhoun, 1.

Beach sands: Martens, 8.

Caves: Crickmay, G. W., 17.

Concretions, calcite: Cooke, C. W., 5.

Earthquake, 1/1/35: Crickmay, G. W., 8, 10.

Radial calcite concretions: Cooke, C. W., 5.

Sienna deposits: Kesler, 4.

Stone Mtn. area: Lester, J. G., 1.

Physiographic geology.

Coosa lowlands: Wright, F. J., 10.

Erosion: Crickmay, G. W., 11; Ireland, 6.

Lyell gully erosion record: Ireland, 6.

Sienna deposits: Kesler, 4.

Stone Mtn. area: Crickmay, G. W., 9; Lester, J. G., 1.

Underground water.

Crystalline rocks: Crickmay, G. W., 19.

General: Smith, R. W., 7.

Ground water, chem. character: Foster, M. D., 1.

Warm springs: Hewett, 13.

Geosynclines, Gulf Coast, Appalachians: Price, W. A., 16.

Geosynclines and geo-basins, origin: Rich, 28.
Geothermal evidence, deductions: DeLury, 19.

Geotherms: Lane, 11.

Germanium: Papish, 1.

Geysers. See also Underground water.

Basins and ig. emanations: Allen, E. T., 6.

Bore-hole inv., Yellowstone Nat. Park: Fenner, 14.

Geysers—Continued.

- California: Jaggard, 19; Keathley, 1.
 General: Allen, E. T., 1-a; Day, 10.
 Mechanism: Day, 6.
 Mexico, Ixtlan: Salazar Salinas, 4.
 Nevada: Nolan, 5.
 Nomenclature of eruptions: Fix, P. T., 1.
 Old Faithful: Bauer, C. M., 6.
 Origin: Sherzer, 1.
 Volcanoes, geysers, and hot springs: Day, 10.
 Yellowstone Nat. Park: Allen, E. T., 5; Bauer, C. M., 5, 6.
 Gilsonite, Utah: Bristol, 1.
 Glacial and postglacial vegetation: Sears, P. B., 9.
 Glacial boulders, migrating: Fryxell, 5.
 Glacial control theory, Bermuda: Schuchert, 21.
 Glacial epochs, N. Am., correl.: Keyes, 401.
 Glacial erosion. See also Erosion; Glacial geology.
 Maine coast: Shepard, F. P., 2.
 Glacial geology. See also Glacial lakes; Quaternary.
 Ablation of snow: Matthes, 21, 23.
 Alaska: Capps, 5, 6, 9, 10, 11, 12, 13; Cooper, W. S., 7; Kerr, F. A., 19; Mertie, 14, 16, 17, 20, 22; Moffitt, 7, 11; Ohrenschall, 2; Ray, L. L., 1; Reed, J. C., 3; Sachs, V. N., 1; Saks, 1; Smith, P. S., 12; Tuck, 7, 9, 10, 11; Waring, 6; Wentworth, 40.
 Alberta: Erdtman, 1; Nichols, D. A., 1.
 American paradigms for European glaciations: Keyes, 304.
 Anticyclones, glacial: Evans, O. F., 5.
 Arctic America: Bentham, 3; Downes, 1; Mathiasen, 2.
 Arid regions during ice age: Pittelkow, 1.
 Arizona valleys and ground water: Smith, G. E. P., 3.
 Baconian cycle: Keyes, 290.
 Bibliography on sediments: Flint, 24.
 British Columbia: Armstrong, J. E., 2; Flint, 11, 14; Hanson, 8, 9, 13; Johnston, W. A., 11; Kerr, F. A., 14, 19; Kindle, E. D., 3; Lang, A. H., 6; Mandy, 1; Marshall, I. M., 1; Munday, 2; Peacock, 8; Rice, 3, 4, 5; Sharpstone, David C., 1.
 Buchanan interglacial epoch: Keyes, 77.
 California: Atwood, W. W., Jr., 11; Blackwelder, 24, 30, 47; Davis, 19; Hazzard, 10; Kesseli, 1; Matthes, 4, 5, 24, 28; Putnam, 4.
 Canada: Alcock, 13; Baulig, 1; Bruce, 10; Freuchen, 1; Johnston, W. A., 9; Kindle, 40; Teichert, 10.
 Cause of glacial period: Keyes, 111.
 Central States: Alden, 11.
 Chamberlin's contr.: Alden, 1.
 Champlain Valley: Chapman, D. H., 1.

528578°—43—10

Glacial geology—Continued.

- Changes attending an ice age: Lombard, 1.
 Chronology of glacial period: Richarz, 3; Spitaler, 1.
 Cincinnati area, Ohio, Ky.: Brand, 4.
 Classification of drift sheets: Kay, G. F., 14; Leighton, 8.
 Classification of glacial deposits: Flint, 3.
 Classification and duration, Pleist.: Kay, G. F., 9.
 Climates, Pleist.: Flint, 13.
 Climatic cycles: Gillette, H. P., 1, 5; Hobbs, 1; Schulman, 1.
 Climaxes of last glaciation: Antevs, 14.
 Coincidence, climatic and sea-level cycles: Gillette, H. P., 5.
 Coal and southern hemisphere glaciation: Shepard, 17.
 Colorado: Atwood, W. W., 1; Atwood, W. W., Jr., 4, 5; Behre, 12; Blackmer, 1; Butler, 9; Cross, C. W., 2; Green, T. H., 1; Heaton, 8; Ives, 4, 9, 12, 13; Lovering, 17; Patterson, R., 1; Powers, W. E., 3, 5, 15; Vanderwilt, 11; Van Tuyl, 11.
 Columbia River basin: Hodge, 25; Landes, H., 1.
 Connecticut: Brown, R. W., 2; Cook, T. A., 1; Crosby, 9; Denny, 1; Dunbar, 20; Flint, R. F., 2, 7, 8, 9, 10; Goldthwait, R. P., 4; Krynine, 5, 7, 8; Lougee, 7.
 Coming ice age: Taber, C. A. M., 1.
 Copper, lost stones in glacial till: Glock, 14.
 Coral reefs, glacial control: Ladd, 3.
 Correlations.
 American-European deposits: Antevs, 12; Keyes, 298.
 Crustal movements, N. Am.: Lougee, 4.
 Glacial chronology and Pleist. terraces; Cooke, C. W., 8.
 Glacial terraces by soils: Allison, 5.
 Glacial varves: Antevs, 18.
 Northern-Southern hemispheres: Coleman, 7.
 United States, west, epochs: Blackwelder, 15.
 Dating glacial varves: De Geer, E. H., 1.
 Des Moines River, deglaciation: Keyes, 297, 328, 432.
 Dispersion, Jasper, conglomerate: Slawson, 3.
 Drainage during deglaciation: Keyes, 446.
 Eldoran epoch, Pleist.: Kay, G. F., 14.
 Elimination, Peorian interglacial epoch: Leighton, 13.
 Eolian action in glacial period, N. Am.: Cailleux, 1.
 Epochs, west U. S., correl.: Blackwelder, 15.
 Evaporation, high altitudes and latitudes: Church, J. E., 1.

Glacial geology—Continued.

- Fauna, Pacific Coast, evolution: Howell, A. B., 1.
- Forests, postglacial migration: Voss, 2.
- General: Daly, 9; Fairchild, 7; Johnston, W. A., 10; Kay, G. F., 4; Keyes, 6, 10, 36, 37, 62, 74, 81, 125, 134, 161, 205; Leverett, 6; MacClintock, 3; Mather, 6; Reid, H. F., 4; Ries, 6; Sardeson, 13; Thwaites, F. T., 3; Whitnall, 1.
- Geochronology, internat.: De Geer, G. J., 23.
- Geologic rhythms: Wanless, 15.
- Geologic time, measure: Keyes, 175.
- Geomorphology, glacial: Engeln, von, 13.
- Glacial concept before Agassiz: Keyes, 223.
- Glacial epochs, west U. S., correl.: Blackwelder, 15.
- Glacial features boundary shown by vegetation: Kirkendall, 1.
- Glacial, interglacial stages, relative length: Leverett, 9.
- Glacial migrations, E. America: Eckel, E. C., 2.
- Glacial movement and erosion: Demorest, 4.
- Glacial period: Bretz, 8.
- Glacial sand and gravel: Whitnall, 1.
- Glacial stages, N. Am.: Leverett, 9; Sardeson, 3.
- Glacial theory: Pegrum, 1.
- Glacial tills in cosmic cycle: Keyes, 83.
- Glaciations, N. Am.: Keyes, 252; Leverett, 3; Sardeson, 8.
- Northern hemisphere: Leverett, 3.
- Glacier motion: Engeln, von, 13.
- Gotiglacial broadmapping, Am.-Europe: De Geer, G. J., 3.
- Gradation by ice: Bordschaug, 2.
- Great Basin: Blackwelder, 35.
- Great Lakes: Shepard, 41; Taylor, 14.
- Greenland: Belknap, 4; Boyd, L. A., 1; Church, J. E., 1; Cleaves, 3; Demorest, M. H., 1, 3; Edelman, 2; Hobbs, 9, 10; Kindle, 36; Koch, 9; Mikkelsen, 1; Poser, 2; Sugden, 1; Teichert, 8, 14; Wright, J. W., 1.
- Hawaii: Gregory, H. E., 3; Wentworth, 33, 48.
- Hinge lines, Connecticut Valley-Great Lakes: Lougee, 4-a.
- Huron-Erie Basins: Leverett, 24.
- Ice ages: Coleman, 11; Gillette, H. P., 3; Taber, C. A. M., 1; Talman, 2.
- Ice cap, lowland, origin: Keyes, 505.
- Ice sheets, stagnation and retreat: Antevs, 26; Flint, R. F., 1; Taylor, F. B., 4, 7.
- Idaho: Anderson, 23; Capps, 14; Hansen, H. P., 3; Livingston, D. C., 4; Reed, J. C., 14; Ross, C. P., 1, 22, 31; Shenon, 16; Stearns, 27.
- Illinoian till, Delaware Valley: Leverett, 5.

Glacial geology—Continued.

- Illinois: Ball, J. R., 18, 24; Bell, A. H., 2; Bretz, 10; Caldwell, L. T., 1; Ekblaw, 10, 11, 14; Flint, 5; Keyes, 408; Krumbein, 3; Leighton, M. M., 3, 17, 19, 25, 31; MacClintock, 1, 2, 4; Stauffer, R. S., 1; Voss, 3, 5; Wanless, 2; Wascher, 1; Workman, 10.
- Indiana: Fidler, 3; Fix, P. F., 1; Harrell, 1; Krumbein, 3; Thornbury, 2, 3, 5; Ulrich, H. P., 1.
- Interglacial, New York: Engeln, 1.
- Interglacial Champlain Sea: Coleman, 4.
- Interglacial diversity: Keyes, 171.
- Iowa: Goshorn, A., 1; Kay, G. F., 1, 2, 3, 4, 12, 13, 17; Keyes, 8, 164, 329, 331, 381, 421, 492; Miller, P. T., 1; Smith, J. E., 4, 6, 7, 13; Wood, L. W., 6, 7; Yoho, 1.
- Iowan drift sheets: Kay, G. F., 8; Leverett, 23.
- Iowan glacial epoch: Keyes, 63.
- Iowan loess and till: Kay, G. F., 10; Keyes, 138; Sardeson, 2.
- Kansas: Hoover, W. F., 1; Jewett, 7; Keyes, 82; MacFarquhar, 1; Newell, 4; Schoewe, 1, 2, 3, 5, 8, 16, 18.
- Kentucky: Desjardins, 1; Jillson, 41; Leverett, 1; McFarlan, 11-a.
- Kettle holes and eskers: Nichols, 6.
- Kinships of inter-till deposits: Keyes, 101.
- Labrador: Gill, 6; Odell, 4, 6; Washburn, A. L., 2; Wheeler, E. P., 2d, 3.
- Lake Chicago, glacial lake: Ball, J. R., 18-a.
- Lake Michigan area drifts: Fuller, G. D., 1.
- Lake Souris, N. Dak., area: Andrews, D. A., 2.
- Lake Superior area: Merrill, J. A., 1.
- Loess deposits: Kay, G. F., 15, 16; Keyes, 95, 104, 187; Leverett, 4.
- Louisiana: Russell, R. J., 23, 24.
- Mabaskan glacial epoch: Keyes, 72.
- Maine: Antevs, 9; Chadwick, 33; Leavitt, 2; Perkins, E. H., 6, 9, 10, 11, 12; Philbrick, 1; Raisz, 1; Sayles, R. W., 8.
- Manitoba: Antevs, 6, 8; Burwash, 7; Downie, D. L., 1; Stockwell, 7; Tanton, R. L., 6-a.
- Maps of Pleist. glaciation: Antevs, 3, 4; Martin, L., 2; Reeds, 5.
- Massachusetts: Brown, T. C., 2, 4, 5, 7, 8, 9; Bryan, 16; Chute, 1; Crosby, 8, 10; Goldthwait, L., 1; Goldthwait, R. P., 6; Howe, O. H., 1; Hyypä, 1; Logan, R., 1; Mather, K. F., 30; Nichols, 9; Sayles, 9.
- Maxima multiple glaciations: Keyes, 84.
- Mexico: Blázquez L., 3; Coleman, 8; Jaeger, 1.

Glacial geology—Continued.

- Michigan: Bay, J. W., 1, 3; Bergquist, 2, 3, 4, 6, 8, 10; Davis, C. M., 1; Dow, 1; Evans, O. F., 8; Krumbein, 3; Lamey, 8; Michigan Acad. Sci., 1, 2; Newcombe, 10; Newman, E. A., 1; Pringle, 1; Riggs, C. H., 2; Stanley, 3; Veatch, J. O., 1, 2.
- Minisink Valley deltas: Happ, 4.
- Minnesota: Allison, 1; Artist, 2; Cooper, W. S., 9; Jenks, A. E., 4; Keyes, 407; Kruger, 1; Leverett, 13; Sardeson, 17, 18, 19, 23, 31, 40; Schwartz, 16; Sherman, 1; Thiel, 2, 10, 13; Anonymous, 199.
- Mississippi River: Cooper, W. S., 6; Flint, 16; Robertson, P., 4; Trowbridge, 12.
- Mississippi Valley, upper: Kansas G. Soc., 8.
- Missouri: Grohskopf, 3; Jewett, 4; Knechtel, 8; Robertson, P., 2, 3.
- Montana: Alden, 3; Demorest, M. H., 2; Knechtel, 9; Parker, F. S., 1; Sardeson, 10; Scott, H. W., 12; Thaxter, 1; Wentworth, 23.
- Moon, origin: Nissen, 1.
- Moraines, washboard, Quebec: Mawdsley, 7.
- Multiple glaciation, Yosemite area: Matthes, F. E., 3.
- Names of tills: Keyes, 114.
- Native copper masses in tills: Glock, 13.
- Nebraska: Condra, 11, 14; Freeman, J. L., 1; Leverett, 20; Lugn, 3, 5, 11, 15.
- Nebraskan, a synonym: Keyes, 78.
- Nevada: Church, J. E., 1; Sharp, R. P., 3.
- New Brunswick: Alcock, 18; Caley, 2; Gesner, 1; Hayes, 7; Rose, B., 1; Shaw, E. W., 1; Wright, W. J., 3.
- New England: Bryan, 28, 32, 34; Flint, 6, 15; Lougee, 8.
- Newfoundland: Betz, 1; Cooper, J. R., 2; Espenshade, 1; Flint, 25; Foley, F. C., 1; Heyl, 1, 2; Jewell, 2; MacClintock, 13; Twenhofel, 40; Vbay, 1.
- New Hampshire: Billings, 9, 10; Crosby, 11; Fowler-Lunn, 1; Goldthwait, J. M., 6, 7; Goldthwait, R. P., 3, 5, 7; Johnson, D. W., 27; Kruger, 2; Lougee, 2, 9; White, G. W., 12, 13, 15.
- New Jersey: Miller, R. L., 3; MacClintock, 6, 12-a; Moldenke, 1.
- New Mexico: Antevs, 17; Ellis, R. W., 4, 8; Smith, W. S. T., 2.
- New York: Antevs, 13; Balk, 5; Berkey, 13; Brigham, A. P., 1, 2; Buddington, 8, 17; Cannon, R. S., 1; Chadwick, 15; Cook, J. H., 1, 2; Dale, 5; Denny, 2; Eaton, H. N., 3; Engeln, von, 1, 4, 10; Fairchild, 5, 9, 10, 11, 15, 17, 18; Fleming, W. L. S., 1;

Glacial geology—Continued.

- New York—Continued.
- Gager, 1; Goldring, 11, 19; Heusser, 1; Holmes, C. D., 1, 2, 3; Kaye, 1; Koenig, 1; MacClintock, 6; Megathlin, 3; Newland, 9; Payne, T. G., 1; Reed, J. C., 5; Rich, 17; Sanford, J. H., 1; Smith, B., 4; Stoller, 2; Strzygowski, 2; Taylor, 10; Thompson, 16.
- New York City area: Berkey, 13; Kaye, 1.
- Nipissing Great Lakes, outlets: Taylor, 8.
- Nomenclature: Keyes, 157, 240.
- North America: Antevs, 13, 24, 27; Baulig, 1; MacClintock, 10; Read, W. F., 1; Sardeson, 49; Wright, W. B., 1, 3.
- North Dakota: Hard, H. A., 1.
- Northwest Terr.: Cameron, 5; Henderson, J. F., 3, 6; Soper, J. D., 1; Wilson, J. T., 9.
- Nova Scotia: Howse, 1; Wilson, J. T., 4.
- Ocean currents and glaciation: Luby, 1.
- Ohio: Austin, G. M., 1; Braun, 1; Cushing, 1; Desjardins, 1, 1-a; Frye, 2; Hubbard, 7, 10; Ireland, 8; Kelley, J. A., 1; Leverett, 25; Reichert, 1; Rogers, J. K., 2; Stout, 15; Ver Steeg, 16, 19, 20, 23, 25, 26, 27, 28; White, G. W., 1, 2, 3, 4, 6, 7, 8, 9, 11, 14, 16, 17, 18, 19; Wolford, 7.
- Ontario: Bateman, J. D., 2; Bruce, 16; Coleman, 5, 9, 10; Derry, 10; Dyer, 9, 15, 20; Fairbairn, 11, 15; Harding, 3, 4; Horwood, 12; Kindle, 34; Laird, 7, 10; Macdonald, R. D., 1; Moore, E. S., 17; Moorehouse, 3; Prest, 1; Rickaby, 6; Rittenhouse, 2; Satterly, 3; Stanley, 6; Taylor, 11; Thomson, R., 4; Wright, 17.
- Oregon: Allison, 4, 6; Atwood, W. W., Jr., 6, 11; Hodge, 12, 26; Holdredge, 1; Piper, 17; Smith, W. D., 11; Thayer, 4, 5.
- Ozark Province: Cozzens, 2.
- Pacific Northwest: Allison, 8.
- Patrician glacial interval, Iowa: Keyes, 234.
- Patrician glaciation: Johnston, W. A., 13; Leverett, 19; Keyes, 214, 232, 235; Martin, L., 3; Tyrrell, J. B., 1.
- Peat deposits: Dachnowski-Stokes, 1.
- Pebble band, Iowan till, origin: Kay, G. F., 10.
- Pebbles, orientation in sed. deposits: Krumbein, 25.
- Pennsylvania: Ashley, 13, 27; Butts, 13; Filmer, 2; Itter, 1; Krynine, 10; Legette, 9; Leverett, 16; Lohman, S. W., 4; Miller, B. L., 13, 15, 18; Piper, 7; Ward, F., 5; Willard, 32, 55, 56; Anonymous, 156.
- Peorian interglacial interval: Cable, 1; Leighton, 9.

Glacial geology—Continued.

- Peorian loess: Leighton, 8.
 Pleistocene: Allison, 7; Cooke, C. W., 15; Fairchild, 20; Kay, G. F., 11; Keyes, 289, 466; Leverett, 3; Longfellow, 2; MacClintock, 9; Stanley, 3.
 Polar elevation and last ice age: Hills, G. F. S., 2.
 Polar ice caps: Keyes, 502.
 Port Huron moraines: Taylor, 13.
 Preglacial sea levels: Miller, A. A., 1.
 Prehistory and climatic fluctuations: Fisher, R. G., 1.
 Pre-Kansan Minn. peat bog: Nielsen, E. L., 1.
 Problems of glacialists: Leverett, 6.
 Quality of erosion: Engeln, von, 14.
 Quaternary, Atlantic, Gulf Coastal Plains: Cooke, C. W., 26.
 Quaternary ice age: Flint, 22.
 Quebec: Auger, 1, 2; Bannerman, 4; Clark, T. H., 8, 11; Cooke, H. C., 26; Denis, 6; Faessler, 6, 8, 14, 16, 22; Hawley, 10; Jones, I. W., 12; Laverdière, 6; Longley, 1, 2, 4; McGerrigle, 4, 6, 8; MacKenzie, 4; Morin, 1; Norman, 12; Northrop, 10; O'Neill, 4; Osborne, 19, 21, 29; Retty, 5; Ross, S. H., 1; Shepard, 7; Twenhofel, 31; Wilson, J. T., 5, 7.
 Rhode Island: Woodworth, 2.
 Ridges, terminal moraines: Engeln, von, 15.
 Rivers, recessional: Keyes, 210.
 Rock sculpture by glaciers: Engeln, von, 11.
 Rocky Mts.: Atwood, W. W., 10; Ray, L. L., 4; Strzygowski, 1.
 Sand and gravel glacial deposits of U. S.: Runner, 13.
 Saskatchewan: Edmunds, 2; McMurchy, 1, 2; Ross, S. H., 2; Sproule, 3, 5.
 Sea level and climatic changes: Wanless, 13.
 Sedimentation cycles: Wanless, 13.
 Sediments: Leighton, M. M., 2, 6.
 Sierra Nevada, east side: Blackwelder, 3.
 Snake River Canyon: Freeman, O. W., 8.
 Snow melting and evaporation, alpine zone: Matthes, 29.
 Soil profiles and glacial drifts: Conrey, 3.
 South Dakota: Gries, J. P., 1; Rothrock, 8, 13.
 Spokane River drainage changes: McMacken, 2.
 Stagnation, ice sheets: Alden, 2; Flint, R. F., 1.
 Subdivisions: Girmounsky, 1.
 Submarine canyons, causes: Shepard, 28, 50.
 Sun-heat relation to glaciation: Keyes, 345.

Glacial geology—Continued.

- Swinging sea-level of ice age: Daly, R. A., 3.
 Terraces, Miss., Minn., St. Croix Rivers: Dutton, C. E., 4.
 Texas, time scale: Price, W. A., 15.
 Thickness of glacial drift: Leet, 3.
 Till reliefs, contrasted: Keyes, 151.
 Till-sheets, front moraines: Keyes, 387.
 Tilting, proglacial lakes: Hitchcock, C. B., 3; Rodgers, 1.
 United States: Atwood, W. W., 9; Ballard, 1.
 Utah: Beutner, 1; Blackwelder, 45; Bradley, 14; Gould, L. M., 1; Powers, W. E., 11; Spieker, 10; Young, J. L., 1.
 Varve correls.: Antevs, 2; Coleman, 2.
 Varve deposition: Fraser, H. J., 1.
 Varved clays: Burwash, 10; Ellsworth, E. W., 2; Mackin, 8; Reeds, 3.
 Varved sediments: Antevs, 5, 7; Reeds, 3; Sayles, R. W., 2.
 Varves, long range correl.: Coleman, 2.
 Measure of geol. time: Keyes, 273.
 Varves and solar-radiation weather: Reeds, 2, 3.
 Vermont: Jacobs, 2, 4; Krieger, M. H., 1.
 Vertebrates, Pleist., N. Am.: Romer, 7.
 Volcanic dust and climate: Humphreys, 1.
 Volume, shape, rocks in gravel: Wadell, 9.
 Washington: Allison, 3; Bretz, 6; Cary, 1; Chappell, 3; Coombs, 3; Culver, 6; Fernquist, 7; Field, R. F., 1; Flint, 11, 12, 17, 18, 19, 20, 23; Freeman, O. W., 3, 4; Hansen, H. P., 2; Hodge, 14; Keyes, 242; Mackin, 10; McMacken, 3; Page, B. M., 2; Treasher, 1, 5; Waters, 7.
 Weather and glaciation: Reeds, 3.
 Weathered zones: Leighton, M. M., 1.
 West Virginia: Petty, 4; Tilton, 4.
 Wisconsin: Ellsworth, E. W., 2; Fries, 1; Hansen, H. P., 1; Kay, G. F., 8; Keyes, 132, 167, 229; Leighton, 16; Shrock, 17; Thwaites, F. T., 1, 6; Ward, F., 4; Wentworth, 39; Wilson, L. R., 1, 3, 7.
 Wisconsin glaciation, extent: Coleman, 3.
 Wisconsin ice tongue, Pa.: Ward, F., 1.
 Wisconsin vs. Cary, till title: Keyes, 400.
 Wyoming: Atwood, W. W., Jr., 5, 10; Fryxell, 1, 2; Horberg, 1; Parsons, W. H., 3; Rouse, 3; Wentworth, 23.
 Yellowstone Nat. Park: Fenneman, 9; Howard, A. D., 6; Miner, 2.
 Yukon: Bostock, 4, 6, 11; Johnston, J. R., 1; Lees, E. J., 2; Wentworth, 40.
 Glacial Lakes. See also Beaches; Lakes (extinct); Shore lines; Terraces.
 Agassiz, Minn., silts: Thiel, G. A., 14-a.

Glacial Lakes—Continued.

- Alberta, S.: Johnston, W. A., 4.
 Algonquin-Nipissing hiatus, Great Lakes: Stanley, 10.
 Arctic America: Roy, 12.
 California: Davis, 20; Powers, H. A., 2.
 Champlain Valley, Lake Vermont: Chapman, D. H., 1.
 Climatic variations, S-W U. S.: Anteys, 25.
 Coincidence, climatic and sea-level cycles: Gillette, 5.
 Columbia River Basin: Landes, H., 1.
 Connecticut, Quinnipiac-Farmington lowland: Lougee, 7.
 Des Moines River: Keyes, 432.
 Drainage during deglaciation: Keyes, 446.
 Great Lakes: Anteys, 11; Baker, 21; Ball, 7; Gordon, B. F., 1; Leverett, 2, 17, 18; Stanley, 4, 10; Taylor, 14; Thiel, 14-a.
 Huron-Erie area: Leverett, 18.
 Huron and Saginaw Basins: Leverett, 17.
 Idaho: Livingston, D. C., 4.
 Illinois: Ball, 7; Bretz, 10; Gordon, B. F., 1.
 Indiana: Thornbury, 3.
 Iowa: Keyes, 421.
 Labrador: Odell, 4.
 Lake Agassiz, Minn.: Thiel, 14-a.
 Lake Algonquin, Ontario: Stanley, G. M., 4, 10.
 Lake Chicago, Ill.: Ball, 7, 18-a; Gordon, B. F., 1.
 Lake Cowanesque, Pa.: Willard, 15.
 Lake Hitchcock, N. H.: Lougee, 3.
 Lake Iriquois, Ontario: Coleman, 9.
 Lake Mogodore, Mich.: Case, 15.
 Lake Ponask, Ontario: Satterly, 2.
 Lake Pymatuning, Pa.: Anonymous, 170.
 Lake Sachigo, Ontario: Satterly, 2.
 Lake San Augustin, N. Mex.: Powers, 13.
 Lake Souris, N. Dak.: Andrews, D. A., 2.
 Lake Superior area: Merrill, J. A., 1.
 Lake Vermont, Champlain Valley: Chapman, D. H., 1.
 Long Lake, Ontario: Fairbairn, 11.
 Michigan: Bay, J. W., 2, 3; Bergquist, 8; Case, 15; Evans, O. F., 8; Stanley, G. M., 2.
 Minisink Valley, Pleist. deltas: Happ, 4.
 Minnesota: Keyes, 407; Thiel, 10, 14-a.
 Montana: Shenon, 15; Thaxter, 1.
 Nebraska: MacClintock, 9.
 Nevada: Sharpe, R. P., 3.
 New Hampshire: Lougee, 3, 9; White, G. W., 13.
 New Mexico: Powers, 13.
 New York: Baker, 21; Fairchild, 9, 11, 17; McCulloch, W. F., 1; Payne, T. G., 1.
 North America: Anteys, 27; Wright, W. B., 1, 3.
 Last ice age: Hawley, M. M., 1.
 North Dakota: Andrews, D. A., 2.
 Ohio: Cushing, 1; Hubbard, 7, 9.

Glacial Lakes—Continued.

- Ontario: Baker, 21; Coleman, 9; Fairbairn, 11; Moore, E. S., 17; Rickaby, 6; Satterly, 2; Stanley, 5, 6.
 Pennsylvania: Willard, 15; Anonymous, 170.
 Quebec: Norman, 12, 13; Wilson, J. T., 5.
 Saskatchewan: Johnston, W. A., 2, 4.
 Tilting proglacial lakes: Hitchcock, C. B., 3; Rodgers, 1.
 Utah: Gould, L. M., 1; Thomas, O. D., 1.
 Vermont: Bigelow, E. L., 1.
 Washington: Flint, 12, 20; Freeman, O. W., 4.
 Wisconsin: Wilson, L. R., 7.
 Yellowstone Canyon: Howard, A. D., 6.
 Glacial migration, E. America: Eckel, E. C., 2.
 Glacial pebbles: Engeln, von, 2.
 Glacial period. See Glacial geology.
 Glacial tables, Teton Nat. Pk.: Fryxell, 3.
 Glaciation and sun-heat on earth: Richarz, 7.
 Glaciers.
 Age of: Matthes, 30.
 Airplane photographs: Richards, C. P., 1.
 Alaska: Capps, 5, 9, 10; Cooper, W. S., 1, 2, 3, 8; Field, W. O., Jr., 1, 2; Hance, 1; Karpinski, 1; Moffit, 11; Ray, L. L., 1; Smith, P. S., 12; Tuck, 5, 6; Washburn, H. B., Jr., 1, 2, 4, 5; Wentworth, 25, 37; Whitney, P. C., 1; Wright, C. W., 1.
 Alberta: McCoubrey, 1.
 Arctic America: Bentham, 3; Buerger, 27; Roy, 12.
 British Columbia: Munday, 1; Sharpstone, David C., 1; Taylor, W., 1.
 California: Engeln, von, 7; Williams, H., 8.
 Canada: McCoubrey, 2; Wheeler, A. O., 1.
 Colorado: Ives, 4, 9.
 Condition of: Matthes, 15.
 Continental: Hobbs, 11.
 General: Matthes, 15.
 Gradation by air and ice: Brodshaug, 2.
 Greenland: Bentham, 2; Boyd, L. A., 1; Brockamp, 2; Carlson, W. S., 1; Demorest, M. H., 1; Hendry, 1; Hobbs, 6, 9, 17; Koch, 7, 11; Lacmann, 1; Loewe, 1; Maync, 1; Odell, 8, 5; Schaub, H. P., 1; Smith, E. H., 1; Spender, 1; Teichert, 6, 8; Wager, 1; Wegmann, 2, 6; Wordie, 1; Wright, J. W., 1.
 Grinnell Glacier, Glacier Nat. Park: Elrod, 1; Gibson, G. R., 1.
 Hoarfrost and glacial growth: Ahlman, 1.
 Ice flowage revealed by striae: Demorest, M. H., 2.
 Labrador: Odell, 4.
 Marginal zone of movement: Hobbs, 7.
 Measurements in U. S.: Matthes, 11.
 Measurement of, necessary: Matthes, 22.
 Montana: Demorest, M. H., 2; Elrod, 1; Gibson, G. R., 1; Thaxter, 1.

Glaciers—Continued.

- Motion : Chamberlin, 8 ; Demorest, M. H., 4 ; Engeln, von, 8, 13 ; Hobbs, 7.
 Mountain glaciers : Hobbs, 11 ; Matthes, 12.
 Mount Hood : Marshall, E. A., 1 ; Phillips, K. N., 2.
 Movement and erosion : Chamberlin, 12 ; Demorest, 4.
 North America : Matthes, 15.
 Last ice age : Hawley, M. M., 1.
 Oregon : Marshall, E. A., 1 ; Phillips, K. N., 3.
 Report of Committee on : Matthes, 15.
 United States : Matthes, 31 ; Wentworth, 10.
 Washington : Brockman, 1 ; Coombs, 3 ; Matthes, F. E., 1 ; Richards, C. P., 2 ; Talman, 3.
 Wyoming : Fryxell, 7 ; Parsons, W. H., 3 ; Wentworth, 10.
 Yukon : Washburn, H. B., Jr., 3.

Glass sand.

- Ohio : Bownocker, 3.
 Oklahoma : Beach, 2.
 Pennsylvania : Krynine, 11.
 United States, SE. : Lloyd, S. J., 1.

Glauber salts, Utah : Martin, 1.

Glaucconite.

- California : Galliher, 12, 13.
 Michigan : Bergquist, 1.
 Mississippi Embayment : Vanderpool, 1-a.
 Missouri : Allen, 20.
 New Jersey : Burt, 5 ; Dryden, 3 ; Storm, P. J., 1.
 Regional petrology : Galliher, 14.
 Virginia : Roberts, 20.
 Wisconsin : Twenhofel, 21.

Glenn oil pool, Okla. : Wilson, W. B., 1.

Glenarm ser., Pa. : Mackin, 4 ; Miller, B. L., 8.

Glenwood beds, Minn. : Thiel, 12.

Globe, the living : Williams, L. H., 1.

Glossary, geol., German-English : Huebner, 2.

Gneiss.

- Greenland : Sahlstein, 1 ; Wegmann, 10.
 Idaho : Wilson, R. A., 5.
 Maryland : Broedel, 1.

Gold.

- Alabama : Adams, G. I., 4 ; Lloyd, S. J., 4 ; Park, 4 ; Poor, 9 ; Wissner, 5.
 Alaska : Buddington, 1, 2 ; Capps, 12 ; Hill, J. M., 2 ; Karpinski, 1 ; Mertie, 3, 4, 6, 12, 14, 15, 16, 19, 22 ; Moffit, 3, 4, 5, 7, 8, 9, 10, 11 ; Ohrenschall, 2 ; Park, 2 ; Ray, J. C., 4, 5 ; Reed, J. C., 18 ; Ross, C. P., 10 ; Smith, P. S., 3, 4, 5, 12 ; Tuck, 4, 9 ; Waters, A. E., Jr., 1 ; Wells, F. G., 4.
 Alberta : Allan, 11 ; Rutherford, 14.
 Appalachians, S. : Parsons, A. B., 2 ; Anonymous, 89.

Gold—Continued.

- Arizona : Butler, 17, 18, 21 ; Fansett, 3 ; Fowler, 14 ; Garrett, S. K., 1 ; Herndon, 1 ; Lausen, 4, 5 ; Peterson, N. P., 1, 2 ; Reber, 1 ; Short, 6 ; Tenney, 6 ; Thompson, A. P., 1 ; Warren, H. V., 2 ; Werber, 1 ; Wilson, E. D., 4, 5, 6 ; Anonymous, 179.
 Boulder Dam area : Lee, 7.
 British Columbia : Armstrong, J. E., 2 ; Bancroft, 1 ; Bostock, 1 ; Cairnes, 11, 12, 14, 15, 17 ; Cleveland, 1 ; Cockfield, 6, 9, 11, 12, 14, 15, 16 ; Davis, N. F. G., 2 ; Dolmage, 6, 7 ; Evans, C. S., 4 ; Galloway, J. D., 2, 3 ; Gunning, 1, 11 ; Hanson, 1, 6, 9, 11, 12, 16 ; Hedley, M. S., 1, 2 ; Horwood, 4, 5 ; Johnston, W. A., 11 ; Joralemon, 3 ; Kerr, F. A., 12, 13, 18, 20, 22 ; Kindle, E. D., 2, 3, 4 ; Lang, A. H., 6, 7 ; Lay, 1, 3, 4 ; MacDonnel, 1 ; Mandy, 1 ; Marshall, I. M., 1 ; Nichols, H. G., 1, 2, 3 ; O'Grady, 1 ; Rice, H. M. A., 2, 4, 5, 6 ; Sargent, 1, 2 ; Schofield, 2 ; Sharpstone, David C., 1 ; Stevenson, J. S., 3, 5, 6 ; Walker, J. F., 5, 6 ; Warren, H. V., 8, 9, 11 ; Wright, L. B., 5.
 California : Averill, 2, 4, 7 ; Donnelly, 1, 2 ; Dudley, 1 ; Duling, 1 ; Ellsworth, E. W., 3 ; Esselink, 3 ; Farmin, 4 ; Ferguson, H. G., 2, 4 ; Franke, H. A., 2 ; Hulin, 9 ; Jenkins, 12, 15, 16, 18 ; Johnston, W. D., Jr., 14 ; Knaebel, 1 ; Knopf, A., 1 ; Lindgren, 18 ; Logan, C. A., 1 ; Maxson, 5 ; Miller, W. J., 12 ; Oakeshott, 1 ; Sampson, R. J., 3, 4, 5 ; Schroter, 1, 2 ; Simpson, E. C., 1 ; Tucker, W. B., 1, 2 ; Van Amringe, 10 ; Webb, 7 ; Wiebenga, 1 ; Wisker, 1.
 Canada : Bichan, 1 ; Bruce, 17, 19, 23 ; Bruet, 2 ; Collins, 12 ; Cooke, H. C., 4, 5 ; Dantouz-Dumesnil, 1 ; Dougherty, 4, 5 ; Dufresne, 4 ; Goodwin, W. M., 4 ; Knight, C. W., 2 ; Robinson, A. H. A., 1, 2, 4 ; Thomson, J. Ellis, 17 ; Wilson, M. E., 20.
 Carbonates in veins : Charleswood, 1.
 Colloidal, stability : Frondel, 15.
 Colorado : Behre, 16, 32 ; Burbank, W. S., 3, 4, 12 ; Burdick, 1 ; Caplan, 5 ; Cross, C. W., 2 ; Dyrenforth, 1 ; Eckel, E. B., 5, 8 ; Goddard, E. N., 2, 3, 5 ; Green, T. H., 1 ; Johnson, J. H., 9 ; Kohanowski, 1 ; Landon, 7 ; Loughlin, 11, 12 ; Lovering, 8, 15, 17, 20, 31 ; Moehlman, 6 ; Root, 1 ; Salisbury, 1 ; Vanderwilt, 11 ; Van Tuyl, 18 ; Wahlstrom, 4 ; Wantland, 2 ; Wilkerson, 4, 5.
 Columbia River Basin : Landes, H., 1.
 Comstock Lode, Nev. : Knochenbauer, 1.
 Criteria, gold quartz mines : Anderson, J. C., 2.

Gold—Continued.

- Cuba: Brodermann, 1; Quirke, 16.
 Cyanide dumps: Crawford, 8.
 Diaschistic dikes and ore deposits: Spurr, 1.
 Dominican Republic: Lengweiler, 2.
 Electrical prospecting for quartz veins: Kelly, S. F., 5, 8.
 Epithermal precious-metal deposits: Nolan, 4.
 Experiments, hydrothermal: Ogrzylo, 1.
 Field test for: Douglas, 7, 8.
 Future production: Graton, 2.
 Geophysical prosp. for: Kelly, S. F., 5, 8, 10; Kiblstedt, 1.
 Georgia: Anderson, C. S., 1; Crickmay, G. W., 3; Green, F. M., 1; Park, 7; Wilson, R. A., 2, 3, 4.
 Gold deposits of the world: Henderson, C. W., 5.
 Gold ores, micr. study: Haycock, 4.
 Greenland, E.: Moos, von, 2.
 Guatemala: Myers, R. E., 3.
 Idaho: Anderson, A. L., 3, 5, 16, 18, 23; Austin, R. B., 1; Bell, R. N., 2; Capps, 14; Currler, 4; Dickey, F. H., 1; Finch, J. W., 2; Hite, 1, 3, 4; Livingston, D. C., 3; Lorain, 2, 3; Reed, J. C., 4, 14, 19; Ross, C. P., 4, 15, 16, 18, 22, 31; Shenon, 9, 10, 11, 16, 17, 18; Umpleby, 1.
 Late, implications: Mawdsley, 8; Oedman, 1.
 Manitoba: Baker, W. F., 1; Brownell, G. M., 2; Downie, 1; McLaren, 1; Reid, J. A., 1; Shepherd, F. D., 1; Stockwell, 7, 9, 10, 11; Tanton, 6-a; Wright, J. F., 3, 12, 13, 15, 18, 21.
 Mesothermal deposits: Connolly, 6.
 Mexico: Barrera, 5; Garrison, 1; González, J., 1; Imlay, 10; Krieger, 3; Moehlman, 4; Ramos, 2; Salazar Salinas, 3; Santillán, 14; Webber, B. N., 2.
 Michigan: Broderick, 12.
 Microscopic features: Crawford, 10.
 Minnesota, prospects: Grout, 19.
 Montana: Blixt, 1; Corry, 1; Crawford, 5, 9; Dake, 25; Dickey, F. H., 2; Dingman, 1; Dyson, 3; Gibson, R., 1; Gilbert, F. C., 2; Grassmuck, 1; Jones, V. E., 2; Lorain, 1; Pardee, 4; Sabinen, 4; Schafer, 1.
 Mother Lode system: Jenkins, 13.
 Nevada: Calkins, 3; Callaghan, 7, 8, 13; Cameron, E. N., 2; Campbell, D. F., 1; Ferguson, H. G., 1, 10, 18; Giannela, 9, 12; Hewett, 4; Jenney, 1; Jones, J. C., 3; Lyman, 1; Nolan, 9; Palmer, W. S., 1; Penrose, R. J., 1; Rott, 1; Schrader, 5, 6; Smith, A. M., 1, 2; Tolman, C. F., 2; Vanderburg, 1, 3, 4.
 New Brunswick: Shaw, E. W., 1.
 Newfoundland: Heyl, 2; Snelgrove, 5, 8.
 New Mexico: Dunham, 3; Harley, 1; Lasky, 12, 14, 16; Wells, E. H., 2.

Gold—Continued.

- New York: Newland, 10.
 North America: Emmons, W. H., 12; McLaughlin, 8; Waters, 13.
 North America and Australia compared: McLaughlin, 8.
 North Carolina: Blakemore, P. B., Jr., 2; Bryson, 7, 7-a; Green, F. M., 2; Hornbeck, 1; Pardee, 8.
 North Dakota: Anonymous, 71.
 Northwest Territories: Camsell, 14; Hawley, 13; Henderson, J. F., 4, 5, 6; Jolliffe, A. W., 1, 2; Jolliffe, F. J., 3; Kidd, 3, 7; Lord, C. S., 1; McMeekan, 1; Riley, 4.
 Nova Scotia: Alcock, 9; Cameron, H. L., 1; Cox, E. J., 1; Davison, E. H., 1; Goodwin, W. M., 6; Harrison, R. B., 1; Messervey, 8, 21; Newhouse, 15.
 Occurrence: Emmons, W. H., 4.
 Ontario: Bain, G. W., 2; Bannerman, 2; Bartley, 2; Bateman, J. D., 2, 3; Bell, L. V., 2; Bothwell, 1; Brenne- man, 1; Bruce, E. L., 1, 14, 16, 20, 21; Burwash, E. M. J., 1, 2, 3, 4, 6, 8; Cormie, 1; Cross, J. G., 1; Dougherty, 2, 3; Dyer, 17, 18, 20, 21, 22; Emmons, W. H., 10; Fairbairn, 11, 15; Flaherty, 2; Freeman, B. C., 4; Froberg, 1, 2, 3; Furse, 3; Gledhill, 1; Graham, A. R., 2, 3, 5, 6; Graton, 5; Harcourt, 4; Harding, W. D., 2, 3, 4, 5; Hawley, J. E., 2; Horwood, 7, 9, 10, 11, 12; Hurst, 3, 4, 5, 9, 10, 11, 12; Kelly, 18; Kindie, E. D., 1; Kindie, L. F., 1, 2, 3; Laird, H. C., 3, 4, 5, 7, 8, 9, 10; Langford, 1, 2, 3, 4; Leduc, 1; MacDonald, R. D., 1; Mather, W. B., 1; Matheson, 1; Moore, E. S., 2, 6, 11, 16, 17, 18; Moorhouse, 1, 3; Phenister, 3; Reid, J. A., 4; Rickaby, 1, 2, 3, 4, 5; Ringsleben, 1; Robson, 1; Satterly, 3, 4; Savage, W. S., 1; Spearman, 3; Thomson, James E., 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16; Thomson, J. Ellis, 13, 14, 15; Watson, R. J., 1; Weeks, L. J., 1; Anonymous, 121.
 Ore deposits: Butler, B. S., 2.
 Oregon: Callaghan, 10; Gilluly, 16; Goodspeed, 7, 8, 17; Hewett, 5; Oregon Dept. Geology, 1; Pardee, 6; Shenon, 5, 6; Smith W. D., 11; Treasher, 3; Wells, F. G., 3.
 Panama: Ignatieff, 1.
 Placers: Cockfield, 8; Crampton, 2; Graves, 1; McKinlay, 1; Storms, 1.
 Precious metals, tests for in ores: Fraser, H. J., 6.
 Pressure zones and ore deposition: Wright, L. B., 1.
 Prospecting, lode gold: Gardner, E. D., 1.
 Placer: Jacy, 1.
 Quartz: Jacy, 1.

Gold—Continued.

- Puerto Rico: Meyerhoff, 10; Ray, H. C., 1.
- Quebec: Backman, 1, 2; Bain, G. W., 2; Bannerman, H. M., 6; Bell, A. M., 1; Bell, L. V., 1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16; Bruce, 7; Butterfield, 1; Connolly, 1, 3; Cooke, H. C., 1, 11; Denis, 6, 7, 8; Derry, 11; Dresser, 6; Faessler, 22; Gill, 7; Goodwin, W. M., 5; Gunning, 13, 15, 22, 23; Gussow, 1; Hawley, 5, 7, 8, 10; Henderson, J. F., 2; Jones, I. W., 15; Lang, A. H., 5; Longley, 1; Lowther, 1; McGerrigle, 4, 5; MacKenzie, G. S., 2, 3, 4, 5; Malouf, 1; Mawdsley, 6; Norman, 6, 7, 9, 10; O'Neill, J. J., 2, 4, 5, 6; Pardee, J. T., 1; Price, P., 1, 2; Robinson, B., 1; Rowe, R. C., 1; Shaw, G., 1; Sproule, 1-a; Thomson, J. Ellis, 13; Tolman, C., 3, 12, 15; Weeks, L. J., 5-a; Wilson, H. S., 1; Wilson, J. T., 6.
- Saskatchewan: Alcock, 16, 17; Cameron, A. E., 3; Cooke, H. C., 24; Keith, M. L., 3; Wright, 16, 18, 19.
- School of Mines Museum collections: Gries, J. P., 1.
- Sierra problem: Locke, 7.
- South Carolina: Linneman, 1; Pardee, 8.
- South Dakota: Anderson, D. L. M., 1; Connolly, 7; Gustafson, J. K., 1; O'Harra, 6; Simmons, 1; Tullis, 5, 6; Wright, L. B., 3, 4.
- Succession of minerals and temperatures of formation: Lindgren, 15.
- Sylvanite, krennerite, calaverite, structures: Tunnell, 12.
- Texas: Baker, C. L., 14.
- Transportation by organic solution: Fetzner, 1; Freise, 1.
- United States: Loughlin, 3.
- Use of geology in seeking: Jenkins, 14.
- Utah: Andrews, W. B., 1; Baker, A. A., 7; Beutner, 1; Chaney, 21; Gilluly, 5; Green, J., 1; Gregory, H. E., 4; Karpinsky, 1; Nolan, 6.
- Virginia: Bevan, 11; Brown, C. B., 3; Grace, 6; Green, F. M., 3; McGill, 4, 6, 8; Park, 6; Ulke, 6.
- Washington, D. C., area: Ulke, 9.
- World deposits and res.: Graton, 13; Knopf, A., 10.
- Wyoming: Abbott, L. V., 1; Coulter, C. C., 2; Parsons, W. H., 1; Wright, L. B., 3.
- Yukon: Bostock, 2, 4, 6, 8, 9, 10, 11, 12; Johnston, J. R., 2; Lees, E. J., 1, 2.
- Gondwana land bridges: Schuchert, 25.
- Goshen flora, Oregon: Chaney, 16.
- Grabens.
- Alaska: Waring, 6.
- Arizona: Reiche, 3.
- California: Eaton, 9.

Grabens—Continued.

- Oklahoma: Hyatt, 1; Millison, 2.
- Ontario: Kay, G. M., 21.
- Texas: Gould, 17.
- Gradation by water: Brodshaug, 3.
- Grains, transfer between liquids: Calkins, 2.
- Grand Canyon. See Arizona.
- Grand Coulee, Wash.: Bretz, 5.
- Granite.
- Canadian Shield: Chamberlin, 16.
- Colorado: Boos, 8; Reno, 1; Schwartz, 11.
- Georgia: Lester, J. G., 1.
- Graphic variety: Wahlstrom, E. E., 6.
- Greenland: Moos, von, 2; Wegmann, 10.
- Magma, fm. of: Collins, 10.
- Maine: Philbrick, 1, 4.
- Manitoba: Cole, L. H., 9.
- Massachusetts: Clifford, J. N., 1; Currier, 9.
- Mexico: Flores, 8.
- Michigan: Dickey, R. M., 3.
- Minerals included: Martin, D. C., 7.
- Minnesota: Schwartz, 29; Tatge, 1.
- Missouri: Tolman, 11, 13.
- Newfoundland: Jewell, 2.
- New York: Reed, J. C., 5.
- North Carolina: Bryson, 7-a; Greaves-Walker, 2.
- Nova Scotia: Messervey, 1.
- Ontario: Ferdue, 1; Thomson, James E., 3.
- Polygonal cracking: Leonard, R. J., 3.
- Quebec: Burton, F. R., 2; Osborne, 14, 17, 20.
- Rhode Island: Quinn, 5.
- Saskatchewan: Weeks, 9.
- South Carolina: Kesler, 1; Smith, L. L., 7.
- South Dakota: Rothrock, 10.
- TVA region: Spain, 4; Anonymous, 139.
- Texas: Barnes, V. E., 8; Keppel, 1.
- Vermont: Church, M. S., 1; Jacobs, 2; Richardson, C. H., 7.
- Virginia: Bloomer, 2; Furcron, 9; Steidtmann, E., 2, 9.
- Washington: Irwin, W. H., 1.
- Granodioritic blocks formed by metamorphism: Goodspeed, 13.
- Granville Lake area, Manitoba: Norman, 4.
- Graphite.
- Alabama: Jones, W. B., 4.
- California: Beverly, 1.
- General: Miller, B. L., 3; Randolph, 13.
- Industrial minerals and rocks: A. I. M. E., 2.
- Maine: Fisher, L. W., 6.
- New Jersey: Palache, 28.
- Nova Scotia: Messervey, 17.
- Quebec: Bain, G. W., 1.
- Texas: Sellards, 11.
- Graptolitoidea.
- Alabama: Foster, 7; Poor, 2.
- Appalachians, S.: Resser, 21.

Graptolitoidea—Continued.

- Arctic America: Ruedemann, 4-a.
 Arkansas: Decker, C. E., 11.
 British Columbia: Ruedemann, 9.
 Bryozoan nature: Ulrich, 10.
 Cambrian: Bassett, 2, 3; Resser, 21;
 Ruedemann, 19, 23.
 Canada: Cox, I. H., 2.
 Colorado: Bassett, 2, 3; Johnson, J. H.,
 22.
 General: Ruedemann, 9.
 Greenland: Poulsen, 4.
 Horizon of extinction: Thomas, N. L., 14.
 Kansas: Ver Wiebe, 8.
 Maine: Smith, E. S. C., 1.
 Michigan: Ehlers, 1.
 Newfoundland: Lochman, 5.
 New York: Flower, 10; Ruedemann, R.,
 1, 30; Sproule, 1.
 North America: Decker, 16, 20; Ruede-
 mann, 50.
 Northwest Territories: Cameron, 5;
 Ruedemann, 44.
 Ohio: Bucher, 21; Stauffer, 20.
 Oklahoma: Decker, 9, 10, 11, 14-a, 15,
 18; Ruedemann, 26.
 Ontario: Caley, 1; Sproule, 1.
 Ordovician: Caley, 1; Clark, T. H., 3;
 Little, 1; Poulsen, 4; Ruedemann,
 29, 41.
 Paleozoics, lower, correl. by: Decker, 14.
 Paleozoic plankton: Ruedemann, 24.
 Quebec: Kindle, 38; Laverdière, 2, 5, 6;
 Northrop, 10; Ruedemann, 39, 41.
 Restoration: Ruedemann, 4.
 Tennessee: Ruedemann, 39.
 Vermont: Gordon, C. E., 1; Richardson,
 C. H., 7.
 Wisconsin: Decker, 21.

Grass Creek dome, Wyo.: Harrison, T. S., 1.

Gravel.

- Alaska: Eardley, 8.
 Alberta: Rutherford, 12, 14; Warren, 22.
 British Columbia: Richmond, A. M., 2.
 California: Bradley, W. W., 7; Krum-
 bein, 27.
 Connecticut: Lougee, 7.
 General: Thoenen, 1.
 Glacial deposits of U. S.: Runner, 13.
 Hawaii: Stearns, 28.
 Idaho: Reed, J. C., 19; Shenon, 17.
 Illinois: Ekblaw, 7; Lamar, 13.
 Industrial minerals and rocks: A. I.
 M. E., 2.
 Iowa: Wood, L. W., 7.
 Kansas: Landes, 24; Mac Farquhar, 1;
 Pierce, 9; Smith, H. T. U., 6.
 Louisiana: Chawner, 3; Huner, 1.
 Manitoba: Hutt, 3.
 Maryland: Darton, 15.
 Mississippi: Foster, 5.
 Montana: Parker, F. S., 2.
 Nebraska: Freeman, J. L., 1.
 New Brunswick: Rose, B., 1.
 New York: Nevins, 3.
 North Carolina: Bryson, 7-a.

Gravel—Continued.

- Oklahoma: Ham, 2; Hendricks, 9; Wil-
 son, C. W., Jr., 13.
 Ontario: Bruce, 16; Fairbairn, 11, 15.
 Oregon: Smith, W. D., 11.
 Pennsylvania: Butts, 13; Leighton, H.,
 6; Stose, 21.
 Prospecting for: Thoenen, 2.
 Quebec: Laverdière, 4; McGerrigle, 6, 8;
 Osborne, 21; Picher, 3, 4, 5.
 Resistivity explor.: Kurtenacker, 2.
 South Dakota: Rothrock, 7.
 Tennessee River: Spain, 3.
 TVA region: Spain, 4; Anonymous, 139.
 Texas: Plummer, 13.
 Vermont: Richardson, C. H., 7.
 Virginia: Wentworth, 4.
 West Virginia: U. S. Comm., 1.
 Yukon: Lees, E. J., 2.
- Gravity anomalies and surveys.
 Anomalies affected by local densities:
 Bowie, 26.
 Anomalies and geol. structures: Wool-
 lard, 1.
 Bahamas: Lushene, 1.
 Black Hills-Bighorn-Beartooth area:
 Chamberlin, 10.
 California, Sierra Nevada: Johnston,
 W. D., Jr., 16.
 Carolina bays area: Prouty, 18, 21.
 Connecticut: Longwell, 24.
 Continental borders: Swick, 3.
 Datum for magnetometer mapping:
 Farnham, F. C., 2.
 Earth, figure: Lambert, W. D., 5, 7, 9.
 Electrical stratification: Lee, 11.
 Eötvös torsion balance use: Barton, 14.
 Geologic corrections on: Woollard, 3.
 Geophysics, interpretation: Miller, A. B.,
 1.
 Gravimeter for ore prosp.: Hedstrom, 3.
 Gravitational methods: Barton, 48.
 Gravity at sea by pendulum: Hoskinson,
 3.
 Gravity field, earth, external, internal:
 Lambert, W. D., 7.
 Gulf Coast States: Baker, W. L., 1;
 Barton, 22.
 Louisiana: Barton, 22; Baker, W. L., 1.
 Magnetic methods: Jenny, 13.
 Maryland: Bowie, 26.
 Massachusetts: Longwell, 24.
 Mexico: Sánchez, 8.
 Montserrat: Lenox-Conyngham, 1.
 Observations and basement structures:
 Thom, 15.
 Oklahoma: Hendricks, 16.
 Pendulums, astatized, for measuring:
 Ising, 1.
 Potsdam, Germany cf. Washington,
 D. C.: Brown, E. J., 1.
 Stoke's formula: Lambert, 6.
 Structure determination: Longwell,
 28-a; Thom, 15; Woollard, 2.
 Texas: Baker, W. L., 1; Barton, 22.
 United States: Glennie, 2; Tsuboi, 1.

- Gravity anomalies and surveys—Continued.
 Vening Meinesz anomalies: Ewing, 14.
 Vertical gradient of gravity: Hammer, S., 1.
 Virginia: Bowie, 26; Swick, 1, 2; Wool-lard, 6.
 West Indies: Ewing, 12, 13; Hess, H. H., 12; Lenox-Conyngham, 1.
 Graywackes, N. Y.: Mencher, 2.
 Great Basin physlog. history: Fenneman, 4.
 Great Bear Lake area, Northwest Territories: Kidd, D. F., 3.
 Great Lakes Basin, origin: Shepard, 41.
 Great Slave Lake area, Northwest Territories: Stockwell, 4.
 Greenalite, Minn.: Gruner, 24.
 Greenland.
 Bibliography: Anonymous, 52.
 Canning Land: Noe-Nygaard, 7.
 East Greenland: Koch, 3, 4, 15; Tei-chert, 4.
 General: Hobbs, 9; Koch, 10.
 Ice cap, form and age: Wager, 2.
 Igalliko Fjord, land E. of: Oedum, 1.
 Lauge Koch, work: Boeggild, 4; Boeg-vad, 5; Margerie, 2.
 Map-making, inaccessible regions: Zeller, M., 1.
 Ozarkian question: Koch, 13; Poulsen, 5, 6.
 West Greenland: Krueger, H. K. E., 2.
Areas described.
 Angmagssalik-Kap Dalton area: Wager, 3.
 East Greenland: Koch, 3, 4, 15; Teichert, 4.
 Northeast Greenland: Teichert, 8.
 West Greenland: Krueger, H. K. E., 2.
Economic geology.
 Coals, Jurassic: Frebold, 5.
 General: Teichert, 14.
 Iron, native: Carpenter, H., 1.
 Mineral resources: Blüthen, 1.
Historical geology.
 Angmagssalik-Kap Dalton area: Wager, 3.
 Basalt fm.: Backlund, 4, 5.
 Caledonian Mts.: Teichert, 3.
 Caledonian orogeny: Wegmann, 1, 9.
 Cambrian pulsations: Grabau, 5.
 Cambro-Ordovician, E. Greenland: Poulsen, 1.
 Canning Land: Büttler, 2; Noe-Nygaard, 5, 7; Sæve-Söderbergh, 6.
 Cape Dalton area: Ravn, 1.
 Cape Fletcher series: Noe-Nygaard, 6.
 Carboniferous: Frebold, 2; Koch, 5;
 Malmquist, 1.
 Christian X Land: Moos, A. von, 1.
 Clavering Is.: Malmquist, 1; Maync, 2;
 Noe-Nygaard, 1; Vischer, 1.
 Corrections: Boeggild, 5.
 Correlations with Labrador: Kranck, 4.
 Cretaceous: Boegvad, 2; Frebold, 6, 11.
 Crystalline complex, Liverpool Land: Kranck, 2.
 Davy Sound area: Büttler, 5.

Greenland—Continued.

Historical geology—Continued.

- Devonian: Büttler, 1, 3, 4, 5; Kulling, 2;
 Sæve-Söderbergh, 1.
 Devonian vertebrate locs.: Kulling, 2.
 East: Aldinger, 2; Büttler, 1, 2, 3, 4, 5;
 Boegvad, 2; Frebold, 1, 2, 4, 7, 9,
 10; Koch L., 1; Maync, 2; Nielsen,
 2; Noe-Nygaard, 3; Orvin, 1; Par-
 kinson, 1; Rosenkranz, 1, 3, 4, 5, 6;
 Sæve-Söderbergh, 4; Stauber, H., 2;
 Vischer, 3; Wager, 1, 3.
 Ella Island: Büttler, 3.
 Faunal correls.: Oepik, A. A., 1.
 Franz Joseph Fjord area: Backlund, 3;
 Odell, 2, 3, 5; Vischer, 2.
 General: Backlund, 6; Boeggild, 3, 4;
 Hobbs, 9, 16; Koch, 8, 12; Schu-
 chert, 29; Teichert, 14; Wegmann,
 2, 8, 10.
 Inglefield Land: Koch, 7.
 Jurassic coals: Frebold, 5.
 Kap Dalton area: Ravn, 1; Wager, 3.
 Koch's investigations: Schuchert, 7.
 Koch on Caledonian Range: Poulsen, 6.
 Koch on Ozarkian: Poulsen, 5.
 Koldewey Island: Frebold, 12.
 Mesozoic, older: Aldinger, 5.
 Metamorphic complex, Franz Joseph
 Land: Backlund, 3.
 Milne Land: Parat, 2.
 Musk Ox Fjord area: Büttler, 4.
 Northeast Greenland: Backlund, 1, 2;
 Kulling, 1; Lacmann, 1; Maync, 1;
 Teichert, 8.
 North Greenland, aerial mapping: Koch,
 11.
 Northwest Greenland: Wordie, 2.
 Parallel Valley, Gauss Pen.: Johansson,
 1.
 Ozarkian question: Koch, 13; Poulsen, 5,
 7.
 Paleoclimatology: Teichert, 16.
 Peat deposits: Backlund, 3.
 Permian: Aldinger, 6; Frebold, 1, 2.
 Peterman Peak-Kjerulff Fjord area:
 Wordie, 1.
 Pre-Cambrian cycle: Wegmann, 4.
 Scoresby Sound area: Aldinger, 3; Ben-
 tham, 1; Bierther, 1; Parat, 1;
 Pedersen, 1; Rothé, 1.
 Southern Greenland: Wegmann, 6, 7.
 Stratigraphy: Koch, L., 2.
 Succession in crystallines: Sahlstein, 2.
 Traill Island: Frebold, 13; Schaub, H. P.,
 1; Stauber, H., 1.
 Volcanism, early Paleozoic: Rittman, 1.
 Washington Land: Koch, 6; Teichert, 11.
 Western Greenland: Bentham, 2; Sug-
 den, 1.
 Wollaston area: Frebold, 8.
 Ymer Island: Cleaves, 3.
Mineralogy.
 Atacamite: Ray, P., 1.
 Cape York meteorites: Figgins, 1.
 Collecting minerals: Toothaker, 2.

Greenland—Continued.

Mineralogy—Continued.

- Copper, free, in meteorite: Buddhue, 9.
- Devonian, E. Greenland: Moos, von, 2.
- East Greenland: Wager, 3.
- Fluorite: Stoilcovic, 1.
- Galena-chalcopyrite-sphalerite in cryolite: Légraye, 1.
- General: Teichert, 14.
- Igalikite: Boeggid, 2.
- Ivigut area: Boegvad, 1.
- Naujakasite: Boeggid, 2.
- Pyroxenes: Deer, 1.
- Ralstonite: Gordon, S. G., 3; Pabst, 15.
- Sand samples: Crommelin, 1.
- Savie meteoric iron: Heintz, 1.
- Thomsenolite: Gordon, S. G., 3.
- Weberite: Boegvad, 4.
- Wulfenite: Gordon, S. G., 3.

Paleontology.

- Ammonites: Frebold, 4.
- Arthrodira: Stensjö, 8.
- Cambrian faunas, E. Greenland: Poulsen, 2.
- Canning Land: Säve-Söderbergh, 6.
- Cape Dalton area: Ravn, 1.
- Carboniferous, E. Greenland: Frebold, 2, 9; Halle, 1.
- Caytonia, Lias: Harris, T. M., 3.
- Cephalopoda: Teichert, 5; Troedsson, 1, 2.
- Coals, paleobotany: Miner, 4.
- Cretaceous: Boegvad, 2; Frebold, 6, 11, 12; Miner, 4; Rosenkrantz, 4.
- Cryptozoon in erratic block: Boegvad, 3.
- Decapoda, Juras: Van Straelen, 1.
- Devonian faunas: Heintz, 1, 3; Kulling, 2; Säve-Söderbergh, 1, 4; Stensjö, 1, 3.
- Diatoms: Iversen, 1.
- Diplopterax: Säve-Söderbergh, 3.
- Dolophonus: Woodward, A. S., 1.
- Eotriassic invertebrates: Spath, 1.
- Faunal correl.: Oepik, A. A., 1.
- Fish: Aldinger, 1, 4, 6; Heintz, 1, 3; Nielsen, E., 1, 3; Stensjö, 1, 2, 3, 4, 6.
- Floras: Harris, T. M., 1, 2, 4; Hoeg, 1; Iversen, 1; Mathiesen, 1, 2; Miner, E. L., 1, 2; Seward, 3, 4; Tutin, 1.
- Foraminifera: Howell, 17.
- Fossils from boulders: Gripp, 1.
- General: Teichert, 14.
- Invertebrates: Frebold, 10; Spath, 1, 2, 3, 4.
- Jurassic, E. Greenland: Rosenkrantz, 6.
- Kap Stosch fm., E. Greenland: Frebold, 9.
- Lepidopteris zones: Oishi, 1.
- Microfossils, coal: Arnold, 7.
- Milne Land: Parat, 2.
- Mytilus in raised beaches: Noe-Nygaard, 2.
- Ordovician faunas: Poulsen, 4; Teichert, 11.
- Peat deposits: Backlund, 2.

Greenland—Continued.

Paleontology—Continued.

- Permian: Frebold, 1, 2.
- Phyllolepidia: Stensjö, 3.
- Piceoxylon cf. laricinoides: Høeg, 2.
- Placodermi, Dev.: Stensjö, 3.
- Plesiosaur, Juras.: Huene, von, 1.
- Reptilia: Romer, 15; Säve-Söderbergh, 5.
- Scoresby Land: Bierther, 1.
- Sharks: Branson, C. C., 7.
- Silurian: Poulsen, 3.
- Stegocephalians: Romer, 15; Säve-Söderbergh, 2, 5.
- Tetrapoda, Dev.: Westoll, 2.
- Thaumatopteris zones: Oishi, 1.
- Traill Island: Frebold, 13.
- Vertebrata: Kulling, 2; Nielson, E., 2; Stensjö, 1.
- Wollaston area: Frebold, 8.
- Ymer Island: Cleaves, 3.

Petrology.

- Basalts: Backlund, 4, 5; Holler, 1; Nieland, 1.
- Beach sands: Stewart, D., Jr., 1.
- Canning Land: Noe-Nygaard, 5.
- Christian X Land: Moos, A. von, 1.
- Corrosion by wind-blown snow: Teichert, 15.
- Crystalline complex: Kranck, 2.
- Devonian, E. Greenland: Moos, von, 2.
- Dike swarms, E. Greenland: Wager, 5.
- East Greenland: Wager, 2.
- Eclogite in gneiss: Sahlstein, 1.
- Franz Joseph Fjord area: Backlund, 1; Vischer, 2.
- General: Teichert, 14.
- Igneous rocks: Tyrrell, G. W., 1.
- Kap Dalton area: Wager, 3.
- Metamorphic rocks: Backlund, 1; Wiseman, 1.
- Mineral composition of sands: Martens, 1.
- Northeast Greenland: Maync, 1.
- Northern Greenland: Callisen, 1.
- Olivines: Deer, 2.
- Peridotite: Drescher, 1.
- Peterman Peak-Kjerulf Fjord area: Wordie, 1.
- Pyroxenes: Deer, 1.
- Rock specimens: Oftedal, 1.
- Sand inv.: Cailloux, 2; Crommelin, 1; Edelman, 2; Martens, 1; Stewart, D. Jr., 1.
- Sedimentary petrography: Hübischer, von, 1.
- South Greenland: Wegmann, 6, 7, 10.
- Succession in crystallines: Sahlstein, 2.
- Tertiary ig. rocks: Wager, 4.
- Traill and Geographical Society Is.: Schaub, H. P., 1.
- Western Greenland: Kreuger, H. K. E., 2.
- Physical geology*.
- Block faulting, SW. Greenland: Belknap, 1.
- Caledonian orogeny. Wegmann, 1, 9.

Greenland—Continued.

Physical geology—Continued.

Canning Land: Büttler, 2; Noe-Nygaard, 5.

Changes of level, Quaternary: Vogt, T., 1.

Crystalline complex: Kranck, 2.

Davis Strait: Trask, 12.

Devonian, Davy Sound: Büttler, 5.

Dike swarms, E. Greenland: Wager, 5.

East Greenland: Koch, 9; Vischer, 3; Wager, 1, 5.

Eruptive rocks, E. Greenland: Backlund, 7.

Fault, submarine, continental border: Holtedahl, 1.

Franz Joseph Fjord area: Odell, 2, 5; Vischer, 2.

General: Koch, 12; Wegmann, 8, 10.

Julianhaab, alkaline rocks: Wegmann, 5.

Mountains, northern: Madsen, 2.

Musk Ox Fjord: Büttler, 4.

Northeast Greenland: Maync, 1.

Olivines, Skaergaard intrusion: Deer, 2.

Scoresby Bay area: Bentham, 1.

South Greenland: Wegmann, 6, 10.

Tertiary ig. rocks: Wager, 4.

Traill and Geographical Society Is.: Schaub, H. P., 1.

Volcanism, Paleozoic: Backlund, 8; Rittman, 1.

Physiographic geology.

Davis Strait area: Ricketts, 1.

East Greenland: Boyd, L. A., 1; Koch, 9; Mikkelsen, 1; Orvin, 2; Poser, 1.

Europe, relation to: Aldinger, 5.

Fjord region: Boyd, L. A., 1.

Fossil river bed, east Greenland: Orvin, 2.

Franz Joseph Fjord region: Odell, 3, 5.

General: Teichert, 14; Wegmann, 3, 8.

Glacial geology: Demorest, M. H., 1, 3; Hobbs, 6; Kindle, 36; Wright, J. W., 1.

Glaciers: Brockamp, 2; Carlson, W. S., 1; Hobbs, 17; Loewe, 1; Smith, E. H., 1; Spender, 1; Teichert, 6; Wegmann, 2.

Ice cap, form and age: Wager, 2.

Ice caps, distrib.: Hawley, M. M., 1.

Ice cave, Canning Land: Noe-Nygaard, 4.

Ice, inland, and glaciers: Teichert, 6.

Ice, thickness: Bowie, 14.

Loess: Hobbs, 10.

Mountains, east coast: Rabot, 1.

North Greenland, aerial mapping: Koch, 11.

Northeast Greenland: Backlund, 1; Lacmann, 1; Maync, 1.

Northwest Greenland: Hendry, 1; Wordie, 2.

Nugssuak Peninsula: Demorest, M. H., 1.

Peterman Peak-Kjerulff Fjord area: Wordie, 1.

Sand dunes: Belknap, 2.

Sand investigations: Edelman, 2.

Greenland—Continued.

Physiographic geology—Continued.

Scoresby Bay area: Bentham, 1.

Southern Greenland: Wegmann, 6.

Steepe district: Hobbs, 2.

Submarine ridge, SE. coast: Taning, 1.

Traill and Geographical Society Is.: Schaub, H. P., 1.

Upernivik region: Belknap, 4.

Valley studies: Poser, 2.

Western Greenland: Sugden, 1.

Green River epoch: Bradley, W. H., 2.

Green sand. See also Glauconite.

Mississippi embayment: Vanderpool, 1-a.

Ground gas survey: Pirson, 9.

Ground motion measurement: Blake, 4; Gardner, D. H., 1.

Ground vibrations near dynamite blasts: Leet, 18.

Ground water. See also Underground water (general); Geysers; Mineral water; Springs; Thermal water.

Arizona: Brown, W. H., 4; Harrell, 2; Sykes, 6.

Arkansas: Thompson, 19.

California: Piper, 16.

Colorado: Robinson, T. W., Jr., 4.

Cone of depression: Theis, 8.

Connecticut: Connecticut Ground Water Survey, 1.

Curacao, West Indies: Molengraaf, G. J. H., 1-a.

Earth-tides shown by well water: Robinson, T. W., Jr. 5.

Florida: Calhoun, 2; Cooke, C. W., 24; Stringfield, 3; Stubbs, 1, 2.

Flow of: Hubbert, 13.

General: Meinzer, 28.

Hawaii: Stearns, H. T., 29; Stearns, N. D., 5; Swartz, J. H., 9.

High Plains, south: White, W. N., 6.

Idaho: Stearns, H. T., 21, 27.

Illinois: Bretz, 10.

Iowa: Robinson, T. W., Jr., 7.

Kansas: Jewett, 8; Lohman, 9.

Karst valleys, Ind.-Ky.: Malott, 11.

Legal control of: Thompson, 18.

Limestone solubility: Adams, C. S., 1.

Louisiana: Maher, J. C., 1; Springfield, 9.

Manitoba, resources: Attwood, 1.

Mexico: Ortiz Mena, 1.

Michigan: McGuinness, 1.

Mississippi: Foster, 5, 6.

Nebraska: Reed, E. C., 1; Waite, 1, 2; Wenzel, 2.

New Hampshire: Goldthwait, J. W., 8.

New Mexico: Morgan, A. M., 1; Robinson, T. W., Jr., 6; Theis, 9, 10, 11, 12, 13.

New York: Baudisch, 2; Dyson, 1-a.

North Dakota: Simpson, H. E., 8; Voedisch, 1.

Ohio: Klaer, 1.

Ground water—Continued.

- Oklahoma: Decker, 25; Schoff, 3, 4;
Anonymous, 192.
Old Faithful, Yellowstone Nat. Park:
Bauer, C. M., 6.
Oregon: Piper, 17.
Pacific Northwest: Appleton, 1.
Pennsylvania: Butts, 13; Gorman, J. M.,
1; Leighton, H., 6; Lobman, S. W.,
6, 10, 11; Miller, B. L., 15, 19;
Stone, 22; Willard, 53.
South Dakota: Rothrock, E. P., 17;
Tullis, 4.
Texas: Foster, M. D., 2; Plummer, 29;
Texas St. Bd. Water Eng., 1.
Utah: Taylor, G. H., 6.
Virginia: Cady, R. C., 5; Cederstrom, 2;
Furcron, 9; McGill, 16.
Washington: Tyler, R. G., 1.
Water in geological processes: Morey,
G. W., 4.
West Virginia: Galpin, 4; Price, P. H.,
17.

Wisconsin: Wisconsin Univ., 1.

Group, use of term: Keyes, 237.

Guadalupan reef theory: Keyes, 18.

Guadalupan series: Keyes, 122, 409.

Guadeloupe.

General: Barrabé, 6.

Economic geology.

Petroleum poss.: Barrabé, 2.

Historical geology.

Désirade: Barrabé, 2.

Sedimentary fms.: Barrabé, 1, 3, 4.

Physical geology.

Désirade: Barrabé, 2.

Physiographic geology.

Désirade: Barrabé, 2.

Guatemala. See also Central America.

Areas described.

Lake Amatitlán area: Deger, 3.

Northwestern Guatemala: Termer, 4.

Historical geology.

General: Sapper, 5; Termer, 6.

Mineralogy.

Lake Atitlán area: Deger, 3.

Mineral collecting: Myers, R. E., 3.

Zunyte: Palache, 14.

Paleontology.

Fusulina: Dunbar, 18.

Orbitolina: Vaughan, 16.

Rudistae: Mac Gillavry, 2, 3.

Petrology.

Lake Amatitlán area: Deger, 3.

Pacayo Volcano: Deger, 1.

Physical geology.

Atitlán eruption: Reck, 3.

Erosion, Mayan cities: Cooke, 11.

Fuego eruption: Reck, 3; Westermann,
R., 1.

General: Termer, 6.

Highland area: Atwood, W. W., 5.

Guatemala—Continued.

Physical geology—Continued.

Lake Amatitlán area: Deger, 3.

Lava domes: Jaggard, 28.

Santa Maria eruption: Jaggard, 23; Reck,
3; Sapper, 1; Termer, 2, 5; Zies, 3,
5.

Sierra de las Minas: Termer, 7.

Volcanoes, active: Sapper, 4.

Physiographic geology.

General: Termer, 6.

Highland area: Atwood, W. W., 5.

Lake Amatitlán area: Deger, 3.

Lake Atitlán: Atwood, W. W., 4.

Santa Maria: Kaiser, 1.

Sierra de las Minas: Termer, 7.

Underground water.

Thermal springs: Deger, 2.

Guidebook, Southern Pacific, New Orleans—
Los Angeles: Darton, 4.

Gulf Coast geophys. prosp.: Zwerger, 2.

Gulf Coast geosyncline: Howe, 22.

Gulf coast oil fields: Barton, 24; Barton
and Sawtelle, 1.

Gulf coast strat. variations: Rosaire, 13.

Gulf coast structural features: Clark, R. P., 2.

Guns of Seneca lake, N. Y.: DeVarigny, 1.

Gymnosperms, structure and evolution:
Chamberlain, C. J., 1.

Gypsum.

Alabama cement res.: Eckel, E. C., 9.

Alaska: Stewart, B. D., 1.

Alberta: Allan, J. A., 3, 12; Cameron,
A. E., 1.

Boulder Dam area: Lee, 7.

Canada: Cole, L. H., 1, 5.

General: Dovalina, 4.

Industrial minerals and rocks: A. I. M.
E., 2.

Kansas: Landes, 24.

Kentucky: Munyan, 1.

Limestone caves: Pohl, 18.

Manitoba: Brownell, 1; Hutt, 3.

Michigan: Mathews, A. A., 1.

Missouri: Robertson, P., 1.

New Brunswick: Bailey, H. B., 1; Rose,
B., 1.

Newfoundland: Hayes, 6, 8.

New Mexico: Gould, 18; Keyes, 339;
Potter, F. C., 2; Robinson, T. W.,
Jr., 6.

New York: Brown, J. S., 1, 7; New-
land, 2.

Nova Scotia: Bailey, H. B., 1, 2; Bell,
W. A., 1; Messervey, 2.

Ohio: Jones, V. E., 3.

Oklahoma: Giles, 9; Ham, 2.

Origin: Dovalina, 5.

South Dakota: Connolly, 3.

Structure materials, TVA region: Anony-
mous, 189.

Virginia: Gildersleeve, 2.

Hackberry stage: Belanski, 1.

Hackmanite: Lee, S. O. L., 1.

Hail prints, mud cracks: Fenton, 31.

Halloysite, Mich.: Ayres, 2.

Hanksite, composition: Ramsdell, 7.

Harmotome, Pa.: Meler, 2.

Hawaiian Islands.

Arc: Bartsch, 1.

Hawaiian Is. and volcanoes: Hinds, 3.

Areas described.

Kau district, Hawaii: Hinds, 4, 7; Stearns, H. T., 5.

Kauai: Hinds, 4, 7.

Niihau: Hinds, 4, 7.

Oahu: Stearns, H. T., 12; Stearns, N. D., 2.

Economic geology.

Geophysical investigations: Swartz, J. H., 9.

Oahu Island: Stearns, H. T., 28.

Historical geology.

Ash fms.: Wentworth, 44.

Erosional unconformity, Kohala Mtn.: Stearns, H. T., 30.

Geologic names lexicon: Wilmarth, 2.

Kau district: Friedlaender, I., 3; Stearns, 8.

Kauai Island: Clark, W. O., 1.

Maui: Stearns, 17.

Molokini: Palmer, 2.

Nuuanu Valley, Oahu: Wentworth, 28.

Oahu: Chamberlin, 14; Grace, 5; Palmer, H. S., 3; Stearns, 15, 17, 28.

Mineralogy.

Clay: Wentworth, 46.

Crystal cavities in lavas: Dunham, 1.

Lavas, analyses: Powers, H. A., 6.

Minerals of Oahu: Eakle, 2.

Soda alunite: Laudermilk, 8.

Syngenite: Terzaghi, R. A. D., 1.

Paleontology.

Foraminifera: Hanzawa, 1.

Lanai, ancient shoreline faunas: Stearns, 22.

Mollusca, Molokai, Maui: Ostergaard, 2.

Oysters, Pleist.: Ostergaard, 1.

Pelecypoda: Dall, 1.

Petrology.

Ash formations: Wentworth, 44.

Diamond Head black ash: Wentworth, 43.

Crystal cavities in lavas: Dunham, 1, 3.

Gas-bubble pits in pahoehoe lavas: Palmer, H. S., 7.

Hawaiian lavas: Piggot, 1; Powers, H. A., 8.

Lavas and soils: Hinds, 5.

Pacific lavas: Barth, 5.

Pacificite: Barth, 1.

Pyroclastic rock types: Wentworth, 5.

Radium in Hawaiian lavas: Piggot, 1.

Physical geology.

Ash formations: Wentworth, 44.

Basaltic lava flows: Jones, A. E., 8.

Hawaiian Islands—Continued.

Physical geology—Continued.

Caldera, Molokai Is.: Stearns, 23.

Chink faceted pebbles: Wentworth, 38.

Diamond Head black ash: Wentworth, 43.

Differentiation of lavas: Powers, H. A., 8.

Earthquakes: Jaggard, 10, 24; Jones, A. E., 4, 6; Waesche, 1; Anonymous, 162.

Erosional unconformity, Kohala Mtn.: Stearns, 30.

Fossil lava tube: Palmer, H. S., 1.

Gases, volcanic, Kilauea: Ballard, 1.

Ground movements: Wingate, 1.

Halemaumau: Jaggard, 2.

Hualalai volcano: Jaggard, 10; Powers, H. A., 4.

Kau district: Friedlaender, I., 3.

Kauai Is.: Clark, W. O., 1.

Kilauea volcano: Coulter, J. W., 1; Finch, R. H., 2; Jaggard, 2, 4, 6, 9, 15, 16, 32, 38; Jones, A. E., 5, 7; Doorninck, 1; Waesche, 2, 4, 6; Wilson, R. M., 1.

Lavas: Chang, 1; Hodgkins, 1; Jaggard, 20; Kinsley, 1.

Lava tree casts and molds, Kilauea: Finch, R. H., 5.

Maui earthquake, 1938: Anonymous, 162.

Mauna Kea: Gregory, H. E., 3; Wentworth, 33.

Mauna Loa: Alexander, W. D., 1; Hodgkins, 1; Jaggard, 26, 33, 35, 36, 37, 40, 42, 43; Stearns, 25; Wingate, 2.

Oahu: Stearns, 28; Wentworth, 28.

Ocean waves from submarine earthquakes: Jaggard, 7.

Orogeny, volcanoes, and volcanism: Wolff, F. L. von, 1.

Pearl and Hermes reef sediments: Thorp, 4.

Pillow lava: Stearns, 24.

Protection of Hilo from lava flows: Jaggard, 39.

Rock weathering: Palmer, H. S., 4.

Seaquake off Hawaii: Brown, C. W., 4.

Seismic phenomena: Jones, A. E., 9.

Shoreline subsidence at Puna: Jones, A. E., 1.

Tilt records: Jaggard, 3.

Ulupau Head, Oahu: Wentworth, 47.

Volcanic cones: Jaggard, 42.

Volcanic cycles: Jaggard, 13, 14.

Volcanic eruptions, 1911-31: Jaggard, 12.

Volcanic products: Powers, H. A., 5.

Volcanism: Doorninck, van, 2.

Volcanoes: Buckingham, 1; Jaggard, 30; Stearns, H. T., 1; Vis-Norton, 1; Waesche, 3.

Phystrgraphic geology.

Ash formations: Wentworth, 44.

Benches: Hinds, 6; Stearns, 16; Wentworth, 27, 31, 45.

Geomorphic divisions: Wentworth, 35.

Hawaiian Islands—Continued.

Physiographic geology—Continued.

- Geomorphology : Jones, S. B., 1.
- Heights and ruggedness, Hawaii and U. S. : Palmer, H. S., 6.
- Lanai, ancient shore lines : Stearns, 22.
- Landscapes, Hawaiian, ages : Hinds, 10.
- Loess at Ka Lae : Palmer, H. S., 5.
- Marine bench-forming processes : Wentworth, 45.
- Maui, Pleist. shorelines : Stearns, H. T., 17.
- Mauna Kea glacial geology : Gregory, H. E., 3 ; Wentworth, 48.
- Oahu : Pollock, 1 ; Stearns, 16, 17, 28 ; Wentworth, 27.
- Pearl Harbor, Oahu, origin : Pollock, 1.
- Shorelines, ancient : Stearns, 16, 17, 22.
- Terraces : Howard, A. D., 7.
- Wave-cut platforms : Hinds, 6.

Underground water.

- Artesian water supply : Meinzer, 12.
- Geophysical inv. : Swartz, J. H., 9.
- Ground water : Meinzer, 5 ; Stearns, 29.
- Honolulu future supply : Stearns, 13.
- Kau dist. : Friedlaender, I., 3.
- Oahu : Chamberlin, 14 ; Stearns, H. T., 15 ; Stearns, N. D., 5.
- Salt-water boundaries : Swartz, J. H., 8.
- Water resources : Wentworth, 42.
- Wells drilled, records : Stearns, 26.

Heat conduction, dissimilar rocks : Lovering, 21.

Heaving shales : Halbouty, 10.

Heavy minerals.

- Accessory minerals in igneous and metamorphic rocks : Reed, J. C., 9.
- California : Pabst, 11 ; Wilson, R. W., 13.
- Cambrian, upper Mississippi Valley : Raasch, 3.
- Canadian Shield granites : Bruce, 15.
- Colorado : Boos, 8 ; Johns, 2.
- Comparison, in sed. rocks : Rittenhouse, 7.
- Comparison, statistical methods : Helson, 1.
- Correlations by : Graham, W. A. P., 2.
- Cretaceous-Eocene beds, Big Horn Basin : Stow, 12.
- Glenwood beds, Minn. : Thiel, 12.
- Granites, pre-Camb. : Stark, 11.
- Greenland, Dev. : Moos, von, 2.
- Guide in stratigraphy : Edson, 6.
- Idaho, correl. by : Ross, C. P., 31.
- Igneous rocks, U. S. : Sandell, 1.
- Illinois sands and gravels : Lamar, 13.
- Lake Superior S. shore, pre-Camb. : Tyler, 5-a.
- Marine sediments off Mid-Atlantic Coast : Cohee, 1.
- Michigan, Huronian : Dickey, R. M., 2.
- Mid-continent region : Edson, 2.
- Minnesota : Grout, 22 ; Kruger, 1.
- Mississippi, Eocene : Grim, 7.
- Missouri granites : Tolman, 13.
- Montana, Beartooth Mts., dating by : Stow, 14.

Heavy minerals—Continued.

- New Mexico white sands : Needham, 12.
 - Oriskany ss. : Stow, 3, 11.
 - Paleozoic fms., Va. : Johnson, J. H., 1.
 - Pennsylvania : Dryden, 13 ; Fraser, 14 ; Krynlne, 11.
 - Petroleum relations to : Tyler, 6.
 - Pre-Cambrian, Lake Superior : Tyler, 4, 5-a.
 - Radioactivity measurements : Landsberg, 13.
 - Rhode Island : Young, J. A., Jr., 1.
 - Rock weathering study : Goldich, 2.
 - Sampling : Cogen, 1.
 - South Canadian River, N. Mex.-Tex. sediments : Sidwell, 6.
 - Suites, statistical comparison : Helson, 1.
 - Virginia : Johnson, James H., 2 ; Johnson, J. H., 1 ; Smith, N. C., 3 ; Stow, 13.
 - West Virginia, deep-well secs. : Martens, 12.
 - Wisconsin, St. Peter ss. : Tyler, 3.
 - Wyoming, Front Range granites : Boos, 8.
 - Zones of Modelo fm., Calif. : Cogen, 2.
- Hedenbergite, Mont. : Warde, 1.
- Helderberg group, Va., W. Va. : Edson, 2.
- Hellum.
- Canada : Rosewarne, 1.
 - Texas : Ruedemann, P., 2.
 - United States : Kauenhowen, 1.
- Hematite.
- British Columbia : Stevenson, 4.
 - Georgia : Kesler, 4 ; Zodac, 28.
 - Greenland : Wegmann, 10.
 - Missouri : Gleason, 3 ; Tolman, 17.
 - Nevada : Ferguson, 10.
 - Nova Scotia : Horner, 1.
 - Oklahoma : Merritt, 7 ; Speer, 1.
 - Ontario : Bartley, 1.
 - Ozark region : Buehler, 10.
- Hendrick oil field, Tex. : Ackers, 1.
- Heterogeneity of parent magma : De Luy, 25.
- Heterostrachi, morphology : Stetson, H. C., 4.
- Heulandite, N. J. : Sachs, 1.
- Hewitt oil field, Okla. : Burton, G. E., 1.
- Highway eng. geology : Runner, 17.
- Hilgardite, La. : Hurlbut, 8.
- Hillsboro ss. : Carman, J. E., 2.
- Hispaniola. See Dominican Republic.
- Historical (stratigraphic) geology. For areal see names of States. See also the different systems ; Correlation ; Geologic formations, tables.
- Ages, Pleist. shore lines : Cooke, C. W., 15.
 - Algonkian : Hinds, 24 ; Lane, 33.
 - America : Drygalski, 1.
 - Antillean-Caribbean region : Chamberlin, 13 ; Hedberg, 2 ; Schuchert, 31 ; Trask, 29.
 - Appalachia : Nelson, 6 ; Thom, 22.
 - Appalachian geology : Bevan, 38.
 - Appalachian geosyncline : Morris, F. K., 4.

Historical geology—Continued.

- Appalachian Plateau and Mississippi Valley: Butts, 12.
 Appalachian structure: Boesch, H. H., 2.
 Arkose deposits in humid tropics: Kry-nine, 3.
 Atlantic Coastal Plain: Miller, B. L., 10; Stephenson, 24.
 Atrypa as horizon marker: Fenton, 14.
 Benton Cret.: Keyes, 504.
 Bentonite, Ord., E. North America: Rosenkrans, 5, 6.
 Big Bone Lick: Kindle, 10.
 Biostratigraphic terms: Fenton, C. L., 9.
 Bonham clay: Alexander, C. I., 3.
 Boundary, Oligocene-Miocene: Cooke, C. W., 23.
 Bradford field, Pa.-N. Y.: Fetteke, 11.
 Cambrian: Keyes, 299; Sardeson, 48.
 Canadian system: Ashley, 30; Ulrich, 12.
 Carboniferous, N. Am.: Moore, 32, 40, 49.
 Carboniferous, N. Am. cf. Europe: Jongmans, 1.
 Cartographic terminology in geology: Kleinpell, 5.
 Chronology, stratigraphic basis: Schuchert, 46.
 Cincinnati arch development: McFarlan, 21.
 Classifications and correls.: Chamberlin, 9.
 Cleavage, Appalachians: Fourmarier, 7.
 Climate and weather cycles: Gillette, 9.
 Coals, Penn., and underclays: Wanless, 10.
 Coastal Plain inv.: Woollard, 4.
 Coincidence, climatic and sea-level cycles: Gillette, 5.
 Colorado bibliography: Johnson, J. H., 29.
 Conocardium, stratigraphic use: Branson, C. C., 19.
 Continental stratigraphy: Keyes, 87.
 Continents: Bowie, 20; Moore, 35; Thom, 17.
 Continents and oceans, origin: Bowie, 20.
 Core orientation, polar: Roberts, D. C., 2.
 Correlations: Chamberlin, 9; Graham, W. A. P., 2; Keyes, 26; McQueen, 4; Mitchell, 5; Plummer, 19; Price, W. A., 17, 21; Stockdale, 10; Workman, 9.
 Cretaceous: Bartram, 8; Erdmann, 3; Keyes, 314; Parker, 7; Stephenson, 22.
 Crinoids as index fossils: Moore, 46.
 Cross sec., Texas-Michigan: Folger, 3.
 Cycle indicators: Gillette, 8.
 Cyclothems, Penn.: Weller, 21.
 Deformation, earth's crust: Bucher, 8.
 Devonian: Cooper, 20; Keys, 505.
 Devonian-Carboniferous boundary: Schindewolf, 1.
 Earth and man: Huxley, 1.
 Earth history and crustal movements: Reed, 27.

Historical geology—Continued.

- Earth movements and stratigraphy: Ulrich, 14.
 Ecologic bases, strat. divs.: Fenton, C. L., 1.
 Ellensburg fm.: Culver, 8.
 Eocene sequence, W. North America: Clark, 21.
 Ep-Archean, Ep-Algonkian intervals: Hinds, 19.
 Fish otoliths, strat. markers: Campbell, R. 1.
 Folds, parallel, structure measurements: Mertie, 20-a.
 Folsom deposits, N. Mex.-Colo.: Bryan, 33.
 Formations, extension: Melton, 9.
 Fossils, plant and animal, time discrepancies: Sahni, 1.
 Fusulinidae in Perm. correl.: Dunbar, 10.
 Galena dolomite taxonomy: Keyes, 366.
 General: Berry, E. W., 10; Daly, 16; Dorado, 1; Dutton, 3; Keyes, 19; Mather, 15; Merriam, J. C., 1, 17; Richards, H. F., 1; Richards, L. W., 1; Somers, 2; Ver Wiebe, 10; Whitney, 7; Willis, 14; Wooster, 1.
 Geochemical prosp.: Rosale, 15.
 Geologic chronology: Keyes, 93.
 Geologic evidence of floods: Hinds, 30.
 Geologic fms. definitions: Keyes, 384, 388.
 Geologic names lexicon: Wilmarth, 2.
 Geologic time measurement: Lane, 36.
 Geology, principles and processes: Emmons, W. H., 14.
 Geology and geophysics, structure determinations: Longwell, 28-a.
 Geophysical prosp. of structures: Sawdon, 2.
 Geosynclines, Gulf Coast, Appalachians: Price, W. A., 16.
 Glacial chronology-Pleist. terraces correls.: Cooke, C. W., 8.
 Gravity anomalies, U. S.: Glennie, 2.
 Greenland: Vischer, 1.
 Group, use of term: Keyes, 237.
 Gulf Coast area: Barton, 27; Brown, L. S., 4; Clark, R. P., 2; Houston, G. S., 3; Howe, 22; Russell, R. J., 22; Stephenson, 24.
 Heavy minerals as strat. guide: Edson, 6.
 Homotaxial principle in: Keyes, 340, 346.
 Insoluble residues in subsurface correls.: Andrews, T. G., 2.
 Introduction to hist. geology: Fisher, L. W., 10; Miller, W. J., 15.
 Iowan drift, age: Leverett, 23.
 Keokuk lms. overlap: Keyes, 410.
 Kinderhook ser.: Keyes, 434.
 Lake Valley Carb. lms.: Keyes, 410.
 Lelorbynchus as guide fossil: Chadwick, 21.

Historical geology—Continued.

- Louisiana, Darrow salt dome: Cook, C. E., 1.
 Lowlands and Ouachita Provs.: Ruedemann, P., 3.
 Mammalia, Tert., in holarctic correl.: Stirton, 22.
 Manual, lab.: Mather, 14.
 Mapping, geol., from aerial photographs: Desjardins, 3.
 Meramec, Carb., Mississippi Valley: Keyes, 440.
 Mesozoic systems: Ver Wiebe, 9.
 Methodology: Price, G. M., 2.
 Mid-continent area: Cram, 9; Dott, 13; Edson, 4; Harlton, 10.
 Mississippian researches: Laudon, 9.
 Mississippi River middle area: Robertson, P., 4.
 Mississippi Valley region: Bastin, 20.
 Molds, internal, uses: Cullison, 5.
 Mollusca, Pleist.: Baker, F. C., 16; Richards, H. G., 15.
 Montana, Medicine Bow Mts.: Neely, 2.
 Naming subsurface fms.: DeFord, 4.
 Nomenclature, strat.: Reeside, 12; Stanton, T. W., 2.
 Oil fields and continental spreading: Wade, 1.
 Oil gravities, Rocky Mtn. States: Bartram, 6.
 Ontario: Moorehouse, 3.
 Outlines of hist. geology: Longwell, 23-a; Schuchert, 12, 39-a.
 Ozarkian and Canadian sec.: Ulrich, 12.
 Ozark Mts. area: Schottenloher, 2.
 Paleocology, effect on: Twenhofel, 22.
 Paleontology in sedimentation: Demorest, M. H., 1-a.
 Paleozoic systems.
 Canadian Rockies: Kelly, W. A., 9.
 Distribution and thickness: Ver Wiebe, 6.
 Europe and North America: Waterschoot van der Gracht, 14.
 Formations, pulsation theory: Schuchert, 49.
 Paluxy sands: Hill, R. T., 9.
 Pectinidae, index fossils, S. E. of U. S.: Mansfield, W. C., 12.
 Pennsylvania, Schuylkill Valley: Willard, 57.
 Pennsylvanian: Keyes, 377, 497.
 Percentage stratigraphic dating method: Keen, 9.
 Permian: Berry, E. Willard, 15; Dott, 11; Keyes, 58, 245, 272, 398, 417; Moore, 29, 40; Schuchert, 24, 32; Waterschoot van der Gracht, 9.
 Permian floral provs., interrelations: Schuchert, 24.
 Permo-Carboniferous: Waterschoot van der Gracht, 9.
 Petroleum: Hager, D., 2.

Historical geology—Continued.

- Petroleum and gas accumulation, time: Herold, S. C., 4.
 Petrological and paleont. strat. relations: Bullman, 1.
 Physical chemistry role in stratigraphy: Mansfield, G. R., 23.
 Plants, distrib., age guide: Chaney, 25.
 Plants, use to identify fms.: Cuyler, 2.
 Pleistocene, Europe and America: Wormington, 1.
 Strict meaning: Keyes, 466.
 Pre-Cambrian: Keyes, 2, 28, 485; Leith, 8; Moss, 3.
 Premonitory fms.: Washburne, 1.
 Principles of hist. geology: Field, 9.
 Priority in strat. nomenclature: Woodward, H. P., 3.
 Priority vs. usage, geol. terminology: Keyes, 261.
 Pulsation theory: Grabau, 3, 4.
 Quaternary, Atlantic and Gulf Coastal Plain: Cooke, C. W., 26.
 Quebec Bureau of mines: Dresser, 4.
 Radioactivity measurements: Lansberg, 13.
 Radioactivity variation in strata: Klepper, 1.
 Reefs or bioherms: Cumings, 4.
 Receptaculites fms., Mississippi Valley: Keyes, 336.
 Red beds of America: Keyes, 406.
 Residues, insoluble, guides in stratigraphy: McQueen, 4.
 Rocky Mtn. area: Heaton, 3, 7; Keyes, 236; Knight, S. H., 13; Resser, 11; Tenney, 3.
 Saint Peter ser.: Edson, 8.
 Sandstones of Southwest, age: Keyes, 92.
 Sedimentary cycles: Keyes, 475; Savage, 5.
 Sedimentary environment: Anderson, G. E., 3.
 Sedimentary and climatic rec.: Bowman, I., 2.
 Sedimentation and stratigraphy: Twenhofel, 14.
 Sediments, continental shelves: Shepard, 6.
 Silicified shell fragments indicate uncon.: Howell, J. V., 2.
 Stage as strat. unit: Schenck, 19.
 Strata, correl. and classn.: Ulrich, 18.
 Stratigraphic nomenclature: Reeside, 12; Stanton, T. W., 2.
 Submarine valleys, age, Atlantic Coast: Stetson, 11.
 Tertiary, Atlantic-Gulf Coastal Plain: Cooke, C. W., 25.
 Texas, Malone Mts.: Albritton, 8.
 Trenton group: Kay, G. M., 19.
 Triassic fault-line: Wheeler, G., 3.
 Triassic period in U. S.: Roth, 15.
 Uncompagran, pre-occupied: Keyes, 459.

Historical geology—Continued.

- Upper Mississippi Valley: Trowbridge, 4; Weller, 18.
 Upthrust, geol. term: Willis, 12.
 Valentine question: Lugin, 13; Stirton, 24.
 Vegetation indicator geol. fms.: Cuyler, 5.
 Volcanism, relation to geol. history: Whitney, D. J., 1.
 West Indies, tectonic position: Rutten, L. M. R., 7.
 West Virginia: Price, P. H., 8-a, 14.

History. See also Surveys.

- Aerial photography: Baisley, 1.
 American Assoc. Adv. Sci.: Clark, A. H., 1; Livingston, B. E., 1.
 American mining: Rickard, 1.
 Borax, early devels.: Esselink, 2.
 Canada Geol. Survey: Collins, W. H., 2; Gray, F. W., 1.
 Canadian mining: Allan, 10; Edwards, F., 1.
 Casas Grandes Mex., meteorite: Monnig, 4.
 Chicago Univ. Dept. Geology: Penrose, R. A. F., 1.
 Clay industry of Tenn.: Whitlatch, 9.
 Colorado River Delta area: Sykes, 2.
 Copper industry: Furness, 1.
 Correlations, Carb., U. S.-Europe: Bertrand, 2.
 Crystallography: Pabst, 7.
 Cuba, min., geol. studies: Ramos, D. F., 1.
 Deformation, earth's crust, Paleozoic: Moore, 30.
 Development, knowledge of fossil birds: Wetmore, 21.
 Earth: Chamberlin, 14-a.
 Earth and man: Huxley, 1.
 Earthquakes, Calif., Nev.: Wood, H. O., 16.
 Earthquakes in U. S.: Heck, 42.
 Economic geology, ancient: Sagul, 1.
 Electrical prosp. methods: Rust, W. M., Jr., 2.
 First geol. work, U. S. Govt.: Finch, E. H., 3.
 General: Ries, 6.
 Geologic map of U. S.: Stanton, T. W., 3.
 Geological sci. devel.: Adams, F. D., 8; Croncis, 47; Reed, 33; Mendenhall, 101.
 Geological Soc. Am.: Fairchild, 8.
 Geology: Berkey, 6.
 Geology and geography at Harvard: Davis, W. M., 2.
 Geophysics: Kelly, 19.
 Geophysics applied to petroleum industry: De Golyer, 8.
 Glacial geology: Keyes, 161.
 Gold in Calif.: Webb, 7.
 Gold mining, N. C.: Green, 2.
 Grand Canyon of the Yellowstone: Howard, A. D., 6.

History—Continued.

- Illinois, early geology: Rolfe, C. W., 1.
 Illinois Geol. Survey: Bain, H. F., 1; DeWolf, 2; Leighton, M. M., 7.
 Kentucky Geol. Survey: Jillson, 33; Townsend, J. W., 1.
 Lake Superior copper dist.: Fisher, J., 1.
 Louisiana Geol. Survey: Howe, H. V., 5.
 Mexico, petroleum industry: Baez, 1.
 Michigan Geol. Survey: Martin, H. M., 2.
 Micropaleontology in Mexico: Barker, 2.
 Mineralogical Soc.: Kraus, 2.
 Mineralogy at Harvard: Palache, 3.
 Montana, gold and silver production: Gilbert, F. C., 1, 2.
 National Acad. Sci.: Campbell, W. W., 1.
 National Research Council, Div. Geology and Geography: Twenhofel, 9.
 Natural gas: Howell, J. V., 3; Price, P. H., 11; Tucker, R. C., 3.
 Nickel, devel.: D'Arcy, 1; Robinson, A. H. A., 5; Stanley, R. C., 1.
 North America regional exposition: Joerg, 1.
 Ore deposits, origin and nature: Adams, F. D., 7.
 Ore minerals study: Thomson, J. Ellis, 20.
 Origin, springs and ground water, ideas on: Baker, M. N., 1.
 Oriskany sand, Appalachian area: Myers, T. H., 1.
 Paleontology, Cenozoic marine invertebrates: Harris, G. D., 3.
 Pennsylvania, early iron works: Billinger, 1.
 Northampton Co.: Miller, B. L., 15.
 Pennsylvania Geol. Survey: Ashley, 22; Logue, 1; Stone, 19; Anonymous, 91.
 Petroleum geology in America: Billingsley, J. E., 4; Croncis, 20; De Golyer, 12; Deussen, 12; Fanning, 1; Goodrich, 2; Hager, 3; Howell, J. V., 1, 3; Lawrence, A. A., 1; Levorsen, 9; Pratt, W. E., 3; Thom, 11; Tucker, R. C., 3.
 Pittsburgh coal bed: Eavenson, 3.
 Precious stones, valuation and price: Ball, S. H., 4.
 Saint Lawrence River: Gill, 6-a.
 Secondary enrichment theory: Brown, J. S., 6; Schneiderhöhn, 2.
 Seismic reflection methods: Marr, 2.
 South Dakota tin mining: Cummings, J. B., 1.
 State and national geol. surveys: Leighton, 11.
 Texas, Div. Nat. Res.: Schoch, 1.
 Petroleum and gas since 1543: Plummer, 28; Warner, C. A., 1.
 Trenton group: Kay, G. M., 19.
 United States Geol. Survey: Mendenhall, 5.
 Section of Geophysics: Lee, 10.
 Water Resources Branch: Follansbee, 2.

History—Continued.

- Virginia, geog. and topog. mapping: Roberts, 27.
 Mineral res. devel.: Boyle, R. S., 2.
 Shenandoah Valley: Bevan, 27.
 Volcanoes, study of: Day, A. L., 9.
 Washington Geol. Survey: Glover, 7.
 Western mining: Ransome, 4.
 West Virginia, anticlinal theory: Price, P. H., 1, 6.
 University Dept. Geology: Tilton, 1.
 Willamette, Oreg., meteorite: Pruett, 3.
 Wisconsin Geol. Survey: Bean, 2.
 Yellowstone Canyon: Howard, A. D., 3.
 Holothuroidea: Croneis, 14, 10; Hanna, G. D., 12; McGlamery, 4.
 Homer oil field, La.: Spooner, 1.
 Homonyms and nomenclators: Oehser, 1.
 Homotaxial principle in geology: Keyes, 340, 346.

Honduras.

Historical geology.

General: Sapper, 5.

Paleontology.

- Eomontipora, Cret.: Gregory, J. W., 4.
 Mammalia, Pliocene: Olson, 4.
 Hopeite: Wolf, C. W., 3.
 Horizon slope calculation, reflecting prosp.: Pentz, 1.
 Hornblends: Barnes, V. E., 1; Miller, F. S., 3.
 Horned ruminants of N. Am.: Thorpe, 12.
 Horse, geol. history and evolution: Riggs, E. S., 1.
 Hot springs. See also Thermal waters.
 General: Day, 11.
 Yellowstone Nat. Park.: Allen, E. T., 2, 5, 6-a; Day, 8; Ross, C. S., 25.
 Huronian. See Pre-Cambrian.
 Huronian problems: Lawson, 1.
 Howlite: Van Amringe, 11.
 Hydrogenation and petroleum origin: Pratt, W. E., 1.
 Hydrographic causes of climate changes: Parr, 1.
 Hydrothermal alteration.

California, Balaklafa chonolith: Seager, 1.
 Colorado, Alma dist.: Singewald, Q. D., 9.

Georgia, Cartersville dist.: Kesler, 4.
 Idaho, Coeur D'Alene district: Shenon, 18.
 Florence dist.: Reed, J. C., 19.

Lead, zinc minerals, experiments: Kristofferson, 1.
 Minnesota Pigeon Pt. area: Bastin, 16.

Montana, Ruby Gulch gold area: Dyson, 3.
 New Mexico, Virginia mining area: Lasky, 13.

New York, magnetites: Alling, 11.

Hydrothermal alteration—Continued.

- Ontario, aplites with cobalt-silver ores: Bastin, 8.
 Riebeckite: Froberg, 4; Hawley, 12.
 Silicate minerals: Syromyatnikov, 1.

Hydrothermal leaching, iron ores: Royce, 4.

Hydrothermal metamorphism, geyser basins: Fenner, 10.

Hydrothermal solutions, potassium chloride: Benedict, 1.

Hydrozoa.

- Camptostroma: Ruedemann, 18.
 Fauna Niagara nodules, Ill.: Grubbs, 1.
 Hydrocorallinae, N. J.: Richards, H. G., 6.
 Jellyfish, Grany Canyon: Van Gundy, 2.
 Ontario, Ord.: Caley, 1.

Hydrachyidae, revision: Wood, H. E., 8.

Hyrax, optical properties: Hanna, 23.

Ice age. See also Glacial geology.

Coming: Taber, C. A. M., 1.

Ice agent of rock weathering: Grawe, 3.

Ice ages (ancient).

- Alaska, Paleozoic: Blackwelder, 27.
 Oligocene: Talliaferro, 5.
 Climatic zones and periods: Hobbs, 1.
 Colorado, San Juan Mts.: Atwood, W. W., 1.
 Great glacial cycle: Forbes, W. T. M., 1.
 Massachusetts, Permo-Carb. varves: Sayles, R. W., 2.
 Texas, Haymond fm.: Baker, C. L., 13.
 Tropical, causes: Gillette, H. P., 3.
 Utah: Blackwelder, 25.
 Varves: Collet, 2; Sayles, R. W., 2.

Ice cap, Greenland: Odell, 3.

Ice caves.

- California: Swartzlow, 7.
 General: Henderson, J., 7.
 Greenland: Noe-Nygaard, 4.
 Idaho: Palmer, J. T., 1; Robinson, H. G., 1.
 New Mexico: McClary, 1; Peck, A. P., 1.
 Origin: Harrington, E. R., 1.

Idaho.

Bibliography, Inland Empire: Kirkham, 3.

Bureau of Mines rept.: Finch, J. W., 5.
 Outline of geology: Palmer, J. T., 1.

Areas described.

- Atlanta dist.: Anderson, A. L., 23.
 Bayhorse area: Ross, C. P., 31.
 Buffalo Hump area: Shenon, 10.
 Cassia Co.: Anderson, A. L., 9.
 Casto quad.: Ross, C. P., 22.
 Clark Fork dist.: Anderson, A. L., 3.
 Dixie placer area: Capps, 14.
 Elk City area: Shenon, 10.
 Florence mining dist.: Reed, J. C., 19.
 Lava Creek area: Anderson, A. L., 1.
 Mud Lake area: Stearns, 27.
 Northern Idaho: Kirkham, 1.
 Orofino area: Anderson, A. L., 5.

Idaho—Continued.

Areas described—Continued.

- Orogrande: Shenon, 10.
 Portneuf quad.: Mansfield, G. R., 2.
 Snake River plain: Stearns, 21.
 Tenmile dist.: Shenon, 10.
 Warren mining dist.: Reed, J. C., 14.

Economic geology.

- Atlanta dist.: Anderson, A. L., 23.
 Bayhorse area: Ross, C. P., 31.
 Beryl: Anonymous, 43.
 Boise Basin lode deposits: Ross, C. P., 18.
 Building stones: Behre, 1.
 Bunker Hill ore deposits: McConnell, 1.
 Casto quad.: Ross, C. P., 2.
 Clays: Hodge, 24; Tullis, 1, 3; Wilson, H., 1.
 Coeur d'Alene mining dist.: Dickey, F. H., 1; Hershey, O. H., 1.
 Copper dists.: Ross, C. P., 23.
 Dixie placer area: Capps, 14.
 Dome mining dist.: Ross, C. P., 17.
 Edwardsburg' dist.: Shenon, 16.
 Elk City dist.: Shenon, 8, 9, 11.
 Florence mining dist.: Reed, J. C., 19.
 Gem minerals: Olson, B. H., 1.
 Gold: Anderson, A. L., 18; Austin, R. B., 1; Bell, R. N., 2; Finch, J. W., 2; Hite, 1, 3, 4; Lorain, 2; Reed, J. C., 2; Ross, C. P., 7.
 Iron: Hodge, 16.
 Kaolin: Wilson, H., 1.
 Limestones: Hodge, 24.
 Lode deposits: Ross, C. P., 7, 15.
 Metal mining history: Ross, C. P., 3.
 Mica pegmatites: Anderson, A. L., 11.
 Mining history: Ross, C. P., 2.
 Mining industry: Campbell, A., 1, 2, 3, 4; Campbell, S., 1, 2, 3, 4, 5; Simons, W. H., 1, 2.
 Murray area: Shenon, 17.
 Natural gas fields: Kirkham, 14.
 Ore deposits: Anderson, A. L., 4; Ross, C. P., 5, 12.
 Orofino area: Anderson, A. L., 5.
 Pearl-Horseshoe Bend gold belt: Anderson, A. L., 18.
 Phosphate: Mansfield, G. R., 1, 10.
 Phosphoria fm.: Mansfield, G. R., 23.
 Placer mining dist.: Lorain, 3.
 Platinum: Hite, 1.
 Porphyry copper deposits: Bell, R. N., 1.
 Prospecting for gold ores: Finch, J. W., 2.
 Rare metals: Bell, R. N., 3.
 Sands: Wilson, H., 2.
 Silica: Hodge, 24.
 Silver: Anderson, A. L., 16; Shenon, 18; Warren, H. V., 5.
 South-central mining dists.: Ross, C. P., 9.
 Thunder Mtn. mining dist.: Livingston, D. C., 3; Ross, C. P., 11, 16.
 Warren mining dist.: Reed, J. C., 14.
 Wood River area: Umpleby, 1.
 Yellow Pine dist.: Currier, 4.

Idaho—Continued.

Historical geology.

- Atlanta dist.: Anderson, A. L., 23.
 Banner dist.: Anderson, A. L., 16.
 Batholith: Clapp, C. H., 5; Ross, C. P., 14, 29.
 Bayhorse region: Ross, C. P., 31.
 Belt series: Fenton, 54; Gibson, 6.
 Boise basin: Ross, C. P., 18.
 Bunker Hill ore deposits: McConnell, 1.
 Carboniferous: Williams, J. S., 8.
 Casto quad.: Ross, C. P., 22.
 Clark Fork-Sandpoint porphyry belt: Anderson, A. L., 21.
 Coeur d'Alene mining dist.: Dickey, F. H., 1.
 Copper districts: Ross, C. P., 23.
 Correlations by heavy minerals: Ross, C. P., 20.
 Correlations, Tert. fms.: Carpenter, J. T., 1.
 Dixie placer dist.: Capps, 14.
 Dome mining dist.: Ross, C. P., 17.
 Edwardsburg-Thunder Mtn. area: Shenon, 16.
 Elk City mining area: Shenon, 9, 11.
 Flora, Tert.: Dorf, 6.
 Florence mining dist.: Reed, J. C., 19.
 General: Large, 1.
 Gneisses, sedimentary: Wilson, R. A., 5.
 Idaho Co. gold: Lorain, 2.
 Latah fm.: Kirkham, 4.
 Limestones: Hodge, 24.
 Meadow Creek mine: Bailey, H. D., 1.
 Mud Lake area: Stearns, 27.
 Murray area: Shenon, 17.
 Natural gas fields: Kirkham, 14.
 Paleozoic S.-cent.: Ross, C. P., 21.
 Payette and Idaho fms.: Kirkham, 9.
 Pearl-Horseshoe Bend gold belt: Anderson, A. L., 18.
 Phosphoria fm.: Branson, C. C., 1.
 Physiographic features: Livingston, D. C., 4.
 Silica deposits: Hodge, 24.
 Silver belt, Coeur d'Alene dist.: Shenon, 18.
 Snake River Valley: Debler, 1; Stearns, 21.
 South-central: Ross, C. P., 4, 7, 25.
 Southwestern: Kirkham, 11.
 Spence sb. and fauna: Resser, 23.
 Springs and alcoves, Snake River: Stearns, 10.
 Tuffs, welded rhyolite: Mansfield, G. R., 17.
 Valley County: Ross, C. P., 11.
 Warren mining dist.: Reed, J. C., 14.
 Wasatch-Great Basin area: Eardley, 12.
 Wood River area: Umpleby, 1.
 Yellow Pine dist.: Currier, 4.
 Mineralogy.
 Atlanta dist.: Anderson, A. L., 23.
 Beryl: Anonymous, 43.
 Bunker Hill ore deposits: McConnell, 1.

Idaho—Continued.

Mineralogy—Continued.

- Coeur d'Alene minerals: Fernquist, 5.
 Dixie placer dist.: Capps, 14.
 Garnets, star: Kayser, 1; Walcott, 5.
 Gems and gem minerals: Carpenter, J. T., 2; Fernquist, 3.
 Mica pegmatites: Anderson, A. L., 11.
 Mordenite: Dake, 20.
 Opals: Fernquist, 1.
 Pegmatite, phosphate minerals: Campbell, C. D., 4.
 Placer mining dist.: Lorain, 3.
 Pyroxmangite: Henderson, E. P., 8.
 Silver belt, Coeur d'Alene: Shenon, 18.
 Willamette meteorite: Duke, 12.

Paleontology.

- Bayhorse region: Ross, C. P., 31.
 Birds, Pliocene: Wetmore, 28.
 Blarina, Pliocene: Gazin, 5.
 Cambrian fauna, Pend Oreille Lake: Resser, 19.
 Cephalopoda, Phosphoria: Miller, A. K., 14.
 Ceratomeryx, Pliocene: Gazin, 15.
 Cercis, Miocene: Berry, 20.
 Erethizon, Cenozoic: Wilson, R. W., 10.
 Felids, Pliocene: Gazin, 7.
 Fish, Latah fm.: Scheld, 2.
 Flora, Miocene: Gillette, N. J., 2.
 Floras, Tert.: Ashlee, 1; Berry, 20, 32, 43; Brooks, B. P. W., 2; Brown, R. W., 8, 14; Dorf, 6; Olson, B. H., 2; Smith, H. V., 1, 2, 4.
 Fossil hunting: Gazin, 12.
 Hares, Pliocene: Gazin, 9.
 Horses: Boss, 1; Gazin, 18; Gidley, 5.
 Mammalia, Pleist.: Blackwelder, 46; Gazin, 14, 16; Schultz, J. R., 3.
 Tertiary: Gazin, 11, 14, 21, 22; Rice, H. E., 1.
 Mustelids, Pliocene: Gazin, 11, 21.
 Otter, Cenozoic: Furlong, 5.
 Peccary, Pliocene: Gazin, 22.
 Petrified Forest: Dake, 22.
 Plesippus, Pliocene: Gidley, 5.
 Pollen analysis of bog: Hansen, H. P., 3.
 Pseudemys, Pliocene: Gilmore, 12.
 Ptarmigan fauna: Resser, 24.
 Quercinum, Miocene: Boeshore, 2.
 Rodent fauna: Wilson, R. W., 4.
 Sloths, Pliocene, Pleist.: Gazin, 14.
 Spence sb. fauna: Resser, 23.
 Tempskya, Cret. ferns: Read, 10.

Petrology.

- Alkaline rocks: Anderson, A. L., 8.
 Amygdales: Reed, J. C., 13.
 Anthophyllite: Anderson, A. L., 7.
 Atlanta dist.: Anderson, A. L., 23.
 Bayhorse region: Ross, C. P., 31.
 Cassia batholith: Anderson, A. L., 14.
 Edwardsburg-Thunder Mtn. Area: Shenon, 16.
 Florence mining dist.: Reed, J. C., 19.
 Garnets, starr: Kayser, 1; Walcott, A. J., 5.
 Hornblendite: Anderson, A. L., 12.

Idaho—Continued.

Petrology—Continued.

- Idaho batholith: Anderson, A. L., 13; Ross, C. P., 29.
 Lava Creek vents: Anderson, A. L., 22.
 Moscow area: Scheld, 3.
 Murray area: Shenon, 17.
 Porphyry belt: Anderson, A. L., 20.
 Rex chert: Keller, 13.
 Tuffs, welded rhyolite: Mansfield, G. R., 17.
 *Yellow Pine dist.: Currier, 4.

Physical geology.

- Amygdales, significance: Reed, J. C., 12, 13.
 Atlanta dist.: Anderson, A. L., 23.
 Bayhorse area: Ross, C. P., 31.
 Blackfoot Mts.: Mansfield, G. R., 7.
 Block faulting, recent: Anderson, A. L., 15.
 Cassia batholith: Anderson, A. L., 14.
 Clark Fork-Sandpoint porphyry: Anderson, A. L., 21.
 Contact metamorphism, Pend Oreille area: Gillson, 2.
 Craters of the Moon Nat. Monument: Lee, C. A., 2; Shepherd, G. F., 7, 9.
 Dixie placer area: Capps, 14.
 Edwardsburg-Thunder Mtn. area: Shenon, 16.
 Erosion, Lost River Range: Ross, 33.
 Faults near Whitebird: Kirkham, 5.
 Florence mining dist.: Reed, J. C., 19.
 Grimes Creek, Payette Canyon: Anderson, A. L., 19.
 Grooved lava, Big Craters: Nichols, 13.
 Ice cave, Shoshone: Robinson, H. G., 1.
 Idaho batholith: Ross, C. P., 29.
 Landslides Salmon Creek: Lee, C. A., 1.
 Lava Creek vents: Anderson, A. L., 22.
 Lava floods: Stearns, 20.
 Minatake Cave: Blenkle, 1.
 Moyle-Lenia overthrust: Kirkham, 6.
 Mud Lake area: Stearns, 27.
 Murray area: Shenon, 17.
 Overthrust fault: Livingston, D. C., 1, 2.
 Physiographic features: Livingston, D. C., 4.
 Salmon River region: Wilson, R. A., 5.
 Silver belt, Coeur d'Alene: Shenon, 18.
 Snake River area: Freeman, O. W., 8; Stearns, 21.
 Springs and alcoves, origin: Stearns, 19.
 Volcanic phenomena, Craters of the Moon: Shepherd, 9.
 Wasatch-Great Basin area: Eardley, 12.

Physiographic geology.

- Asymmetrical Palouse hill profiles: Newcomb, 2.
 Atlanta dist.: Anderson, A. L., 23.
 Bayhorse area: Ross, C. P., 31.
 Black Canyon reservoir: Hough, 4.
 Blackfoot Valley: Mansfield, G. R., 22.
 Coeur d'Alene flood plain: Humphrey, 1.
 Craters of the Moon: Stearns, H. T., 2.
 Cretaceous-Tert. planation: Anderson, A. L., 2.

Idaho—Continued.

Physiographic geology—Continued.

- Dixie placer dist.: Capps, 14.
 Erosion surfaces: Kirkham, 7; Ross, C. P., 6.
 Florence mining dist.: Reed, J. C., 19.
 Glacial till: Field, R. F., 1.
 Glaciation, early Pleist.: Ross, C. P., 1.
 Grimes Creek: Anderson, A. L., 19.
 Mud Lake area: Stearns, 27.
 Palouse Hills topog.: Kirkham, 8.
 Paradise Valley quad.: Mansfield, G. R., 24.
 Physiographic features: Livingston, D. C., 4.
 Pollen analysis of bog: Hansen, H. P., 3.
 Salmon River canyon: Shenon, 14.
 Shoshone ice cave: Palmer, J. T., 1.
 Snake River area: Freeman, O. W., 8; Kirkham, 10; Stearns, 21.
 Snowdrifts and Palouse topog.: Rockie, 1.
 South-central: Ross, C. P., 8.
 Spokane River drainage changes: McMacken, 2.
 Warren mining dist.: Reed, J. C., 14.

Underground water.

- Bayhorse area: Ross, C. P., 31.
 Dakota ss. ground-water: Robinson, T. W., Jr., 7.
 Mud Lake area: Stearns, 11, 27.
 Snake River area: Debler, 1; Stearns, 18, 19, 21.
 Springs and alcoves, origin: Stearns, 19.
 Thermal springs: Waring, 5.

Ideas of geology, emergence: Ashley, 25.

Igneous and volcanic rocks. See also Batholiths; Dikes, Intrusions; Laccoliths; Magmas; Petrology.

Accessory minerals: Reed, J. C., 9.

Alabama: Adams, G. I., 7; Park, 4.

Alaska: Buddington, 1, 2, 6; Capps, 2, 3, 4, 6, 10, 11, 12; Kerr, F. A., 9; Koschmann, 4; Mertie, 1, 4, 7, 10, 14, 16, 20; Moffit, 8, 11; Park, 2; Reed, J. C., 3; Smith, P. S., 1, 12.

Altered volcanics, Iowa-Wis.-Mo.: Allen, V. T., 7.

Analyses, metamorphic rocks: Mathews, E. B., 9.

Anorthosite: Buddington, 15; Faessler, 15.

Antillean-Caribbean region: Schuchert, 31.

Appalachia: Nelson, 6.

Appalachian Plateau and Mississippi Valley: Butts, 12.

Arctic America: Bentham, 2, 3.

Arizona: Brady, 7; Brown, W. H., 4; Butler, 17, 18, 19, 20, 21; Colton, 8; Fowler, 14; Galbraith, 1; Garrett, S. K., 1; Gilluly, 17, 20; Harrell, 2; Hernon, 1; Kuhn, 1; Lausen, 4; Peterson, N. P., 1, 2; Reber, 1; Short, 6; Smith, H. T. U., 10; Williams, H., 11; Wilson, E. D., 8; Anonymous, 179.

Igneous and volcanic rocks—Continued.

Arkansas: Cronels, 1, 3; Miser, H. D., 1; Ross, C. S., 1, 29.

Artificial classn.: Hoover, W. F., 3.

Aruba, West Indies: Westermann, J. H., 1, 4.

Atlantic and Caribbean: Groeber, 1.

Atlantic and Gulf Coastal Plain: Stephenson, 24.

Basaltic magmas, differentiation: Kennedy, 1.

Basalts, extrusive, columnar structure: Conard, 2.

Batholiths, Minn.-Ontario: Grout, 3.

Belt ser.: Fenton, 54.

Beryllium ores: Brinton, 1.

Bonaire, West Indies: Phipps, 4, 6.

British Columbia: Armstrong, J. E., 1, 2; Bancroft, 1; Bostock, 1; Brock, B. B., 1; Brock, R. W., 1; Cairnes, 5, 15, 17; Campbell, C. D., 1, 6; Cockfield, 11, 14; David C., 1; Davis R. E., 1; Gray, J. G., 1; Gunning, 3, 11; Hanson, 1; James, H. T., 1; Johnston, W. A., 11; Kerr, F. A., 9, 11, 22; Kindle, E. D., 3, 4; Lang, A. H., 1; Mathews, W. H., 1; Rice, H. M. A., 1, 4, 6; Sharpstone, David C., 1; Stevenson, J. S., 5; Stevenson, L. S., 1; Walker, J. F., 4, 5.

California: Anderson, C. A., 2, 3, 5, 6; Andrews, P., 2; Averill, 1, 7; Calkins, 1; Chapman, R. W., 4; Clark, 19; Dudley, 1; Eckis, 1; Erwin, 1; Evans, R. D., 1; Ferguson, H. G., 2, 4; Finch, R. H., 4; Fitch, 2, 3, 4; Fraser, D. M., 1; Gilbert, C. M., 1; Herold, 8; Hertlein, 11; Hewett, 16; Hinds, 11, 15, 16, 18; Hoots, 3; Kelley, 10; Knopf, A., 1; Knopf, E. C., 1; Longley, 3; MacDonald, G. A., 1; Mayo, 2; Miller, F. S., 3; Miller, W. J., 4, 6, 11, 12, 17, 21; Morse, R. R., 1; Murphy, F. M., 3; Noble, L. F., 4; Oakeshott, 1; Osborn, E. F., 1; Peacock, 2; Powers, H. A., 7; Rand, W. W., 1; Reck, 2; Schroter, 2; Schürmann, 4; Swartzlow, 5-a; Taff, 3; Williams, H., 1, 4; Wilson, R. W., 13; Woodford, 8.

Canada: Alcock, 13; Dougherty, 5; Furse, 1; Moore, E. S., 7, 14, 23; Pettijohn, 11.

Canadian Shield: Chamberlin, 16; Derry, 9; Grout, 21; Wilson, M. E., 20.

Carriacou, West Indies: Trechmann, 8.

Central America: Müllerried, 30; Sonder, 1.

Chemical constituents: Harcourt, 2.

Classification: Peacock, 1; Shand, 1; Van Tuyl, 19.

Colorado: Barnes, F. F., 2; Behre, 32; Boos, M. F., 5, 9; Burbank, W. S., 2, 3, 4; Butler, B. S., 5, 9; Chapman, E. P., 2; Conn., 1; Eckel, E. B., 5; Goddard, E. N., 1, 2, 3; Gra-

Igneous and volcanic rocks—Continued.

Colorado—Continued.

ham, J. R., Jr., 1; Green, T. H., 1; Heaton, 8; Howland, 1; Johnson, J. H., 9; Kans. G. Soc., 11; Knopf, 11; Larsen, 4, 16; Lavington, 3; Lovering, 15, 22, 30; Pearl, 1; Reno, 1; Rohlfing, 1; Smith, Ward C., 1; Singewald, Q. D., 1, 3, 6, 7; Stark, 5, 6, 8, 12; Switzer, 4; Upson, J. E., 2; Vanderwilt, 2, 11; Van Tuyl, 18; Waldschmidt, 5, 7; Walker, S. M., 1; Wilkerson, 5.

Columbia River Basin: Landes, H., 1.

Connecticut: Agar, W. M., 2, 7, 9, 10; Foye, 7; Stewart, L., 1.

Costa Rica: Schaufelberger, 7.

Crystalline schists, Pa.-Md.: Jonas, 12.

Cuba: Lewis, J. W., 1; Ortega y Ros, 1, 2; Palmer, R. H., 5; Rutten, L. M. R., 4; Taber, 7, 13; Thiadens, 5; Vermunt, 4.

Curacao, West Indies: Molengraaff, G. J. H., 1-a, 2; Pijpers, 2; Vermunt, 1, 2.

Descriptive petrography: Johannsen, 2.

Determination: Van Amringe, 4.

Diversification: De Lury, 24.

Dunite: Bowen, 13.

Equilibrium studies: Snow, R. B., 1.

Evaluation of names: Haff, 2.

Field classn.: Parker, 6.

Flow lines and planes: Fraser, D. M., 3.

Flow units in basalt: Nichols, R. L., 4.

Formation of ore deposits: Bastin, 19.

General: Buddington, 7; Daly, 7, 12; Friedlaender, C., 1; Howe, W. W., 1; Johannsen, 2; Quirk, 19.

Geological notes for climbers: Erwin, 5.

Georgia: Cooke, C. W., 21; Crickmay, G. W., 22; Lester, J. G., 1.

Granites: Goranson, R. W., 3; Lester, J. G., 1; Wahlstrom, 6.

Greenland: Backlund, 3, 5, 7; Bentham, 1, 2; Büttler, 2, 3, 4; Callisen, 1; Holler, 1; Hübscher, von, 1; Koch, L., 2, 10, 12; Kranck, 2; Krueger, H. K. E., 2; Maync, 1, 2; Moos, A. von, 1, 2; Nieland, 1; Noe-Nygaard, 3, 5; Odell, 5; Oedum, 1; Rittman, 1; Schaub, H. P., 1; Sugden, 1; Teichert, 14; Vischer, 1, 2, 3; Wager, 3; Wegmann, 5, 6, 7, 8, 9, 10; Wordie, 1.

Guadeloupe: Barrabé, 2.

Guatemala: Atwood, W. W., 5; Deger, 1, 3; Termer, 6, 7.

Hawaii: Chang, 1; Gregory, H. E., 3; Hinds, 5, 7; Jaggar, 37; Palmer, H. S., 8; Powers, H. A., 8; Stearns, H. T., 5, 8, 15; Wentworth, 44.

Heat conduction: Lovering, 18.

Heavy minerals: Sandell, 1.

Hydrothermal alteration: Schwartz, 27.

Idaho: Anderson, A. L., 1, 3, 5, 8, 9, 11, 12, 14, 18, 22, 23; Capps, 14; Currier, 4; Dickey, F. H., 1; Kirkham,

Igneous and volcanic rocks—Continued.

Idaho—Continued.

11; Livingston, D. C., 4; Mansfield, G. R., 2; Reed, J. C., 19; Ross, C. P., 15, 18, 22, 31; Shenon, 10, 16, 17, 18; Stearns, H. T., 19, 21, 27; Umpleby, 1; Wilson, R. A., 5.

Inclusions, origin: Grout, 20.

Interpretative petrology: Buddington, 16; Dake, 14.

Jamaica: Matley, 2, 5; Trechmann, 9.

Kansas: Carpenter, A. C., 1.

Kings Mtn. area, N. C. and S. C.: Frink, 1.

Labrador: Kranck, 3; Odell, 4, 6; Wheeler, E. P., 2d, 1, 2.

Lake Superior region: Merrill, J. A., 1.

Louisiana: Fisk, 7.

Lowlands, S.-cent. and Ouachita Provs.: Ruedemann, P., 3.

Magnetic stoping: Grout, 17.

Magmatism: Ellis, R. W., 5.

Maine: Chadwick, 33; Fisher, L. W., 11; Jenks, W. F., 2; Smith, E. S. C., 2; Trefethen, H. T., 1.

Manitoba: Baker, W. F., 1; Bruce, 4; Downie, 1; Stockwell, 5, 6, 7, 9, 10, 11; Tanton, 6-a; Wright, J. F., 1, 12, 21.

Maryland: Cloos, 6, 12, 14; Knopf, E. F. B., 2.

Massachusetts: Billings, 18; LaForge, 1.

Mauna Loa, Hawaii, laval flows: Jaggar, 37.

Mechanical analysis, thin-sec.: Krumbein, 7.

Metomorphic terminology: Erwin, 6.

Metamorphism and ig. action: Read, H. H., 1.

Metchosin volcanics, Wash., Oreg.: Weaver, 11.

Mexico: Arnold, R., 2; Blázquez, L., 3; Burri, 1; Cumming, 3; Díaz, 1; Donald, R. T., 1; Flores, T., 1, 5, 10; González, J., 1; Hernandez, 2, 3; Hirschi, 2, 5; Hisazumi, 1; Imlay, 4, 7, 10, 12; King, P. B., 26; King, R. E., 6; Kellum, 10; Kelly, S. F., 5; Müllerried, 25; Muir, J. M., 3; Ordóñez, 5, 6; Pastor, 1; Perera Castillo, 1; Santillán, 5; Schmitt, H., 2; Schürmann, 1; Singewald, Q. D., 12; Staub, 3; Valentine, W. G., 1; Vivar, 2; Wandke, 2; Watson, 9; Woodford, 6.

Michigan: Ayres, 1; Butler, B. S., 1; Dickey, R. M., 1; Lamey, 2, 4, 8.

Minerals of volcanic rocks: Melhase, 19.

Minnesota: Balk, 8; Bastin, 16; Grout, F. F., 2, 10, 22, 23; Richarz, 2; Sandberg, 4; Sanders, C. W., Jr., 1; Schwartz, 13, 29; Sleight, 1; Stark, 16; Swanson, R. W., 1; Tatge, 1; Thiel, 13.

Miquelon Is., West Indies: Aubert de la Rue, 1, 2, 3.

Mississippi embayment: Moody, C. L., 8.

Igneous and volcanic rocks—Continued.

- Mississippi Valley area: Bastin, 20; Tolman, 16.
- Missouri: Bridge, 2; Conselman, 1; Dake, C. L., 1; Graves, 1; Mullenberg, 1; Singewald, J. T., Jr., 5; Tarr, 9, 16; Tolman, 8, 10.
- Models of: Anonymous, 130.
- Montana: Clapp, C. H., 3; Dickey, F. H., 2; Gibson, R., 1, 2; Howland, 2; Hurlbut, 10; Jones, R. H. B., 1; Langton, 1; Larsen, E. S., 2, 15; Lorain, 1; Lovering, 1; Pardee, J. T., 2; Parsons, W. H., 4; Pierce, 7; Reeves, F., 1, 3; Sahinen, 4; Schafer, 3; Shenon, 1, 15; Skeels, 1; Spiroff, 3; Vhay, 2; Wolff, 6.
- Montserrat, West Indies: MacGregor, 2.
- Nevada: Calkins, 4; Callaghan, 6, 8, 13; Cameron, E. N., 2; Campbell, D. F., 1; Ferguson, 10; Gianella, 9; Gillson, 1; Hewett, 4; Kerr, P. F., 14, 20; Muller, 14; Nolan, 2, 8, 9; Sharp, 4, 5; Westgate, 6.
- New Brunswick: Caley, 2; Flaherty, 1; Gesner, 1.
- Newfoundland: Cooper, J. R., 1, 2; Espenshade, 1; Foley, F. C., 1; Heyl, 1; Ingerson, 2; Jewell, 2; Snelgrove, 2, 4.
- New Hampshire: Billings, 9; Chapman, C. A., 1, 2; Hadley, J. B., 1; Kaiser, E. P., 2; Kingsley, 1; Modell, 3; White, G. W., 12; Williams, C. R., 2.
- New Jersey: Butler, J. W., Jr., 1, 3; Moldenke, 1.
- New Mexico: Church, F. S., 1; Hunt, C. B., 1, 4, 4-a; Just, 3; Lasky, 12, 14; 16; Nichols, 7; Parker, B. H., 2; Renick, 3; Schmitt, 6, 10; Spencer, A. C., 1; Stott, C. E., 1; Vanderwilt, 12; Williams, H., 11; Winchester, 3.
- New York: Alling, 6; Balk, 2, 5, 11; Bell, G. K., Jr., 1; Brown, J. S., 2; Buddington, 3, 8, 17, 23; Cannon, R. S., 1; Dale, N. C., 2, 5; Gallagher, 1; Reed, J. C., 5; Rodgers, 3; Whitcomb, 11-a.
- Nicaragua: Burri, 2, 3, 4.
- North America: Boesch, H. H., 3; Butler, 16; Waters, 13.
- North Carolina: Keith, Ar., 2; Murray, 4, 6; Vitz, 1.
- Northwest Territories: Furnival, 3, 5; Henderson, J. F., 4, 5, 6; Jolliffe, A. W., 2; Jolliffe, F. J., 3; Kidd, 3; Lord, C. S., 1; Riley, 3, 4; Robinson, H. S., 1.
- Nova Scotia: A. P., Jr., 1; Howse, 1; Lund, R. J., 1.
- Numerical field tabulation: Spearman, 2.
- Oklahoma: Decker, 24, 25; Ham, 1; Hoffman, M. G., 1; Merritt, 6, 7; Ross, C. S., 1.

Igneous and volcanic rocks—Continued.

- Ontario: Bannerman, 3; Bartley, 2; Bateman, J. D., 1, 2, 3; Brenneman, 1; Bruce, 8, 21, 22, 26; Burwash, 4, 11; Cloos, 8; Collins, 7; Cooke, H. C., 25; Derry, 5, 10; Dyer, 20, 22; Emmons, R. C., 1; Fairbairn, 11, 15; Freeman, B. C., 2, 3; Froberg, 3; Gledhill, 1; Greer, L., 1; Grout, F. F., 2; Harcourt, 4; Harding, W. D., 2, 3, 4, 5; Horwood, 1, 12; Hurst, 10; Keith, M. L., 4; Kidd, 4; Laird, H. C., 2, 5, 7, 8; Langford, 4; Macdonald, R. D., 1; Matheson, 1; Moore, E. S., 8, 18; Moorhouse, 1, 3; Osborne, 31; Perdue, 1; Pettijohn, 5, 7, 15; Prest, 1; Quirke, 2, 13; Rickaby, 3, 4; Robson, 1; Satterly, 3, 4; Savage, W. S., 1; Suffel, 2; Tanton, 1, 5; Thompson, James E., 3, 5, 6, 8, 11, 13, 14, 15; Thompson, R., 4; Tolman, C., 1; Wright, 21; Anonymous, 121, 149.
- Optical identification of minerals: Basore, 1.
- Oregon: Buwalda, 19; Callaghan, 3, 10; Fuller, R. E., 3, 15, 16; Gilluly, 4, 7, 12, 16; Goodspeed, 20; Hewett, 5; Hodge, 26; Layfield, 1; Moore, B. N., 8; Oregon Dept. Geology, 1; Piper, 17; Reed, J. C., 1; Renick, 2; Smith, W. D., 11; Stearns, 7; Thayer, 5; Wells, F. G., 6, 9; Wheeler, 12; Williams, H., 9.
- Origin and composition: Runner, D. G., 5.
- Origin and mineralogy: Schairer, 7.
- Oxides, opaque: Newhouse, 12.
- Panama: MacDonald, D. F., 1.
- Pegmatites: Hess, F. L., 8.
- Pennsylvania: Bascom, 1, 3, 4, 6; Fraser, 11, 15; Jonas, 2; Knopf, E. F. B., 3; Miller, B. L., 13, 15; Stose, G. W., 1, 21; Watson, E. D., 6; Willard, 58.
- Peridotites: Sosman, 1.
- Perthites, plutonic: Alling, 10.
- Petrography: Grout, 6; Johannsen, 2.
- Petroleum accumulations: Sellards, 35.
- Petrology: Alling, 8; Bowen, 16; Grout, 6; Johannsen, 2; Pettijohn, 13.
- Pre-Cambrian: Bascom, 5; Moore, E. S., 22; Tyler, 4.
- Pribilof Is.: Washington, 4.
- Primary banding: Coats, 1; Hess, H. H., 15.
- Pseudo-cataclastic texture: Anderson, G. H., 4.
- Puerto Rico: Meyerhoff, 4, 10; Ray, H. C., 4.
- Quartz dikes: Tolman, C., 5.
- Quebec: Auger, 1, 2; Backman, 1, 2; Bain, 21; Bannerman, 4, 6; Bell, A. M., 1; Bell, L. V., 7, 10, 12, 13, 16; Bruce, 7; Clark, T. H., 5;

Igneous and volcanic rocks—Continued.

Quebec—Continued.

Conolly, H. J., 1; Cooke, H. C., 5, 11, 18, 22; Denis, 4, 6, 7; Douglas, 4; Dresser, J. A., 6; Faessler, 16, 18, 22; Furnival, 4; Gunning, 12, 15, 22, 24; Hawley, 7, 10; Henderson, J. F., 1, 2; Jones, I. W., 4, 6, 13, 15; Laverdière, 4; Lang, A. H., 3, 4; Longley, 1, 2, 4; Lowther, 1; McGerrigle, 8; MacKenzie, 4, 5; Malouf, 1; Mawdsley, 6; Norman, 1, 6, 9, 9-a, 10, 11; Northrop, 10; O'Neill, J. J., 2, 6; Osborne, 15, 16, 17, 21, 22, 29; Parks, W. A., 4; Retty, 1, 4, 6; Ross, S. H., 1; Shaw, G., 1; Sproule, 1-a; Tolman, C., 2, 3, 7, 15; Weeks, L. J., 5-a; Wilson, H. S., 1; Wilson, J. T., 6; Wilson, M. E., 12, 14, 17, 19, 22.

Rare elements, concentration: Zies, 6.

Relations of: Hodge, 19.

Replacement shells around batholiths: Freeman, B. C., 5.

Rest Is. granite, Minn.-Ontario: Cram, 4.

Rio Grande depression: Bryan, 36.

Rock-ore assoc., significance: De Lury, 27.

Roots of volcanoes: Daly, 18.

Saba, West Indies: Molengraaff, G. A. F., 1.

St. Martin, West Indies: Molengraaff, G. A. F., 1.

Saint Pierre, West Indies: Aubert de la Rue, 1, 2, 3.

Saint Monica Mts.: Kelley, V. C., 1.

Saskatchewan: Alcock, 17, 19; Keith, M. L., 3; McLearn, 4; McMurchy, 1, 2; Ross, S. H., 2; Sproule, 3, 5; Stockwell, 1; Weeks, 9; Wright, 18, 19.

Seyenites and gabbros: Knopf, A., 14.

Silicates, high-temperature research: Bowen, 17.

Snake River Canyon: Freeman, O. W., 8.

South Carolina: Keith, Ar., 2.

South Dakota: Runner, J. J., 5; Tullis, 5, 6, 7.

Squeeze-ups of lava: Nichols, R. L., 5.

Structural behavior: Balk, 13; Barton, 47; Buddington, 20.

Structures: Willis, B., 1.

Succession and fm. temperatures, minerals: Lindgren, 15.

Sulfides: Newhouse, 12.

Temperatures, high, effect on: Bowen, 11.

Tennessee: Born, 5; Laurence, R. A., 4.

Terminology, tectonic forms: Straley, 3.

Texas: Elms, 1; Jones, C. T., 1; King, P. B., 5, 29; Ross, C. S., 1; Schoffemayer, 1.

Texture demonstration: Hoover, W. F., 2.

Thorium-uranium ratios and lead origin: Keevil, 3.

Trinidad: Kugler, H. G., 2.

Uinta Mts.: Forrester, 1.

Igneous and volcanic rocks—Continued.

Utah: Beutner, 1; Callaghan, 12; Dobbin, 17; Gilluly, 5; Green, J., 1; Gregory, H. E., 4, 6; McEuen, K., 1; Nolan, 6; Schoff, 2; Thorpe, 14; Williams, H., 11.

Variation diagrams: Larsen, 21.

Vermont: Foyles, 3; Jacobs, 2, 3;

Kreiger, M. H., 1; Larrabee, 1;

Maynard, J. E., 2, 3; Richardson,

C. H., 2, 3, 4, 7; Wolff, J. E., 1, 2.

Virginia: Brown, C. B., 3; Cooper, B. N.,

1; Dennis, W. C., 1; Edmundson,

4; Furcron, 3, 4, 9; Hess, H. H., 4;

Jonas, 3, 7; Manning, 1; Nelson, 4;

Park, 6; Pegau, 7, 10; Steidtmann,

7; Thiesmeyer, 5-a.

Viscosity problems: Balk, 7.

Volcanic domes: Williams, H., 5.

Washington: Barr, 1; Chappell, 1; Cul-

ver, 6; Felts, 3, 4; Flint, 19; Fuller,

10; Goodspeed, 1; Hoffman, M. G.,

2, 4; Irwin, W. H., 1; Richarz, 6;

Waters, 4, 11; Weaver, 7.

Water content of magmas: Gilluly, 19.

West Indies: Barrabé, 7; Rutten, 9.

Wisconsin: Stark, 4; Wang, 1.

Wyoming: Beckwith, 3; Fowler, K. S.,

1; Horberg, 1; Love, 6; Nace, 2;

Parsons, W. H., 2; Rouse, J. T., 2,

3, 9; Sheets, 1.

Yellowstone Nat. Park: Brouwer, 1, 2,

3; Fenner, 18; Howard, A. D., 14.

Yukon: Bostock, 4, 6, 11; Johnston, J. R., 1; Lees, E. J., 2.

Igneous rocks and high temperatures: Bowen, 11.

Igneous intrusions. See Intrusions.

Illinois.

Chicago area eng. geology: Ekblaw, 8.

Earth resistivity survey: Hubbert, 4.

Engineering demands on geology: Ekblaw, 4.

Geologic mapping, 1839-1939: Weller, 36.

Geological chart: Crook, A. R., 5.

Investigations, Ill. geology: Rolfe, C. W., 1.

Publications, geology, min. res., mineral industry of Ill.: Ill. G. S., 1.

State Geol. Survey: Bain, H. F., 1;

Cheney, 2; DeWolf, 2; Leighton,

M. M., 7.

Typical rocks and minerals: Ekblaw, G. E., 3.

Areas described.

Alexis quad.: Wanless, 1.

Chicago area: Bretz, 10.

Rock River country: Rolfe, D., 1.

Economic geology.

Ash coal formula: Ball, C. G., 3.

Basin oil field: Lee, L. K., 1, 2.

Burlington lms.: Lamar, 12.

Carbon-ratio theory: Bell, A. H., 15.

Centralia oil field: Koch, H. L., 1; Moulton, G. F., 1.

Illinois—Continued.

Economic geology—Continued.

- Clay minerals, lms., dolomites: Grim, 11.
 Clays: Allen, V. T., 8; Grim, 3, 13, 14; Lamar, 5; Piersol, 1.
 Coals: Bement, 1; Benson, E. T., 1; Boley, 1; Cady, G. H., 3; Henbest, L. G., 1; McCabe, 3, 4, 5; Thiessen, R., 2, 6; Wanless, 8; Weller, 35; Anonymous, 59.
 Correlations, Illinois Basin fields: Workman, 9.
 Darmstadt anticline: Bell, A. H., 3.
 Deep-drilling poss.: Bell, A. H., 25.
 Dolomites: Lamar, 15.
 Dupo oil field: Bell, A. H., 1.
 Earth resistivity surveys: Hubbert, 3.
 Eastern Interior coal basin, oil and gas: Bell, A. H., 11.
 Fluorspar: Bastin, 2; Carroll, 3; Currier, 5, 7; Pough, 1.
 Fuller's earth: Grim, 2.
 Geology of oil fields: Bell, A. H., 4; Howard, W. V., 12.
 Gravel: Ekblaw, G. E., 7.
 Gumbotil poss.: Lamar, 16.
 Herrin coal bed: Cady, G. H., 7, 8.
 High-calcium lms.: Lamar, 6.
 Illinois Basin: Bell, A. H., 17; Cohee, 5; Hares, 6; Howard, W. V., 6; Leighton, 27; Wasson, 3; Weller, 24, 28.
 Kaolin: Grim, R. E., 4; Piersol, 1.
 Kaolinite in coal: Ball, C. G., 2.
 Kaskaskia River Valley: Ekblaw, 11; Leighton, 28.
 Lead-zinc area: Behre, 14; Scott, E. R., 1.
 Limestones: Lamar, 1, 15.
 Loudon pool: Sloan, 1.
 Magnetometer work: McClure, P. S., 1.
 Martinsville oil fields: Moulton, G. F., 1.
 Mineral industry: Voskuil, 1.
 Mineral res.: Lamar, 14; Leighton, 15.
 Molding sand: Willman, 1.
 Mud-fluid materials: Lamar, 7.
 Natural gas: Bell, A. H., 12, 13, 14, 16, 18, 20, 21; Collingwood, 4; Weller, 24; Anonymous, 193.
 New Centralia oil field: Bell, A. H., 29.
 Nonmetallic min. res.: Lamar, 8.
 Oil and gas fields: Anonymous, 193.
 Oil and gas map, 1937: Bell, A. H., 19.
 Pennsylvanian cycle significance: McGee, 1.
 Petroleum: Arnold, H. H., Jr., 1; Bell, A. H., 7, 8, 9, 10, 12, 14, 16, 18, 19, 20, 21, 22, 23, 26, 27, 28; Cohee, 3; Collingwood, 4; Cronels, 7; Easley, 1; Howard, W. V., 6; Moulton, G. F., 2; Sanders, T. P., 3; Wasson, 4; Weller, J. M., 24; Anonymous, 193.
 Publications on: Anonymous, 84.
 Rock wool: Lamar, 10; Leighton, 22.
 Salem oil field: Arnold, H. H., Jr., 1.
 Sand: Ekblaw, 7.
 Sandoval Dev. structure: Spitznagle, 1.
 Sediments, argillaceous: Bray, R. H., 1.

Illinois—Continued.

Economic geology—Continued.

- Silica: Parmelee, 2.
 Southwest Ill.-S. E. Mo. area: Kans. G. Soc., 12.
 Springfield coal basin: Wanless, 8.
 Sulphate reduction, oil-well waters: Bastin, 1.
 Underclays: Allen, V. T., 8; Grim, 13.
 Warsaw oil area: Bell, A. H., 10.
Historical geology.
 Aux Vases ss.: Keyes, 439.
 Baltimore & Ohio route: Grimsley, 1.
 Basin oil field: Lee, L. K., 1, 2.
 Boring, Morris: Lamar, 9.
 Cambrian: Bevan, 2, 19, 36.
 Carlinville quad.: Ball, 18.
 Centralia oil field: Koch, H. L., 1.
 Chicago region: Bretz, 10; Nichols, H. W., 2.
 Chicago sh.: Taylor, D. O., 1.
 Clay Co.: Weller, 24.
 Clay veins in coal: Roe, W. B., 1.
 Coal: Prescott, 1; Weller, 35.
 Contact, Glenwood-Platteville fms.: Elder, 1.
 Covell conglomerate: Willman, 2.
 Cretaceous, S. Ill.: Lamar, 4.
 Cyclical sedimentation: Weller, 12.
 Cyclothems: Wanless, 7.
 Darmstadt anticline: Bell, A. H., 3.
 Decatur area: Workman, L. E., 4.
 Deep-drilling poss.: Bell, A. H., 25.
 DeKalb quad.: Caldwell, L. T., 1.
 Devonian: Stainbrook, 1; Weller, 31; Workman, 5.
 Dubuque fm.: Kay, G. M., 16.
 Dupo oil field: Bell, A. H., 1.
 East St. Louis area: Ekblaw, 9.
 Fern Glen invalid: Keyes, 463.
 Fernvale fm.: Greger, 9; Shideler, 18.
 Fluorspar: Currier, 5, 7, 8.
 Formation names, Ill.-Mo.: Weller, 33.
 Galena dolomite: Kay, G. M., 12; Keyes, 374.
 General: Folger, 4; Kans. G. Soc., 8; Trowbridge, 15; Twenhofel, 15.
 Geologic mapping, 1839-1939: Weller, 36.
 Glenwood shs.: Sardeson, 20.
 Golconda lms.: Keyes, 169.
 Greene Co., oil poss.: Collingwood, 4.
 Herrin coal bed: Cady, G. H., 7, 8.
 Hoing sand, position: Workman, 3.
 Illinois Basin: Bell, A. H., 17, 24; Cohee, 5; Hares, 6; Howard, W. V., 6; Leighton, 27; Moulton, 4; Wasson, 3; Weller, 24, 25, 28, 30.
 Isopach formational maps: Ball, J. R., 13; Edwards, I., 2.
 Jersey Co. oil poss.: Collingwood, 4.
 Kankakee arch: Ekblaw, 15.
 Kaskaskia lms. title: Keyes, 325.
 Kaskaskia River valley: Ekblaw, 11.
 Kinderhook fm.: Keyes, 430.
 Lake Springfield dam, geology: Ekblaw, 16.

Illinois—Continued.

Historical geology—Continued.

- La Salle anticline, age: Payne, J. N., 3.
 La Salle lms.: Griffin, J. R., 1.
 Lead-zinc area: Behre, 14.
 Loudon pool: Sloan, 1.
 Louisiana lms.: Williams, J. S., 4.
 Macomb area: Savage, T. E., 3.
 Madison Co. oil poss.: Collingwood, 4.
 Marlon Co.: Weller, 24.
 Mississippian fms.: Coryell, 19; Moore, 27; Weller, J. M., 32; Weller, S. H., 4; Workman, 11.
 Mississippi River arch: Howell, J. V., 6.
 Mississippi Valley: Workman, 7.
 Niagara stromatoporoid reefs: Fenton, C. L., 11.
 Okaw fm.: Sutton, 9.
 Ordovician: Fisher, 16; Kay, G. F., 16.
 Oshawanian ser.: Keyes, 76.
 Ozark prov.: Cozzens, A. B., 2.
 Paleozoic history: Leighton, M. M., 5.
 Pennsylvanian: Ball, J. R., 10; Cady, 11; Fuller, M. W., 1; McGehee, 1; Needham, 2; Newton, 1; Wanless, 3, 4, 9, 16; Weller, J. M., 6, 14, 30.
 Petroleum: Bell, A. H., 17, 21, 23, 28.
 Pinckneyville-Jamestown area: Bell, A. H., 5.
 Platville fm.: Bays, 2.
 Pleistocene loess, Molluscan fauna: Baker, F. C., 15.
 Port Byron lms.: Savage, 8.
 Prairie du Chien beds: Powers, E. H., 3.
 Pre-Pennsylvanian fms.: Weller, S., 3.
 Profiles of weathering, drift: Leighton, M. M., 4.
 Publications on: Anonymous, 84.
 Renault anticlinal areas: Moulton, 2.
 Rockford area: Payne, J. N., 1.
 Ste. Genevieve lms., insoluble residue: corals: Hoover, W. F., 4.
 Salem oil field: Arnold, H. H., Jr., 1.
 Sandoval Dev. structure: Spitznagle, 1.
 Sedimentary cycles, Penn.: Weller, J. M., 14.
 Shale ser., Bedford: Branson, C. C., 8.
 Shoal Creek cf. Carlinville lms.: Ekblaw, S. E., 2.
 Silurian: Ball, 21, 22, 23; Sutton, 11; Workman, 12.
 Southwest Ill.-S. E. Mo. area: Kan. G. Soc., 12.
 Stewartville fm.: Kay, G. M., 16.
 Structure, Illinois Basin: Cohee, 5.
 Sycamore quad.: Caldwell, L. T., 1.
 Tazwell till: Keyes, 408.
 Tertiary: Lamar, 4.
 Underclays, Penn.: Grim, 13, 17.
 Vienna City reservoir site: Ekblaw, 13.
 Warsaw fm.: Weller, 19.

Mineralogy.

- Benld meteorite: Nichols, H. W., 3; Wilson, B. H., 2.
 Clays: Bradley, W. F., 1; Grim, 11, 13, 14, 17.

Illinois—Continued.

Mineralogy—Continued.

- Copper erratics: Crook, A. R., 1.
 Crystallizations in geodes: McKinley, W. C., 3.
 Galena: Payne, J. N., 2.
 Galena replacing rootlet: Allen, V. T., 6.
 Geodes: McKinley, W. C., 2, 3.
 Heavy minerals, sands and gravels: Lamar, 13.
 Kaskaskia River Valley min. res.: Leighton, 28.
 Mica, argillaceous sediments: Grim, 10.
 Pyrite, lead-zinc area: Born, K. E., 2.
 Sphalerite: Payne, J. N., 2.
 Tilden meteorites: Crook, A. R., 4.
 Underclays, Penn.: Grim, 13, 17.

Paleontology.

- Aquatic life, Chicago Glenwood Lake beds: Ball, J. R., 4.
 Aurora mastodon: Powers, W. E., 7.
 Bellerophons, Carb.: Weller, J. M., 4.
 Bogs: Artist, 1; Riggs, E. S., 3; Voss, 3.
 Carboniferous forest: Noé, 8.
 Casteroides: Baker, F. C., 4; Cahn, 3.
 Cephalopoda, Port Byron: Foerste, 12.
 Ceratlocaris: Roy, 8, 10.
 Cervicalces: Galbreath, 2.
 Chaetetes: Heritsch, 1.
 Chester fossils: Sutton, 5.
 Coal ball floras: Cady, G. H., 4; Fisher, M. C., 1; Graham, R., 2, 3; Noé, 4, 5, 7, 9, 12; Schopf, 2.
 Coal balls: Schopf, 10.
 Coal measure plants: Hoskins, 1, 3.
 Coal no. 6: Henbest, O. J., 1; Schopf, 1.
 Coal, phys. constituents: Cady, G. H., 3.
 Codonotheca: Darrah, 13.
 Conodonts, Niagara: Cronels, 16.
 Conularia Sil.: Roy, 8.
 Corals, Missn.: Grove, B. H., 3.
 Cordaites: White, C. D., 14.
 Crinoidea, larviform: Weller, J. M., 5.
 Crossotheca: Darrah, 13.
 Cryptoblastus: Cline, L. M., 2.
 Cycadofilicnean roots: Hoskins, 4.
 Dadoxylon, Carb.: Miner, 5.
 Dipnoans, Carb.: Romer, 10.
 Euphemus, Carb.: Weller, J. M., 5.
 Fernvale fm.: Greger, 9.
 Forests, pollen analysis: Voss, 1, 2, 4, 5.
 Fossils, Dev.: Cooper, 26.
 Fructifications, seed-like in coal balls: Krick, 1.
 Fungi in ancient wood: Tehon, 1.
 Fusulinidae, Penn.: Dunbar, 17.
 Galena fauna: Scott, H. W., 2.
 Harrisoceras, Sil.: Flower, 7.
 Holothuroidea: Cronels, 14.
 Insecta, Carb., Mazon Creek: Carpenter, 21.
 Interglacial and postglacial flora: Fuller, G. D., 2.
 Key for plant fossils: Noé, 18.
 Kilmswick lm.: Bradley, J. H., Jr., 2.
 Larviform crinoids: Weller, J. M., 5.

Illinois—Continued.

Paleontology—Continued.

- Leperditia titanica*: Scott, H. W., 1.
Lepidocarpon sporangia: Reed, F. D., 1.
Lepidophyte strobilus: Arnold, 32.
Lesleya Lesquereux: Florin, 1.
 Lycopod seeds, Penn.: Schopf, 5.
Macrostachya, Carb.: Darrah, 9-a.
 Mammoth: Baker, F. C., 13.
 Mastodons: Anderson, F., 1; Powers, W. E., 7; Smith, B., 4; Smith, C. R., 2.
Medullosa: Schopf, 7; Steidtmann, W. E., 2.
Megalopteris Dawson: Florin, 1.
Mesolobus mesolobus: Weller, 17.
 Mollusca: Baker, F. C., 1, 3, 9, 10, 14, 15.
Neuropteris ovata: Jongmans, 6.
Oligocarpa: Darrah, 15, 17.
 Ophiuroidea: Weller, 7.
Ostracoda: Coryell, 20, 37, 38, 39, 43, 45.
Paleocyclidae, corals: Bassler, 25.
Pedicellariae: Geis, 3.
 Plants: Noé, 6, 12; Reed, F. D., 2; Schopf, 2.
 Platteville faunas: Scott, H. W., 2.
Polygyra: Baker, F. C., 12, 17.
Pomatiopsis: Baker, F. C., 8.
 Port Byron fauna: Savage, 8.
 Postglacial vegetation: Fuller, G. D., 1.
Productidae: Sutton, 14.
Psaronius: Gillette, N. J., 1; Hoskins, 6; Moon, 1.
 Pteridosperms: Arnold, 28; Darrah, 12.
Ptychocarpus: Hoskins, 5.
 Scolecodonts: Cronels, 16; Dunn, 11; Potter, F. C., 1.
 Sea balls, Sil.: Cronels, 46.
 Seeds in coal: Reed, F. D., 3.
Selaginella: Darrah, 19.
 Sponge spicules: Weller, 10, 13.
 Spores in coal: Schopf, 1, 4, 6.
 Spruce cones: Anonymous, 107.
 Starfish: Cronels, 18.
 Trilobite, Dev.: Roy, S. K., 6.
 Trumpeter swan: Wetmore, 34.
 Vertebrata: Galbreath, 1; Smith, C. R., 3.
 Worms: Cronels, 33; Roy, S. K., 4.
 Yvania: Weller, J. M., 3.
Zeacrinus: Sutton, 15.

Petrology.

- Ash correction formula: Ball, C. G., 3.
 Beach sands, Lake Michigan: Pettijohn, 2.
 Chert, Niagaran: Schultz, J. R., 1.
 Clay minerals, lms., dolomites: Grim, 11.
 Fluorspar: Currier, 8.
 Fuller's earth: Grim, 6.
 Heavy minerals in sands, gravels: Lamar, 13.
 Kaolin: Grim, 4.
 Mica, argillaceous sediments: Grim, 10.
 Molding sand: Willman, 1.
 Ste. Genevieve lms., insoluble residue corals: Hoover, W. F., 4.

Illinois—Continued.

Petrology—Continued.

- Silurian corals: Workman, 12.
 Stylolites, Burlington lms.: Frye, 3.
 Underclays: Grim, 13.
Physical geology.
 Basin oil field: Lee, L. K., 2.
 Beach pebbles, abrasion, transp.: Landdon, 1.
 Bottom sediments, Lake Mich.: Hough, J. L., 1.
 Cap au Grès faulted flexure: Rubey, W. W., 4.
 Caves, Galena fm.: Bretz, 9.
 Chicago area: Bretz, 10.
 Cusps, lake shore: Needham, 1.
 Cylindrical structures in ss.: Hawley, 11.
 Earthquakes: Dahm, 1; Heinrich, 3; Westland, 2.
 Faults: Hubbert, 5; Russell, W. L., 15.
 Fluorspar field: Currier, 5.
 Herrin coal bed structure: Cady, G. H., 7, 8.
 Illinois River channel equilibrium: Rubey, 6.
 Kankakee Arch: Ekblaw, G. E., 15.
 Landslides: Ekblaw, G. E., 6; Ramirez, 2.
 Pennsylvanian overlap: Wanless, 5.
 Pleasantview ss. channel deposits: Ekblaw, S. E., 1.
 Rock falls near Savanna: Ekblaw, G. E., 2.
 Rough Creek fault and Ouachita deformation: Russell, W. L., 15.
 Structure, by electrical prosp.: Hubbert, 8.
 Structure, Illinois Basin: Cohee, 5.
 Underclays, weathering: Grim, 17.
 Weathering of loess: Grim, 9.

Physiographic geology.

- Beaver Creek glacial origin: Ekblaw, G. E., 1.
 Bogs on glacial drift: Voss, 3.
 Carlinville quad.: Ball, 18.
 Chicago area: Bretz, 7, 10.
 Cusps, lake shore: Needham, C. E., 1.
 Decatur area: Leighton, 19.
 DeKalb quad.: Caldwell, L. T., 1.
 Drift hills, elongated: Ball, 24.
 Flood, S. Ill., 1937: Carroll, 4.
 Glacial history, Quincy area: Leighton, 25.
 Glacial Lake Chicago: Ball, 7; Ekblaw, 5; Gordon, B. F., 1.
 Glacial till, variations: Krumbein, 3.
 Glaciated areas: Leighton, 17.
 Glaciation, N. W. Ill.: Flint, 5.
 Grays Lake quad.: Ekblaw, 14.
 Kaskaskia River valley: Ekblaw, 11.
 Lake Chicago, glacial: Ball, 7; Ekblaw, 5; Gordon, B. F., 1.
 Lake, disappearing, Hardin Co.: Bonnell, 1.
 Lake Michigan sediments: Todd, J. P., 1.
 Moraines: Leighton, 31.

Illinois—Continued.

Physiographic geology—Continued.

- Nebraskan till: Wanless, 2.
- Ohio River evolution: Fowke, 1.
- Ozark prov.: Cozzens, A. B., 2.
- Physiographic divisions, S. Ill.: MacClintock, 1.
- Pre-Illinoian drift: MacClintock, 2, 4.
- Rock fragments in gravel: Wadell, 9.
- Soil materials: Ekblaw, 10.
- Sycamore quad.: Caldwell, L. T., 1.
- Tazewell till: Keyes, 408.
- Wabash Valley development: Fidler, 4.
- Weathered zones: Leighton, M. M., 1, 3.
- Winchester, tills: Bell, A. H., 2.
- Wisconsin till: Stauffer, R. S., 1; Wacher, 1.

Underground water.

- Anna City: Workman, 1.
- Ground waters: Gerber, 1, 5; Workman, 8.
- Hydrology of water supplies: Gerber, 2.
- Kaskaskia River Valley: Gerber, 6.
- Lake Co.: Gerber, 3; 4.
- Location of wells: Imbt, 1; Leighton, 20.
- Rockford area: Payne, J. N., 1.
- Rock River pre-glacial valley: Workman, 10.
- Underground water supplies, search for: Gerber, 5; Workman, 2.
- Wells, location: Imbt, 1; Leighton, 20.
- Zones of mineralization: Thwaites, 7.
- Umenite: Brown, C. B., 3; Gillson, 7; Moore, E. S., 24.

Illuminator, vertical for mineral photography: Legge, 1.

Inclusions in veins, dislocated: Douglas, C. B. E., 1.

Incrustation of minerals, selective: Frondel, 13.

Index fossils.

- Alabama, Cret.-Eocene contact: McGlamery, 2.
- Alberta: McLearn, 21; Warren, 18.
- Algae: Fenton, 58.
- Archimedes lms.: Keyes, 451.
- Arkansas: Adkins, 10; Alexander, 16; Calaban, 1.
- Ark-La-Tex area: Calaban, 1.
- California: Adams, B. C., 1-a; Rankin, W. D., 1; Schenck, 35.
- Conocardium: Branson, C. C., 19.
- Conodonts: Branson, E. B., 26, 30, 32; Ellison, 2; Gunnell, F. H., 5-a.
- Correlations by: Branson, E. B., 30, 32; Gunnell, F. H., 5-a; Rankin, W. D., 1.
- Crinoidal remains: Moore, 46.
- Devonian, Middle: Cooper, 20.
- Foraminifera: Adams, B. C., 1-a; Albritton, 3; Alexander, C. I., 16; Bermúdez y Hernández, 10; Dunbar, 10; Gravell, 3, 4; Hobson, 2; Needham, 6; Nuttall, 5; Kornfeld, M. M., 1; Muir, 3; Plummer, H. J., 9; Schenck, 33, 35.

Index fossils—Continued.

- Fossils in petroleum geology: Nuttall 4; Schenck, 33.
- Geologic fms., limitations: Keyes, 388.
- Graptolites: Ruedemann, 30.
- Gulf Coast: Kornfeld, M. M., 1; Rols-hausen, 2.
- Helicoprion, Nev., Calif.: Wheeler, 10.
- Hipparton, Pleist.: Stirton, 22.
- Lepidocyclina, Tex.-La.: Gravell, 4.
- Louisiana: Gravell, 4; Howe, 31, 32; Kornfeld, M. M., 5.
- Mexico: Müllerried, 25; Muir, 3.
- Micropaleontology and petroleum geology: Nuttall, 4.
- Mollusca: Baker, F. C., 16; Richards, H. G., 15.
- Nevada: Muller, 14.
- Ontario, Dev. zones: Fritz, 8.
- Ostracoda: Alexander, 16; Cooper, C. L., 13; Stewart, 12.
- Paleontology in sedimentation: Demorest, M. H., 1-a.
- Pectinidae, Tert., U. S.: Mansfield, W. C., 12.
- Pennsylvania: Cleaves, 8; Swartz, F. M., 10; Willard, 59.
- Permian ammonoid zones: Miller, 44.
- Quebec, York River area: Jones, I. W., 13.
- Range and environment: Eaton, 8.
- Silurian, Ky., Ohio, Ind.: McFarlan, 18.
- Tertiary faunas: Cronels, 28; Gravell, 5.
- Tertiary zones, Miss., Ala., Fla.: Gravell, 5.
- Texas: Harris, 10; Plummer, 22; Quesenberry, 1; Rutsch, 3; Stenzel, 16; Thomas, 12.
- Utah, fusulinids: Bissell, 3, 4.
- Virginia: Bates, R. L., 4.
- Wyoming: Jepsen, 10.

Index liquids.

- Checking with microscope: Slawson, 8.
- Immersion, high refraction index: West, C. D., 1.
- Measuring refractive index: Von Schlichten, 1.
- Optical analysis, immersion methods: Saylor, 2.
- Standardization: Glass, 2.

Indiana.

- Copper nugget, glacial: Mabin, 1; Vaughan, T. H., 1.
- Geologic structure and isomagnetic lines: Logan, W. N., 6.
- Lawrence Co.: Bushnell, 1.
- Monroe Co.: Bushnell, 1.
- Pike Co. soils: Miller, J. T., 1.
- Pisolites, polyhedral: Shrock, 4.
- Putnam Co. soil survey: Bushnell, 2.
- Report Div. Geology: Esarey, 2; Logan, W. N., 1.

Economic geology.

- Bristow oil field: Esarey, 5.
- Ceramic materials: Logan, W. N., 4.
- Clay resources: Whitlatch, 4.
- Coals, minable: Weller, 35.

Indiana—Continued.

Economic geology—Continued.

Eastern Interior coal basin, oil and gas:
Bell, A. H., 11, 13.

Foundry sands: Logan, W. N., 7.

Francisco oil fields: Moulton, G. F., 1.

Illinois Basin field: Moulton, G. F., 4.

Iron: Fix, G. F., 1.

Limestone, oolitic: Loughlin, 2; Vischer, 3.

Mineral fuel res.: Logan, W. N., 5.

Mineral res.: Fix, G. F., 1.

Mineral wool: Fix, G. F., 1; Thornbury, 4.

Natural gas: Bell, A. H., 11, 13; Esarey, 1, 3; Freed, 2; Ley, 5; Logan, W. N., 11; Anonymous, 193.

Nonmetallic min. res.: Logan, W. N., 9.

Oil sh., petroleum source: Anonymous, 148.

Petroleum: Bell, A. H., 11, 13; Carman, 5; Esarey, 1, 3; Ley, 5; Logan, W. N., 3, 10, 11; Malott, 8; Wanenmacher, 1; Weller, 25; Anonymous, 148, 193.

Historical geology.

Archimedes lms.: Keyes, 451.

Baltimore & Ohio route; Grimsley, 1.

Borden bioherms: Stockdale, 6.

Borden rocks: Stockdale, 2, 4, 5.

Borings, Ft. Wayne: Cumings, 1.

Bristow oil field: Esarey, R. E., 5.

Cincinnati arch.: Chappars, 8.

Coals, minable, corals: Weller, 35.

Correlations by graptolites: Decker, 14.

Devonian: Sutton, D. G., 1; Whitlatch, 3.

Dolomites, Niagaran: Busch, 1.

Flora, New Albany sh.: Read, 13.

General: Harrell, 1; Kans. G. Soc., 8.

Harrodsburg lms.: Stockdale, 1.

Illinois Basin: Moulton, G. F., 4; Weller, 25.

Isopach map, Galena, Decorah, Platteville fms.: Ball, 13.

Kentland area: Shrock, 5, 10, 11.

Lower Missn.: Stockdale, 7.

Martin Co.: Malott, 4.

Mississippian lms.: Martin, H. G., 1.

Murphys Bluff, Hayden Branch fms.: Malott, 7.

New Albany sh.: Campbell, G., 1; Huddle, 2.

New Corydon lms.: Breeze, 2.

Pennsylvanian: Culbertson, 1; Malott, 10; Wanless, 16.

Rock exposures, NW. Ind.: Shrock, 3.

Silurian: Ball, 21; Cumings, 3; Foerste, 24; Huddle, 1; McFarlan, 18.

Siosi field: Logan, W. N., 3, 10.

Subsurface geology: Logan, W. N., 8.

Trenton lms.: Logan, W. N., 2.

Turkey Run State Pk.: Anonymous, 76.

Underclay in coal fields: Whitlatch, 2.

Union oil and gas field: Logan, W. N., 11.

Wabash River Valley floor: Fidler, 3.

Indiana—Continued.

Historical geology—Continued.

West Franklin fm.: Shrock, 2.

Mineralogy.

Geodes, Stouts Creek Canyon: Von Osinski, 1.

Helt Tp. meteorite: Perry, S. H., 5.

Marcasite, fibrous, in calcite: Smith, E. R., 1.

Paleontology.

Algae, Salem lms.: Shrock, 13.

Callixylon: Arnold, C. A., 1.

Cephalopoda: Foerste, 9.

Cervales: Gazin, 23; Riggs, E. S., 2.

Cincinnati area: Chappars, M. S., 3.

Conodonts: Huddle, 3.

Coprolites: Shrock, 6.

Corals: Grove, B. H., 3; Werner, 2.

Corynecrinus: Kirk, E., 13.

Crinoids, larviform: Weller, J. M., 5.

Crinoids on fossil wood: Wickwire, 1.

Deer: Engels, W. L., 2.

Ditomyopidae, adolescent: Weller, J. M., 22.

Flora, postglacial: Read, 13.

Fossils in peat: Potzger, 2.

Harrisoceras: Flower, 7.

Kentland area: Shrock, 11, 12.

Larviform crinoids: Weller, J. M., 5.

Lebetocrinus: Kirk, E., 21.

Lichenocrinus: Faber, 1.

Mammalia: Engels, 1; Kintner, E., 1;

Lyon, M. W., Jr., 1, 2, 3; Sanford,

4; Simpson, P. F., 1; Anonymous, 21.

Marine fossils, New Albany sh.: Huddle, 2.

Neuropteris ovata: Jongmans, 6.

Niagaran rocks: Priddy, 1.

Ophiuroid species: Weller, 7.

Ostracoda: Coryell, 13; Gels, 1; Payne, K. A., 1.

Pagecrinus: Kirk, E., 1.

Paleocyclidae, corals: Bassler, 25.

Pennsylvanian, S. Ind.: Culbertson, 1.

Platycrinus: Weller, 9.

Pollen in bogs: Barnett, 1; Houdek, 1;

Howell, J. W., 1; Lindsey, 1; Otto,

J. H., 1; Prettyman, 1; Richards,

R. R., 1; Smith, Wm. M., 1.

Productidae: Sutton, 14.

Pseudorthoceratidae: Flower, 9.

Seeds, Carb., in coal: Reed, F. D., 3.

Silurian, N. Ind.: Cumings, 3.

Sponge spicules: Weller, 13.

Symbos: Lyon, M. W., 4.

Vertebrata, geol. history: Moodle, 1.

Waldron sh. micro-organisms: Berry, E. Willard, 4.

Petrology.

Beach sands, Lake Mich.: Pettijohn, 2.

Chester ss.: McCartney, 1.

Coals: Fieldner, 11.

Kentland area: Shrock, 11.

Loess and lake silts: Thornbury, 5.

Niagaran rock: Priddy, 1.

Indiana—Continued.

Physical geology.

- Caves : Esarey, 4; Fidler, 2.
- Differential erosion : Breeze, 1.
- Earthquake, Porter : Schmitt, A. R., 1.
- Faults : Freed, 1; Whitlatch, 1.
- Floyds Knob lms. solution : Stockdale, 3.
- Karst windows : Von Osinski, 2.
- Kentland area : Shrock, 11.
- Limestone, Missn. : Martin, H. G., 1.
- Mud stalagmites : Malott, 6.
- Stylolites, origin : Shaub, 14.

Physiographic geology.

- Bartholomew Co. : Ulrich, H. P., 1.
- Beach sands, variation : Krumbein, 17.
- Bloomington quad. : Addington, 1.
- Brown Co. : Ulrich, H. P., 1.
- Crawford Co. : Thornbury, 1.
- Erosion contrasts : Visher, 4, 5, 6; Wal-
ka, 1.
- Glacial boundary, S. Ind. : Thornbury, 2.
- Glacial geology : Thornbury, 3.
- Glacial till, variations : Krumbein, 3.
- Island hills, Wabash Valley : Fidler, 1.
- Karst valleys : Malott, 11.
- Klinter, Wabash Valley : Shrock, 1.
- Loess and lake silts : Thornbury, 5.
- Lost River Caverns : Malott, 1.
- Lost River, Orange Co. : Malott, 5.
- Marengo Cavern : Malott, 1.
- Ohio River evolution : Fowke, 2.
- Pine Hills Park : Smith, E. R., 2.
- Regional contrasts, rainn and erosion :
Visher, 6.
- Sand dunes, Lake Mich. : Shepherd, G. F.,
2.
- Sinking Creek, Wash. Co. : Bates, R. E., 1.
- Sedimentation, Tippecanoe Lake : Wilson,
I. T., 1.
- Wabash Valley : Fidler, 3, 4; Malott, 2.
- West Fork, White River : Fix, P. F., 1.
- Wyandotte Cavern : Malott, 1.

Underground water.

- Ground water : Harrell, 1.

Individual explor., substrata deposits : Rose,
R. B., 1.

Inductive logic and uniformitarianism : Baker,
H. B., 4.

Industrial minerals and rocks : A. I. M. E., 2.

Inertia in low-angle thrust faulting : Stev-
ens, E. H., 1.

Influence of potential in ore deposition : Dad-
son, 2.

Inesite, Wash. : Glass, 9.

Insecta.

- Amber containing : Carpenter, 11, 16;
Walker, T. L., 13, 17.
- Antiquity of structures : Cockerell, 8.
- Ants : Carpenter, F. M., 1, 2.
- Arizona Petrified Forest : Walker, M. V.,
5.
- Bees, mining, larval chambers : Brown, R.
W., 7, 10.
- Beetle elytra, fossil : Cockerell, 4.
- Blattaria, Kans. : Tillyard, 1.
- Borings in fossil wood : Brues, 2.

Insecta—Continued.

- Carboniferous : Carpenter, F. M., 10, 21.
- Cephaleia, Colo. : Cockerell, 11.
- Chrysopidae, Colo. : Carpenter, 12.
- Coleoptera : Wickham, 1.
- Color, Perm. : Dreyermann, 1.
- Colorado : Bequaert, 1; Bradley, 15;
Carpenter, 7; Cockerell, 8, 18;
Forbes, W. T. M., 2; Hungerford 1;
James, M. T., 2; Oman, 1; Usinger,
1.
- Diptera, Colo. : James, M. T., 2.
- Dragon fly, Calif. : Cockerell, 2.
- Emblaria, Kans. : Tillyard, 1.
- Eulithomyrmex for Lithomyrmex : Car-
penter, 17.
- Evolution of : Carpenter, 5; Tillyard, 2.
- Forest insect, changes : Brues, 1.
- Fossil collecting, Kans., Utah, Colo. :
Carpenter, 22.
- Fossil insects : Carpenter, 17.
- General : Carpenter, 8.
- Geological history : Carpenter, 4.
- Hemiptera, Colo. : Oman, 1.
- Holcorpa, Colo. : Carpenter, 7.
- Insect-cut leaf, Eocene : Berry, 29.
- Kansas, Cret. : Carpenter, 14.
- Kansas, Perm. : Carpenter, F. M., 8;
Tillyard, 1.
- Lake Uinta, Utah-Colo. : Bradley, 15.
- Larval chambers, mining bees : Brown,
R. W., 7, 10.
- Lygaedidae, Colo. : Usinger, 1.
- Megasecopterion, Kans. : Carpenter, 9.
- Miocene insect gall impression : Hoffman,
A. D., 1.
- Moth, Eocene, Colo. : Forbes, W. T. M., 2.
- Nemestrinidae, Colo. : Bequaert, 1.
- Palaeogyrynus : Darlington, 1.
- Permian, Kans. : Carpenter, F. M., 3;
Tillyard, 1.
- Ptiloteuthis, Calif. : Rehn, 1.
- Raphidiodea revision : Carpenter, 15.
- Scytinoptera, Mexico : Carpenter, 19.
- Syrphus (?) hendersoni : James, M. T., 1.
- Termites and pellets : Light, 1; Rogers,
29; Snyder, 1.
- Termopsinae : Emerson, A. E., 1.
- Washington, Latah fm. : Carpenter, F. M.,
6.
- Water bug, Colo. : Hungerford, 1.
- Xiphenax, N. Mex. : Cockerell, 7.

Inselberge, Lapland, Newfoundland : Schrep-
fer, 1.

Insoluble residues.

- Bermuda : Young, J. A., Jr., 2.
- Correlations by : Andrews, T. G., 2.
- Economic application of method : Mc-
Queen, 9.
- Illinois, Sil. corals. by : Workman, 12.
- Ste. Genevieve lms. : Hoover, W. F., 4.
- Kansas, Mississippi lime : Hiestand, 3.
- Missouri ser. : Keroher, G. C., 1.
- Pennsylvanian rocks : Schoewe, 15.
- Louisiana, salt domes and plugs : Huri-
but, 8; Taylor, R. E., 1, 3.

Insoluble residues—Continued.

- Missouri, correl.: McQueen, 9.
 Montana, Madison group: Sloss, 3.
 Nebraska, wells: Reed, E. C., 1.
 Oklahoma, correl. by: Ireland, 4.
 Sedimentary petrography: Krumbein, 15.
 South Carolina, Trias.: Berry, E. Willard, 18.
 Tennessee, Clay Co.: Born, 11.
 Texas, lms.: Patton, L. T., 3.
 Virginia, lms.: Smith, J. H., 1.
 Wisconsin, Sil.: Karges, 1.

Interglacial diversity: Keyes, 171.

Interglacial periods. See Glacial geology.

Intergrowth, bornite-chalcocopyrite: Schwartz, 7.

Interpretation of geophysical data: Blau, 2.

Intrusions. See also Batholiths; Dikes; Igneous and volcanic rocks; Laccoliths; Magmas.

Adirondacks: Buddington, 5.

Alaska: Capps, 10, 12; Mertie, 16; Moffit, 10, 11; Reed, J. C., 11, 17, 18; Smith, P. S., 12; Waring, 6.

Arctic America: Bentham, 2.

Arizona: Brown, W. H., 4; Butler, 17, 18, 20, 21; Crawford, W. P., 2; Garrett, S. K., 1; Gilluly, 20; Harrell, 2; Hernon, 1; Ingerson, 7; Peterson, N. P., 1, 2; Reber, 1; Rubly, 1; Smith, H. T. U., 11; Tenney, 4; Trischka, 4; Wilson, E. D., 8; Anonymous, 179.

Arkansas: Bramlette, 5; Ross, C. S., 29.

Aruba, West Indies: Westermann, J. H., 1.

Bibliography: Grout, 5-a; Sundeen, 1.

Bore-hole inv., Yellowstone: Fenner, 14.

British Columbia: Armstrong, J. E., 1, 2; Cairnes, 15, 17; Campbell, C. D., 6; Cleveland, 1; Gray, J. G., 1; Gunning, 10; Hanson, 13; Horwood, 3; Kerr, F. A., 18, 20, 21, 22; Kindle, E. D., 2, 3, 4; Lang, A. H., 6; Lay, 3; Marshall, I. M., 1; O'Grady, 1; Rice, 4, 5; Stevenson, 5; Wright, L. B., 5.

California: Chapman, R. W., 4; Cloos, E., 4, 13; Daly, J. W., 1; Dudley, 1; Durrell, 2; Erwin, 4; Farmin, 4; Hazzard, 9; Hertlein, 11; Ingerson, 7; Kelley, 8, 9, 10; Knopf, 1, 18; Larsen, 24; MacDonald, G. A., 3; Mayo, 7, 10, 11, 13; Miller, F. S., 2, 3; Miller, W. J., 17; Osborn, E. F., 1; Putnam, W. C., 4; Reiche, 1; Seager, 1; Webb, 9; Wiebenga, 1.

Canada: Collins, 12; Dougherty, 5; Moore, E. S., 23; Wright, L. B., 20.

Canadian Shield: Derry, 9; Wilson, M. E., 20.

Colorado: Bain, 22; Barnes, F. F., 12; Behre, 16, 32; Boos, 10, 12, 14, 15; Burbank, 12, 16; Cross, C. W., 2; Eckel, E. B., 9; Goddard, 5, 6;

Intrusions—Continued.

Colorado—Continued.

Green, T. H., 1; Heaton, 8; Howland, 5; Jahns, 1; Kohanowski, 1; Lovering, 17, 20, 23, 26, 30; Moehliman, 6; Pearl, 1; Reno, 1; Rohlfing, 1; Singewald, Q. D., 5, 11; Smith, Ward C., 1; Stark, 9; Switzer, 4; Vanderwilt, 11; Van Tuyl, 18; Van Valkenburgh, A. J., 1; Waldschmidt, 5, 7; Wilkerson, 5.

Columbia River Basin: Landes, H., 1.

Connecticut: Cameron, E. N., 3.

Contamination, acid magmas: Nockolds, 1.

Cuba: MacGillavry, 4; Thiadens, 3, 5.

Diaschistic dikes and ore deposits: Spurr, 1.

Dikes, dilation and replacement: Goodspeed, 19.

Domes, structure elements: Balk, 9.

Fractures, ore-bearing, origin: Emmons, W. H., 8.

Gogebic iron dist.: Atwater, 5.

Greenland: Bentham, 2; Deer, 2; Kranck, 2; Odell, 2, 5; Rittman, A., 1; Schaub, H. P., 1; Sugden, 1; Telchert, 14; Wager, 1, 3, 4; Wegmann, 5, 6.

Guatemala: Deger, 3; Termer, 7.

Heat conduction theory: Lovering, 18.

Idaho: Anderson, 23; Capps, 14; Dickey, F. H., 1; Reed, J. C., 14; Ross, C. P., 29, 31; Shenon, 17, 18.

Igneous intrusions: Andrews, E. C., 1.

Igneous rocks: Johannsen, 2.

Jamaica: Trechmann, 9.

Joints, curved, columnar: Hunt, C. B., 6.

Kansas: Weidman, 3.

Labrador: Gill, 6; Kranck, 3; Odell, 4.

Lake Superior iron ores, origin: Gruner, 28.

Maine: Chadwick, 33; Haff, 4; Philbrick, 1, 2; Trefethan, H. T., 1; Trefethan, J. M., 3.

Magma, primary: Hess, H. H., 11, 13.

Manitoba: Brownell, G. M., 2; Downie, 1; Horwood, 2; Shepherd, F. D., 1; Stockwell, 10, 11; Tanton, 6-a; Wright, 21.

Maryland: Broedel, 1; Cohen, 1; Hershey, H. G., 1; Ingerson, 7; Marshall, J., 1.

Massachusetts: Billings, 18; Richmond, W. E., Jr., 3; Stobbe, 2.

Mechanics of: De Lury, 15; Loewinson-Lessing, 1.

Metals, primordial segregation: De Lury, 28.

Metamorphic contrasts, Minn.-Mich.: Lamey, 10.

Metamorphism and ig. action: Read, H. H., 1.

Mexico: Bastin, 13; Imlay, 3; Jones, T. S., 1; Kellum, 10, 13; Kelly, W. P., 10; King, P. B., 26; King, R. E.,

Intrusions—Continued.

Mexico—Continued.

- 6; Singewald, Q. D., 12; Tenney, 5; Valentine, W. G., 1; Watson, E. H., 9; Wisser, 2; Woodford, 6.
- Michigan: Dickey, R. M., 1, 3; Lamey, 1, 7; Swanson, 5.
- Minnesota: Balk, 8; Bastin, 16; Lamey, 9; Sandberg, 4; Sleight, 1; Stark, 16.
- Mississippi Valley area: Bastin, 20; Tolman, 16.
- Missouri: Graves, 1; Rust, G. W., 2; Tarr, 12.
- Montana: Barksdale, J. D., 1; Bule, 1; Dickey, F. H., 2; Dyson, 3; Gibson, 4, 5; Hurlbut, 10; Lorain, 1; Peoples, 2; Rouse, 7; Sproff, 3; Wolff, 6.
- Nevada: Bateman, 5; Callaghan, 7, 8, 13; Cameron, E. N., 2; Campbell, D. F., 1; Coats, 3; Ferguson, 8; Grout, 4; Jenney, 1; Kerr, P. F., 17; Muller, 14; Sharp, R. P., 5.
- Nova Scotia: Cameron, H. L., 1; Wright, W. J., 1.
- New Brunswick: Alcock, 18; Caley, 2; Hayes, 7.
- New England: Wheeler, G., 1.
- New Foundland: Buddington, 18; Cooper, J. R., 1, 2; Espenshade, 1; Foley, F. C., 1; George, P. W., 2; Heyl, 2, 3; Jewell, 2; Snelgrove, 4; Twenhofel, 29.
- New Hampshire: Billings, 13-17-a; Chapman, C. A., 1; Fowler-Lunn, 1; Hadley, J. B., 2; Kaiser, E. P., 1, 2; Quinn, 3, 4; White, G. W., 13; Williams, C. R., 2.
- New Jersey: Walker, F., 1.
- New Mexico: Dunham, 3; Hunt, 4; Lasky, 11, 14, 16; Paige, 1; Spencer, A. C., 1; Vanderwilt, 12.
- New York: Alling, 11; Buddington, 11, 23; Dale, 5; Whitcomb, 11-a.
- North America: Butler, 16; Waters, 13.
- North Carolina: Parker, J. M., 1; Vitz, 1.
- Northwest Territories: Furnival, 3, 5; Hawley, 13; Henderson, J. F., 3, 4, 5, 6; Jolliffe, A. W., 2; Kidd, 7; Ryan, J. P., 1.
- Oklahoma: Ireland, 3; Merritt, 7.
- Ontario: Bartley, 2; Bateman, J. D., 2; Brenneman, 1; Bruce, 12, 16, 22, 25, 26; Burrows, 3; Burwash, 8, 11; Chayes, 1; Collins, 7; Derry, 1, 10; Dyer, 21; Fairbairn, 15; Freeman, B. C., 4; Frohberg, 4; Harcourt, 4; Harding, W. D., 2, 4; Horwood, 9, 12; Hurst, 10, 11; Keith, M. L., 1, 4; Mather, W. B., 1; Moorehouse, 3; Perdue, 1; Pettijohn, 9, 15; Phemister, 1; Prest, 1; Quirke, 18-a, 18-b, 21; Ringsleben, 1; Robson, 1; Satterly, 3, 4; Thom-

Intrusions—Continued.

Ontario—Continued.

- son, James E., 7, 14, 15; Thomson, Robt., 4; Walker, 15; Wright, 21; Yates, 1; Anonymous, 149.
- Oregon: Buddington, 14; Callaghan, 10; Gilluly, 16; Goodspeed, 17, 20; Kelly, J., 1; Oregon Dept. Geol., 1; Piper, A. M., 14; Pratt, A. F., 1; Smith, W. D., 11.
- Pennsylvania: Bascom, 6; Fraser, D. M., 5, 15; Postel, 2; Stose, 17; Watson, 8; Willard, 58; Yaklich, 1.
- Pre-Cambrian: Moore, E. S., 22.
- Quebec: Auger, 2; Backman, 2; Bain, 21; Bannerman, 4; Bell, L. V., 12, 16; Conolly, H. J., 1; Cooke, H. C., 19; Denis, 6, 7, 8; Douglas, 4; Faessler, 7, 13, 16, 18, 22; Freeman, B. C., 5, 7; Gunning, 13, 15, 22, 23, 24; Gussow, 1; Hawley, 10; Henderson, J. F., 1; Keith, 10; Landes, 25; Longley, 1, 2, 3, 4; Lowther, 1; McGerrigle, 9; MacKenzie, 1, 4, 5; Mawdsley, 6; Norman, 1, 6, 9, 11; Northrop, 10; O'Neill, 4; Osborne, 26, 29, 29-a, 30; Price, P., 3; Reilly, 6; Ross, S. H., 1; Shaw, G., 1; Sproule, 1-a; Stevenson, J. S., 2; Tolman, 12, 15; Weeks, L. J., 5-a; Wilson, J. T., 7; Wilson, M. E., 16, 19.
- Rhode Island: Quinn, 5.
- Rise of molten rock: Miller, W. J., 7.
- Roots of volcanoes: Daly, 18.
- Saskatchewan: Alcock, 14, 16, 17, 19; Cameron, A. E., 3; Cooke, H. C., 24; Keith, M. L., 3; McMurphy, 1, 2; Ross, S. H., 2; Sproule, 3; Weeks, 9.
- South Carolina: Kessler, 1; Taber, 18.
- South Dakota: Gardner, E. D., 2; Tullis, 5, 6.
- Texas: Baker, C. L., 21; Jones, C. T., 1; King, 29; McAdams, 1; Ross, C. P., 30; Sayre, 4; Sellards, 30; Stenzel, 10.
- Time-temperature, cooling: Schneiderhöhn, 1.
- Utah: Baker, A. A., 5; Beutner, E. L., 1; Callaghan, 12; Chapman, R. W., 6; Eardley, 12; Green, J., 1; Gregory, H. E., 4; Hunt, 5; McEuen, 1; Park, 3; Schoff, 2; Thorpe, 13, 14.
- Vermont: Church, M. S., 1; Doll, 2; Maynard, J. E., 3; Richardson, C. H., 5, 6, 7.
- Virginia: Bevan, 37-a; Bloomer, 2; Brown, C. B., 3; Furcron, 9; Nelson, 4; Rickard, 1; Steidtmann, 7; Thiesmeyer, 5-a.
- Washington: Campbell, C. D., 5; Culver, 6; Felts, 2, 4; Irwin, W. H., 1; Waters, 12, 14.
- Wisconsin: Dickey, R. M., 4.

Intrusions—Continued.

- Wyoming: Beckwith, 5; Dutton, Carl E., 1; Effinger, 2; Gwynne, 6; Love, 6; Parsons, W. H., 1, 2; Rouse, 6, 9.
 Yellowstone: Fenner, 18.
 Yukon: Bostock, 11; Johnston, J. R., 2; Lees, E. J., 2.

Invertebrates (general). See also the classes of invertebrates.

- Alabama, Eocene: Aldrich, T. H., 2.
 Alaska, Camb.: Kobayashi, 2.
 Alberta: Burgess, C. H., 1; Kindle, C. H., 1; McLearn, 2; Warren, P. S., 6.
 Appalachian plateau—Miss. Valley: Butts, 12.
 Arizona: Hernon, 3.
 Arkansas: Girty, 1.
 Atlantic Coastal Plain: Richards, H. G., 14.
 Baffinland: Wilson, A. E., 1, 2.
 British Columbia: Crickmay, C. H., 8; Ruedemann, 11.
 Burgess sh. fauna: Walcott, C. D., 1.
 California: Loel, 2; Mason, J. F. 1; Richey, 2; Stauffer, C. R., 2.
 Cambrian: Gale, H. R., 3; Howell, 34; Mason, J. F., 1.
 Canada: Kindle, 40.
 Cardium nixicollis: Stephenson, 14.
 Cenozoic marine: Harris, J. D., 3.
 Chemung tracks and trails, Pa.: Willard, 28.
 Chert fauna, Ontario: Laird, 6.
 Colorado: Dane, 11; Roth, 8.
 Correlations, Camb.: Howell, 34.
 Cretaceous, S. C.: Prouty, 6.
 Descriptions: Roy, S. K., 2.
 Development, evolution: Swinnerton, H. H., 1.
 Devonian: Savage, 6.
 Devonian-Carb., N. Y.-Pa.: Caster, 1.
 Dubuque fm.: Kay, G. M., 16.
 Fauna, Mazquital Valley, Mexico: Müllerried, 34.
 Florida, Pliocene: Mansfield, W. C., 7.
 Fossils handling field and lab.: Caldwell, C. L., 9.
 Greenland: Frebold, 3, 10, 12; Poulsen, 2, 3; Spath, 1, 2, 3, 4; Teichert, 14.
 Hamilton group, Allegheny front: Willard, 35.
 Illinois, worm: Bradley, J. H., Jr., 2; Roy, S. K., 4.
 Jamaica: Trechmann, 1.
 Kansas: Boos, M. F., 1; Moore, 33; Pierce, 9; Sayre, 1.
 Kentucky: McFarlan, 11, 16; Morse, W. C., 2.
 Labrador: Roy, S. K., 5.
 Louisiana: Bridges, 1.
 Lowlands and Ouachita Prov.: Ruedemann, P., 3.
 Luta lms. fauna: Boos, M. F., 1.
 Maquoketa sh.: Ladd, H. S., 1.

Invertebrates—Continued.

- Mexico: Flores, 10; Kane, 1.
 Michigan: Kelly, W. A., 1.
 Mississippian: Weller, 11.
 Missouri: Bradley, J. H., Jr., 2.
 Montana: Gale, H. R., 3.
 Museum Comp. Zool. Rept.: Raymond, 3.
 Nebraska: Freeman, J. L., 1.
 Nevada: MacNeill, 8.
 Newfoundland: Betz, 1.
 New Hampshire: Billings, 8.
 New Jersey: MacClintock, 6.
 New Mexico: Stainbrook, 2.
 New species: Raymond, 6.
 New York: Cooper, 18; Delo, 4; Goldring, 11; MacClintock, 6; Monahan, 1; Payne, T. G., 1; Smith, B., 4.
 North Carolina: McCampbell, J. C., 1.
 Ohio: Stewart, G. A., 2.
 Oklahoma: Boos, M. F., 1; Wilson, C. W., Jr., 13.
 Ontario: Laird, 6; Wilson, A. E., 3, 5.
 Ordovician: McFarlan, 9.
 Oregon: Packard, 7.
 Ostrea battensis: Stephenson, 14.
 Paleontology: Cronels, 26; Decker, 12; Raymond, 3; Twenhofel, 16.
 Pennsylvania: Butts, 10, 13; Leighton, H., 6; Willard, 28, 34, 41.
 Phosphoria fm.: Branson, C. C., 1.
 Recent lit., western Mesozoic: Adkins, 5.
 Silica sh., Ohio: Stewart, G. A., 2.
 Silurian: Foerste, 14.
 South Carolina: Cooke, C. W., 17; Prouty, 6.
 Stewartville fm.: Kay, G. M., 16.
 Texas: Eley, 1; Newell, 13; Plummer, 17.
 Tracks and trails, Pa.: Willard, 28.
 Tully fm., N. Y.: Cooper, G. A., 18.
 Utah: Baker, Ar. A., 7; Nolan, 6.
 Virginia: Cooper, B. N., 2.
 West Virginia: Price, A., 1.
 Wyoming: Branson, C. C., 11, 18; Love, 6.
 Ione fm., Calif.: Allen, V. T., 2.
 Iowa.
 Des Moines River: Keyes, 230.
 General: Keyes, 41.
 Geological Survey rept.: Kay, G. F., 7.
 Limestone boulders quarry, Winterset: Goshorn, A., 1.
 Economic geology.
 Burlington lms.: Knight, N., 1.
 Clarinda oil prospect: Lees, J. H., 4.
 Coal measures, original size: Keyes, 333.
 Coals: Lees, J. H., 3; Young, C. M., 2.
 Forest City Basin: Osborn, W. G., 2.
 Madison Co. quarries: Goshorn, G., 1.
 Mineral production: Lees, J. H., 1.
 Molding sands: Smith, J. E., 3.
 Nonmetallic minerals: Lees, J. H., 5.
 Recent oil explor.: Hager, 4.
 Road materials: Morris, M., 1; Wood L. W., 1, 7.

Iowa--Continued.

Economic geology—Continued.

Sedimentation cycles and coal: Keyes, 380.

Wells, deep: Lees, J. H., 8; Norton, W. H., 3.

Historical geology.

- Alexandrian ser.: Scobey, 1.
- Atchison sh. vs. Wabauunsee: Keyes, 393.
- Beloit lms.: Keyes, 348.
- Bethany lms.: Keyes, 383.
- Borings, Clarinda: Lees, 4.
- Burlington lms.: Keyes, 230.
- Callaway lms.: Keyes, 477.
- Cambrian correls.: Bridge, 7.
- Cambrian, redefinition: Keyes, 295.
- Carboniferous: Keyes, 207, 367.
- Cedarlan ser.: Keyes, 100.
- Cedar Valley lms.: Keyes, 488; Tester, 7, 10; Wood, L. W., 2.
- Channing ss.: Gwynne, 3.
- Charette lms. title: Keyes, 341.
- Chartresan ser. emended: Keyes, 443.
- Chemung fm., Iowa-N. Y.: Tester, 1.
- Chouteau lms.: Keyes, 212, 262.
- Coal measures: Keyes, 1, 118, 431.
- Contact, Glenwood, Platteville fms.: Elder, 1.
- Cooper lms.: Keyes, 482.
- Correlations, Upper Camb.: Bridge, 7; Cline, 4.
- Cretaceous: Keyes, 60, 213, 231; Tester, 2, 6.
- Cyclothem: Wanless, 7.
- Dakota ss.: Keyes, 246, 319, 332, 382.
- Dakota stage: Tester, 3.
- Davenport: Putnam, E. K., 1.
- Decorah fm.: Kay, G. M., 13; Stauffer, 14.
- Deep wells, 1928-32: Norton, 3.
- Des Moines ser.: Gwynne, 2; Keyes, 447.
- Devil's Backbone area: Goshorn, 3.
- Devonian: Keyes, 496; Stainbrook, 1; Stookey, 2, 3.
- Dodge gypsum: Keyes, 52, 433, 448.
- Dresbach fm.: Edwards, I., 2.
- Dubuque fm.: Kay, G. M., 16.
- Fern Glen invalid: Keyes, 463.
- Forbes lms. validity: Keyes, 358.
- Forest City Basin: Osborn, W. G., 2.
- Fort Dodge, Carb.: Wood, L. W., 4.
- Franconia fm.: Edwards, I., 2.
- Galena dolomite: Kay, G. M., 12.
- Galena lms.: Keyes, 150.
- General: Folger, 4; Kans. G. Soc., 8; Keyes, 107, 421; Thomas, A. O., 3; Trowbridge, 15; Twenhofel, 15.
- Geological boundaries, mapping: Tester, 17.
- Geological classn.: Keyes, 170, 247.
- Geological complex: Osborn, W. G., 1.
- Gilmore City fm.: Laudon, 5.
- Glenwood shs.: Sardeson, 20.
- Goweran and Leclairan: Keyes, 142.
- Grassy sh.: Keyes, 222.
- Greenhorn fm.: Georgesen, 1.

Iowa--Continued.

Historical geology—Continued.

- Gypsum, Missn.: Tester, 16.
- Hackberry stage: Belanski, 1.
- Hampton fm.: Keyes, 458.
- Hertha, preoccupied: Keyes, 391.
- Hopkinson fm.: Wood, L. W., 5.
- Index to stratigraphy: Ver Wiebe, 7.
- Iola lms.: Keyes, 371, 484.
- Iowa marble: Keyes, 209.
- Isopach map: Edwards, I., 2.
- Kansas City fm.: Goshorn, A., 2.
- Kinderhook group: Laudon, 1.
- Lawrence shs.: Keyes, 118.
- Ledges State Park, Penn.: Smith, J. E., 9.
- Lexington fm.: Keyes, 394.
- Linnean ser.: Keyes, 476.
- Linwood shs.: Keyes, 385.
- Louisiana lms.: Williams, J. S., 4.
- Loveland gumbo-loess: Keyes, 195.
- Lyon Co.: Tester, 18.
- Madison Co. quarries: Goshorn, G., 1.
- Magnesian lms.: Keyes, 241.
- Maquoketa ser.: Keyes, 49, 118.
- Maquoketa sh.: Ladd, H. S., 1.
- Middle River traverse: Condra, 10.
- Mississippi River arch: Howell, J. V., 6.
- Mississippi Valley: Kay, G. F., 16; Moore, 27; Powers, E. H., 3; Sutton, 11; Trowbridge, 8, 9; Weller, 32.
- Mississippian: Laudon, 4, 7; Moore, 27; Weller, 32; Wood, L. W., 10.
- Missouri River traverse: Condra, 8.
- Missouri ser.: Wood, L. W., 3.
- Niobrara fm.: Georgesen, 1.
- Ordovician: Allen, V. T., 7; Kay, G. F., 16.
- Osage, Henry Co.: Wood, L. W., 8.
- Pella shs.: Keyes, 442.
- Pennsylvanian: Wood, L. W., 9, 11.
- Platte sh., Meek's, taxonomy: Keyes, 373.
- Platteville fm.: Bays, 3.
- Plattsmouth, Meek's, priority: Keyes, 369.
- Pleistocene: Carman, 4; Kay, G. F., 1, 5.
- Prairie du Chien fm.: Powers, E. H., 2, 3.
- Recent oil explor.: Hager, 4.
- Red Clastics taxonomic position: Keyes, 352.
- Red Oak fault: Keyes, 356, 370.
- Red Oak-Stennet-Lewis traverse: Condra 9.
- Richmond ss.: Keyes, 203.
- Rockford fm. and ser.: Keyes, 13, 176, 436.
- Ste. Genevieve lms.: Keyes, 218.
- Sandstone, Des Moines age: Stookey, 4.
- Sedimentation cycles and coal: Keyes, 380.
- Shawnee group correls.: Condra, 16.
- Sheffield fm.: Laudon, 2.
- Silurian: Rowser, 1; Sutton, 11.
- Southern Iowa: Wood, L. W., 7.
- Spergen lms.: Keyes, 168.

Iowa—Continued.

Historical geology—Continued.

- Stanton lms. : Keyes, 379.
 Stewartville fm. : Kay, G. M., 16.
 Synonymy, glacial till titles : Keyes, 492.
 Trempealeau fm. Isopach map : Edwards, L., 2.
 Unconformity, Henrietta group : Cline, 3.
 Waucoma dolomite : Keyes, 141.
 Well log, Glenwood : Lindley, 1.
 Western Iowa syncline : Keyes, C. R., 3.
 Winterset vs. Bethany : Keyes, 468.
 Yanktonian ser. vs. Benton sh. : Keyes, 315.
 Yorkic system : Keyes, 152.

Mineralogy.

- Kaolinite : Tarr, 25.
 Meteorites, Coe College coll. : Dillé, 1.

Paleontology.

- Alexandrian ser. : Scobey, 1.
 Ammonoids, Dev. : Miller, A. K., 21, 31.
 Ancient man, no remains : Sanders, W. E., 1.
 Athyris, Dev. : Fenton, C. L., 36.
 Atrypa : Fenton, C. L., 5, 36.
 Aulocaulis, coral : Fenton, M. A., 10.
 Botryopteris fructifications : Darrah, 23.
 Brachiopoda, Dev. : Stainbrook, 4.
 Burlington lms. faunal zones : Laudon, 12.
 Cephalopoda : Foerste, 19, 25 ; Miller, A. K., 9.
 Charophyta, Paleozoic : Peck, R. E., 4.
 Coal balls, flora : Darrah, 23.
 Coals, microfossils : Wilson, L. R., 9.
 Conodonts : Furnish, 3 ; Stauffer, 14.
 Corals : Bassler, 25 ; Fenton, M. A., 10 ; Grove, B. H., 3.
 Crinoidea : Barbour, 12 ; Laudon, 3, 8, 14 ; Keyes, 216 ; Thomas, A. O., 5.
 Cryptoblastus : Cline, L. M., 2.
 Cyrtina, Devonian : Fenton, C. L., 36.
 Decorah fm. : Kay, G. M., 3.
 Echinodermata : Barbour, 12 ; Beane, 1 ; Keyes, 216 ; Steinbrook, 3.
 Elk head : Cable, 2.
 Eumorphoceras : Wiedey, 2.
 Flora, coal balls : Darrah, 23.
 Flora, flowering, Penn. : Keyes, 501.
 Foraminifera : Miller, A. K., 12 ; Thomas, A. O., 1, 4 ; Thompson, M. L., 1.
 Gilmore City fm. : Laudon, 5.
 Kinderhook ser. : Laudon, 1.
 Maquoketa sh. : Ladd, H. S., 1.
 Mastodon tusk : Cable, 3, 4.
 Nautiloids : Miller, A. K., 16.
 Ostracoda : Kay, G. M., 12, 20-a ; Spivey, R. C., 1.
 Paleocyclusidae, corals : Bassler, 25.
 Paleoniscid brain : Moodie, 10.
 Pentameridae : Stainbrook, 5.
 Phacopinae, Dev. : Delo, D. M., 8.
 Plant microfossils in coal : Wilson, L. R., 5.
 Pollen analysis, peat : Lane, G. H., 1.
 Proboscidian remains : Rowe, P., 1, 2.

Iowa—Continued.

Paleontology—Continued.

- Ruminants, Pleist. : Hay, 1.
 Schizoblastus : Cline, L. M., 2.
 Spirifers : Fenton, C. L., 10 ; Laudon, 2.
 Sponges, boring : Fenton, C. L., 2, 3.
 Starfish : Keyes, 216.

Petrology.

- Concretions limonite : Bates, R. L., 2.
 Loess : Cuthbert, 1.
 St. Peter ss. : Thiel, 9.

Physical geology.

- Caves, Galena fm. : Bretz, 9.
 Earthquakes : Seeburger, 4.
 General : Keyes, 421.
 Geological complex : Osborn, W. G., 1.
 Ramparts around lakes : Stookey, D. W., 1.
 Redfield anticline : Condra, 17.
 Red Oak fault : Keyes, 370.
 Tectonic features : Keyes, 57.
 Teleseismic recording : Seeburger, 1.
 Unconformity, Henrietta group : Cline, 3.

Physiographic geology.

- Aftonian interglacial horizon : Kay, G. F., 2.
 Ashawa till sheet : Keyes, 164.
 Audubon Co. Pleist. : Yoho, 1.
 Buchanan interglacial : Keyes, 77.
 Climatic cycles and glacial recession : Smith, J. E., 13.
 Concretions, limonite : Bates, R. L., 2.
 Des Moines glacial sec. : Keyes, 34.
 Des Moines River, glacial : Keyes, 328, 331, 381.
 Drainage changes : Keyes, 217.
 Duration, glacial-interglacial ages : Kay, G. F., 12.
 General : Keyes, 421.
 Glacial deposits : Keyes, 35.
 Glacial history : Keyes, 421.
 Glacial outlook : Keyes, 36.
 Iowan glacial epoch : Keyes, 63.
 Iowan gravels : Miller, P. T., 1.
 Iowan loess and till : Keyes, 138 ; Sardeson, 2.
 Iowan-Wisconsin drift sheets, ages : Kay, G. F., 8.
 Loveland loess : Kay, G. F., 15, 16, 17 ; Keyes, 215, 233.
 Maquoketa natural bridge : Keyes, 17.
 Maryville lowland : Keyes, 487.
 Middle River traverse : Goshorn, A., 4.
 Patrician glacial interval : Keyes, 234.
 Pebble band, Iowan till, origin : Kay, G. F., 10.
 Peneplanation, driftless area : Keyes, 302.
 Peorian loess : Kay, G. F., 15, 16, 17.
 Pleistocene : Carman, 4 ; Kay, G. F., 1, 4, 6, 12, 13 ; Smith, J. E., 7.
 Post-Illinoian, pre-Iowan loess : Kay, 3.
 Pre-Wisconsin valley : Wood, L. W., 6.
 Rate of last ice withdrawal : Keyes, 329.
 Recessional stages, Altamont-Gary area : Smith, J. E., 2.

Iowa—Continued.

Physiographic geology—Continued.

Redfield anticline: Condra, 17.

Wisconsin glaciers, retreat stages:
Smith, J. E., 4.

Underground water.

Deep wells: Lees, 8; Norton, W. H.,
2, 3.

Earth-tides shown by well-water: Rob-
binson, T. W., Jr., 5.

Fluorine in well waters: Gwynne, 4.

Ground-water work of Survey: Tester,
19.

Story-Hamilton artesian area: Smith,
J. E., 6.

Water problems: Trowbridge, 18.

Well water recessions: Lees, J. H., 2.

Zones of mineralization: Thwaites,
F. T., 7.

Iridium, Wyo.: Coulter, C. C., 2.

Irma oil field, Ark.: Teas, 1.

Iron.

Alabama: Blair, A. J., 1; Blair, C. S., 1;
Burchard, 3, 10; Jones, W. B., 14;
Rama Rao, B., 1.

Alaska: Hodge, 16.

Alkali sulfides, action on minerals:
Lindner, 2.

Alteration, pyrite to pyrrhotite:
Stevens, R. E., 2.

Appalachian Plateau and Mississippi
Valley: Butts, 12.

Arizona: Burchard, 2; Garrett, S. K.,
1; Reber, 1.

Awaruite: Buddhue, 11.

Bibliography, U. S. and Cuba: Anony-
mous, 82.

Boulder Dam area: Lee, 7.

British Columbia: Cairnes, 13; Hodge,
16; Rice, H. M. A., 1.

California: Esselink, 1; Johnston, W.
D., Jr., 10; Moorhouse, 2; Wright,
R., 2.

Canada: Faessler, 19; Royce, 2; Thom-
son, J. Ellis, 17.

Canadian Shield: Moore, E. S., 21.

Central America: Hodge, 16.

Colorado: Goddard, 3; Henderson, C.
W., 1; Stone, J. B., 1; Vander-
wilt, 11.

Cuba, ilmenite: Torre, R. de la, 1.

Equilibrium relationships inv.: Greig, 4.

Ferric-ferrous ratio, metamorphic de-
posits: Lasky, 8.

General: Haas, 4.

Gogebic iron dist.: Atwater, 3, 5.

Greenland: Carpenter, H., 1; Deer, 2.

Guatemala, mineral collecting: Myers,
R. E., 3.

Idaho: Anderson, 23; Reed, J. C., 19.

Indiana: Flx, G. F., 1.

Josephinite: Buddhue, 11.

Kaolin, content of: Hendricks, S. B., 5.

Lake Superior region: Broderick, 6;
Gruner, 8, 12, 28; Hotchkiss, 4;

Iron—Continued.

Lake Superior region—Continued.

Lake Superior Iron Ore Assoc., 1;

Leith, C. K., 2; Merrill, J. A., 1;

Michigan Acad. Sci., 3; Nishio, 1;

Royce, 1, 2, 4, 5.

Limonite: Boswell, 1.

Lodestones: Bandy, 1; Gruner, 6; New-
house, W. H., 1.

Magnetic metacrysts: Schwartz, 18.

Magnetic study of deposits: Stratton, 1.

Magnetite: Gruner, 33; Guild, 3;
Schwartz, G. M., 2.

Martite, Marquette dist.: Wienert, 1.

Maryland: Mathews, E. B., 2.

Massachusetts: Newland, 13; Perry, E.
L., 4.

Meteorites, iron structures: Derge, 1.

Meteoritic sulfide, composition: Budd-
hue, 15.

Mexico: Foshag, 2; Santillán, 14.

Michigan: Adler, 1; Alessi, 3; Brode-
rick, 8; Derby, 1; Dicky, R. M.,
2; Dutton, C. E., 5; Eaton, L., 1;
Gruner, 28; Lake Superior Iron Ore
Assoc., 1; Leith, 10; Michigan
Acad. Sci., 3; Rama Rao, B., 1;
Royce, 2, 4, 5; Swanson, 1, 2, 3, 5;
Zinn, 1.

Minnesota: Broderick, 8; Bruner, 19,
33; Jolliffe, F. J., 2; Leith, 10;
Royce, 2; Stark, 2; Taylor, W. L.,
1; Zapffe, 3.

Miquelon: Aubert de la Rue, 107.

Missouri: Gleason, 3; Grawe, 4; Meyer,
C., 1; Rama Rao, B., 1; Singewald,
J. T., Jr., 1; Tarr, 24, 28; Tolman,
17.

Montana: Lorain, 1.

Native and alloys: Buddhue, 2.

Newfoundland: Hayes, A. O., 1, 8.

New Jersey: Smith, L. L., 3.

New Mexico: Keyes, 386; Lasky, 12;
Ransome, 3; Schmitt, 10; Spencer,
A. C., 1.

New York: Alling, 11; Brown, J. S., 4;
Buddington, 8; Dale, N. C., 1, 5;
Fronde, 12; Gallagher, 1; Miller,
W. J., 20; Newland, 13; Osborne,
18; Ruedemann, 12.

Northwest U. S. deposits: Hodge, 16.

Nova Scotia: Cox, E. J., 1; Hornor, 1.

Oklahoma: Merritt, 5, 7; Williams, A.
J., 1.

Ontario: Bannerman, 1, 3; Bartley, 1;
Bateman, J. D., 2; Dadson, 3; Dyer,
18; Emmons, R. C., 1; Fairbairn,
11; Goodwin, W. M., 3; Harcourt,
4; Harding, 4; Hawley, J. E., 2;
Hurst, 7, 9; Jolliffe, F. J., 1;
Kindle, L. F., 3; Matheson, 1;
Miller, A. H., 4; Moore, E. S., 13, 16;
Tanton, 2; Thomson, James E., 13;
Thomson, J. Ellis, 14; Weeks, L.
J., 1.

Iron—Continued.

- Oregon: Allen, A. R., 1; Byram, 1; French, 1; Melhase, 8; Williams, I. A., 1.
 Ores of U. S.: Cooke, S. R. B., 3.
 Pacific Coast: Hodge, 16.
 Paragenesis, iron sulfides, Black Hills, S. Dak.: Schwartz, 22.
 Pennsylvania: Billinger, 1; Butts, 10, 13; Callaghan, 1; Detrick, 2; Hickok, 2, 5; Miller, B. L., 13, 15; Smith, L. L., 1; Staples, J. M., 1; Stose, 8; Yaklich, 1.
 Pre-Cambrian: Moore, E. S., 22.
 Puerto Rico: Colony, R. J., 5; Meyerhoff, 10.
 Quebec: Gillson, 7; Keys, 2; Osborne, 19.
 Saint Pierre: Aubert de la Rue, 4.
 Solvent effects on, organic acids: Harrar, 1.
 Sources of ores: Burchard, 5.
 South Dakota: Tullis, 6.
 Stilpnomelene: Gruner, 31.
 Structure and concentrability, U. S. ores: Cooke, S. R. B., 3.
 Succession and formation temperature, minerals: Lindgren, 15.
 Supergene martite: Geijer, 1.
 Tennessee: Blakemore, P. B., Jr., 1; Born, K. E., 1; Burchard, 8; Eckel, E. C., 8; Jewell, 1.
 Texas: Eckel, E. B., 6, 7, 11; Galbraith, 2.
 Utah: Wells, F. G., 10.
 Valence, pyrite, marcasite: Buerger, 21.
 Vermont: Newland, 13.
 Virginia: Boyle, R. S., 3; Cooper, B. N., 7; Currier, 2; Furcron, 4; Holden, 7; Moore, C. H., Jr., 3; Sears, C. E., Jr., 2.
 Washington: Major, 1.
 Western States: Hodge, 16.
 West Virginia: McKinley, 7; Price, P. H., 17.
 Wisconsin: Aldrich, H. R., 1; Dickey, R. M., 4; Hawley, 9; Leith, 10.
 Wyoming: Lovering, 2.
 Yukon: Hodge, 16.

- Iron and copper sulfides, inv.: Foreman, 1.
 Iron and silica relations: Moore, E. S., 4.
 Irreversibility of evolution: Gregory, 24.
 Iskut River area, Brit. Col.: Kerr, F. A., 4.
 Island formed by Mississippi River at Columbus, Ky.: Shull, 1.

Isocon map, Ord. waters: Dott, 1.

Isopach maps.

- Arkansas: Jenny, 12; Link, W. K., 1, 2; McFarland, L. R., 1; Trager, H. H., 1; Weeks, W. B., 4, 13.
 California: Bartosh, 3; Miller, R. H., 1; Porter, L. E., 1; Sanders, T. P., 4; Stockman, 2; Wyatt, 1.
 Colorado: Dapples, 3; Harris, G. W., 1; Hunt, E. H., 1; Kansas G. Soc., 11; Lavington, 2, 8.

Isopach maps—Continued.

- Contouring faulted fms.: Atwater, 6.
 Fault, active, Calif. oil field: Sanders, T. P., 4.
 Florida: Boesch, C. E., 1, 2; Stringfield, 8.
 Gulf Coast datum contour planes: Houston G. Soc., 3.
 Illinois: Arnold, H. H., Jr., 1; Cady, 8; Koch, H. L., 1; Sloan, 1; Spitznagle, 1.
 Illinois basin: Bell, A. H., 28.
 Illinois-Missouri sec.: Kans. G. Soc., 12.
 Indiana, Bristow field: Esarey, 5.
 Kansas: Bunte, 1, 2; Landes, 26.
 Kentucky: Freeman, L. B., 2; McFarlan, 20.
 Louisiana: Bornhauser, 1; Clark, C. C., 1; Crider, 3; Eaves, 1; Grage, 1; Huner, 1; Mix, 1; Ross, J. S., 2; Thomas, G. D., 1.
 Michigan: Eddy, G. E., 1; Newcombe, 13; Newman, E. A., 1; Riggs, C. H., 2.
 Mississippi Valley, upper: Kans. G. Soc., 8.
 Missouri: Grohskopf, 3; McQueen, 10.
 New Mexico: Anderson, C. C., 1; Carpenter, C. B., 1.
 New York: Reeves, J. R., 3.
 Oklahoma: Boyd, W. B., 1; Dane, 12; Hendricks, 9; Ingham, 1; Kirk, C. T., 2; Markham, E. C., 1; Rau, 1; Rothrock, H. E., 3; Tels, 1; Tilton, 2.
 Oklahoma City gas field: Heithecker, 1; Hill, H. B., 3.
 Ontario: Williams, M. Y., 11.
 Pennsylvania: Reeves, J. R., 3.
 Rocky Mtn. area: Hunt, E. H., 2.
 South Dakota: Gries, J. P., 1.
 Tennessee: Born, 11; Jenny, 12.
 Texas: Carpenter, C. B., 1; Halbouty, 6; Hill, H. B., 1; Liddle, 3; Martyn, 1; Tucker, R., 1; Young, A., 2.
 Uinta Mts., Utah-Colo.: Forrester, 1.
 Virginia: Cederstrom, 2.
 Wyoming: Horberg, 1.

Isostasy.

- Asthenolith theory: Willis, 16.
 Basin Range hypothesis: Keyes, 256.
 Black Hills-Bighorn-Beartooth area: Chamberlin, 10.
 Boulder Dam and lake, measure of: Keyes, 301.
 California: Buwalda, 16; Lawson, 12.
 Canada: Lawson, 6; Miller, A. H., 5, 7.
 Continents, oceans, origin and motion: Gunn, 1, 2; Moore, 35; Ramos, R. R., 1.
 Continents and orogeny: Gunn, 1.
 Critical review: Hubbert, 1.
 Deep-focus earthquakes and isostasy: Stechschulte, 4; Thom, 18.
 Deformation of earth's crust: Bucher, 8; Moore, 30.
 Deltas: Lawson, 9.

Isostasy—Continued.

- Earth's crust, bending due to Boulder dam: Anonymous, 72.
 Strength: Daly, 17.
 Warping in U. S.; Glennie, 1.
 Earth, interior: Daly, 12.
 Earth tilting: Denison, F. N., 1.
 Flotation of mts.: Kimbrell, 1; Lawson, 10.
 General: Bowie, 1, 3, 5, 6, 9, 12, 13, 18, 26, 28; Day, 1; Gauntlett, 1; Huebner, 1; Keyes, 14, 265; Lambert, W. D., 2; Melton, 6; Nádal, 1.
 Geologic considerations: Chamberlin, R. T., 2.
 Geologic role: Chamberlin, R. T., 3.
 Geotherms: Lane, 3.
 Gravity anomalies: Ewing, 12; Glennie, 2; Putnam, G. R., 2.
 Greenland, dike swarms: Wager, 5.
 Hawaii: Wingate, 1.
 Influence on geol. thought: Reid, H. F., 2.
 Isostatic compensation: Putnam, G. R., 1.
 Mountain bldg. and isostasy: Hoffman, 7.
 Mountain structure: Longwell, 5.
 Problems in: Goranson, R. W., 1.
 Regional departures from: Daly, 19.
 Seismometry: Sohn, 1.
 Sierra Nevada: Byerly, 38; Lawson, 8.
 Status and importance: Bowie, 3; Hixon, 1.
 Structural, magmatic processes: Hoffman, 8.
 Theoretical basis of: Lambert, W. D., 1.
 United States: Tsuboi, 1.
 West Indies: Ewing, 12; Hess, H. H., 12.
 Isostasy and the eruptive crust: Willis, 11.
 Isostasy and the figure of the earth: Heiskanen, 2.
 Isostasy and the origin of continents, oceans: Robles Ramos, R., 1.
 Isostasy in the proving: Keyes, 266.
 Ispatinows, Canada: Nichols, D. A., 2.
 Isotopes, uranium and lead: Lane, 41.
 Isthmian links of continents: Willis, 10.
 Jade, identification by X-ray: Merritt, P. L., 1.
 Jadeite, Wash.: Anonymous, 188.
 Jamaica.
 General: Küchler, 1.
Historical geology.
 Basal complex: Matley, 2, 4; Trechmann, 9.
 Blue Mts.: Trechmann, 1.
 General: Küchler, 1.
 Granodiorite age: Matley, 5.
 Manchioneal beds: Trechmann, 2.
Paleontology.
 Blue Mts.: Trechmann, 1.
 Corals, Cret., Eocene: Wells, J. W., 5, 8.
 Echini: Arnold, B. W., 1.
 Foraminifera: Cushman, 1, 13; Hanzawa, 1; Palmer, D. B. K., 8; Vaughan, 7.

Jamaica—Continued.*Paleontology—Continued.*

- Manchioneal beds: Trechmann, 2.
 Mollusca, Bowden fm.: Woodring, 2.
 Pseudorbitoides: Vaughan, 5.
 Spondylii, Neocene: Palmer, K. E. H. V., 4.
 Strombus, Miocene: Rutsch, 1.

Petrology.

- Basal complex: Matley, 4; Trechmann, 9.

Physical geology.

- Basal complex: Trechmann, 9.
 General: Küchler, 1.
 Synchronism of earthquakes: Brennan, 1.

Physiographic geology.

- Coral cays: Steers, 1.
 Moneague valley: Rappenecker, 1.

Jasper.

- Atlantic Coastal Plain: Ulke, 5.
 California: Bell, O. J., 1; Lewis, W. S., 6; Walcott, 4.
 Lake Superior area: Koelnau, 1.
 Pennsylvania: Fraser, 10; Miller, B. L., 16; Myers, P. B., 1.

Jasperoid, Wash.: Park, 9.**Jointing and joints.**

- Alabama: Wissner, E. H., 5.
 Arctic America: Bentham, 3.
 California: Mayo, 13; Webb, 4.
 Cleating in coal: Dapples, 1.
 Cliffs, glaciated, disintegration: Balk, 16.
 Colorado: Reno, 1.
 Curved, columnar, volcanic rocks: Hunt, 6.
 Feather joints: Cloos, E., 5.
 Geological notes for mtn. climbers: Erwin, 5.
 Greenland: Wegmann, 6.
 Illinois: Bretz, 10.
 Maine: Chadwick, 33.
 Maryland: Broedel, 1; Cohen, 1; Dryden, 4; Hershey, 1; Marshall, J., 1.
 Minnesota: Balk, 8; Swanson, R. W., 1.
 Missouri: Graves, 1.
 Montana: Spiroff, 3.
 Newfoundland: Bain, 18; George, P. W., 2; Jewell, 2.
 New York: Berry, G. W., 1; Buddington, 17; Cannon, R. S., 1; Dale, 5; Larrabee, 1.
 Nomenclature of fractures: Murray, G. E., Jr., 1.
 North Carolina: Prouty, 7.
 Ontario: Fairbairn, 11; Harcourt, 4; Prest, 1.
 Oregon: Fuller, 15.
 Ouachita Mts., joint systems: Melton, 3.
 Pennsylvania: Miller, B. L., 18.
 Pyramidal in shales: Sheldon P. G., 2.
 Quebec: Auger, 2; MacKenzie, 4; Wilson, M. E., 19.
 Rupture fm. of: Bridgman, 3.
 Saganaga batholith, Minn.-Ont.: Grout, 18.

Jointing and joints—Continued.

- Sedimentary rocks, systematic: Parker, J. M., 2.
 Southwest: Melton, 8.
 Strain ellipsoid theory of rupture: Griggs, 2.
 Subsidence and ground movements in: Crane, 1.
 Tennessee: Laurence, 3; Wilson, C. W., Jr., 7.
 Texas: Blakemore, E. F., Jr., 2; Ross, C. P., 30.
 Uinta Mts., Utah-Colo.: Forrester, 1.
 Utah: Gregory, H. E., 6.
 Vermont: Krieger, M. H., 1; Larabee, 1.
 Virginia: Cooper, B. N., 7; Currier, 2; Lammers, 1; Rowland, R. A., 1; Ward, R. V., 2.
 Washington: Felts, W. M., 4; Irwin, W. H., 1.
 Wisconsin: Behre, 27.
 Wyoming: Dutton, Carl E., 1; Wilson, C. W., Jr., 3.

Jordanian, Alaska: Capps, 13.

Jurassic. See also Paleontology, Jurassic.

- Alaska: Buddington, 1; Capps, 10, 13; Knappen, 1; Moffit, 10, 11; Smith, P. S., 3, 12; Waring, 6.
 Alberta: Allan, 6, 7; Evans, C. S., 1; Hake, 2; Howells, 1; Hume, 1, 26, 29, 31; MacKay, 8; McLearn, 3; Moore, P. D., 3; Russell, 31, 34-a; Sanderson, J. O. G., 4; Stanton, T. W., 1; Telfer, 1; Warren, 10, 12; Yarwood, 2.
 Antillean-Caribbean area: Schuchert, 31.
 Arizona: Harrell, 2; Holm, 1; Keyes, 293; McKee, 5.
 Arkansas: Keyes, 469.
 British Columbia: Armstrong, J. E., 2; Bancroft, 1; Cairnes, 15; Cockfield, 14; Crickmay, C. H., 7; De Béthune, 3; Hanson, 1, 11; James, H. T., 1; Johnston, W. A., 11; Kerr, F. A., 18, 20, 21, 22; Kindle, E. D., 2, 3, 4; Lang, A. H., 6; MacKay, 5, 6; Mathews, W. H., 1; Telfer, 1; Williams, M. Y., 4; Wright, L. B., 5.
 California: Anderson, F. M., 6, 7, 8, 10, 11; Averill, 7; Crickmay, C. H., 19; Donnelly, 2; Eekis, 1; Erwin, 4; Forbes, H., 1; Hertlein, 11; Hinds, 14, 15, 16, 18; Hoots, 6; Jenkins, 12; Knopf, A., 1; Miller, F. S., 2; Oakeshott, 1; Piper, 16; Reed, R. D., 9; Reiche, 1; Stockman, 1; Taff, 3; Tallaferro, 13; Woodford, 8.
 Canada, W.: Goodman, 4.
 Colorado: Blackmer, J., 1; Burbank, 12, 16; Cross, C. W., 2; Eckel, E. B., 5; Erdmann, 1; Green, T. H., 1; Heaton, 1, 8; Hunt, E. H., 1; Kans. G. Soc., 7, 11; Lavington, 3; Lovering, 4, 14, 15, 17, 30;

Jurassic—Continued.

Colorado—Continued.

- Mohr, 3; Reesde, 10; Vanderwilt, 11; Van Tine, 1; Van Tuyl, 17, 18; Waldschmidt, 4, 7.
 Columbia River basin: Landes, H., 1.
 Connecticut: Cook, T. A., 1.
 Correlations, intercontinental: Lupter, 7.
 Southwest U. S.: Baker, A. A., 6; Schuchert, 39.
 Cuba: Bermúdez y Hernández, 10; Dickerson, 2; Lewis, J. W., 1; Rutten, L. M. R., 4; Sánchez Roig, 4; Schürmann, 2; Thiadens, 3, 5.
 General: Miller, B. L., 10.
 Geographical Society Is.: Schaub, H. P., 1; Stauber, H., 1.
 Greenland: Aldinger, 3; Berthier, 1; Cleaves, 3; Fiebold, 5, 13; Koch, L., 1, 2, 10; Maync, 1, 3; Noe-Nygaard, 3; Parat, 1, 2; Rosenkrantz, 6; Schaub, H. P., 1; Stauber, H., 1; Teichert, 8, 14; Vischer, 1, 2.
 Guatemala: Termer, 6.
 Idaho: Anderson, A. L., 5; Mansfield, G. R., 2.
 Kansas: Elias, 19; Landes, 28.
 Manitoba: Wickenden, 11.
 Massachusetts: Chute, 1.
 Mexico: Burckhardt, 2; Flores, T., 1; Gibson, J. B., 1; Hisazumi, 1; Im-lay, 2, 4, 10; Keller, W. T., 1; Kel-lum, 4, 10, 7, 13; King, R. E., 6; Muir, 3, 5; Müllerried, 16, 25; Santillán, 16.
 Montana: Bevan, 3; Collier, 1; Emery W. B., 3; Knappen, 2; Lammers, 2; Neely, 2; Perry, 18; Reeves, F., 8; Sanderson, 2; Skeels, 1; Spiroff, 3; Thom, 14; Wilson, C. W., Jr., 2.
 Nebraska: Noble, E. B., 2.
 Nevada: Cameron, E. N., 2; Campbell, D. F., 1; Ferguson, 6, 7; Gianella, 9; Glock, 1; Hewett, 4; Jenney, 1; Muller, 9, 14.
 Newfoundland: Twenhofel, 40.
 New Jersey: Moldenke, 1.
 New Mexico: Hunt, C. B., 2, 4; Kans. G. Soc., 7; Keyes, 172; Renick, 3; Talmage, 7; Winchester, 3.
 New York City area: Strzygowski, 2.
 North America: Baker, A. A., 6; Butler, 16; Crickmay, C. H., 13, 21; Schuchert, 39, 57; Waters, 13.
 Oklahoma: Kans. G. Soc., 7; Stovall, 3.
 Oregon: Buwalda, 19; Goodspeed, 20; Keyes, 469; Lupter, R. L., 2, 8; Oregon Dept. Geol., 1; Piper, 17.
 Ouachita Mts., Ark.-Okla.: Keyes, 469.
 Post-Keweenawan, age by helium: Urry, 8.
 Restorations, geol. landscapes: Reid, G. A., 1.
 Rio Grande depression, Colo.-N. Mex.: Bryan, 36.

Jurassic—Continued.

- Rocky Mtn. area: Bartram, 10; Branson, E. B., 1; Heaton, 3, 7; Hunt, E. H., 2; Keyes, 361; Reeside, 2; Uren, 2; Warren, P. S., 1.
- Saskatchewan: Edmunds, 2; Wickenden, 13-a.
- South Dakota: Connolly, 3; Rothrock, 15.
- Texas: Adkins, 8; Albritton, 2, 7, 8; Carsey, 1; King, 19; Schoffelmayer, 1.
- Traill Islands: Schaub, H. P., 1; Stauber, H., 1.
- Trinidad: Hutchison, 2.
- Uinta Mts., Utah-Colo.: Forrester, 1.
- Unconformities, N. Am.: Crickmay, 21.
- United States: Crickmay, 13, 21; Effinger, 4; Fischer, R. P., 2.
- Utah: Baker, A. A., 3, 5, 7; Beutner, E. L., 1; Callaghan, 9; Dane, 7; Dobbin, 17; Eardley, 2, 12; Gilluly, 1; Green, J., 1; Gregory, H. E., 1, 4, 5, 6; Hinds, 26; Schoff, 2; Thorpe, 14.
- Wasatch Mts.: Mathews, A. A. L., 4.
- Wyoming: Bartram, 3; Beckwith, 4; Crickmay, 26; Dobbin, 1, 2; Effinger, 1; Emery, W. B., 3; Fanshawe, 1; Horberg, 1; Jones, C. T., 2; Love, J. D., 1, 6; Neely, 4; Nichols, H. D., 1; Nightingale, 2; Stevens, E. H., 2; Tillotson, 1; Veatch, 1; Wilson, C. W., Jr., 15.
- Washington: Weaver, 7.
- Yukon: Bostock, 6, 11; Johnston, J. R., 2; Lees, E. J., 1, 2.
- Zones: Crickmay, C. H., 23.
- Kames, Mass.: Brown, T. C., 3.
- Kansas.

- Animal-polished boulder: Schoewe, 9.
- General: Wooster, 1.
- Meteor, Butler, Co.: Nininger, 5.
- Meteorite crater, Brenham: Nininger, 29.
- Soils, nature and origin: Moore, R. C., 13.

Areas described.

- Cloud Co.: Wing, 1.
- Cowley Co.: Bass, 1.
- Johnson Co.: Newell, 4.
- Miami Co.: Newell, 4.
- Mitchell Co.: Landes, K. K., 2.
- Osborne Co.: Landes, K. K., 2.
- Republic Co.: Wing, 1.
- Wallace Co.: Elias, 2.
- Wyandotte Co.: Jewett, 7.

Economic geology.

- Arkansas River oil fields: Wilhelm, C. J., 1.
- Bartlesville sands: Bass, 4, 7, 10; Leatherock, 1; Tarr, R. S., 2; U. S. G. S., 12, 13.
- Barton Arch oil field: Woodruff, E. G., 1.
- Bituminous lms. and ss., porosity: Utterback, D. D., 1.
- Burbank sands: Bass, 7, 10; Leatherock, 1; U. S. G. S., 12, 13; Weirick, G., 1.

Kansas—Continued.

Economic geology—Continued.

- Carboniferous, Upper: Kans. G. Soc., 10.
- Coal analyses: U. S. Bur. Mines, 2.
- Coal fields: Moore, R. C., 1; Pierce, 9.
- Coffeyville oil field: Foster, W. H., 1.
- Cowley Co. oil and gas fields: Bass, 1; Snow, D. R., 1.
- Crude oil relations, Cherokee sh.: Bass, 14.
- Cunningham field: Rutledge, 1, 2.
- Diatomaceous marl: Anonymous, 24.
- El Dorado oil field: Reeves, J. R., 1.
- Fairport oil field: Allan, T. H., 1.
- Finney Co. oil field: Kans. G. Soc., 11.
- Forest City Basin oil field: Dalrymple, 1; McClellan, 3; Osborn, W. G., 2.
- Gove Co.: Landes, 28.
- Granite Ridge oil field: Rich, J. L., 3.
- Greenwich pool area: Bunte, 1.
- Hugoton gas field: Hemsell, 1.
- Insoluble residues, Mississippi lime: Hiestand, 3.
- Lakin-Hugoton-Guymon area: Bartle, 5.
- Lead and zinc dist.: Fowler, G. M., 2, 4, 8; Harbaugh, 1, 2.
- Lime content, Cret. rocks, Osborne Co.: Search, H., 1.
- Logan Co.: Landes, 28.
- Magnetic vectors: Jenny, 2.
- Map, oil and gas fields: Landes, 10.
- Miami-Picher lead-zinc dist.: Fowler, G. M., 5; Tarr, 15.
- Midcontinent oil fields: Bass, 8; Hiestand, 1.
- Mineral res.: Landes, 24.
- Mississippian, thickness, oil and gas: Lee, W., 3.
- Natural gas fields: Cadman, 1; Folger, 5; Garlough, 1; Charles, 2; Landes, 10; Ley, 3.
- No gold in Kans.: Kinney, 1.
- Nonmetallic min. res.: Landes, 8.
- Northeastern Kansas: Ockerman, 3.
- Oil and gas fields map: Landes, 10.
- Oil and gas res.: Bass, 13; Folger, 5; Hall, R. H., 2; Koester, 1, 3; Moss, 4; Ver Wiebe, 20, 22, 25.
- Oil and oil structures, Okla.-Kans.: Fowler, G. M., 3.
- Oil fields, distrib.: Rich, J. L., 10; Thomas, C. R., 3.
- Oklahoma-Kansas mining field: Fowler, G. M., 6.
- Ore deposits, Tri-State dist.: Fowler, G. M., 1, 10.
- Pennsylvanian cycles: Moore, R. C., 12.
- Petroleum devels.: Bloesch, 6; Lee, M., 1.
- Petroleum, pre-Camb.: Landes, 30.
- Petroleum and gas: Bass, 13; Folger, 5; Hall, R. H., 2; Koester, 1, 3; Moss, 4; Ver Wiebe, 20, 22, 25.
- Petroleum source beds: Trask, 35.
- Ploog oil pool: Bunte, 2.
- Pre-Camb. uplift: Kornfeld, James A., 1.
- Rainbow Bend oil field: Snow, D. R., 1.
- Rock wool: Plummer, N. V., 1.

Kansas—Continued.

Economic geology—Continued.

- Rocky Mtn. area : Uren, 2.
 Salt field : Sangster, 1.
 Scott Co. oil field : Kans. G. Soc., 11.
 Shale-gas, E. Kans. : Charles, 1.
 Shoestring sands : Bass, 9; Dalrymple, 2; Garlough, 2; Lucke, 8; Patton, J. F., 1; Read, W. F., 3.
 Smith Co. oil and gas seeps : Landes, 31.
 Syracuse dome oil poss. : Bloesch, 5.
 Trego Co. : Landes, 28.
 Tri-State lead-zinc dist. : Fowler, G. M., 2, 4, 8; Harbaugh, 1, 2.
 Uplift, central : Koester, 2.
 Valley Center oil field : Hall, R. H., 1.
 Virgil oil field : Beekly, 1.
 Volcanic ash : Knight, G. L., 1.
 Voshell field : Hiestand, 1.
 Wildcat drilling, 1938 : Koester, 4.
 Wyandotte Co., min. res. : Newell, 1.

Historical geology.

- Arkansas River oil fields : Wilhelm, C. J., 1.
 Atchison sh. vs. Wabaunsee : Keyes, 293.
 Bartlesville sands : Bass, 4, 7, 10; Leatherock, 1; Tarr, R. S., 2; U. S. G. S., 12, 13.
 Bethany lms. : Keyes, 383.
 Big Blue Carb. ser. : Elias, 9, 15.
 Bronson Penn. group : Jewett, 1, 2.
 Bryozoans, fenestrate, significance : Elias, 16.
 Burbank sands : Bass, 4, 7, 10; Leatherock, 1; Tarr, R. S., 2; U. S. G. S., 12, 13; Weirick, 1.
 Carboniferous, Upper : Kans. G. Soc., 10.
 Central Kansas uplift : Koester, 2; Morgan, L. C., 1.
 Cherokee fm. : Roth, R. I., 7.
 Cherokee sh., lead-zinc dist. : Anonymous, 61.
 Chert gravels, Lyon Co. : Wooster, 2.
 Cimarron ser. : Keyes, 413.
 Coal fields : Pierce, 9; Anonymous, 61.
 Coal fragments, angular : Rich, 11.
 Conodonts, Penn. index fossils : Ellison, 2.
 Cross sec., Penn.-Perm. : Kellett, 2.
 Cunningham field : Rutledge, 1, 2.
 Cyclical sedimentation, Cherokee : Abernathy, 1.
 Dakota stage : Tester, 3.
 Decatur Co. : Elias, 19.
 Domes, Lincoln, Mitchell Cos. : Landes, 6, 17.
 Drum lms. : Sayre, 1.
 Englevale ss. : Pierce, 3.
 Equus beds area : Lohman, 9.
 Finney Co. oil fields : Kans. G. Soc., 11.
 Flint Hills reefs : Keyes, 419.
 Forest City Basin : McClellan, 3; Osborn, W. G., 2.
 General : Folger, 4; Kans. G. Soc., 5, 7, 8.
 Geologic maps : Moore, R. C., 8, 39; Kans. G. S., 2, 3; Anonymous, 61.

Kansas—Continued.

Historical geology—Continued.

- Gerlane fm. : Knight, G. L., 3.
 Geuda salt beds : Keyes, 403, 415.
 Gove Co. : Landes, 28.
 Gravels, Pleist. : Smith, H. T. U., 6.
 Greenwich pool area : Bunte, 1.
 Grenola fm. : Condra, 7.
 Guidebook 9th Field Conf. : Ball, 15.
 Hamilton Co. fm. table : Bass, 2.
 Hodgeman Co. : Moss, 2.
 Hollow pool area : Johnston, L. A., 1.
 Hugoton gas field : Hemsell, 1.
 Hunton lms. : Haase, 1; Hall, R. H., 3; McClellan, 2.
 Index to stratigraphy : Ver Wiebe, 7.
 Insoluble residues, Mississippi lime : Hiestand, 3.
 Johnson Co. : Newell, 4.
 Kansas City dolite prior name : Keyes, 357, 473.
 Labette sh., preoccupied : Keyes, 344.
 Lakin-Hugoton-Guymon area : Bartle, 5.
 Logan Co. : Landes, 28.
 Luta lms. : Boos, M. F., 1.
 Mapping unit in geology : Keyes, 355.
 Marmaton fm. : Roth, 7.
 Miami Co. : Newell, 4.
 Midcontinent oil fields : Hiestand, 2.
 Midcontinent tectonics : Edson, 4.
 Mid-Penn. disturbances : Rich, J. L., 8.
 Mineral res. : Landes, 24.
 Mississippian-Penn. contact : Pierce, 5.
 Mississippian thickness, oil and gas : Lee, W., 3.
 Mohawkian correlatives : Kay, G. M., 2.
 Nemaha uplift : Thomas, C. R., 2.
 Ness Co. : Moss, 2.
 Niobrara fm. : Loetterle, 1.
 Northeastern Kansas : Ockerman, 3.
 Ogallala fm. : Elias, 7; Hesse, 1.
 Oil fields : Fowler, C. S., 3; Rich, 10; Thomas, C. R., 3.
 Oklahoma-Kansas mining field deformation : Fowler, 6.
 Paleozoic plants : Elias, 11.
 Pennsylvanian : Grace, 9; Levorsen, 10; Moore, R. C., 7, 14, 16, 23, 25, 28, 29, 31.
 Permian : Green, D. A., 2; Mohr, 4; Moore, R. C., 23, 25, 26, 28, 31, 33; Norton, G. H., 2.
 "Permian" flora from Penn. rocks : Moore, R. C., 33.
 Permian sedimentation cycles : Moore, R. C., 26.
 Petroleum and gas : Ver Wiebe, 16, 22, 25.
 Ploog oil pool : Bunte, 2.
 Pre-Camb., E. Kans. : Kans. G. S., 1.
 Pre-Camb. uplift : Kornfeld, James A., 1.
 Pre-Missn., cent. Kans. : Edson, 1.
 Rawlins Co. : Elias, 19.
 Red beds : Norton, G. H., 1.
 Richmond fossils in Viola fm. : Kidd, R. E., 1.
 Rock wool res. : Plummer, N. V., 1.

Kansas—Continued.

Historical geology—Continued.

- Rocky Mtn. area : Uren, 2.
 Rush Co. oil and gas area : Landes, 26.
 Scott Co. oil fields : Kans. G. Soc., 11.
 Sedimentation cycles, Penn. : Moore, R. C., 23, 28.
 Sedimentation cycles, Perm. : Jewett, 3 ; Moore, R. C., 23, 26, 28.
 Shawnee group correl. : Condra, 16.
 Shoestring sands origin : Bass, 9 ; Garlough, 2 ; Lucke, 8 ; Read, W. F., 3.
 Smoky Hill chalk : Russell, W. L., 3.
 Sooy conglom. : Edson, 7.
 Tectonic features, Midcontinent area : Edson, 4.
 Terrace sands, Sedgwick Co. : Michaelson, 1.
 Time, Penn. unconf. : Rich, 7.
 Triassic : Roth, 11.
 Tri-State dist. : Fowler, 7.
 Uplift, central : Koester, 2.
 Upper Cret. : Stoner, 1.
 Wabaunsee fm. : Keyes, 389.
 Wellington fm. : Ver Wiebe, 17.
 Wyandotte Co. : Jewett, 7.
 Zone fossils, Penn., Perm. : Moore, R. C., 29.

Mineralogy.

- Beardsley meteorite : Nininger, 19.
 Celestite : Schoewe, 13.
 Coldwater meteorite : Nininger, 4, 6.
 Covert meteorite : Nininger, 12.
 General : Carpenter, A. C., 1.
 Haviland meteor crater excavations : Nininger, 51.
 Insoluble residues, Mississippi lime : Hiestand, 3.
 Insoluble residues, Missouri ser. : Keroher, 1.
 Kansas River valley till : Hoover, 1.
 Meteorites since 1925 : Nininger, 42, 51, 53.
 Mineral collecting fields : Ward, H. K., 2.
 Salt field : Sangster, 1.
 Sandstones, mineralog. analyses : Whitla, 1.
 Tri-State dist. minerals : Palmer, E. J., 1.

Paleontology.

- Algae of fossil red salt : Tilden, 1.
 Amebelodon near Canton : Mohler, R. E., 1.
 Ammonoids, Paleozoic : Elias, 20.
 Amphibian tracks : Wooster, 3.
 Aquatic dinosaur, Niobrara : Mehl, 5.
 Artinskia, Perm. : Miller, A. K., 28.
 Aves : Wetmore, 10, 38.
 Benton fauna : John, J. H., 9.
 Big Blue fossil zones : Elias, 15.
 Blattaria, Perm. : Tillyard, 1.
 Bryozoans, Paleozoic fenestrate : Elias, 16.
 Capromeryx altidens : Hesse, 4, 7.
 Celtis nutlets : Brooks, B. P. W., 1 ; Watt, 1.

Kansas—Continued.

Paleontology—Continued.

- Cephalopoda : Elias, M. K., 1 ; Morrow, 2 ; Newell, 3.
 Charophyta : Peck, R. E., 3.
 Coal field, S. E. Kans. : Pierce, 9.
 Coelacanthus, Penn. : Hibbard, 2.
 Comanchean reptiles : Gould, C. N., 7.
 Conifer forest, Penn. : Elias, 4.
 Conodonts : Ellison, 2 ; Gunnell, F. H., 8 ; Stauffer, 5.
 Cordaitan wood : Steidtmann, W. E., 1.
 Crocodillan remains : Mehl, 8.
 Crinoloea, Carb. : Moore, 48.
 Cynomys, Pleist. : Hibbard, 7.
 Diatoms, Pliocene : Hanna, 24.
 Dinosauria, Cret. : Russell, L. S., 4.
 Ditomopygae : Weller, 22.
 Drum lms. : Sayre, 1.
 Edson quarry fauna : Hibbard, 5, 12.
 Elephants : Brubaker, 1 ; Schaffner, 3.
 Embiaria, Perm. : Tillyard, 1.
 Enteletes, Penn. : Bridwell, 1.
 Fauna, Pliocene : Hibbard, 9.
 Felidae : Hibbard, 3.
 Fish, Penn. : Gunnell, F. H., 8.
 Flint Hills reefs : Keyes, 419.
 Floras, Stephanian : Elias, 14.
 Floras, Tert. : Chaney, 27.
 Footprints : Branson, E. B., 15.
 Foraminifera : Morrow, 1.
 Fossil "nests" : Schoewe, 11.
 Gastroliths, Clay Co. : Schaffner, 2.
 Guathabeldon, Pliocene : Barbour, 30.
 Gonioloboceras, Penn. : Elias, 20.
 Graptolites : Ver Wiebe, 8.
 Grasses, Tert. : Elias, 5, 10.
 Gravels, Pleist. : Smith, H. T. U., 6.
 Grebe, Pliocene : Wetmore, 38.
 Grus, Pliocene : Wetmore, 10.
 Hierosaurus, Cret. : Mehl, 9.
 Holinella, Carb. : Kellett, 1.
 Holothuroidea, Carb. : Hanna, G. D., 12.
 Insecta, Cret. : Carpenter, F. M., 14.
 Insecta, fossil, collecting : Carpenter, F. M., 22.
 Insecta, Perm. : Carpenter, F. M., 3, 20 ; Tillyard, 1.
 Invertebrata : Glrty, 2 : Newell, 3 ; Williams, J. S., 12.
 Jelinite, fossil resin : Buddhue, 23.
 Kansasimys, Pliocene : Wood, A. E., 13.
 Kansasite, fossil resin : Roddhue, 18.
 Laccoteris, Cret. : Miner, E. L., 3.
 Luta lms. : Boos, 1.
 Mammalia, Pleist. : Hibbard, 13.
 Man, early : Smith, H. T. U., 10-a.
 Martinogale, Pliocene : Dunkle, 1.
 Mazonia, Penn. : Elias, 17.
 Megasecoptera, Penn. : Carpenter, F. M., 3.
 Micropaleontology, Niobrara fm. : Leet-terle, 1.
 Mollusca, Pliocene : Baker, F. C., 18.
 Nautiloidea, Cherokee : Miller, A. K., 16.
 Neuropteris, Carb. : Jongmans, 6.

Kansas—Continued.

Paleontology—Continued.

- Ostracoda: Delo, 3; Harris, R. W., 5; Kellett, 3; Morrow, 1.
 Permian flora from Penn. rocks: Moore, 33.
 Permian Insecta: Carpenter, F. M., 3, 20; Tillyard, 1.
 Permian microfauna: Lalicker, C. G., 1.
 Pisces: Gunnell, 8; Hibbard, 4.
 Pitymys, Pleist.: Hibbard, 6.
 Pleistocene, McPherson Co.: Nininger, 7.
 Portheus, Cope: Thorpe, 5.
 Properrinites, Carb.: Elias, 20.
 Rabbits, Pliocene: Hibbard, 10.
 Reptilia: Gould, C. N., 7; Russell, L. S., 4.
 Schaphiopus, Pliocene: Taylor, E. H., 1.
 Schizophoriidae, Penn.: Newell, 2.
 Schwagerina: Ryniker, 1.
 Sunfish, Pliocene: Hibbard, 4.
 Teleostean, Niobrara: Hussakof, 1.
 Trilobita, Penn.: Newell, 2.
 Triticites: Merchant, 1; Newell, 7.
 Urodele, Pliocene: Adams, L. H., 1, 2.
 Vertebrata: Harnly, 1; Hibbard, 8.
 Wedekindellina, Penn.: Newell, 8.
 Zone fossils, Penn., Perm.: Moore, R. C., 29.

Petrology.

- Bartlesville sand: Leatherock, 3.
 Beardsley meteorite: Waldschmidt, 2.
 Black shales: Gordon, G. H., 1.
 Burbank sands: Leatherock, 3.
 Concretions, Dakota ss.: Shaffer, H. L., 2.
 Igneous intrusive, Silver City: Weidman, 3.
 Insoluble residues, Mo. ser.: Keroher, 1; Schoewe, 15.
 Kansas River Valley till: Hoover, W. F., 1.
 Laccoliths: Landes, 3.
 Lime content, Cret. rocks: Search, H., 1.
 Permian red beds: Norton, G. H., 2.

Physical geology.

- Central uplift: Koester, 2.
 Circular depressions, cent. Kans.: Rich, 1.
 Clastic dikes, Ft. Hays chalk: McMillan, 1.
 Cretaceous deformation: Ver Wiebe, 18.
 Fault-block structures: Rich, 21.
 Forest City Basin: Osborn, W. G., 2.
 Fracture patterns: Melton, 12.
 Laccoliths: Knight, G. L., 2; Landes, 13.
 Local subsidence: Bass, 2; Elias, 1; Landes, 7; Russell, W. L., 4.
 Megashar zones: Keith, B. A., 2.
 Metamorphism, Woodson Co.: Schaffner, 1.
 Rock City: Schoewe, 14.
 Sink holes: Gordon, G. H., 2.
 Subsidence: Bass, 2; Elias, 1; Landes, 7; Russell, W. L., 4.
 Ventifacts, Pleist.: Smith, H. T. U., 7.

Kansas—Continued.

Physiographic geology.

- Caves in loess: Landes, 15.
 Concretions, Rock City: Ward, H. K., 1.
 Drift borders: Schoewe, 5, 18.
 Drift deposits: Schoewe, 1.
 Dunes, Quat.: Smith, H. T. U., 8, 12.
 Excavations, meteorite craters: Ninger, 25.
 Glacial erratics: Schoewe, 2.
 Glacial grooves and striae: Schoewe, 8.
 Glacial sec., Atchison: Schoewe, 16.
 Gravels, chart: MacFarquhar, 1.
 Ice invasion S. of Kansas River: Schoewe, 3.
 Johnson County: Newell, 4.
 Kansas River Valley till: Hoover, W. F., 1.
 Loess near McPherson: Frye, 4.
 Marais des Cyne River: Landes, 18.
 Miami Co.: Newell, 4.
 Monument Rocks, Gove Co.: Robertson, G. M., 5.
 Natural bridge, Sun City: Jewett, 5.
 Pawhuska rock plain: Melton, F. A., 29.
 Sand dune cycle: Smith, H. T. U., 8, 12.
 Scenic Kansas: Landes, 22.
 Sink, Mitchell Co.: Landes, 11.
 Soil drifting Great Plains: Leighton, 29; Throckmorton, 2.
 Surface features: Landes, 5; Moore, R. C., 9.
Underground water.
 Aquifers, E. Kans.: Jewett, 8.
 Arkansas River oil fields: Wilhelm, C. J., 1.
 Decatur Co.: Elias, 19.
 Equus beds area: Lohman, S. W., 9.
 Finney Co.: Moss, 1.
 Ford Co. wells: Lohman, 8.
 Ground water, High Plains: Theis, 3.
 Johnson Co.: Jewett, 6.
 Mineral res.: Landes, 24.
 Rawlins Co.: Elias, 19.
 Scott Co.: Moss, 1.
 Subsurface water, characteristics: Case, L. C., 3.
 Water resources: Kansas State Plann. Bd., 1.
 Water-table fluctuation: Schoewe, 12.

Kansas G. Soc. 11th Field Conf.: Borden, 1.

Kaolin. See also Clays.

- Allophane: Ross, C. S., 15.
 General: Kerr, P. F., 21.
 Georgia: Henry, 1; Munyan, 2; Smith, R. W., 1.
 Halloysite: Ross, C. S., 15.
 Idaho: Wilson, H., 1.
 Illinois: Grim, 4, 13; Piersol, 1.
 Iron content: Hendricks, S. B., 5.
 Minerals: Ross, C. S., 4, 6.
 Missouri: Allen, 17.
 New Mexico: Richard, 1.
 North Carolina: Bryson, 7-a; Hornbeck, 1; Hunter, C. E., 1; Stuckey, 3.
 Ontario: Montgomery, R. J., 1.

Kaolin—Continued.

- Origin : Badger, 1.
- Quebec : Osborne, 29.
- Saskatchewan : Fraser, F. J., 5.
- South Carolina : Bryson, 8.
- Structure of water layers in : Hendricks, S. B., 4.
- Tennessee, ceramic : Whitlatch, 19, 20.
- Texas, ceramic : Schoch, 1.
- Vermont : Burt, F. A., 1.
- Washington : Wilson, H., 1.

Kaolinites and anauxites : Machatschki, 1.

Karst topography.

- Cuba : Meyerhoff, 25.
- Indiana : Von Osinski, 2.
- Jamaica : Rappenecker, 1.
- Kentucky : Dicken, 1, 2; Smith F. J., 2.
- Limestone terranes : Swinnerton, 10.
- Mexico : Wittich, 2, 3.

Kaskaskia lms. : Keyes, 68.

Kentucky.

- Big Bone Lick : Kindle, 10.
- General : Jillson, 3.
- Geological Survey Adm. Repts. : Jillson, 6, 7, 26.
- Geological Survey origin : Townsend, J. W., 1.
- Geological Survey work : Payne, H. M., 2.
- Geophysical inv., Mammoth Cave : Eve, 3.
- Harrison Co. map : Ky. G. S., 3.
- Johnson Co. map : Ky. G. S., 7.
- Magnetic vectors : Jenny, 6.
- Pendleton Co. map : Ky. G. S., 5.
- Publications, Geol. Survey : Sulzer, 1.
- Silhouettes by Procter : Jillson, 23.

Areas described.

- Bluegrass region : Jillson, 24.
- Cannelton quad. : Mayfield, 4.
- Dawson Springs quad. : Sutton, A. H., 1.
- Edmonson Co. : Weller, J. M., 1.
- Fordsville quad. : Mayfield, 4.
- Hancock Co. : Chisholm, D. B., 1.
- Hardin Co. : Sutton, 4.
- McLean Co. : Robinson, L. C., 3.
- Scott Co., geol. map : Wolford, 5.

Economic geology.

- Allen Co. oil sands : Lee, 4.
- Appalachian coal field : Wanless, 16-a.
- Appalachian oil and gas fields : Ashley, 28.
- Ashland region : Burroughs, W. G., 2.
- Asphalt deposits : Russell, W. L., 8.
- Barren Co. oil and gas map : Ky. G. S., 6.
- Bell Co. : Ky. G. S., 2.
- Big Sinking pool : Jones, 2.
- Bleaching, ceramic clays : Mansfield, G. R., 21.
- Boone Co. oil and gas map : Withers, F. S., 1.
- Borings : Meacham, 2.
- Carlisle gas field : Jillson, 32; Withers, F. S., 2.
- Channelling and oil accumulation : Strachan, C. G., 1.

Kentucky—Continued.

Economic geology—Continued.

- Clays : Mansfield, G. R., 21; Roberts, J. K., 8; Spain, 2.
- Coal : Jillson, 9; Jones, D. J., 3; Stith, 1; Weller, 35.
- Corniferous oil, origin : Thomas, R. N., 1.
- Cumberland Co. oil and gas map : Ky. G. S., 9.
- Deformation, pre-Dev. : Jones, D. J., 4.
- Devonian sh., Oriskany sand drilling : Bennett, J., 1.
- Eastern Interior coal basin, oil and gas : Bell, A. H., 11, 13.
- Elkhorn coal bed study : Thiessen, 5.
- Elliott Co. oil and gas map : Ky. G. S., 1.
- Fluorite deposits : Jillson, 14; Pough, 1.
- Fluorspar : Currier, 5, 7.
- Harlan Co. coal fields : Jones, D. Johnathan, 3.
- Hart Co. oil and gas map : Ky. G. S., 8.
- Henderson Co. geol. map : Theis, 1.
- Himyar gas field : Jillson, 28.
- Illinois Basin field : Moulton, 4.
- Island Creek oil pool : Jillson, 11.
- Janet gas field : Russell, W. L., 12.
- Jefferson Co. oil and gas map : Ky. G. S., 10.
- Johnson Co. geol. map : Miller, R., 5.
- Legraude oil pool : Jillson, 17.
- Limestones, phosphatic : Peter, 1.
- McClosky oil horizon : Freeman, L. B., 1; Jones, D. J., 5.
- Magmatic ore dists. : Robinson, L. C., 5.
- Mammoth Cave inv. : Eve, 2.
- Meade Co. oil and gas map : Briggs, 1.
- Metabentonites : Laurence, 1.
- Mineral res. : Jillson, 18, 31.
- Natural gas : Arnold, H. C., 1; Bailey, W. F., 3; Bell, A. H., 11, 13; Billingsley, J. E., 1; Bizot, 1; Fiske, 1; Hager, D., 1; Hunter, C. D., 1, 2; Jillson, 16, 18, 22, 24, 28, 32, 34, 35, 40; Ky. G. S., 1, 6, 8, 9, 10, 11; Russell, W. L., 10, 11; St. Clair, S., 1; Ver Wiebe, 16; Withers, F. S., 1, 2; Anonymous, 193.
- Oil fields : Billingsley, J. E., 1; Bizot, 1; Briggs, 1; Fiske, 1; Hager, D., 1; Howard, W. V., 6; Jillson, 11, 17, 18, 24, 25, 40; Ky. G. S., 1, 6, 8, 9, 10, 11; Lee, 4; Russell, W. L., 7, 10, 11, 14; St. Clair, S., 1; Shiarella, 1; Swartz, J. H., 6; Weller, 25; Wesley, 1, 2; Anonymous, 193.
- Oolitic lms. : Roberts, J. K., 3.
- Owen Co. oil and gas map : Ky. G. S., 11.
- Petroleum, origin and geology : Russell, W. L., 14; Wesley, 2.
- Rock asphalt : Marks, 1.
- St. Peter ss. oil and gas poss. : Jillson, 40.
- Silurian, Irvine pool : McFarlan, 20.
- Structural geology map : Jillson, 19.
- Vein deposits, cent. Ky. : Robinson, L. C., 4.
- Western Ky. Basin : Wesley, 3.

Kentucky—Continued.

Historical geology.

- Anderson Co. geol. map: McFarlan, 5.
 Archimedes lms.: Keyes, 451.
 Asphalt region: Russell, W. L., 8.
 Bath Co. geol. map: Miller, 1.
 Berea region: Souder, 1.
 Black sh., age: Savage, 7.
 Blue grass area: Welch, 1.
 Boone Co. geol. map: Shideler, 8.
 Boyle Co. geol. map: Miller, R., 2.
 Bracken Co. geol. map: Dunn, P. H., 2.
 Breckenridge Co. geol. map: Griffin, J. R., 2.
 Bullitt Co. geol. map: Miller, R., 3.
 Calloway Co. geol. map: Roberts, J. K., 5.
 Campbell Co. geol. map: Shideler, 9.
 Carboniferous deformation, W. Ky.: Jillson, 10.
 Carroll Co. geol. map: Shideler, 1.
 Central Ky.: Robinson, L. C., 4.
 Chattanooga sh. overlap relations: Klepser, 2.
 Chattanooga black shs., age: Keyes, 444.
 Chester rocks: Butts, 1; Stonder, 1.
 Cincinnati arch: McFarlan, 21.
 Clark Co. geol. map: Meacham, 1.
 Clinton Co. geol. map: Miller, R., 10.
 Coals: Averitt, 1; Hunt, C. B., 3; Wanless, 16; Weller, J. M., 35.
 Corniferous oil, origin: Thomas, R. N., 1.
 Cretaceous: Lamar, 4; Roberts, J. K., 4.
 Crittenden Co. geol. map: Weller, S., 1.
 Cross sec., Ky.-W. Va.: Krebs, 2.
 Cumberland Co. geol. map: Dunn, 6.
 Dam sites, Tennessee River: Wentworth, 3.
 Daviess Co. geol. map: Woodruff, J. G., 1.
 Deep wells: Jillson, 25.
 Devonian: Freeman, L. B., 3; McFarlan, 19; Savage, T. E., 2; 6.
 Edmonson Co. geol. map: Weller, J. M., 2.
 Estill Co. geol. map: Freeman, L., 1.
 Fayette Co. geol. map: McFarlan, 1.
 Fleming Co. geol. map: Miller, R., 4.
 Flora, New Albany sh.: Read, 13.
 Fluorspar area: Currier, 5, 7.
 Fordsville quad. geol. map: Mayfield, 2.
 Franklin Co. geol. map: Miller, A. M., 1.
 Fredonia oolite: Keyes, 452.
 Fulton Co. geol. map: Roberts, J. K., 9.
 Fulton fm.: McFarlan, 11.
 Gallatin Co. geol. map: Shideler, 10.
 General: Jillson, 25, 35; Kans. G. Soc., 8; McFarlan, 16.
 Geologic history: Twenhofel, 4.
 Geologic map: Jillson, 4.
 Geosyncline, E. Ky.: McFarlan, 15.
 Grant Co. geol. map: Chappars, 1.
 Gratz div., Ord.: Wolford, 6, 8.
 Hancock Co. geol. map: Mayfield, 3.
 Hardin Co. geol. map: Sutton, A. H., 2.
 Harrison Co. geol. map: Dunn, 3.
 Hart Co. geol. map: Withers, F. S., 3.

Kentucky—Continued.

Historical geology—Continued.

- Henry Co. geol. map: Wolford, 1.
 Hickman Co. geol. map: Roberts, J. K., 10.
 Illinois Basin: Howard, W. V., 6; Moulton, 4; Weller, 25.
 Insoluble residues, Missn. lms.: Martin, H. G., 2.
 Jefferson Co. geol. map: Butts, 2.
 Jessamine Co. geol. map: McFarlan, 2.
 Kenton Co. geol. map: Shideler, 11.
 Landscape evolution: McFarlan, 11-a.
 Larue Co. geol. map: Griffin, J. R., 3.
 Lexington-Cynthiana-Eden relationship: McFarlan, 10.
 Lincoln Co. geol. map: McFarlan, 4.
 Livingston Co. geol. map: Weller, S., 2.
 Lower Chester correl.: Sutton, 8.
 McClosky oil horizon: Freeman, L. B., 1.
 McClosky productive areas: Jones, D. J., 5.
 McCracken Co. geol. map: Roberts, J. K., 6.
 McLean Co. geol. map: Robinson, L. C., 2.
 Madison Co. geol. map: McFarlan, 6.
 Mammoth Cave area: Swartz, J. H., 4.
 Marion Co. geol. map: Miller, R., 9.
 Marshall Co. geol. map: Roberts, J. K., 7.
 Mason Co. geol. map: Dunn, 5.
 Maysville-Richmond boundary: Shideler, 13.
 Meade Co. geol. map: Sutton, 3.
 Menifee Co. geol. map: Robinson, L. C., 1.
 Mercer Co. geol. map: Ky. G. S., 4; McFarlan, 7.
 Mill Springs area: Knapp, T. S., 1.
 Mississippian: Weller, 11.
 Montgomery Co. geol. map: McFarlan, 3.
 Morehead quad. geol. map: Crabb, 1.
 Muhlenberg Co.: Woodruff, J. G., 2.
 Natural gas sands: Hunter, C. D., 1; Jillson, 16.
 Nelson Co. geol. map: Shideler, 2.
 Nicholas Co. geol. map: Wolford, 2.
 North-cent. Ky.: Jillson, 30.
 Oldham Co. geol. map: Miller, R., 6.
 Ordovician: McFarlan, 9.
 Owen Co. geol. map: Wolford, 4.
 Pendleton Co. geol. map: Dunn, 7.
 Pennsylvanian: Culbertson, 1; Glenn, 5; Morse, W. C., 2; Wanless, 16, 17.
 Petroleum pool, Livermore: Wesley, 1, 2.
 Powell Co. geol. map: Miller, R., 7.
 Pre-Cret. soil horizon: Sutton, 7.
 Pre-Mississippian: McClellan, 1.
 Pulaski Co. geol. map: Mayfield, 1.
 Robertson Co. geol. map: Wolford, 2.
 Rockcastle Co. geol. map: Eyl, 1.
 Rogers Gap fm.: McFarlan, 11.
 St. Peter ss.: Edson, 9; Freeman, L. B., 2; Jillson, 40.
 Shelby Co. geol. map: McFarlan, 8.
 Silurian: Ball, 21; Foerste, 14, 24; McFarlan, 18, 20.
 Simpson Co. geol. map: Miller, R., 8.

Kentucky—Continued.

Historical geology—Continued.

- Spencer Co. geol. map: Shideler, 3.
 Trenton rocks, relations: McFarlan, 17.
 Tertiary: Lamar, 4; Roberts, 12.
 Trimble Co. geol. map: Shideler, 4.
 Tully black sh.: Savage, T. E., 1.
 Utica sh.: Beckner, 1.
 Washington Co. geol. map: Dunn, 4.
 Wells, deep strata: Jillson, 42.
 Western Ky.: Beckner, 2; Wesley, 3.

Mineralogy.

- Concretions, phosphatic: Edmondson, 3.
 Gypsum, Hopkins Co.: Munyan, 1.
 Magmatic ore dist.: Robinson, L. C., 5.
 Metabentonites: Laurence, 1.
 Meteorites: Young, D. M., 1.

Paleontology.

- Archaeopitys, Carb.: Scott, D. H., 2.
 Auloporoids, Dev.: Okulitch, 9.
 Big Bone Lick: Jillson, 36, 37; Smith, F. J., 1.
 Calamopityeae, New Albany sh.: Read, 8.
 Calcified wood, Pleist.: Brand, L. S., 2.
 Crinoidae: Bassler, 10; Kirk, E., 20.
 Cenozoic: Roberts, 14.
 Charophyta, Paleozoic: Peck, R. E., 4.
 Chester fossils: Sutton, 5.
 Corals, Dev.: Werner, 2.
 Corals, Paleozoic: Bassler, 25.
 Cryphiocrinus: Kirk, E., 3.
 Cumberland ss. fauna: Dunn, P. H., 1.
 Devonian: Read, C. B., 9; Savage, T. E., 2, 6.
 Dielchnia, Dev.: Read, C. B., 8.
 Eupachyrinus: Kirk, E., 18.
 Floras: Read, C. B., 9, 13.
 General: Jillson, 21; McFarlan, 16.
 Geological succession of life: Moodie, 8.
 Historical: Jillson, 33.
 Insect-cut leaf, Eocene: Berry, 29.
 Mesozoic: Roberts, 13.
 Mississippian: Weller, 11.
 Ordovician: McFarlan, 9.
 Paleocyclusidae, corals: Bassler, 25.
 Pennsylvanian: Culbertson, 1; Moodie, 9; Morse, W. C., 2.
 Pleistocene: Cooper, C. L., 2.
 Productella, Carb.: Brill, 1.
 Productidae, Missn.: Sutton, 14.
 Petridosperms, Carb.: Seward, 2.
 Rock footprints: Anonymous, 185.
 Rugose corals: Bassler, 25; Werner, 1.
 Silurian: Foerste, 14.
 Trochiliscus, Dev.: Hacquaert, 1.
 Xylodes, coral: Smith, S., 1.
 Zeacrinus, Missn.: Sutton, 15.

Petrology.

- Insoluble residues, Hunton, Viola lms.: Ockermann, 2.
 Limestones, phosphatic: Peter, 1.

Physical geology.

- Berea region: Souder, 1.
 Cave region: Mauntel, 1.
 Changes, base-level, shown by caves: Swinnerton, A. C., 2.

Kentucky—Continued.

Physical geology—Continued.

- Cumberland thrust block: Rich, 16.
 Deformation, pre-Dev.: Jones, D. J., 4.
 Dike, ss., in fault zone: McFarlan, 13.
 Deformation, pre-Dev.: Jones, D. J., 4.
 Faulting, post-Paleozoic: Rboades, 2.
 Fluorspar field, Ill.-Ky.: Currier, 5.
 Fracturing without displacement: Sutton, 6.
 Harlan Co. coal fields: Jones, D. J., 3.
 Jephtha Knob: Wheeler, G., 5.
 Karst lands erosion: Dicken, 1.
 Mammoth Cave area: Swinnerton, A. C., 9.
 Ouachita deformation: Russell, W. L., 15.
 Petroleum pool, Livermore: Wesley, 1.
 Rough Creek fault: Russell, W. L., 15.
 Structure determination, electrical: Hubbert, 8.
 Western Ky. Basin: Wesley, 3.

Physiographic geology.

- Berea region: Souder, 1.
 Caves: McFarlan, 11-b.
 Cincinnati area: Brand, 4; Desjardins, 1.
 Cuesta, solution: Dicken, 1.
 Cumberland Gap: Rich, 12.
 Erosion surfaces: Cole, 11.
 General: McFarlan, 14; Visser, 1.
 Glaciation, Cincinnati area: Desjardins, 1.
 Island formed in Mississippi R.: Shull, 1.
 Karst areas: Dicken, 1, 2; Jillson, 1; Malott, 11.
 Landscape evolution: McFarlan, 11-a.
 Mammoth Cave area: Lobeck, 1; Smith, F. J., 2.
 Midland Trail: Lobeck, 2.
 Natural bridges: McFarlan, 11-b.
 Ohio River evolution: Fowke, 2.
 Peneplains: Jillson, 12.
 Pike Co.: Hunt, C. B., 3.
 Pleistocene: Leverett, 1.
 Pleistocene glaciation: Jillson, 41.
 Pre-Illinoian glaciation: Desjardins, 1.

Keratophyres, Oregon: Gilluly, 12.

Kernite, Calif.: Schaller, 20.

Kevin-Sunburst oil field, Mont.: Howell, W. F., 1.

Keys in systematic paleontology: Simon, 1.

Klinter, Ind.: Shrock, 1.

Knebelite, Brit. Co.: Gunning, 14.

Knickpoints, cyclical significance: Meyerhoff, 19.

Koch, Lauge, defense of: Margerie, 2.

Kowkash-Ogoki gold area, Ont.: Kindle, L. F., 2.

Koyukuk valley area, Alaska: Marshall, R., 1.

Kunzite, Calif.: Buranek, 1.

Kyanite.

- Georgia: Crickmay, G. W., 6, 7; Johnston, W. D., 11; Prindle, 2; Smith, R. W., 6.

Kyanite—Continued.

- North Carolina: Bryson, 7-a; Dunn, J. A., 1; Mattson, 1; Stuckey, 13.
 Virginia: Watkins, 1.
 Wyoming: Beckwith, 1.

Labrador.

- Aerial mapping: Forbes, A., 2; Washburn, A. L., 2.
 Mature valleys: Cooke, H. C., 2.
 Mineral composition of sands: Martens, 1.

Historical geology.

- Coast: Kranck, 3.
 Correlations with Greenland: Kranck, 4.
 Hudson Bay shore: Gardner, G., 1.
 Northeastern: Roy, S. K., 5.
 Northernmost: Odell, 4, 6.
 Wapussakatoo Mts.: Gill, J. E., 6.

Mineralogy.

- Labradorite: Anonymous, 75.

Paleontology.

- Beekmantown drift fossils: Roy, S. K., 5.
 Cyathaspongia: Okulitch, 2.
 Foraminifera, Camb.: Howell, 17.
 Ordovician fossils: Little, 1.
 Trilobites, Camb.: Resser, 16.

Petrology.

- Amazonite aplite dike: Wheeler, E. P., 2nd, 2.
 Coast: Kranck, 3.
 Diabase dikes: Wheeler, E. P., 2nd, 1.
 Rocks, NE. Labrador: Uhlig, 1.

Physical geology.

- Coast: Kranck, 3.
 Northernmost: Odell, 4.
 Wapussakatoo Mts.: Gill, 6.

Physiographic geology.

- Aerial survey: Forbes, A., 2.
 Cape Chidley area: Forbes, A., 1.
 Mountains: Odell, 1.
 Nain-Oak section: Wheeler, E. P., 2nd, 3.
 Northernmost: Odell, 4, 6; Washburn, A. L., 2.
 Wapussakatoo Mts.: Gill, 6.

Laccoliths. See also Intrusions.

- California, Marysville Buttes: Williams, H., 1.
 Colorado, Crested Butte dist.: Cady, G. H., 6.
 Green Mtn. dam site: Heaton, 8.
 Kansas, Woodson Co.: Knight, G. L., 2.
 Mexico: Watson, 9.
 Montana: Barksdale, J. D., 1; Hurlbut, 3, 10; Larsen, 15; Reynolds, D. L., 2; Rouse, 7.
 Newfoundland: Buddington, 18; Ingerson, 2.
 New Hampshire: Chapman, C. A., 1.
 Quebec: Cooke, H. C., 5.
 Shonkin Sag, Mont.: Barksdale, J. D., 1; Hurlbut, 3; Reynolds, D. L., 2.
 Utah, Abajo Mts.: Thorpe, 13, 14.
 Wyoming: Effinger, 2; Rouse, J. T., 2.
 Lake balls, fm.: Allen, F. H., 1; Huntsman, 1.

Lake Lahonton, age: Jones, J. C., 1.
Lakes.

- Amatitlán, Guatemala: Deger, 3.
 Atitlán, Guatemala: Atwood, W. W., 4.
 British Columbia, Fort Fraser area: Armstrong, J. E., 2.
 Turner Lake: Munday, 2.
 California: Davis, 20; Kessell, 1.
 Deltas, channel deposits: Tanner, W. F., 3.
 Great Lakes: Taylor, 14.
 Guatemala, Amatitlán, Atitlán: Atwood, W. W., 4, 5; Deger, 3.
 Lahontan Basin, Nev.: Hutchinson, 2.
 Lake Michigan Basin: Evans, O. F., 7.
 Louisiana, Lake Pontchartrain: Steinmayer, 4.
 Maine, Square Lake: Nylander, 1.
 Massachusetts, rounded lakes and lagoons: Raisz, 4.
 Michigan, harbor lakes, origin: Evans, O. F., 8.
 New Hampshire, Merrimack watershed: White, G. W., 12, 13.
 Ontario, Lake Savant: Moore, E. S., 2.
 Oregon, saline lakes: Melhase, 14; Smith, W. D., 12; Stafford, 1.
 Quebec, disappearing: Irénée-Marie, 1.
 Shore processes, artificial lakes: Evans, 11.
 Tennessee: Tenn. State Plann. Commission, 1.
 Texas, sedimentation: Reed, E. L., Jr., 1.
 Thermal stratification: Kindle, E. M., 2.
 Undertow: Evans, 15.
 Virginia, Mountain Lake: Sharp, H. S., 7, 8.

Lakes, extinct. See also Glacial lakes.

- Arizona: Brown, W. H., 4; Knechtel; 6; Smith, G. E. P., 3.
 Border region, Tex.-Mexico: Hill, 8.
 California, Afton Basin: Blackwelder, 43.
 Lake Manly: Blackwelder, 31.
 Lake Mojave: Antevs, 22; Bode, 8; Campbell, E. W. D., 2.
 Lake Tecopa: Blackwelder, 5.
 Long Valley: Mayo, 9.
 Minerals in lake deposits: Melhase, 17; Scott, D. B., 1.
 Colorado, Creede Lake: Caplan, 1.
 Lake Uinta: Bradley, 15.
 Connecticut, Quinipiac-Farmington lowland: Lougee, 7.
 Idaho, Mudd Lake area: Stearns, 27.
 Illinois, Chicago area: Bretz, 10.
 Indiana: Thornbury, 3, 5.
 Lake Lahonton, age: Jones, J. C., 1.
 Lake Superior region: Merrill, J. A., 1.
 Michigan: Bay, J. W., 3; Bergquist, 8.
 Minisink Valley Pleist. deltas: Happ, 4.
 Nevada, Lake Lahontan Basin: Hutchinson, 2; Rose, R. H., 1; Sharp, R. P., 3.

Lakes, extinct—Continued.

- New Hampshire, Connecticut watershed: Lougee, 9.
 New Mexico, Lake San Augustin: Powers, W. E., 2, 13.
 New York: Fairchild, 15; Payne, T. G., 1.
 Nipissing Great Lakes outlet: Taylor, 8.
 North America, Quat.: Wright, E. B., 1, 3.
 North Dakota, Lake Souris: Andrews, D. A., 2.
 Ohio, tilted abandoned lake beds: Hubbard, 9, 10, 12.
 Oregon, Lake Labish: Smith, J. E., 14.
 Quebec: Norman, 12; Wilson, J. T., 5.
 Utah, Lake Bonneville: Leggette, 2.
 Lake Uinta: Bradley, 15.
 Wisconsin: Aldrich, H. R., 3.
 Yellowstone, Hayden Valley: Howard, A. D., 4.

Lakes, glacial. See Glacial lakes.

Lamellibranchiata. See Pelecypoda.

Lancaster quad., Pa.: Jonas, 2.

Lance Creek oil and gas field, Wyo.: Emery, W. B., 1.

Land forms: Buss, F. E., 1.

Landslides.

- Alaska, Fort Liscum: Johnson, B. L., 4.
 Agriculture and eng. problems: Sharpe, 6.
 Analysis and control: Hennes, 1.
 Arizona: Hinds, 28; Keyes, 416; Reiche, 2.
 California: Curry, 3; Hacker, 1; Krauskopf, 1; Miller, W. J., 5; Taylor, C. A., 1.
 Colorado, rock slide, Durango: Vanderwilt, 6.
 Columbia River gorge, drowned forests: Lawrence, D. B., 1, 2.
 General: Blackwelder, 17.
 Great Basin Ranges: Keyes, 411.
 Hawaii, Lehua and Kaula Is.: Palmer, H. S., 8.
 Idaho, Salmon Creek Canyon: Lee, C. A., 1.
 Illinois: Ekblaw, 6; Ramirez, 2.
 Kentucky, Jephtha Knob: Wheeler, G., 5.
 Landslips, subsidences and rock falls: Ladd, G. E., 2.
 Mississippi: Morse, 11; Russell, R. J., 10.
 Montana, Mizpah coal field: Parker, F. S., 2.
 Montserrat, W. Ind.: MacGregor, 2.
 New Mexico: Smith, W. S. T., 2.
 New York, Bouquet River: Newland, 17; Whitcomb, 11, 11-a.
 Ohio, Cincinnati area: Von Schlichten, 2.
 Quebec, Ste. Anne River: Laverdère, 6.
 Submarine canyons, changing depths: Shepard, 46.
 Suspension currents and mud slides: Stetson, 14.
 Tennessee, Webb Mtn. cloudburst: Moneymaker, 7.

Landslides—Continued.

- Type in clay terraces: Rogers, J. K., 1.
 Utah, San Juan country: Gregory, H. E., 4.
 Virginia, Cherry Hill: Ladd, G. E., 1.
 Wyoming, Centennial Valley: Sharpe, H. S., 4.
 Landslides, agr. and eng.: Sharpe, C. S. F., 6.
 Landslides and related phenomena: Russell, R. J., 20; Sharpe, C. S. F., 2, 3; Washburn, A. L., 1.
 Landslips, subsidences, and rock falls: Ladd, G. E., 2.
 Land surfaces, origin: Beckner, 4.
 Land surfaces, slope determination: Wentworth, 6.
 Land tilt: Delaney, 2.
 Lapolith, Quebec: Freeman, B. C., 7.
 Latah fm., Idaho: Kirkham, 4.
 Late gold, implications: Mawdsley, 8; Oedman, 1.
 Lauge Koch on Caledonian Range: Poulsen, 6.
 Lauge Koch on Ozarkian: Poulsen, 5.
 Lava casts forest, Oregon: Alford, 1.
 Lavas and lava flows. See also intrusions.
 Anosma or "squeeze-ups": Colton, 4.
 Arizona: Colton, 6; Fuller, R. E., 3; Gilluly, 17; Reiche, 3; Richter, R., 4; Schenk, 7.
 Block lava: Finch, R. H., 8.
 British Columbia: Rice, 4.
 California: Anderson, 5; Jones, A. E., 8; Keathley, 1; Swartzlow, 5-a.
 Colorado: Ross, C. S., 20; Stark, 12; Waldschmidt, 7.
 Columbia River Basin: Landes, H., 1.
 Flow units in basalt: Nichols, R. L., 4.
 Hawaii: Chang, 1; Dunham, 1, 3; Hinds, 5; Hodgkins, 1; Jaggar, 37; Jones, A. E., 8; Palmer, H. S., 7; Powers, H. A., 6, 8; Stearns, H. T., 5, 24, 28.
 Idaho: Anderson, A. L., 1; Lee, C. A., 2; Livingston, D. C., 4; Nichols, 13; Reed, J. C., 12; Shepherd, 9.
 Mexico: Kelly, W. A., 10; Valentine, W. G., 1.
 Michigan: Broderick, 9.
 Minnesota: Swanson, R. W., 1.
 Montana: Fenton, 60.
 Nevada: Callaghan, 8; Sharp, R. P., 4; Thayer, T. P., 3.
 New Mexico: Hunt, C. B., 4; Just, 2; Nichols, 10, 12.
 Nova Scotia, veins in lavas: Hornor, 1.
 Ontario, Schreiber area: Harcourt, 4.
 Oregon: Allen, J. E., 1; Barr, 2; Buwalda, 19; Callaghan, 10; Fuller, 15, 16; Nichols, 9-a; Piper, 17; Thayer, T. P., 3, 5.
 Pillow lavas, origin: Moore, E. S., 8.

Lavas and lava flows—Continued.

- Quebec: Auger, 2; Denis, 8; Henderson, J. F., 1; Longley, 1, 4; Ross, S. H., 1; Wilson, M. E., 19.
- Slump scarps: Finch, R. H., 7.
- Squeeze-ups of lava: Colton, 4; Nichols, R. L., 5.
- Temperatures, Oregon lava beds: Van Orstrand, 12.
- Texas, Barilla and Davis Mts.: Jones, C. T., 1.
- Virginia: Furcron, 5; Steidtmann, 7.
- Viscosity: Kinsley, 1; Nichols, 11; Ross, C. S., 20.
- Volcanic activity, surface manifestations: Zies, 7.
- Volcanic products: Powers, H. A., 5.
- Washington: Chappell, 2; Felts, 3; Fuller, 10; Verhoogen, 1, 2.
- Wyoming: Howard, A. D., 5; Rouse, 6.
- Lava Creek dist., Idaho: Anderson, A. L., 1.
- Lava domes: Jaggar, 28.
- Lava stalactites, stalagmites, toes and squeeze-ups: Jaggar, 20.
- Lava tube, fossil: Palmer, H. S., 1.
- Law of symmetry, earth's crust: Fourmarier, 6.
- Lazulite, Graves Mtn., Ga.: Zodac, 28.
- Lead.
- Alabama: Jones, W. B., 13-a.
- Alaska: Buddington, 2; Mertie, 15; Moffit, 3.
- Arizona: Butler, 17, 18; Fowler, 14; Garrett, S. K., 1; Hernon, 1; Peterson, N. P., 1; Reber, 1; Rubly, 1; Wilson, E. D., 5.
- Arkansas: McKnight, 2; Miser, 11; Anonymous, 39.
- Boulder Dam area: Lee, 7.
- British Columbia: Armstrong, J. E., 1, 2; Cairnes, 12, 13, 14, 17; Evans, C. S., 4; Goranson, E. A., 3; Gunning, 1; Hanson, 1, 11; Hedley, M. S., 2; Kerr, F. A., 18, 20; Kindie, E. D., 2, 3, 4; Lay, 4; O'Grady, 1; Rice, 5, 6; Sargent, 1, 2; Schofield, 2.
- California: Johnston, W. D., 14; Kelley, 8, 10; Sampson, R. J., 4; Van Amringe, 10; Webb, R. W., 3.
- Canada: Alcock, 3, 10; Thomson, J. Ellis, 17.
- Colorado: Behre, 16, 32; Burbank, 3, 4; Chapman, E. P., 2; Cross, C. W., 2; Goddard, 2, 3; Loughlin, 12; Lovering, 15, 17, 20; Rohlfing, 1; Sandberg, 3; Singewald, Q. D., 11; Vanderwilt, 11; Wahlstrom, 3, 4, 5.
- Columbia River basin: Landes, H., 1.
- Cyrtolite, analysis: Muench, 1.
- Europe-N. Am. correl.: Behre, 33.
- Galena in Camb. lms.: Howells, 33; Lochman, 3.

Lead—Continued.

- General: Jackson, C. F., 1.
- Greenland: LeGraye, 1.
- Guatemala, mineral collecting: Myers, R. E., 3.
- Hydrothermal experiments: Kristoffer-son, 1.
- Idaho: Anderson, A. L., 1, 3, 23; Dickey, F. H., 1; Hershey, O. H., 1; McConnell, 1; Ross, C. P., 4, 17, 31; Shenon, 17, 18; Umpleby, 1; Warren, H. V., 5.
- Kansas: Fowler, 6; Landes, 24.
- Lowlands, S.-cent. and Ouachita prov.: Ruedemann, P., 3.
- Manitoba, Flin-Flon: Brownell, G. M., 2.
- Mesothermal deposits: McKnight, 1.
- Metals, primordial segregation: De Lury, 28.
- Mexico: Bastin, 13; Donald, R. T., 1; Fletcher, A. R., 1; Flores, 9; Foshag, 12; González, J., 1; Hayward, M. W., 1; Imlay, 10; Landenberger, 1; Riley, L. B., 1; Santillan, 9, 14.
- Mississippi Valley: Banfield, 1; Bastin, 20; Newhouse, 9.
- Missouri: Bryan, J. J., 3; Dake, C. L., 1; Smith, W. S. T., 3; Tarr, 21; Tolman, 8.
- Montana: Dickey, F. H., 2; Lovering, 1; Pardee, 4; Sahinen, 4; Schafer, 1; Shenon, 12, 15; Spiroff, 3.
- Nevada: Callaghan, 7, 13; Cameron, E. N., 2; Ferguson, H. G., 1, 5; Hewett, 4; Schrader, 6; Vandenburg, 3, 4; Westgate, 6.
- Newfoundland: George, P. W., 2; Snelgrove, 8.
- New Mexico: Dunham, 3; Harley, 1; Krieger, P., 2; Lasky, 12, 16; Nichols, 7; Stott, 1.
- New York: Dyson, 1-a; Kerr, P. F., 1.
- North America: Sminov, 1.
- Northwest Territories: Bell, J. M., 2, 3; Marble, 5.
- Nova Scotia: Cox, E. J., 1; Messervey, 10.
- Oklahoma: Fowler, 6; Speer, 1; Tarr, 11; Weidman, 2.
- Ontario: Bannerman, 1, 2; Burrows, 2; Freeman, B. C., 4; Hawley, J. E., 3; Hurst, 1, 2; Moore, E. S., 6; Moorhouse, 3; Osborne, 3, 31; Phemister, 3; Thomson, J. Ellis, 14; Tuck, 2.
- Ore deposits: Butler, G. M., 4.
- Ore guides, Tri-State dist.: Ageton, R. V., 1.
- Oregon: Callaghan, 10; Smith, W. D., 11.
- Ores from magmas or deeper: Graton, 12.
- Ozark region, sink and cave deposits: Buehler, 10.

Lead—Continued.

- Pennsylvania, Tyrone quad.: Butts, 13.
 Primary ores, origin: Holmes, A., 5;
 Knopf, 15; Wells, R. C., 13.
 Quebec: Faessler, 22; Jones, I. W., 1,
 5, 7, 15; Osborne, 30.
 Saskatchewan: Cameron, A. E., 3.
 South Dakota: Tullis, 6
 Texas: Baker, C. L., 16; Ross, C. P.,
 28.
 Thorium-uranium ratios and lead origin:
 Keevil, 3.
 Tri-State dist.: Fowler, G. M., 1, 2,
 4, 5, 7, 8, 10, 13; Harbaugh, 1, 2;
 Kans. G. Soc., 10; Leith, C. K., 5;
 Rama Rao, B., 1; Ridge, 1; Tarr, 15.
 Utah: Bryan, G. G., 1; Green, J., 1;
 Nolan, 6.
 Virginia: Boyle, R. S., 3; Carrier, 2.
 Washington: Hayes, D. I., 1; Park, 9.
 Western U. S.: Loughlin, 8.
 Wisconsin: Behre, 14, 23, 24, 27.
 Wyoming: Abbott, 1; Parsons, W. H.,
 1.
 Yukon: Bostock, 10, 12.
 Zinc-lead micrography, Miss. Valley:
 Banfield, 1.
 Lechatellierite, Meteor Crater: Rogers, A. F.,
 3.
 Lepidolite: Stevens, R. E., 4; Winchell, 8.
 Lesser Antilles structure: Barrabé, 7.
 Lesueur's Walnut Hill fossil shells: Gardner,
 12.
 Leucoxene: Tyler, 5.
 Life, origin: Rehder, 1.
 Life processes: Staley, 1.
 Lightning spalling: Lauder milk, 10.
 Lignite. See also coal.
 Alabama: Barksdale, J., 2.
 Ontario: Dyer, 7, 8, 10, 11, 15; Gilmore,
 R. E., 1; Miller, A. H., 4; Ontario
 Research Foundation, 1.
 Limestone. See also Building stone.
 Alabama: Eckel, E. C., 9; Jones, W. B.,
 1, 17.
 Alaska: Hodge, 16, 24.
 Algal lms.: Eardley, 1; Johnson, J. H.,
 27.
 Boulder Dam area: Lee, 7.
 British Columbia: Cairnes, 17; Goudge,
 3; Hodge, 24; Richmond, A. M., 2.
 California: Eckel, E. C., 1; Hodge, 24;
 Webb, 12.
 Canada: Goudge, 1, 2, 5, 7.
 Columbia River Basin: Landes, H., 1.
 Connecticut: Moore, F. H., 1.
 Georgia, Chehaw State Pk.: Griffin, R. H.,
 1.
 Hydrology, lms. terranes: Swinnerton,
 10.
 Illinois: Ekblaw, 11; Grim, 11; Lamar,
 1, 6, 12, 15.
 Indiana, oolitic: Loughlin, 1, 2; Visser,
 3.

Limestone—Continued.

- Industrial minerals and rocks: A. I.
 M. E., 2.
 Inorganic marine lms.: Gee, 2.
 Iowa: Knight, N., 1; Wood, L. W., 7.
 Kansas: Landes, 24; Search, 1.
 Kentucky: Mayfield, 4; Peter, 1; Roberts,
 J. K., 3; Welch, 1.
 Louisiana: Huner, 1.
 Manitoba: Hutt, 3; Pugh, F., 1.
 Marine fm.: Field, 8.
 Metamorphism: Bowen, 22.
 Minnesota: Stauffer, 6.
 Mississippi: Foster, 5.
 Missouri: Allen, 13; Brightman, 1.
 Newfoundland: Betz, 1; Cooper, J. R., 2.
 New York: Berry, G. W., 1.
 North Carolina: Greaves-Walker, 2;
 Hornbeck, 1.
 Nova Scotia: Messervey, 5.
 Ohio: Stout, 18; Ver Steeg, 23.
 Oklahoma: Hickock, 1; Wilson, C. W.,
 Jr., 13.
 Ontario: Bruce, 25; Dyer, 4; Goudge, 5.
 Oregon: Moore, B. N., 8.
 Origin and uses: Field, R. M., 1; Knopf,
 13; Runner, 10.
 Pacific Coast: Hodge, 16.
 Pennsylvania: Bascom, 6; Butts, 10, 13;
 Ewing, 7; Jonas, 2; Leighton, H.,
 6; Miller, B. L., 4, 15; Rogers,
 R. D., Jr., 1; Stose, 18.
 Pitting, Niagara lms., Wis.: Kowalke, 1.
 Porosity, development of: Howard,
 W. V., 5.
 Precipitation by submarine volcanoes:
 Kania, 1.
 Quebec: Goudge, 5; Laverdière, 4, 6;
 Osborne, 21, 29.
 Rhode Island: Willard, 9.
 Seismic study, Lehigh Valley, Pa.:
 Ewing, 7.
 Solubility: Adams, C. S., 1.
 Solution and slope effect: Smith,
 J. F., Jr., 1.
 Structural materials, T.V.A.: Anony-
 mous, 139.
 Tennessee: Spain, 4; Whitlatch, 13, 19,
 30; Anonymous, 139.
 Terranes, lms.: Swinnerton, 10.
 Trinidad: Hutchison, 3.
 Utah, algal lms.: Eardley, 1.
 Virginia: Bates, R. L., 4; Furcron, 4;
 Woodward, 13.
 Washington: Hodge, 24.
 West Virginia: McCue, 1; U. S. Comm.,
 1, 2.
 Limonite structure: Boswell, 1.
 Lindgren volume: A. I. M. E., 1.
 Lithium.
 Colorado, lepidolite deposit: Eckel, E. B.,
 3.
 Industrial minerals and rocks: A. I.
 M. E., 2.
 Maine, spodumene: Hess, F. L., 13.
 Manitoba: Stockwell, 2; Wright, J. F., 5.

Lithium—Continued.

- Massachusetts, spodumene: Hess, F. L., 13.
 North Carolina, spodumene: Hess, F. L., 9.
 South Dakota: Connolly, 3.
 Lithological inv., oil areas: Khmelevskaya, 1.
 Lithology. See also Petrology.
 Variations in, test: Eisenhart, 2.
 Lode gold prosp.: Gardner, E. D., 1.
 Lodestone magnetite: Newhouse, 1.
 Long Beach oil field, Calif.: Roberts, D. C., 1.
 Loess.
 Alaska: Tuck, 10, 11.
 General: Keyes, 147.
 Hawaii: Palmer, H. S., 5.
 Illinois: Ekblaw, 10; Grim, 9.
 Indiana: Thornbury, 5.
 Iowa: Cutbberth, 1; Keyes, 215, 233.
 Kansas: Frye, 4; Jewett, 7; Landes, 28; Newell, 4.
 Louisiana: Fisk, 4; Richards, 19, 20.
 Loveland, aeolian: Kay, G. F., 17.
 Massachusetts: Smith, H. T. U., 1.
 Measure of accumulation: Keyes, 198.
 Mississippi: Foster, V. M., 1, 4; Richards, 19, 20.
 Mississippi Valley, lower: Russell, R. J., 18.
 Missouri: Oefelein, 1; Robertson, P., 3.
 Missouri Valley: Musgrave, 2.
 Nebraska: Leverett, 20; Lugn, 5, 15.
 Origin: Hobbs, 10; Shimek, 2.
 Peorian, aeolian: Kay, G. F., 17.,
 Rate of deposition: Keyes, 189.
 Soil drifting, Great Plains: Leighton, 29.
 Time of accumulation: Keyes, 104.
 Wyoming: Condra, 13.
 Logging, electrical, and oil prosp.: Anonymous, 123.
 Logs, deep wells, S. Dak.: Rothrock, 14.
 Louisiana.
 Bibliography: Dunbar, C. P., 1; Russell, R. J., 17.
 Geological Survey repts.: Howe, H. V., 28; Moresi, 2, 4.
 Geological Survey, history of: Howe, H. V., 5.
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 Torsion balance surveys: Barton, 17.

Areas described.

- Caldwell Parish: Huner, 1.
 Catahoula Parish: Chawner, 3.
 Concordia Parish: Chawner, 3.
 Grant Parish: Fisk, 2.
 Iberia Parish: Howe, H. V., 3.
 Lafayette Parish: Howe, H. V., 7.
 La Salle Parish: Fisk, 2.
 St. Martin Parish: Howe, H. V., 7.
 Winn Parish: Huner, 1.

Louisiana—Continued.

Economic geology.

- Aragonite in salt-dome cap rock: Hanna, M. A., 11.
 Ark-La-Tex oil and gas field: Easton, 8.
 Ascension Parish: Howe, H. V., 30.
 Barataria Bay sediments: Krumbein, 22.
 Bear Creek gas field: Kamb, 2.
 Belle Isle salt dome: Barton, 15, 22; Craft, 1.
 Bellevue oil field: Crider, 3; Teas, 2.
 Caddo oil field: Fletcher, C. D., 1.
 Caldwell Parish: Huner, 1.
 Cameron Meadows fields: Teas, 4.
 Cap rock on salt domes, origin: Janssen, 2.
 Carterville-Sarepta field: Thomas, G. D., 1.
 Catahoula Parish: Chawner, 3.
 Cheneyville oil fields: Buchanan, 3.
 Clays: Whittemore, 1, 2, 3.
 Coastal Plain oil fields: Bignel, 1; Teas, 4.
 Concordia Parish: Chawner, 3.
 Conroe Trend oil fields: Anonymous, 147.
 Converse oil field: Easton, 1.
 Cores, deep Rodessa well: Israelsky, 7.
 Correlations by Foraminifera: Nuttall, 5.
 Côte Blanche oil field: Barton, 26.
 Cotton Valley oil field: Hutson, 1; Moody, 5, 8; Ross, J. S., 1, 2; Tucker, M., 1.
 Cretaceous: Shreveport G. Soc., 4.
 Darrow salt dome: Cook, C. E., 1.
 Dixie oil pool: Shearer, H. K., 2.
 Driscoll gas field: Kamb, 2.
 East Hackberry salt dome: Bauernschmidt, 3.
 Electrical inv., oil fields: Lagerhjelm, 1.
 Eocene oil fields, Conroe Trend: Anonymous, 147.
 Eola field: Jenny, 14.
 Faults, Gulf Coast oil fields: Kornfeld, Joseph A., 2.
 Geophysical prosp. upper Gulf Coast: Todd, J. D., 2.
 Geophysics, relation to salt domes and oil fields: Eby, J. B., 3, 4.
 Glen Rose fm., oil: Easton, 7.
 Grant Parish: Fisk, 2.
 Gulf Coast oil fields: Barton and Sawtelle, 1; Brace, 5, 7; Deussen, 2; Easton, 2; Logan, J., 4, 5; Mills, 5; Vanderpool, 2; Williams, N., 2; Woodruff, E. G., 4.
 Gulf Coast oil horizons: Deussen, 2, 9.
 Gulf Coast oil reserves: Deussen, 7; Williams, N., 4.
 Gulf Coast salt domes: Logan, J., 5; Teas, 6.
 Gulf Coast seismograph explor.: Rosaire, 9.
 Heaving shale: Halbouty, 10.
 Homer oil field: Spooner, 1.
 Iberville Parish: Howe, H. V., 30.
 Jefferson Is. salt dome: O'Donnell, 1.
 Jennings salt dome: Halbouty, 8.

Louisiana—Continued.

Economic geology—Continued.

La Salle Parish: Fisk, 2.
 Lisbon oil field: Grage, 1.
 Magnetic vectors: Jenny, 2.
 Magnetometer study, Caddo-Shreveport uplift: Barret, 1; Collingwood, 1.
 Map, oil, gas, sulfur fields: La. G. S., 1.
 Mineral resources: Shaw, J. A., 2.
 Monroe gas field: Fergus, 1.
 Natural gas: Chisholm, W. O., 1.
 North La. oil field strat.: Crider, 2.
 Oil fields: Lloyd, A. M., 2.
 Oil-producing horizons: Deussen, 2, 9.
 Oil and gas fields: Bingham, D. H., 1; Brace, 5; Craft, 2; Eby, J. B., 2; Moody, 5; Postley, 5; Shearer, 4; Spooner, 5, 6.
 Oil and salt: Howe, H. V., 7.
 Oil and sulfur: Anonymous, 10.
 Petroleum: Brace, 6, 7; Shearer, H. K., 5.
 Petroleum-bearing strata: Howe, H. V., 21; Weinzierl, J. F., 3.
 Petroleum poss.: Barton, 11; Thomas, P., 1; Weinzierl, J. F., 3.
 Petroleum strat.: Howe, H. V., 19.
 Petroleum and natural gas: Bingham, D. H., 1; Brace, 5; Craft 2; Moody, 5; Postley, 5; Shearer, H. K., 4; Spooner, 5, 6.
 Pine Is. oil field: Crider, 1, 4.
 Plaquemines Parish: Russell, R. J., 15.
 Producing sands above Jackson: Clayton, 2.
 Prospecting Gulf Coast marsh and water areas: Flude, 1.
 Report, Div. of Minerals: Shaw, J. A., 1.
 Richland gas field: Gordon, D., 2.
 Rodessa field: Clark, C. C., 2; Ivy, 1; Mills, 3.
 St. Bernard Parish: Russell, R. J., 15.
 Salt: Judson, 3, 4; Weigel, 2.
 Salt domes: Clapp, F. G., 4; Hanna, M. A., 3; Howe, 13, 26, 31; Judson, 3, 4; Sawtelle, 1; Schmidt, C., 1; Steinmayer, 2; Taylor, R. E., 3.
 Salt dome areas, geophys. prosp.: Schmidt, C., 1.
 Secondary salt-dome minerals: Hanna, M. A., 3.
 Seismic explor. for oil: Taylor, J. 1.
 Shongaloo oil field: Eaves, 1; Thomas, G. D., 1.
 Shreveport oil field: Grimm, 1; Mix, 1.
 Simsboro gas field: Kamb, 2.
 South Elton oil field: Blondeau, 1.
 Sparta-Wilcox trend: Todd, J. D., 3, 4; Williams, N., 6.
 Starks field: Kornfeld, 5.
 Sugar Creek field: Clark, C. C., 1.
 Sulfur: Moresi, 1.
 Sulfur dome: Bauernschmidt, 2.
 Tepetate oil field: Bornhauser, 1.
 Urania oil field: Schneider, G. W., 1.
 Valentine (La Rose) dome: Buchanan, 1, 2.

Louisiana—Continued.

Economic geology—Continued.

Vermillion Bay: Rosaire, 2.
 Volcanoes and oil accumulation: Easton, 3.
 Water-insoluble residues, salt plugs: Taylor, R. E., 1.
 Wilcox sand oil poss.: Fisk, 9.
 Zwolle field: Kamb, 1.

Historical geology.

Ark-La-Tex oil and gas field: Easton, 8.
 Bellevue oil field: Crider, 3.
 Caldwell Parish: Huner, 1; Shreveport G. Soc., 2.
 Cameron Parish: Barton, 42.
 Catahoula-Fleming contact: Haase, 3.
 Catahoula Parish: Chawner, 3; Shearer, H. K., 1; Shreveport G. Soc., 2.
 Cheneyville oil field: Buchanan, 3.
 Chestnut dome: Moody, C. L., 1.
 Claiborne, correl.: Ellisor, 1.
 Claiborne, foraminiferal zonation: Israel-sky, 6.
 Comanche and pre-Comanche fms.: Hazzard, R. T., 3.
 Concordia Parish: Chawner, 3.
 Conroe Trend Eocene oil fields: Anonymous, 147.
 Correlations, elec. logs: Deussen, 4.
 Correlations by Foraminifera: Nuttall, 5.
 Côte Blanche salt dome: Barton, 26.
 Cotton Valley field: Hutson, 1; Moody, 5, 8; Ross, J. S., 1, 2.
 Cretaceous: Shreveport G. Soc., 4.
 Cross secs., Ark.-La.: Alexander, 15; Lloyd, A. M., 3; Purzer, 1.
 Darrow salt dome: Cook, C. E., 1.
 Deltas, Mississippi River: Russell, R. J., 13.
 Eocene oil fields, Conroe Trend: Anonymous, 147.
 Florida Parishes, Pleist.: Fisk, 8; Howe, 33.
 Geologic cross secs.: Alexander, 15; Hazzard, R. T., 1; Lloyd, A. M., 3; Purzer, 1.
 Geologic fms.: Weber, 1.
 Glen Rose fm. origin: Easton, 2.
 Grant Parish: Happ, 5.
 Gulf Coast geosyncline: Barton, 25.
 Gulf Coast oil horizons: Deussen, 2, 9.
 Hackberry foraminiferal zones: Kornfeld, 5.
 Heaving shale: Halbouty, 10.
 Iberian structural axis: Barton, 31.
 Ice age oscillations: Russell, R. J., 24.
 Index fossils: Calaban, 1.
 Jennings salt dome: Halbouty, 3.
 La Salle Parish: Fisk, 2; Happ, 5.
 Life and climate, primeval La.: Glenk, 1.
 Lisbon oil field: Grage, 1.
 Marine shell stratum, Pleist.: Bridges, 1.
 Mid-continent area, S. La.: Lahee, 8.
 Midway group, Eocene: Alexander, 12.
 Miocene, S. La.: Ellisor, 7.
 Monroe gas field: Fergus, 1.

Louisiana—Continued.

Historical geology—Continued.

- North La. oil fields: Crider, 2; Easton, 2.
 Oil-producing horizons: Deussen, 2, 9.
 Oligocene: Ellisor, 2.
 Petroleum-bearing strata: Howe, 21.
 Petroleum, Eocene poss.: Thomas, P., 1.
 Petroleum strat.: Howe, 19.
 Pine Is. oil field: Crider, 1, 4.
 Plaquemines Parish: Russell, R. J., 15.
 Pleistocene history: Fisk, 3, 4; Richards, 21.
 Post-Fleming fms.: Doering, 1.
 Quaternary: Russell, R. J., 27.
 Richland gas field: Gordon, D., 2.
 Rodessa field: Clark, C. C., 2; Ivy, 1.
 Sabine uplift: Moody, C. L., 2.
 Salt dome cap rock, origin: Taylor, R. E., 3.
 Salt dome mechanics: Barton, 23.
 Shongaloo oil pool: Eaves, 1.
 Shreveport oil field: Mix, 1.
 Sparta-Wilcox Trend: Todd, J. D., 1; Williams, N., 6.
 Sugar Creek field: Clark, C. C., 1.
 Sulfur dome: Bauernschmidt, 2.
 Tepetate oil field: Bornhauser, 1.
 Tertiary: Howe, H. V., 6.
 Vermilion Parish: Barton, 42.
 Vicksburg in borings: Halbouty, 1.
 Winn Parish: Huner, 1.

Mineralogy.

- Anhydrite cap rock minerals: Barnes, V. E., 4.
 Aragonite in salt dome cap rock: Hanna, M. A., 11.
 Choctaw salt dome minerals: Hurlbut, 6, 8.
 Dust storms, mineral composition: Russell, P. G., 8.
 Fluoride in ground water: Maher, 1.
 Hilgardite: Hurlbut, 6.
 Parahilgardite: Hurlbut, 7.
 Salt: Weigel, 2.
 Salt dome cap rock minerals: Hanna, M. A., 8.
 Salt dome cap rock origin: Taylor, R. E., 3.
 Sulfur: Moresi, 1.
 Water-insoluble residues, salt plugs: Taylor, R. E., 1.

Paleontology.

- Ascension Parish: Howe, 30.
 Archaeoceti, Tert.: Kellogg, 9.
 Bitubulogenerina: Howe, 12.
 Caldwell Parish: Huner, 1; Shreveport G. Soc., 2.
 Catahoula Parish: Shreveport G. Soc., 2.
 Cephalopoda, Trinity group: Scott, G., 8.
 Corals, Pleist., Mississippi delta: Wells, J. W., 4.
 Claiborne foraminiferal zones: Israelsky, 6.
 Cretaceous: Shreveport G. Soc., 4.
 Crustaceans, decapod: Stenzel, 7.

Louisiana—Continued.

Paleontology—Continued.

- Cythereis, Eocene: Gooch, 1.
 Cytherelloidea, Tert.: Howe, 8.
 Cytheridea, Tert.: Stephenson, M. B., 3.
 Cytheropteron, Eocene: Martin, J. L., 1.
 Fauna, Oligocene: Rukas, 1.
 Flora, Pleist.: Brown, C. A., 1.
 Foraminifera: Cushman, 1; Garrett, 3; Gravell, 2; Howe, H. V., 4, 34; Kornfeld, 4, 5; Vaughan, 6, 17.
 Hackberry foraminiferal zones: Kornfeld, 5.
 Heisteria, Eocene: Berry, 59.
 Helicolepidina, Eocene: Vaughan, 30.
 Iberville Parish: Howe, 30.
 Index fossils: Calaban, 1.
 Lepidocyclina, Oligocene: Gravell, 4.
 Loxoconcha, Eocene: Murray, G. E., Jr., 3.
 Mammal, Paleocene: Simpson, 17.
 Marginulina: Garrett, J. B., Jr., 2; Howe, 32.
 Marine shell stratum, Pleist.: Bridges, 1.
 Microfauna, Jackson fm.: Wharton, J. B., Jr., 1.
 Microfossils, Potamides matsoni zone: Stephenson, M. B., 1.
 Mollusca: Palmer, K. E. H. V., 2; Richards, 19, 20.
 Mosses, Pleist.: Steere, 1.
 Orbitocyclina: Vaughan, 6.
 Ostracoda: Howe, 8, 10, 16, 25; Stephenson, M. B., 3.
 Pectinidae, Tert.: Rowland, H. T., 1.
 Pleistocene, Florida Parishes: Fisk, 4.
 Salt domes: Howe, 31.
 St. Bernard Parish: Russell, R. J., 15.
 Turrids, Eocene: Harris, G. D., 4.
 Uvigerinia, Eocene: Cushman, 1.
 Valvulinidae: Cushman, 29.
 Verneullinidae: Cushman, 29.
 Virgulinidae: Cushman, 29.
 Winn Parish: Huner, 1.

Petrology.

- Barataria Bay sediments: Krumbein, 12, 22; Winston, 1.
 Barite concretions: Hanna, M. A., 9.
 Cap rock on salt domes, origin: Janssen, 2.
 Chandeleur Is., pebbles: Dohm, 1.
 Concretions, barite, Yazoo clay: Hanna, M. A., 9.
 Cone-in-cone structure: Tarr, 13.
 Cores, deep Rodessa well: Israelsky, 7.
 Gravels, Pleist.: Fisk, 7.
 Mississippi River subdeltas: Dohm, 1.
 Pebbles, Chandeleur Is.: Dohm, 1.
 Plaquemines Parish: Russell, 15.
 St. Bernard Parish: Russell, 15.
 Salt domes, cap rock origin: Taylor, R. E., 3.
 Sediments: Krumbein, 12, 22, 23.

Physical geology.

- Barataria Bay sediments: Krumbein, 22; Winston, 1.

Louisiana—Continued.

Physical geology—Continued.

- Cone-in-cone structure: Tarr, 13.
 Faults, Gulf Coast oil fields: Kornfeld, Joseph A., 2.
 Grant Parish: Fisk, 2.
 La Salle Parish: Fisk, 2.
 Log jams, Red River: Guardia, 1.
 Oil fields, N., La.: Easton, 2.
 Rodessa field: Clark, C. C., 2.
 Sedimentation phases, Gulf Coast: Steinmayer, 1.
 Sedimentation of Red River: Jones, V. H., 2.
 Volcanoes and oil accumulation: Easton, 3.
 Warping, Gulf Coast fms.: Moresi, 3.

Physiographic geology.

- Ascension Parish: Howe, 30; Lucke, 11; Russell, R. J., 21.
 Barataria Bay sediments: Krumbein, 12, 22.
 Bayou Manchac: Kniffen, 2, 4.
 Caldwell Parish: Huner, 1.
 Catahoula Parish: Chawner, 3.
 Cheniers, S. W. La.: Russell, R. J., 11.
 Coast, S. W., La.: Howe, 13.
 Concordia Parish: Chawner, 3.
 Darrow salt dome: Cook, C. E., 1.
 Delta deposits, Mississippi River: Russell, R. J., 13, 26.
 Erosion surfaces, Quat.: Russell, R. J., 19.
 Florida Parishes, Pleist.: Fisk, 5.
 Glacial geology, non-deglaciated area: Russell, R. J., 23.
 Grant Parish: Fisk, 2.
 Iberville Parish: Howe, 30; Lucke, 11; Russell, R. J., 21.
 Ice age oscillations: Russell, R. J., 24.
 Lake Ponchatrain: Steinmayer, 4.
 Larto Lake: Russell, R. J., 6.
 La Salle Parish: Fisk, 2.
 Marshes, coastal: Russell, R. J., 9.
 Mississippi River Delta: Lougee, 5; Price, 19; Russell, R. J., 13, 16, 28; Thomas, 15; Trowbridge, A. C., 3.
 Natural mounds: Melton, 2.
 Plains, shore-lines, post-recent: Barton, 44.
 Plaquemines Parish: Russell, R. J., 15.
 Pleistocene, Florida Parishes: Fisk, 4.
 Post-Fleming fms.: Doering, 1.
 St. Bernard Parish: Russell, R. J., 15.
 Sediments: Krumbein, 12, 22, 23.
 Stream patterns: Russell, R. J., 25.
 Terrace slopes: Fisk, 6.
 Vermilion River: Kniffen, 3.

Underground water.

- Fluoride in ground water: Maher, 1.
 Ground-water supplies: Stringfield, 9.

Lower Silurian. See Ordovician.

Lucite uses in geol. lab.: Bell, J. F., 3.

Luling oil field, Tex.: Brucks, 1.

- Luminescence in minerals: Brown, W. L., 4.
 McCalls Ferry-Quarryville dist., Pa.: Knopf, E. F. B., 3.

Mackenzie, Northwest Territories.

Economic geology.

- Lead-zinc, Great Slave Lake: Bell, J. M., 2, 3.
 McKittrick oil field, Calif.: English, W. A., 1.
 Madden dam project, Panama Canal Zone: Reeves, F., 2.
 Madison oil field, Kans.: Cheyney, 1.
 Magmas and magmatic differentiation. See also Batholiths; Dikes; Igneous and volcanic rocks; Intrusions; Laccoliths; Lavas.

Abyssal assimilation: Grout, 5.

Adirondacks: Balk, 3; Buddington, 13.

Anorthosite, origin: Buddington, 15.

Asthenolith theory: Willis, 16.

Basalt, crystallization: Barth, 13.

Basaltic, differentiation: Kennedy, 1.

Basaltic flows, endomorphic alteration: Fuller, 7.

British Columbia: Brock, B. B. 1; Horwood, 8.

California: Farmin, 4; Hurlbut, 2; Kelley, 5; Mayo, 13; Miller, F. S., 2, 3; Miller, W. J., 17; Putnam, 4; Seager, 1; Webb, 9; Wiebenga, 1.

Canada, Porcupine-Kirkland Lake areas: Dougherty, 5.

Carbonation, carbothermal metamorphism; Holden, 10.

Colorado: Boyd, James, 1; Goddard, 6; Jahns, 1; Larsen, 13; Lovering, 20, 23, 26; Smith, Ward C., 1; Wahlstrom, 4.

Connecticut, pegmatites: Jenks, W. F., 2.

Contamination, acid magmas: Nockolds, 1.

Corundum in Pa. dike: Tomlinson, W. H., 3.

Criteria, origin of inclusions: Grout, 20.

Cuba: Schürmann, 2.

Deformation: De Lury, R. E., 1.

Differentiation: Broderick, 9, 10; Fenner, 15; Lane, 30.

Diachistic dikes and ore deposits: Spurr, 1.

Dunite intrus., olivine: Bowen, 13.

Earth shells concept: Chamberlin, 17.

Endomorphic alteration, basaltic flows: Fuller, 7.

Equilibrium studies: Snow, R. B., 1.

Flow structures: Balk, 7.

From subsidence: DeLury, J. S., 6.

General: Bowen, 20; Burbank, 14; Daly, 7; Fenner, 9; Fitzhugh, 1; Lindgren, 8.

Generation: De Lury, R. E., 1.

Granitic batholiths: Emmons, W. H., 7.

Granitic rocks, derivation: Collins, 10.

Gravitational accumulation of olivine: Fuller, R. E., 2.

Greenland: Wager, 3, 4; Wegmann, 5.

Magmas and magmatic differentiation—Con.

- Hawaii, lava differentiation: Powers, H. A., 8.
 Heat conduction theory: Lovering, 18.
 Heterogeneity: De Lury, 25.
 Igneous rocks: Balk, 13; Bowen, 11; Buddington, 20; De Lury, 24; Schaller, 7.
 Intrusions, mechanics of: De Lury, 24; Loewinson-Lessing, 1.
 Inclusions, dislocated, in veins: Douglas, C. B. S., 1.
 Kentucky, magmatic ore dist.: Robinson, L. C., 5.
 Late gold and implications: Mawdsley, 8; Oedman, 1.
 Lead ores, primary, origin: Holmes, A., 5.
 Locus of fm.: De Lury, 14.
 Magmatic cycles: MacCarthy, 1.
 Magmatic segregation: Singewald, J. T., Jr., 10.
 Magmatic stoping: Grout, 17.
 Magmatic wedge: De Lury, 17.
 Maine, Lincoln sill: Trefethen, 3.
 Manitoba, Echimamish area: Tanton, 6-a.
 Granitization: Horwood, 6.
 Metals, promordial segregation: De Lury, 28.
 Michigan: Broderick, 9; Dickey, R. M., 3.
 Mineral assoc., high temperature: Buddington, 9.
 Mineral veins, origin: Behre, 17.
 Minnesota: Bastin, 16; Grout, 14; Sandberg, 5; Sanders, C. W., Jr., 1.
 Mississippi Valley type ores: Graton, 7.
 Missouri, lead deposits: Tarr, 21.
 Montana: Barksdale, J. D., 1; Hurlbut, 10; Jones, R. H. B., 1; Wolff, 6.
 Mt. St. Helens, Wash., recent volcano: Verhoogen, 1.
 Nevada: Campbell, D. F., 1; Grout, 4.
 New England: Currier, 10.
 Newfoundland, lamprophyres: Heyl, 3.
 New Hampshire: Billings, 13, 15; Chapman, C. A., 1; Chapman, R. W., 1, 2, 3; Fowler-Lunn, 1; Modell, 3; Quinn, 4; Williams, C. R., 2.
 New Jersey, zinc ores: Bowen, W. C., 1.
 New Mexico: Dunham, 3; Schmitt, 10.
 New York, Alling, 11; Buddington, 23; Miller, W. J., 18.
 Northwest Territories: Hawley, 13.
 Nova Scotia, gold zones: Newhouse, 15.
 Ohio, cryptovolcanic structure: Bucher, 15-a.
 Ontario: Bastin, 8; Burrows, 3; Collins, 7; Emmons, W. H., 10; Fenner, 12; Keith, M. L., 4; Phemister, 1; Reynolds, D. L., 1; Spearman, 3; Thomson, James E., 13; Thomson, R., 3; Walker, 15.
 Ore bodies, localization: Bruce, 18; Butler, G. M., 4.
 Ore solution chemistry: Schmedeman, 1.

Magmas and magmatic differentiation—Con.

- Oregon: Goodspeed, 17, 20.
 Ores from magmas or deeper: Graton, 12.
 Orientation of minerals, autoliths: Fabst, 6.
 Origin and movement in strong earth: De Lury, 26.
 Pennsylvania: Bascom, 4; Fraser, D. M., 5; Postel, 2.
 Pennsylvania-Maryland Blue Ridge ig. complex: Bascom, 4.
 Peridotites: Hess, H. H., 13, 16.
 Primary banding: Coats, 1; Hess, H. H., 15.
 Primary, ultramafic: Hess, H. H., 11.
 Quartz "dikes": Furnival, 4.
 Quebec: Freeman, B. C., 7; Landes, 25; Osborne, 30.
 Rare elements, concentration: Zies, 6.
 Reactions in molten magmas: Howe, W. W., 1.
 Replacement shells around batholiths: Freeman, B. C., 5.
 Rise of molten rock: Miller, W. J., 7.
 Roots of volcanoes: Daly, 18.
 Saganaga batholith, Minn.-Ont.: Grout, 18.
 Segregations from basalt crystallization: Fuller, 8.
 Shonkin Sag laccolith, Mont.: Osborne, 11; Reynolds, D. S., 2.
 Sierra Nevada: Lawson, 8.
 Silicates, high-temperature research: Bowen, 17.
 Silicification: Randolph, 7.
 South Dakota: Stobbs, 1; Tullis, 7.
 Spillite and average metabasalt: Fairbairn, 3.
 Stillwater ig. complex: Hess, H. H., 17.
 Structural, magmatic processes: Hoffman, 8.
 Succession of minerals and fm. temperatures: Lindgren, 15.
 Sudbury nickel intrusive: Burrows, 3; Collins, 7; Fenner, 12; Phemister, 1; Reynolds, D. L., 1; Walker, 15.
 Sunset Crater, Ariz., lava squeeze-ups: Colton, 3.
 Temperatures: Larsen, 3; Lovering, 23.
 Thorium-uranium ratios and lead origin: Keevil, 3.
 Virginia barite, origin: Edmundson, 4.
 Viscosity of liquids: Gibson, R. E., 1.
 Viscosity, silicate melts: Bowen, 9.
 Volatiles, role in ore genesis: Weed, 2.
 Volcanic products: Powers, H. A., 5.
 Washington: Goodspeed, 1; Irwin, W. H., 1.
 Water content: Gilluly, 19.
 Water in geol. processes: Morey, G. W., 4.
 Waves: Lay, 2.
 Western States: Bowen, 5.
 Wisconsin: Dickey, R. M., 4.
 Wyoming, sunlight volcanic centers: Parsons, W. H., 2.
 Yellowstone Nat. Pk.: Wilcox, R. E., 3.

- Magma and their products: Knopf, 17.
- Magma and ore deposits: Osborne, 27; Singewald, J. T., 13.
- Magnesiocromite, Quebec: Parsons, A. L., 18.
- Magnetite.**
 Boulder Dam area: Lee, 7.
 British Columbia: Cairnes, 12; Cockfield, 10.
 California: Perry, J. B., 1.
 Canada: Wilson, M. E., 15.
 Columbia River Basin: Landes, H., 1.
 Industrial minerals and rocks: A. I. M. E., 2.
 Nevada: Callaghan, 2.
 New Mexico: Taft, 1.
 Northwest U. S.: Hodge, 24.
 Quebec: Osborne, 21, 29.
 Texas, Sharp Mtn. marble: Barnes, V. E., 6.
 Washington: Culver, 14.
- Magnetic anomalies.
 Alabama: Adler, 2.
 Carolina Bays: MacCarthy, 13.
 Sparta-Wilcox Trend structure: Barret, 5.
- Magnetic surveying: Slichter, 1.
- Magnetite. See also Iron.
 Canada: Faessler, 19.
 Crystal growth: Schwartz, G. M., 2.
 Minnesota: Gruner, 33; Spiroff, 4.
 New York: Alling, 11.
 North Carolina: Bryson, 7-a.
 Nova Scotia: Hornor, 1.
 Oklahoma: Merritt, 5, 7; Speer, 1.
 Planes, separation: Greig, 5.
- Magnetization, Atlantic sediments: McNish, 2, 3.
- Magnetometer inv., gold placer, Colo.: Heiland, 2.
- Mahaskan glacial epoch: Keyes, 72.
- Maine.**
 Bibliography on geology: Twinem, 1.
 First annual rept. on geology: Merrill, L. H., 1.
 Polygonboden, Mt. Desert Is.: Nichols, R. L., 3.
- Areas described.*
 Geology: Toppan, 1.
 Hallowell intrus., Kennebec Co.: Trefethen, H. T., 1.
- Economic geology.*
 Appalachian Trail: Philbrick, 1.
 Beryllium: Burr, 1.
 Clays, post-Pliocene: Perkins, E. H., 3.
 General: Merrill, L. H., 1.
 Road materials: Leavitt, 1, 2; White, G. W., 10.
- Historical geology.*
 Appalachian Trail: Philbrick, 1; Sosman, 2.
 Bates lms., Lewiston: Fisher, L. W., 9.
 Dikes, multiple, Cape Neddick: Haff, 4.
 Fitchburg granite, age: Lane, 19.

Maine—Continued.

Historical geology—Continued.

- General: Keith, Ar., 3.
 Geologic fms., Maine mts.: Perkins, E. H., 7.
 Geologic map: Keith, Ar., 5.
 Glacial deposits: Perkins, E. H., 11.
 Granites: Keith, Ar. 6.
 Lewiston area: Fisher, L. W., 11.
 Mount Desert Is.: Brown, C. W., 1, 3; Chadwick, 33.
 Onawa pluton: Philbrick, 2.
 Ordovician: Ruedemann, 34.
 Pleistocene: Brown, C. W., 3; Perkins, E. H., 12; Sayles, 8.
 Pleistocene clays, Mt. Desert Is.: Brown, C. W., 3.

Mineralogy.

- Autunite: Smith, E. S. C., 6.
 Bibliography of minerals: Bowles, O., 2.
 Caesium: Burbank, B. B., 1.
 General: Merrill, L. H., 1.
 Graftonite: Glass, 8.
 Graphite in pegmatite: Fisher, L. W., 6.
 Herderite: Burbank, B. B., 3; Yatsevitch, 1.
 Microcline: Smith, E. S. C., 5.
 Microcline: Palache, 42.
 Mineral locs.: Holman, 1.
 Mt. Apatite: Fisher, L. W., 5.
 Mt. Mica muscovite: McKinley, 5.
 Natural history of minerals: Perkins, E. H., 1.
 Paris area: Cloud, P. E., 2.
 Pegmatites: Berman, H., 2; Fraser, H. J., 2; Morrill, 1.
 Pleasant Mtn. heavy minerals: Jenks, W. F., 1; Marsden, 1.
 Pollucite: Fleischer, 2; Richmond, W. E., Jr., 5.
 Ragged Jack Mtn.: Fisher, L. W., 4.
 Selenites, Mt. Pleasant: Jenks, W. F., 1; Marsden, 1.
 Spodumene in pegmatites: Hess, F. L., 13.
 Stalactites, Lewiston: Fisher, L. W., 7.
 Topaz: Burbank, B. B., 3; Nevel, 1; Palache, 23.
 Type mineral locs.: Richmond, W. E., Jr., 1.

Paleontology.

- Crinoid, Dev.: Goldring, 8.
 Fauna, Pleist. clays: Whitcomb, 10.
 Fossil locs.: Perkins, 8.
 Graptolites: Smith, E. S. C., 1.
 Oldhamia: Smith, E. S. C., 5.
 Post-Pleist. clays: Perkins, E. H., 3.
 Pseudorthoceratidae: Flower, 9.

Petrology.

- Bates lms.: Fisher, L. W., 9.
 Dikes, Cape Neddick: Haff, 4.
 Feldspar zoning: Trefethen, J. M., 1.
 Graphite in pegmatite: Fisher, L. W., 6.
 Igneous rocks, Mt. Kineo: Smith, E. S. C., 3.

Maine—Continued.

Petrology—Continued.

- Katahdin granite: Philbrick, 4.
 Lincoln sill: Trefethen, J. M., 3.
 Onawa pluton: Philbrick, 2.
 Pegmatite belt: Morrill, 1.
 Pleasant Mtn. stock: Jenks, W. F., 2.
 Ragged Jack Mtn.: Fisher, L. W., 4.
 Rhyolite: Smith, E. S., 2.

Physical geology.

- Contact metamorphism, Ellsworth schist: Gillson, 5.
 Damariscotta shell heaps and coastal stability: Goldthwait, R. P., 1.
 Dikes, Cape Neddick: Haff, 4.
 Earthquakes: Perkins, E. H., 2.
 Katahdin granite metamorphism: Philbrick, 4.
 Lincoln sill: Trefethen, J. M., 3.
 Mt. Desert batholith: Chadwick, 32, 33.
 Onawa pluton: Philbrick, 2.
 Slip faulting: Squires, 2.

Physiographic geology.

- Alpine zone, Mt. Washington Range: Antevs, 9.
 Appalachian Trail: Philbrick, 1; Sosman, 2.
 Buckfield quad. glacial geol.: Perkins, E. H., 6.
 Calcareous beach: Raymond, 9.
 Coast, glacial erosion: Shepard, F. P., 2.
 Damariscotta shell heaps and coastal stability: Goldthwait, R. P., 1.
 Eskers, origin: Perkins, E. H., 10.
 Evolution of scenery: Perkins, E. H., 4.
 General: Toppan, 2.
 Glacial deposits: Perkins, E. H., 11.
 Glacial geology: Leavitt, 2.
 Mt. Desert Is.: Chadwick, 32, 33; Raisz, 1.
 Pleistocene: Sayles, 8.
 Road materials, glacial geol.: White, G. W., 10.
 Shore line, Maine and Conn.: Sharp, H. S., 5.
 Square Lake: Nylander, 1.
 Streams, post-glacial consequent: Sayles, 7.
 Wisconsin glaciation: Perkins, E. H., 9.
 Wisconsin glacier, readvance: Perkins, E. H., 5.

Mammalia.

- Aelurodon, Tert. dog: VanderHoof, 14.
 Age of, beginning: Simpson, 39.
 Agriochoerids, Utah: Peterson, 6.
 Alaska: Buddhue, 5; Chaney, 32; Hill, E. W., 1.
 Alberta, tracks: Russell, L. S., 6, 16.
 Allocyon, John Day beds: Merriam, C. W., 1.
 Allometrons and aristogenes: Osborn, 39.
 Amblypoda: Patterson, 5, 6; Simpson, G. G., 7.
 Amblyrhiza, St. Martin: Schreuder, 1.
 Amebelodon, Kans.: Mohler, R. E., 1.
 Nebraska: Barbour, E. H., 1, 2, 4.

Mammalia—Continued.

- Amphicyon, Mont.: McGrew, 8.
 Amynodonts, Calif.: Stock, 26, 77.
 Anchitherine horses: Bode, 2.
 Antelopes: Furlong, 7; Stirton, 7.
 Antilocapra americana: Hesse, 10.
 Antilocaprids, Tert., Pleist.: Stirton, 20, 21.
 Antilocaprine, Ariz.: Roosevelt, Q., 1.
 Aphelops: Matthew, 13.
 Aptaelurus, Utah: Scott, W. B., 7, 8.
 Apternodus, Wyo.: Schlaikjer, 3, 4.
 Araedon, Wyo.: Simpson, 44.
 Archaeoceti: Kellogg, 9; Thorpe, 11.
 Archidiskodon, Nebr.: Osborn, 28; Anonymous, 65.
 Arctothere, Calif.: Stock, 61.
 Ardynomys, Mont., Nebr.: Burke, 9.
 Artifacts and extinct mammals, Tex.: Sellards, 37, 41.
 Artiodactyla: Barbour, 28; Matthew, 3; Scott, W. B., 11; Stirton, 2; Stock, 46.
 Auditory bulla: Van der Klaauw, 1.
 Badger, Mexico: Drescher, A. B., 1.
 Barylambda for Titanoides faberi, Colo.: Patterson, 8.
 Basilosaurus, Ark.: Palmer, K. E. H. V., 5.
 Bassariscus, Nebr.: Hibbard, 1.
 Bat, Pleist., Fla.: Allen, G. M., 2.
 Bat, Pliocene, Ariz.: Stirton, 4.
 Bear, Tert., Calif.: Frick, 1.
 Bear Creek fauna, Mont.: Dorf, 14.
 Beavers, Tert.: Stirton, 13.
 Bison: Cotter, 1; Eddy, F. S., 1; Jenks, A. E., 5; Stock, 65; Williams, M. Y., 13.
 Blarina, Idaho: Gazin, 5.
 Borophagus: Matthew, 6; VanderHoof, 1, 10.
 Borophagus: Matthew, 6; VanderHoof, 1, 10.
 Brachyhyops, Wyo.: Colbert, 5, 10.
 Brain casts, Tert.: Tilney, 1.
 Brain, fish to man: Gregory, 27.
 British Columbia, Eocene: Russell, L. S., 23.
 Burge fauna, Nebr.: McGrew, 5.
 California: Bode, 3, 4; Cockerell, 4; Eaton, 10; Gazin, 1; Henshaw, 1; Kellogg, 5; Maxson, 1; Merriam, J. C., 9; Russell, P. G., 3; Schultz, J. R., 4; Stirton, 13, 19, 25, 26; Stock, 7, 16, 17, 18, 20, 40, 66, 74; VanderHoof, 1, 3, 7; Wilson, R. W., 2, 3; Wood, A. E., 18.
 Calippus, Pliocene, Tex.: Johnston, C. S., 7.
 Camels, Nebraska: Barbour, 24, 36; Brown, B., 1.
 Nevada: Cockerell, 14.
 South Dakota: Bump, 3; Gregory, J. T., 3.
 Washington: Beck, 9.
 Wyoming: Loomis, 11.
 Camel-like ruminants, Tert., N. Am.: Scott, W. B., 9.

Mammalia—Continued.

- Canada, Cret., Tert.: Russell, 32.
 Canidae dentition: Wood, A. E., 3.
 Canidae, Tex., Cope's collection: VanderHoof, 13.
 Canis leophagus, Tex.: Johnston, C. S., 9.
 Canis molars, Md.: Patterson, 3.
 Capromeryx: Furlong, 1; Hesse, 4, 7.
 Carnivora.
 California: Stock, 28.
 Oregon: Stock, 6.
 Texas: Stirton, 27.
 Carsiioptychus for Plagioptychus: Simpson, 36.
 Castoridae, Nev.: Stirton, 5.
 Castoroides: Cahn, 1, 2, 3; Engels, 2; Whipple, 1; Wood, A. E., 16.
 Cenozoic migrations: Colbert, 8.
 Ceretomeryx, Idaho: Gazin, 15.
 Cernictis, Calif.: Hall, E. R., 7.
 Cervales: Galbreath, E. C., 2; Gazin, 23; Riggs, E. S., 2.
 Cetacea, N. C.: Prouty, 10.
 Cetotheres: Kellogg, 3, 8; Packard, 5.
 Chiroptera, Puerto Rico: Anthony, 1.
 Civets: Gregory, 31.
 Classification: Simpson, 14.
 Climate and evolution: Matthew, 18.
 Colorado: Koerner, 2.
 Columbia Basin: Beck, 11.
 Cophocetus, Oreg.: Packard, 6.
 Cosomys, Pleist., Calif.: Wilson, R. W., 1.
 Creodont, Utah: Scott, W. B., 7.
 Creodontia, Calif.: Stock, 35.
 Cricetidae, Miocene: Wood, A. E., 6.
 Cuba: Torre, C. de la, 1.
 Cupidinus, Pliocene, Nev.: Chaffee, 1.
 Cuyama, Calif.: VanderHoof, 15.
 Cynarctus, Miocene, Nebr.: McGrew, 4, 7.
 Cynodesmus, Tert.: McGrew, 1; Wilson, J. A., 1.
 Cynomys, Pleist., Kans.: Hibbard, 7.
 Deer, Ind.: Engels, 2.
 Delphinodon, Md.: Barwick, 2.
 Dental evolution: Simpson, 24.
 Dentition, earliest mammalian: Simpson, 37.
 Desmostylus, Miocene: VanderHoof, 9, 11.
 Diceratherium, Mont.: Wood, H. E., 6.
 Dinocerata, Colo.: Patterson, 11.
 Diplolophus, Tert., Nebr.: Barbour, 37.
 Dipoides, Tert.: Stirton, 15; Wilson, R. W., 7.
 Dogs: Colbert, 11; Loomis, 10, 11; Matthew, 5.
 Dolphin, Tert., Calif.: Wilson, L. E., 2.
 Dyseophyus, Tert., Calif.: Stock, 69.
 Ectoganus, Tert., Wyo.: Gazin, 17.
 Edentates, Pleist.: Holmes, W. W., 1; Schenk, 6; Simpson, 15.
 Elasmotheres, evolution: Wood, H. E., 10.

Mammalia—Continued.

- Elephants: Arneson, 1; Avery, O. P., 2; Barbour, 6; Brown, C. A., 1; Case, 15; Hansen, G. H., 2; Lull, 6; Müllerried, 17; Pontier, 1; Price, L. L., 2; Schaffner, 3; Schaub, S., 1; Shuler, 5; Stock, 1, 12, 48, 54; Stovall, 5; Wells, D., 1.
 Elk Head, Iowa: Cable, 2.
 Entelodonts, Miocene: Loomis, 5.
 Eocene, Pacific Coast: Stock, 16.
 Eodelphis, Alberta: Simpson, G. G., 9.
 Eohaplomys, Tert., Calif.: Stock, 40.
 Eohippus: Friant, 2; Simpson, 19; Troxell, 5.
 Eomellivora, Calif.: Stock, 21.
 Eporeodon: Stock, 36; Thorpe, 2.
 Equidae: Berry, C. T., 1; Johnston, C. S., 6; Lewis, G. E., 1; Matthew, 9; Robb, 1; Stirton, 11, 14.
 Equus phylogeny: Stirton, 11, 14.
 Erethizon, Idaho: Wilson, R. W., 10.
 Erinaceids, Colo.: Patterson, 10.
 Eubelodon, Nebr.: Barbour, 30.
 Euceratherium, Great Plains: Stovall, 13, 14.
 Eumysops, Calif.: Wilson, R. W., 8.
 Evolution: Evans, F. G., 1; Scott, W. B., 4; Simpson, 30.
 Extra rib, artiodactyl: Cook, H. J., 2.
 Faunas, Burnet Cave, N. Mex.: Schultz, C. B., 3.
 Clovis, N. Mex.: Howard, E. B., 4.
 Cuyama, Calif.: Wood, A. E., 11.
 Fort Union, Mont.: Simpson, G. G., 3.
 Local, continental relationships: Simpson, 34.
 McKittrick, Calif.: Stock, 80.
 Williams Cave, Tex.: Ayre, 1.
 Felidae: Gazin, 7; Hibbard, 3; Jepsen, 6; Merriam, J. C., 7, 8.
 Field study vertebrate fossils: Clark, J., 4.
 Fish to man: Gregory, 9.
 Florida: Connery, 1; Simpson, G. G., 6, 8, 10, 11, 16, 20; Wood, A. E., 2.
 Florentiamyinae, Wyo.: Wood, A. E., 9.
 Fort Union fauna, Mont.: Simpson, G. G., 3.
 General: Scott, W. B., 5.
 Gentlicamelus, Wyo.: Loomis, 11.
 Geocapromys, Bahamas: Allen, G. M., 3; Lawrence, B., 1.
 Geomyid rodents, Tert.: Wood, A. E., 14.
 Giant beaver, Nebr.: Barbour, 9.
 Gigantocamelus, Nebr.: Barbour, 36.
 Glossary and correlation of fms.: Simpson, 22.
 Gnathabelodon, Kans.: Barbour, 16.
 Goshen Hole area, Wyo.: Schlaikjer, 3.
 Grand View, Idaho: Furlong, 5.
 Graterogale, Nebr.: Gazin, 19.
 Green River Eocene, Utah: Burke, 8.
 Ground sloths: Hausman, 1; Lull, 1; Matthew, 11; Stock, 47.

Mammalia—Continued.

- Hair, fossil ground sloth: Hausman, 1.
 Hares: Dice, 1; Gazin, 9.
 Hedgehog, Nev.: Hall, E. R., 1; Matthew, 2.
 Helicomys, Nebr.: Wood, A. E., 20.
 Hemicyoninae: Frick, 1.
 Hemipsalodon, Saskatchewan: Russell, 38.
 Heptodon, Wyo.: Seton, 1.
 Hesperosiren: Simpson, 19.
 Heteromyid rodents: Wood, A. E., 1, 4.
 Hipparion faunas, N. Am.: Maxson, 13; Stirton, 22.
 Holmesina, Fla.: Simpson, 12.
 Homalodotherium mounted skeleton: Riggs, 4.
 Honduras, Pliocene: Olson, 4.
 Hoplophonus, S. Dak.: Wood, H. E., 1.
 Horned ruminants, N. Am.: Frick, 5; Thorpe, 12.
 Horse family: Antonius, 1; Berry, C. T., 1; Bode, 1, 5; Friant, 2; Gazin, 18; Gregory, J. T., 2; Johnston, C. S., 6; Lewis, G. E., 1; Lull, 5; Matthew, 9; Riggs, E. S., 1; Robb, 1; Schlaikjer, 1, 2; Simpson, 19; Stirton, 11, 14; Stock, 70; Troxell, 5; Walker, M. V., 1; Anonymous, 15.
 Hyaeodontidae, Calif.: Stock, 24.
 Hyaeognathus, Pleist., Calif.: Stock, 20.
 Hydrachyidae: Wood, H. E., 8.
 Hypsodontidae, Calif.: Stock, 34.
 Hyracs: Thorpe, 4.
 Idaho: Gazin, 12, 16; Schultz, J. R., 3.
 Indiana: Lyon, M. W., Jr., 1, 2, 3; Potzger, 2.
 Insectivora: Anthony, 1; Reynolds, T. E., 2; Stock, 42.
 Isochryomys, Colo.: Friant, 1.
 Jurassic, paleobiology: Simpson, 21.
 Kansas: Brubaker, 1; Harnly, 1; Hibbard, 5, 8, 12; Nininger, 7; Wood, A. E., 13.
 Kansasimys, Pliocene: Wood, A. E., 13.
 Kentucky: Cooper, C. L., 2; Jillson, 36, 37.
 Lagomorphs: Walker, M. V., 2, 3.
 Lamdotherium, Wyo.: Bonillas, 1, 2.
 Land, western hemisphere: Lull, 13; Scott, W. B., 5.
 Leptomeryx, S. Dak.: Hernon, 1.
 Leptoreodon, Calif.: Stock, 52.
 Ligament scars, horses' feet: Smith, N., 1.
 Louisiana, Paleocene: Simpson, 17.
 Machaerodus, Tex.: Burt, W. H., 2.
 Mammoths: Baker, F. S., 13; Blackwelder, 49; Broms, 1; Cook, H. J., 3; Cotter, 1; Mitchell, L., 3; Osborn, 13; Sternberg, 3.
 Man and extinct sloths, Calif.: Anonymous, 28.
 Man and primates: Gregory, 28.
 Manati, Cuba: Duelo, 1.
 Marsupials, Nebr.: McGrew, 3.

Mammalia—Continued.

- Martinogale, Kans.: Dunkle, 1.
 Maryland: Gidley, 8; Kellogg, A. R., 1.
 Mastodons: Anderson, F., 1; Barbour, 8, 13, 23, 31; Berry, C. T., 2; Broms, 1; Cable, 3, 4; Case, 18; Frick, 2, 4; Hesse, 5; Hitchcock, M. R., 1; Kintner, 1; Powers, W. E., 7; Price, P. H., 4; Robinson, C. W., 1; Sanford, 4; Simpson, P. F., 1; Smith, B., 4; Smith, C. R., 2; Sternberg, 3; Ver Steeg, 29; Will, 1; Anonymous, 21.
 Mastodon of Jefferson: Hitchcock, M. R., 1.
 Mastodonts: Gregory, 13; Mitchell, L., 3.
 Matthew's contributions: Gregory, 8.
 Measuring Pleist. time by enamel method: Osborn, 21.
 Megalodon, Nebr.: Barbour, 27.
 Megalonyx, Calif.: Lyon, G. M., 1.
 Meniscoessus, Mont.: Simpson, 31.
 Meniscotherium, Wyo.: Thorpe, 4.
 Merychippine horses: Bode, 1, 6; Gregory, J. T., 2; Russell, L. S., 17; Simpson, 19.
 Merycoidodontidae: Bump, B., 1; Furlong, 6; Matthew, 15; Phleger, 10; Romer, 20; Thorpe, 3, 7, 8, 9, 10.
 Mesocyon, Nebr.: Barbour, 31.
 Mesobippus: Schlaikjer, 1, 2.
 Mesonychids, Utah: Peterson, 5.
 Mesozoic: Simpson, G. G., 1.
 Mesozoic plants and mammalian evolution: Werner, 2.
 Metacheiromys, Wyo.: Simpson, 15.
 Metacodon, status: Clark, J., 5.
 Metamynodon, S. Dak.: Wood, H. E., 2d, 13.
 Metarhinus (?), Calif.: Stock, 64.
 Mexico City fossil bed: Diaz Lozano, 3.
 Miadis, Utah: Clark, J., 7.
 Microsopsinae, Calif.: Stock, 34.
 Mimmomys, Calif.: Hesse, 2.
 Mint Canyon, Calif.: Stirton, 10.
 Miocene, Calif.: Wilson, L. E., 1.
 Miocene-Pliocene, Nebr.: Stirton, 12.
 Miocene-Pliocene, N. Am.-Asia: Teilhard de Chardin, 1.
 Miotapirus, Wyo.: Schlaikjer, 6.
 Missouri, Pliocene: Burrill, 2.
 Montana: Matthew, 16; Simpson, 5, 35, 38, 43.
 Multituberculata: Granger, 1; Russell, 33; Simpson, 45.
 Musk oxen, Pleist.: Barbour, 14; Hay, 7; Stokes, 1.
 Mustelids: Gazin, 11, 21; Hall, E. R., 6, 8.
 Mylodon: Brady, 5; Johnston, C. S., 4; Müllerried, 21.
 Mystipterus, Nev.: Hall, E. R., 4.
 Mytonolagus, Utah: Burke, 4.
 Nannipus: Johnston, C. S., 8; McGrew, 2.
 Nanodelphys, Nebr.: McGrew, 10.
 Nannotragulus, S. Dak.: Loomis, 7.

Mammalia—Continued.

- Nebraska: Barbour, 33, 34, 35; Colbert, E. H., 2; Cook, 10; Davis, P. B., 1; Effinger, 1; Lugin, 5; McGrew, 6; Matthew, 14; Meade, 1; Anonymous, 93.
- Nevada: Sharp, R. P., 4; Simpson, 26; Stock, 9.
- New Jersey, Miocene: Wood, H. E., 2d, 18.
- New Mexico: Antevs, 17; Cooper, C. F., 1; Cotter, 2; Gazin, 20; Lull, 1, 3; Matthew, 17; Stock, 8, 14.
- New York, Quat.: Smith, B., 1.
- North America: Scott, W. B., 11.
- Nothocyon, John Day: Hall, E. R., 5.
- Nothotherium: Lull, 1, 3; Moodie, 11.
- Notolagus, Mex.: Wilson, R. W., 17.
- Notoungulates classn. by brain casts: Patterson, 9.
- Oklahoma: Gould, C. N., 4, 9; Stovall, 7.
- Opossum, recent and fossil: Simpson, 29.
- Oreamos, Nev.: Stock, 59.
- Oregon: Elftman, 1; Gazin, 3, 4; Scharf, 1; Smith, W. D., 11.
- Oreodon with unborn twins: Hernon, 2; O'Harra, 4.
- Oreodonts: Barbour, 20; Loomis, 8; Schlaikjer, 5; Stock, 5.
- Ornithomimus, Alberta: Sternberg, 13.
- Orthogenesis, rhinoceroses: Wood, H. E., 2d, 17.
- Osteoborus: Johnston, C. S., 10, 11; Richey, 1; Stirton, 9.
- Otter, Nev.: Furlong, 3.
- Ovibovine, Nebr.: Barbour, 25.
- Palaeolagus: Dice, 2, 3.
- Palaeomastodon, revision: Matsumoto, 1.
- Palaeonictis: Sinclair, 1.
- Palaeosyops variation: Lane, H. H., 2.
- Paleocene: Russell, L. S., 16; Simpson, G. G., 5, 32.
- Paleoecology and Cenozoic mammals: Schultz, C. B., 7.
- Pantodonta, Colo.: Patterson, 11.
- Parahippus, Wyo.: Schlaikjer, 7.
- Paralephas, Fla.: Osborn, 15.
- Parallel radiation, geomyid rodents: Wood, A. E., 19.
- Paramys, Mont.: Jepsen, 8.
- Peccaries: Colbert, 6; Johnston, C. S., 1.
- Pediomeryx, Tex.: Stirton, 17.
- Pelvis, fish to man: Gregory, 19.
- Peratherium, Colo.: Gazin, 13; Stock, 50.
- Perissodactyla: Stock, 27, 53; Wood, H. E., 2d, 14.
- Peromyscus, Calif.: Wilson, R. W., 11.
- Phenacodus typus: Peterson, O. A., 1.
- Phlaocyon dentition: McGrew, 9.
- Pitymys, Kans.: Hibbard, 6.
- Platybelodon, Neb.: Barbour, 19.
- Platygonus, Idaho: Gazin, 22.
- Pleistocene: Burnet, 1; Colbert, 4; Gut, 2; Hay, 5, 8; Hibbard, C. W., 13; Packard, 8; Schultz, C. B., 2.
- Plesiadapis, Colo.: Simpson, 28.

Mammalia—Continued.

- Plesippus, Pliocene: Gidley, 5; Schultz, J. R., 2.
- Pleurocyon, Calif.: Stock, 25.
- Pliauchenia, S. Dak.: Gregory, J. T., 1.
- Pliocene: Cook, 4; Rice, H. E., 1.
- Pliohippus: Stirton, 23; VanderHoof, 2.
- Pliomastodon: Matthew, 8; Stock, 57.
- Porpoise, Calif.: Kellogg, 6.
- Prairie dog, Okla.: Wood, A. E., 5.
- Primate, Calif.: Stock, 29, 31, 32.
- Proboscidea: Osborn, 8, 29, 33, 34, 36, 38; Rowe, P., 1, 2.
- Procaenopus, Colo.: Figgins, 3.
- Procyonidae, Neb.: McGrew, 7.
- Prohyracodon: Wood, H. E., 3.
- Prosthenops, Neb.: Colbert, 3.
- Protitanops, Calif.: Stock, 60.
- Protohippus, Calif.: Stock, 44.
- Protoloph-ectoloph angle, Equidae: Stovall, 1.
- Protomeryx, Wyo.: Loomis, 9.
- Protostrix for Aquila lydekkeri: Wetmore, 26.
- Pseudaelurus, Nev.: Stock, 38.
- Pseudocreadi, west U. S.: Denison, R. H., 1.
- Pseudocylindrodon, Mont.: Burke, 6, 11.
- Puerco, N. Mex.: Simpson, 83.
- Rabbits, Pliocene, Kans.: Hibbard, 10.
- Rancho La Brea, Pleist., Calif.: Stock, 4.
- Relationships, local-continental faunas: Simpson, 34.
- Relative growth, vertebrate phylogeny: Phleger, 1, 2.
- Restorations: Burroughs, H., 1; Reimann, 11.
- Rhinoceroses: Barbour, 20; Beck, 12; Cook, H. G., 1; Figgins, 5; Matthew, 10, 13; Wood, H. E., 2d, 2, 5, 11.
- Rodentia: Anthony, 2; Burke, 3, 7; Hall, E. R., 2, 3; Thorpe, 15; Wilson, R. W., 4, 5, 12, 14, 15, 16, 18, 19, 20; Wood, A. E., 7, 8, 10, 12, 15, 17.
- Ruminants, Pleist., Iowa: Hay, 1.
- Sabre-tooth tiger, Calif.: Moodie, 12.
- Saskatchewan, Tert.: Russell, L. S., 25; Russell, R. J., 8.
- Schizodelphis, Fla.: Case, 13.
- Sciuravus, Utah: Burke, 10.
- Serbelodon, Calif.: Osborn, 30.
- Shrews, Calif.: Compton, 7.
- Simimeryx, Calif.: Stock, 37.
- Simmys for Eumysops: Wilson, R. W., 9.
- Sinclairella, S. Dak.: Jepsen, 7.
- Siphonocetus, Md.: Barwick, 1.
- Sirenia: Müllerried, 10; Simpson, 18.
- Skeletons, habitus factors in: Gregory, 22.
- Sloths, Idaho: Gazin, 14.
- Smilodon, Calif.: Moodie, 11.
- Snake Creek fauna, Nebr.: Matthew, 1.
- Soricidae: Patterson, 10; Stirton, 3.
- South Dakota: Bump, 3; Clark, J., 3; Loomis, 4, 7; Richardson, G. H., 1; Scott, W. B., 3.
- Species range, limits: Matthew, 7.

Mammalia—Continued.

- Sphenophalus, Oreg.: Furlong, 2.
 Stenomylius, Miocene, Nebr.: Burke, 12.
 Succession associated with early man: Stock, 58.
 Succession-correlation, continental Pliocene faunas: Stirton, 16; Stock, 58.
 Symbos, Pleist.: Lyon, M. W., 4; Stovall, 11.
 Synthetoceras, Tex.: Stirton, 6.
 Tapirs: Brown, C. A., 1; Schlaikjer, 6; Stirton, 1; Stovall, 4.
 Tarsiid primate and mixodectid, Calif.: Stock, 71.
 Tarsioids, Calif.: Stock, 78.
 Taurotragus renamed Euceratherium: Gazin, 6.
 Teeth, Calif. horses: Bode, 5.
 Teleoceras, Tex.: Johnston, C. S., 3.
 Teleodus: Peterson, 4; Stock, 45.
 Tennessee cave fossils: Cahn, 4.
 Tertiary, holarctic correls.: Stirton, 22.
 Tetrameryx, Ariz.: Colbert, 9.
 Texas: Albritton, 9; Howard, C. A., 1, 2; Reed, L. C., 2.
 Texas, artifacts with fossil mammals: Sellards, 37, 41.
 Tiffany fauna, Colo.: Simpson, 28.
 Titanoides, Colo.: Patterson, 5, 6, 7.
 Titanotheres: Barbour, 15; Dietrich, 1; Hersh, 1; Osborn, 1, 6, 18; Pavlova, Peterson, 9; Russell, L. S., 39-a; Stock, 51, 73.
 Tomarctus, Md.: Berry, C. T., 10.
 Toothed whale, Fla.: Kellogg, 2.
 Torynodelodon, Nebr.: Barbour, E. H., 3, 11, 17.
 Toxodontia: Patterson, B., 2.
 Tracks, Death Valley, Calif.: Curry, H. D., 2.
 Trigonias, Colo.: Alf, 1.
 Trituberculy: Gregory, 14.
 Trogosus, British Columbia: Russell, L. S., 27.
 Tubulodon, Wyo.: Jepsen, 5.
 Tursiops, Md.: Blake, S. F., 1.
 Typus, Aquila: Wetmore, 82.
 Museum Comp. Zoology: Allen, G. M., 1.
 Uinta basin, Utah: Peterson, 8.
 Uintathere, Wyo.: Simpson, G. G., 7.
 Upper Eocene, land: Stock, 13.
 Ursus, Okla.: Stovall, 6, 16.
 Utah: Burke, 2; Gazin, 24, 25, 26.
 Variation, supra-specific: Gregory, 26.
 Vertebrata: Harnly, 1; Hay, 6; Hesse, 14; Mehl, 7; Peterson, 7; Schultz, J. R., 5; Tapp, 1; Wood, H. E., 12.
 Vertebrate extinction, factors: Tapp, 1.
 Virginia, Pleist.: Clark, A. H., 2.
 Viverravus, Calif.: Stock, 41.
 Washington basalts: Beck, 3.
 West Virginia: Brooks, A. B., 1.
 Whales: Hanna, 32; Helm, 1; Kellogg, 2, 10.

Mammalia—Continued.

- Wolf jaw, Calif.: Stock, 72.
 Wyoming: Denison, R. H., 1; Jepsen, 1, 2, 10; Schlaikjer, 3; Simpson, G. G., 4, 46.
 Zarbachis, Md.: Kellogg, 7.
 Zeuglodon, Ala.: Richards, E. F., 1.
 Zeuglodonts: Kellogg, 4.
 Man, fossil.
 Age determination: Osborn, 27.
 Age of human race: Osborn, 25, Richarz, 3.
 Alabama: Jones, 18, 19.
 Alaska: Hrdlička, 2.
 Alberta, artifacts: Bird, J., 1.
 America: Amsden, 1; Hrdlička, 3; Merriam, J. C., 12, 13; Nelson, N. C., 1; Smith, M. G., 1; Spinden, 1; Stock, 30.
 Ancient artifacts, Colo.: Cook, 8.
 Ancient peoples of the Northwest: Randolph, 11.
 Antiquity in America: Cox, P. E., 1; Howard, E. B., 2, 5, 10; Merriam, J. C., 12, 13; Nelson, N. C., 1; Smith, M. G., 1; Spinden, 1; Stock, 30.
 Arizona, early culture: Cummings, B., 1; Gladwin, 1.
 Arrow points with *Bison*, Nebr.: Barbour, 21; Meserve, 1.
 Artifacts with extinct animals: Amsden, 2; Barbour, 21; Cooper, C. L., 10; Howard, E. B., 1, 3; McClintock, 8; Meserve, 1; Sayles, E. B., 1; Sellards, 37, 41; Woodward, A., 1.
 Avifauna and human remains, Rancho La Brea: Howard, H., 15.
 Brain, fish to man: Gregory, 27.
 California: Amsden, 2; Barbieri, 1; Bowden, 1; Campbell, E. W. C., 1; Clements, 9; Harrington, M. R., 3; Howard, H., 15; Moodie, 11; Woodward, A., 1; Anonymous, 45.
 Canada, western: Bliss, 11; Roberts, F. H. H., Jr., 9.
 Caves, Utah: Anonymous, 146.
 Central Plains area: Van Royen, 2.
 Climate and early man in N. Am.: Antevs, 21.
 Clovis site, N. Mex.: Antevs, 17; Howard, E. B., 9, 10; Stock, 55.
 Colorado: Bryan, 33, 45; Cook, 5, 8; Figgins, 2; Roberts, F. H. H., Jr., 1, 2, 5, 6, 8.
 Coming of man: MacCurdy, 1.
 Connections, America-Asia?: Smith, P. S., 9.
 Cultures, early, Ariz., Tex.: Gladwin, 1.
 Date, in Southwest: Antevs, 20.
 Dating poss., artifacts-fossil mammals: MacClintock, 8.
 Ear ossicles in fossil crania: Evans, T. H., 1.

Man, fossil—Continued.

- Early man in America: Antevs, 20;
Bullitt, 1; Howard, E. B., 2, 5, 8;
Kay, G. F., 20; MacCurdy, 2; Sel-
lards, 32, 37-a; Woodward, A. S., 2.
Evidence of, N. Am.: Howard, E. B.,
2; Leighton, 12.
Evolution of man: Romer, 5; Schlaikjer,
9.
Existence in America?: Leighton, 12.
Fauna, Pleist., Clovis, N. Mex.: Ho-
ward, E. B., 4.
Florida: Gidley, 1, 2, 4, 7; Leverett, 11;
Richards, 10; Sellards, 33.
Folsom culture: Bryan, 33, 45; Brown,
B., 9, 12; Cook, H. J., 1, 5; Figgins,
4, 6, 7; Ray, C. N., 1; Roberts, F.
H. H., Jr., 1, 5, 7.
General: Bishop, 1; Cole, Fay-Cooper,
1; Gregory, W. K., 5; Merriam, J.
C., 1, 12, 13, 17.
Geologic evidences of: Cook, 7.
Geologic history of mankind: Mather, 3.
Glacial man: Bentley, 1; Osborn, 7.
Gypsum Cave, Nev.: Harrington, M.
R., 2.
Homo sapiens, whence, wither: Hooton,
2.
Implements, Pleist., Calif.: Barbieri, 1.
Indian, Calif.: Moodie, 11.
Influence of glacial age on evolution:
Osborn, 7.
Interglacial man: Hagie, 1.
Iowa, no remains: Sanders, W. E., 1.
Kansas, geomorphic evidence: Smith, H.
T. U., 10-a.
Kentucky, rock footprints: Anonymous,
185.
La Jolla site, Calif.: Moodie, 11.
Lake Mojave site, Calif.: Antevs, 22;
Barbieri, 1; Bryan, 45; Campbell,
E. W. D., 2.
Landscapes showing ancient life: Knight,
C. R., 1.
Lindenmeier site, Colo.: Roberts, F. H.
H., Jr., 2, 8.
Los Angeles man deposits, Calif.: Cle-
ments, 9.
Malakoff image: Sellards, 8.
Mammals, succession, with early man:
Stock, 58.
Man, early, paleontology-of: Merriam,
J. C., 14.
Man and extinct sloths, Calif.: Anony-
mous, 29.
Man and primates: Gregory, W. K., 28.
Minnesota: Antevs, 23; Bryan, 27, 38,
39; Eddy, S., 1; Hrdlička, 4; Jenks,
A. E., 1, 2, 3; Kay, G. F., 19; Keyes,
407; Madsen, 1; Sardeson, 30, 43;
Thiel, 7, 10; Anonymous, 38.
Missouri: Croneis, 49.
Mollusks and early man: Richards, 13.
Neanderthal man: Farrington, 4.
Nebraska: Barbour, 22, 32; Lugin, 7, 15;
MacClintock, 5; Schultz, C. B., 1;
Van Roy, 2, 1.

Man, fossil—Continued.

- Nevada: Anonymous, 20.
New Mexico: Antevs, 17; Burnet, 1;
Bryan, 42, 44; Cook, H. J., 1; Cot-
ter, 1, 2; Howard, E. B., 1, 4, 9, 10,
11; Moodie, 11, 12; Stock, 11, 55;
Thone, 1.
North America: Hay, 1-a; Schultz,
C. B., 5; Anonymous, 182.
North Platte Valley, Nebr.: Van Royen,
1.
Occurrence of human remains: Hay, 2.
Oklahoma: Cook, 9; Evans, O. F., 3;
Gould, C. N., 4, 5, 9; Hay, 2;
Sellards, 26.
Oregon, Great Basin: Cressman, 1.
Origin of man: Gregory, W. K., 5.
Pinto Basin site, Calif.: Campbell,
E. W. C., 1.
Piro Indians, N. Mex.: Moodie, 12.
Pithecanthropus and *Eoanthropus*, geol.
age: Osborn, 4.
Pleistocene man, N. Am.: Burnet, 1;
Cummings, B., 1; Jenks, A. E., 4;
Romer, 7.
Pollen analysis as dating aid: Sears, 11.
Prehistoric ancestors: Cleland, H. F., 1.
Prehistoric life: Raymond, 20.
Prehistoric man in the Southwest:
Getty, 1.
Prehistory and postglacial climatic
fluctuation: Fisher, R. G., 1.
Pre-Pueblo Indians, N. Mex.: Moodie, 11.
Primitive man, Tex.: Leighton, 24.
Rock footprints, Ky.: Anonymous, 185.
Round Rock, Tex.: Sellards, 29, 32.
Skeletal remains: Hrdlička, 1.
Skull and teeth devel.: Branson, C. C.,
1-a.
Southwest U. S.: Antevs, 28; Howard,
E. B., 6; Stock, 30.
Spread, aboriginal man to N. Am.:
Antevs, 15, 16.
Stone age, Little Colorado River ter-
races: Bartlett, K., 1.
Symposium, internat., 1937: Davis, E.
C., 1.
Tertiary man: Osborn, 12.
Texas: Ayre, 1; Bryan, 40; Gladwin, 1;
Pearce, 1; Sellards, 29, 32, 37, 41;
Witte, 1.
Up from the ape: Hooton, 1.
Weathering profiles, significance: Leigh-
ton, 26.
Western U. S. and Canada: Roberts,
F. H. H., Jr., 9.
Williams Cave, Tex.: Ayre, 1.
Wisconsin, *Bison* with artifacts: Cooper,
C. L., 10.
Yuma-Folsom sites, Nebr.: MacClin-
tock, 5.
- Manganese.
Alabama: Blair, C. S., 3.
Alabandite: Hewett, 2.
Arizona: Guild, 4; Rasor, 2; Wilson,
E. D., 2.
Arkansas: Miser, 13.

Manganese—Continued.

- Boulder Dam area : Lee, 7.
 Canada : Hanson, 5; Kindle, 31.
 Colorado : Burbank, 10.
 Deposition : Zapffe, 2.
 Exchangeable, river and ocean muds :
 Murata, 2.
 Industrial minerals and rocks : A. I. M.
 E., 2.
 Mexico : Santillán, 14; Schaller, 24.
 Minerals, etching tests : Smitheringale, 2.
 Miquelon, West Indies : Aubert de la
 Rue, 6.
 Montana : Gilbert, F. C., 3.
 Nevada : Hewett, 6; Westgate, 6.
 New Brunswick : Wright, W. J., 4.
 Newfoundland : Heyl, 1; Snelgrove, 8.
 New Hampshire : Kindle, 24.
 New Mexico : Lasky, 12.
 Nova Scotia : Bancroft, 3; Kindle, 24;
 Messervey, 13.
 Oregon : Hodge, 21.
 Oriskany ore : Holden, 3.
 Oxidation, hydrothermal : Trengove, 1.
 Oxides, and ground-water circulation :
 Hewett, 11.
 Pacific Coast : Hodge, 16.
 Puerto Rico : Harper, M. F., 2; Meyer-
 hoff, 10; Ray, H. C., 1.
 St. Pierre, West Indies : Aubert de la
 Rue, 6.
 Solution, transp., precipitation : Savage,
 W. S., 2.
 South Dakota : Anonymous, 6.
 Tennessee : Whitlach, 14, 20.
 Tennessee Valley region : Rankin, H. S.,
 1.
 Texas : Hewett, 14.
 Utah : Callaghan, 11, 14.
 Virginia : Currier, 2; Holden, 7.
 Washington : Hodge, 21; Park, 10.
 Western States : Hewett, 6, 9.
 West Virginia : Reeves, F., 5.
 Wisconsin : Dickey, R. M., 4.

Manitoba.

Areas described.

- God's Lake area : Baker, W. F., 1;
 Wright, J. F., 13.
 Granville Lake area : Norman, 4.
 Halfway Lake-Beresford Lake area :
 Stockwell, 11.
 Island Lake area : Wright, J. F., 13.
 Kisissing Lake area : Wright, J. F., 1.
 Northwest Manitoba : Wright, J. F., 1.
 Ontario-Manitoba boundary : Derry, 6.
 Oxford House area : Wright, J. F., 12.
 Oxford Lake area : Wright, J. F., 13.
 Reindeer Lake area : Stockwell, 1.
 Rice Lake-Gold Lake area : Stockwell, 10.
 Southeastern Manitoba : Wright, J. F.,
 13.
 Stull (Mink) Lake area : Downie, 1.

Economic geology.

- Amaranth gypsum deposit : Brownell,
 G. M., 1.

Manitoba—Continued.

Economic geology—Continued.

- Beryllium : Stockwell, 2; Wright, J. F.,
 5.
 Building stone : Cole, L. H., 9.
 Canadian Shield dist. : Wright, J. F., 21.
 Cold Lake copper-zinc : Wright, J. F., 2.
 Copper : Bruce, E. L., 2, 3, 5; Wright,
 J. F., 2, 3, 4, 6.
 Elbow-Morton area gold : Stockwell, 7.
 Flin Flon gold mine : Brownell, G. M., 2;
 Wright, 18.
 Foundary sands : Stanley, T. R., 1.
 God's Lake area : Baker, W. F., 1;
 Wright, J. F., 13.
 Gold : Baker, W. F., 1; Brownell, 2;
 McLaren, 1; Reid, J. A., 1; Shep-
 herd, F. D., 1; Stockwell, 7, 9;
 Wright, J. F., 3.
 Gold Lake area : Stockwell, 10.
 Granite : Cole, L. H., 9.
 Halfway Lake-Beresford Lake area :
 Stockwell, 11.
 Island Lake area : Wright, J. F., 13.
 Leached outcrops : Gwillam, 1.
 Limestones : Goudge, 1; Pugh, F., 1.
 Lithium : Stockwell, 2; Wright, J. F., 5.
 Metal mining : Cole, G. E., 1.
 Mineral prosp. : Goodwin, W. L., 3.
 Mineral res. : Cole, G. E., 2; De Lury,
 J. S., 1; Hutt, 3.
 Minerals, indust. : Hutt, 3.
 Natural gas : Hume, 18.
 Nickel : Wright, J. F., 3.
 Northwestern Manitoba : Wright, J. F., 7.
 Petroleum : Hume, 18.
 Rice Lake-Gold Lake area : Stockwell, 10.
 San Antonio gold mine : Reid, J. A., 1.
 Sherritt-Gordon copper-zinc deposits :
 Bruce, E. L., 2, 3, 5; Wright, J. F.,
 4, 6.
 Stull (Mink) Lake area : Downie, 1.
 Tapestry lms. : Pugh, F., 1.
 Tin : De Lury, J. S., 2; Derry, 2; Wright,
 J. F., 3, 5.
 Zinc deposits : Bruce, E. L., 2, 3, 5;
 Wright, J. F., 2, 4, 6.

Historical geology.

- Berens River sheet, g. map : Canada G.
 S., 1.
 Canadian Shield mining dists. : Wright,
 J. F., 21.
 Carroll Lake sheet, g. map : Canada G.
 S., 1.
 Cold Lake area : Wright, J. F., 2.
 Cretaceous : Kirk, S. R., 2; Wickenden, 3.
 Cross Lake area : Horwood, 2.
 Deer Lake sheet, g. map : Canada G. S.,
 1.
 Echimamish area : Tanton, G.-a.
 Elbow-Morton area : Canada G. S., 1;
 Stockwell, 7.
 Flin Flon area : Ambrose, 2, 3; Brownell,
 G. M., 2; Kerr, F. A., 15; Wright,
 J. F., 18.

Manitoba—Continued.

Historical geology—Continued.

- God's Lake gold area : Baker, W. F., 1.
 Granville Lake sheet : Canada G. S., 1.
 Gunnar gold mine area : Shepherd, F. D., 1.
 Halfway Lake-Beresford Lake area : Stockwell, 11.
 Hecla sheet, g. map : Canada G. S., 1.
 Herb Lake area : Canada G. S., 1; Stockwell, 9.
 Jurassic in borings : Wickenden, 9, 11.
 Klisseyenew gneiss : Bruce, 4.
 Lac du Bonnet sheet, g. map : Wright, J. F., 10.
 Missi series, Flin Flon area : Ambrose, 2, 3.
 Norway House sheet, g. map : Canada G. S., 1.
 Oiscau sheet, g. map : Wright, J. F., 9.
 Ontario-Manitoba boundary : Derry, 3.
 Ordovician : Foerste, 5.
 Oxford House sheet : Canada G. S., 1.
 Paleozoic, Jurns. fms., in wells : Wickenden, 9, 11.
 Pas sheet : Canada G. S., 1.
 Rice Lake-Gold Lake area : Reid, J. A., 1; Stockwell, 10.
 Seal River area : Canada G. S., 1; Johnston, A. W., 1.
 Stull Lake, g. map : Canada G. S., 1; Downie, 7.
 Thunder Hill structure : McLearn, 20.
 Wadhope area, g. map : Wright, J. F., 11.
 Winnipeg sheet, g. map : Johnston, W. A., 3.

Mineralogy.

- Amber : Carpenter, 11; Walker, T. L., 13, 17.
 Chemawinitite, Canadian amber : Walker, T. L., 13.
 Cordierite : Rutherford, 10.
 Gold : Baker, W. F., 1; Brownell, G. M., 2; McLaren, 1; Reid, J. A., 1; Shepherd, F. D., 1; Stockwell, 7, 9; Wright, J. F., 3.
 Pegmatite minerals : Walker, T. L., 5.
 Uraninite : De Lury, J. S., 5.
 Zeolites : Brownell, G. M., 3.

Paleontology.

- Amber : Carpenter, 11; Walker, T. L., 13, 17.
 Cephalopoda : Foerste, 5, 7.
 Foraminifera : Wickenden, 6.
 Insects in amber : Carpenter, 11.
 Lambeoceratops, Garson : Leith, E., 1.
 Trinacromerum : Russell, 30.

Petrology.

- Echimaish area : Tanton, 6-a.
 Genesis of pegmatites : Stockwell, 6.
 Gneiss zone, Flin Flon area : Kerr, F. A., 15.
 Granite, Rest Is. : Cram, 4.
 Gunnar gold mine : Shepherd, F. D., 1.
 Halfway Lake-Beresford Lake area : Stockwell, 11.

Manitoba—Continued.

Petrology—Continued.

- Klisseyenew gneiss : Bruce, 4.
 Lithium pegmatite : Stockwell, 5.
 Metamorphism, progressive : Ambrose, 3.
 Pegmatites : Stockwell, 5; Walker, T. L., 5.

Stull (Mink) Lake area : Downie, 1.

Physical geology.

- Canadian Shield mining dists. : Wright, 21.
 Changes of level : Johnston, W. A., 14.
 Cross Lake area : Horwood, 2, 6.
 Echimaish area : Tanton, 6-a.
 Flin Flon area : Ambrose, 2, 3; Brownell, G. M., 2.
 Gneiss zone, Flin Flon area : Kerr, F. A., 15.
 God's Lake gold mine : Baker, W. F., 1.
 Granitization, Cross Lake area : Horwood, 6.
 Gunnar gold mine : Shepherd, F. D., 1.
 Halfway Lake-Beresford Lake area : Stockwell, 11.
 Herb Lake area : Stockwell, 9.
 Metamorphism, progressive : Ambrose, 3.
 Rice Lake-Gold Lake area : Stockwell, 10.
 Structure, Missi ser. : Ambrose, 2.
 Stull (Mink) Lake area : Downie, 1.

Physiographic geology.

- Echimaish area : Tanton, 6-a.
 Elbow-Morton area : Stockwell, 7.
 Glaciation : Antevs, 6, 8; Burwash, 7.
 Gotiglacial broadmapping : De Geer, G. J., 3.
 Stull (Mink) Lake area : Downie, 1.

Underground water.

- Water resources : Attwood, 1.
 Winnipeg area : Johnston, W. A., 12.

Map making. See also Cartography.

Inaccessible regions : Zeller, 1.

Mapping unit in geology : Keyes, 355.

Maps. See Cartography; Geologic maps; Isopach maps; Relief maps.

Maps, geomorphic notes : Sharp, 9.

Maps, oil industry : Lahee, 16.

Maquokota, sh. : Ladd, H. S., 1.

Maquoketan ser. : Keyes, 75.

Marble.

- Alabama : Jones, W. B., 13-a.
 Alaska : Hodge, 24.
 California : Bradley, W. W., 7.
 Colorado : Vanderwilt, 11.
 Connecticut : Moore, F. H., 1.
 Newfoundland : Bain, 16, 18; Betz, 1.
 North Carolina : Bryson, 7-a; Hornbeck, 1; Stuckey, 6, 10.
 Petrology of : Bain, 13.
 Structure of deposits : Prouty, 4.
 Tennessee : Hall, G. M., 3; Oder, 3; Walls, 1; Whitlatch, 20.
 TVA region : Spain, 4; Anonymous, 139.
 Texas, Sharp Mtn. : Barnes, V. E., 6.

Marble—Continued.

- Vermont: Bain, G. W., 7, 20-a; Jacobs, 2; Perkins, G. H., 6.
 Virginia: Cooper, B. N., 7; Furcron, 4; Kessler, J., 2; Mathews, A. A. L., 9.
 Marcasite crystal structure: Buerger, M. J., 3.
 Marine biology and paleoecology: Fish, C. J., 1.
 Marine plants and Pacific paleogeography: Setchell, 2.
 Marine unconformities and congloms.: Twenhofel, 20.

Markings on rocks.

- Arthraia-like markings: Fenton, 33.
 Hall prints, Proterozoic: Fenton, 31.
 Mud cracks, Proterozoic: Fenton, 31.

Marls.

- Formation affected by thermal stratification: Kindle, E. M., 2.
 Minnesota: Stauffer, 6; Thiel, 2.
 Mississippi: Foster, V. M., 5.

Marshes, N. Y., Long Is. salt: Knight, J. B., 10.

Martic overthrust: Mackin, 4; Miller, B. L., 8.

Martinique, West Indies.

Historical geology.

Sedimentary rocks, correl with Guadeloupe: Barrabé, 1.

Physical geology.

Mt. Pelée, eruptions and domes: Arsan-daux, 1, 2, 3, 4; Jaggard, 20, 29; Jansen, 1; MacGregor, 2; Perret, 1, 2, 3, 5; Romer, M., 1; Shepherd, 6; Trechmann, 11.

Maryland.

Areas described.

Baltimore County: Mathews, E. B., 1.

Economic geology.

Analyses of coal: Fieldner, 4.
 Asbestos: Bowles, O., 4.
 Coal fields: Mathews, E. B., 3.
 Frost pegmatite: Watson, E. D., 1.
 Gravel: Darton, 15.
 Mineral res.: Mathews, E. B., 2.
 Pittsburgh coal bed: Eavenson, 3.
 Sand: Darton, 15.

Historical geology.

Appalachian region: Stose, 11.
 Atlantic Coastal Plain: Jonas, 4.
 Baltimore Co.: Berry, E. W., 9; Knopf, E. F. B., 2.
 Baltimore & Ohio R. R. route: Grimsley, 1.

Bentonite beds: Whitcomb, 7.

Blue Ridge: Stose, 11.

Calvert fm.: Dryden, 12.

Cambrian: Resser, 21; Stose, 20-a.

Chesapeake Bay area: Stephenson, L. W., 6.

Chesapeake and Delaware Canal area: Carter, C. W., 1.

Coastal Plain: Berry, E. W., 9; Darton, 14; Jonas, 4; Monroe, 6.

Maryland—Continued.

Historical geology—Continued.

Cretaceous: Darton, 8, 9, 14.
 Crystalline rocks: Cloos, 14; Jonas, 12.
 Dam site, Savage River: Eckel, 12.
 Eastern Md.: Darton, 15.
 Ellicott City granite: Cloos, 6.
 Eruptive rocks, Baltimore: Watson, E. D., 3.
 Frederick Co. g. map: Jonas, 13.
 Frederick lms.: Keyes, 343.
 Gabbro complex, Baltimore: Cohen, 1.
 Geologic map: Mathews, E. B., 6.
 Gneiss domes, Baltimore: Broedel, 1.
 Guidebook, Pa. Geol. Conf.: Bevan, 34.
 Hamilton correls.: Willard, 45.
 Helderberg group: Swartz, F. M., 1, 3.
 Igneous rocks, pre-Camb.: Bascom, 5.
 Limestones, Frederick valley: Jonas, 11.
 McKenzie sh., correl.: Swartz, F. M., 3.
 Miocene: Dryden, 9.
 Overlap, Cret-Tert.: Darton, 8, 9.
 Piedmont intrusives: Cloos, 12.
 Port Deposit granodiorite: Hershey, H. G., 1.
 Pre-Cambrian: Stose, 20-a.
 Silurian fms., relations: Swartz, C. K., 3; Swartz, F. M., 8.
 Southern Appalachian area: Butts, 4; Jonas, 10.
 Southern Md.: Cooke, C. W., 7.
 Tertiary: Darton, 14; Dryden, 7; Stephenson, 23-a.
 Volcanic complex, Cecil Co.: Marshall, J., 1.
 Volcanic rocks, pre-Trias.: Jonas, 10.
 Wissahickon schist: Singewald, J. T., Jr., 8.

Mineralogy.

Albite, Piedmont: Ingerson, 4.
 Ankerite, Bethesda: Ulke, 1.
 Gold, near Washington, D. C.: Ulke, 4, 9.
 Heavy minerals, Coastal Plain: Dryden, 5.
 Minerals: Ulke, 3.
 Quarries near Washington, D. C.: Ulke, 4.

Paleontology.

Anomoeodus, Cret.: Berry, C. T., 13.
 Archaeomonadaceae: Deflandre, 1, 2.
 Birds, Miocene: Wetmore, 1.
 Bonasa, Pleist.: Wetmore, 5.
 Cambrian, restricted, S. Appalachians: Resser, 21.
 Chesapeake and Delaware Canal area: Carter, C. W., 1.
 Clam, Miocene, in barnacle shell: Buck, 1.
 Conifers, Cret., Northwest Branch: Brown, R. W., 9.
 Crassatellites, Miocene: Mansfield, W. C., 18.
 Cypress swamp, Talbot Co.: Berry, C. T., 4.
 Delphinodon, Miocene: Barwick, 2.
 Fauna, Pamlico Pleist.: Richards, 14.

Maryland—Continued.

Paleontology—Continued.

- Felichthys, Miocene: Lynn, 3.
 Fish, Eocene: Myers, G. S., 1.
 Foraminifera: Cushman, 1, 23.
 Kummella, Eocene: Stephenson, 17.
 Lagodon, Miocene: Berry, C. T., 2.
 Mammalia: Gidley, 8; Kellogg, A. R., 1, 7.
 Molars of Canis: Patterson, 3.
 Ophiura, Tert., Recent: Berry, C. T., 3, 11.
 Pearl, Miocene: Berry, C. T., 7.
 Pectinidae, Tert.: Rowland, H. I., 1; Tucker, 8.
 Pinus, Miocene: Berry, E. W., 54.
 Siphonocetus, Miocene: Barwick, 1.
 Sula, Miocene: Wetmore, 43.
 Taurotragus, Pleist.: Gazin, 6.
 Tomarctus, Miocene: Berry, C. T., 10.
 Tursiops, Pleist.: Blake, S. F., 1.
 Turtles, Miocene: Collins, R. E. L., 4.
 Venericardia, variations: Chavan, 1.
 Vertebrata, Pleist.: Gidley, 9.
 Walnut, Miocene: Berry, E. W., 48.
 Whale, Miocene: Helm, 1.
 Xenobelix, Miocene: Dryden, 6.
 Xiphias?: Berry, E. Willard, 2.

Petrology.

- Crystalline rocks: Cloos, 15; Jonas, 12; Knopf, E. F. B., 2.
 Ellicott City granite: Cloos, 6.
 Fabrics, inclusions and intrusions: Ingerson, 7.
 Gabbro complex, Baltimore: Cohen, 1.
 Gneiss domes near Baltimore: Broedel, 1.
 Oriskany ss.: Stow, 11.
 Pegmatites, origin: Watson, E. D., 1.
 Piedmont intrusives, age: Cloos, 12.
 Port Deposit granodiorite: Hershey, H. G., 1.
 Serpentine: Prouty, W. F., 1.
 Volcanic complex, Cecil Co.: Marshall, J., 1.
 Wissahickon schist: Singewald, J. T., Jr., 8.

Physical geology.

- Appalachian Piedmont deformation: Campbell, M. R., 1.
 Calvert tilting, Coastal Plain: Dryden, 1.
 Crystalline rocks, interpretation: Cloos, 14.
 Fabrics, inclusions, intrusions: Ingerson, 7.
 Faults, joints, Coastal Plain: Dryden, 4.
 Gabbro complex, Baltimore: Cohen, 1.
 Gneiss domes, Baltimore: Broedel, 1.
 Metamorphic belt, Appalachians: Jonas, 1.
 Piedmont intrusives: Cloos, 12.
 Port Deposit granodiorite: Hershey, H. G., 1.
 Volcanic complex, Cecil Co.: Marshall, J., 1.

Physiographic geology.

- Baltimore Co.: Berry, E. W., 8; Knopf, E. F. B., 1.

Maryland—Continued.

Physiographic geology—Continued.

- Calvert Coastal Plain tilting: Dryden, 1.
 Chambersburg (Harrisburg) peneplain: Campbell, M. R., 11.
 Coastal Plain: Dryden, 1, 11; Monroe, 6.
 Damsite, Savage River: Eckel, 12.
 Eastern Md.: Darton, 15.
 Terraces: Cooke, C. W., 19; Scheidt, V. E., 1.

Massachusetts.

- General: Longwell, 12.
 Survey of: Currier, 11.

Areas described.

- Boston area: La Forge, 1.
 Cape Cod area: Woodsworth, 2.

Economic geology.

- Granite: Clifford, J. N., 1.
 Limonites, origin: Newland, 13.
 Mineral resources: Crosby, 5.

Historical geology.

- Boston Basin: Billings, M. P., 1.
 Cambrian, Dedham quad.: Rhodes, 1.
 Carboniferous near Boston: Billings, 18.
 Connecticut Valley: Bain, G. W., 5; Kitson, J. E., 1.
 Pt. Gammon-Monony Pt., Cape Cod: Chute, 1.
 Structural geology, central: Callaghan, 1.
 Taconic quad.: Prindle, 1.
 Triassic belt: Longwell, 14.
 Wachusett Coldbrook tunnel: Larsen, 9.

Mineralogy.

- Babingtonite: Baum, 3; Kitson, J. E., 2; Palache, 13, 33; Richmond, W. E., Jr., 1.
 Blue Mtn., paragenesis: Richmond, W. E., Jr., 3.
 Chialtolite: Broderick, J. H., 1.
 Epidote: Palache, 33.
 Grunerite: Bowen, 12; Sundius, 1.
 Hawley min. belt: Perry, E. L., 4.
 Limonites, origin: Newland, 13.
 Pegmatites: Hitchin, 1.
 Spodumene in pegmatites: Hess, F. L., 13.
 Stalactites in sewer: Quinn, W. D., 1.

Paleontology.

- Amphibian footprints: Willard, 6.
 Fern garden, Carb.: Sanford, S. N. F., 2.
 Flora in glacial sediments: Sayles, 9.
 Fossiliferous eskers and outwash plains: Nichols, 9.
 Gay Head Miocene: Sanford, S. N. F., 1.
 Paradoxides fauna: Howell, 24.

Petrology.

- Blue Mtn. minerals: Richmond, W. E., Jr., 3.
 Carboniferous near Boston: Billings, 18.
 Central Mass.: Callaghan, 1.
 Chelmsford granite problem: Currier, 9.
 Concretions, Champlain fm.: Tarr, 18.
 Granite, Quincy: Clifford, J. N., 1; Kevill, 4; Leet, 4.
 Grunerite: Bowen, 12; Sundius, 1.

Massachusetts—Continued.

Petrology—Continued.

- Intrusive complex: Stobbe, 2.
- Limonites: Newland, 13.
- Manganese-poor grünerites: Sundius, 1.
- Trap rock, Holyoke Range: Stevens, N. P., 1.

Physical geology.

- Atlantic Coastal Plain: Ewing, 10.
- Blue Mtn. minerals, paragenesis: Richmond, W. E., Jr., 3.
- Boston Basin: Billings, M. P., 1.
- Carboniferous near Boston: Billings, M. P., 18.
- Changes in level, glacial: Brown, T. C., 6.
- Chelmsford granite problem: Currier, 9.
- Coast, vertical stability, Marblehead: Goldthwait, J. W., 5; Macar, 2.
- Connecticut Valley, flood erosion March 1936: Collins, R. F., 1.
- Earthquake, Provincetown: Leet, 8.
- Erosion, Massachusetts Bay: Stetson, 9.
- Gravity anomalies, geol. interpretation: Longwell, 24.
- Intrusive complex: Stobbe, 2.
- Long-period seismol. disturbances: Langguth, 1.
- Medford diabase, weathering: Billings, 6; Lane, 18; Wolf, 1.
- Pebbles, wind-faceted: Matthes, 19.
- Quincy granite: Keevil, 4; Leet, 4.
- Regional granitization and metamorphism: Currier, 10.
- Rock bottom, Massachusetts Bay: Hough, J. L., 1.
- Rock weathering study: Goldich, 2.
- Salt marsh border and coast stability: Goldthwait, J. W., 3.
- Sedimentation, Massachusetts Bay: Trowbridge, 7.
- Shoreline changes: Nichols, R. L., 8.
- Stability, land and sea: Goldthwait, J. W., 2.
- Ventifacts, glacial: Matthes, 19; Thiesmeyer, 6.

Physiographic geology.

- Attleboro area, esker chains: Goldthwait, L., 1.
- Beach, Cape Cod: Schalk, 1.
- Boston Basin drumlins: Crosby, 10.
- Connecticut Valley: Collins, R. F., 1; Flint, 9.
- Drumlins, glacial clay, Boston Basin: Crosby, 10.
- Esker chains: Goldthwait, L., 1.
- Esker and outwash plains: Nichols, R. L., 9.
- Felsite, boulder train, Hingham: Howe, O. H., 1.
- Glacial geology, S. E. Mass.: Bryan, 16.
- Glacial history: Hörner, 1; Hyypä, 1.
- Glacial marine waters limit: Hörner, 1; Hyypä, 1.
- Glacial sediments flora: Sayles, 9.

Massachusetts—Continued.

Physiographic geology—Continued.

- Housatonic Valley glacial history: Logan, R., 1.
- Ice-sheet retreat: Brown, T. C., 7.
- Kames, kame terraces: Brown, T. C., 3.
- Lake Hadley, glacial: Brown, T. C., 9.
- Lake Montague, glacial: Brown, T. C., 9.
- Lakes, glacial: Brown, T. C., 9; Raisz, 4.
- Lagoons, rounded, coastal plain: Raisz, 4.
- Loess near Boston: Smith, H. T. U., 1.
- Mashee pitted plain: Goldthwait, R. P., 6.
- Meanders, tidal creeks: Goldthwait, J. W., 4.
- Moraines, Cape Cod: Mather, 30.
- Millers River Valley: Brown, T. C., 5, 8.
- Nashua Valley: Brown, T. C., 1, 2, 8.
- Permo-Carboniferous varves, Squantum: Sayles, R. W., 2.
- Pt. Gammon-Monomoy Pt., Cape Cod: Chute, 1.
- Shore lines, glacial: Crosby, 13.
- Terraces, Conn. Valley: Flint, R. F., 7.
- Ventifacts, glacial, Cape Cod: Matthes, 19; Thiesmeyer, 6.
- Wisconsin ice movements: Brown, T. C., 4.

Underground water.

- Connecticut River Valley, bibliography: New England Regional Plann. Commission, 1.
- Ground-water supplies: Kingsbury, F. H., 1.

Mass-movement, soil and rock, U. S.: Sharpe, 5.

Meanders.

- Alaska, lower Yukon: Eardley, 8.
- California, June, Gull, Silver Lakes Valleys: Kessell, 1.
- Intrenched, interpretation: Cole, W. S., 4.
- Larto Lake, Mississippi River channel: Russell, R. J., 6.
- Louisiana, stream patterns: Russell, R. J., 25.
- New Mexico, arroyos: Leighly, 4.
- New York, incised, modified: Cole, 13.
- Pennsylvania, Juniata River: Stone, 16.
- Streams, intermittent, development in: Leighly, 3.
- Wisconsin, Kickapoo region: Bates, R. E., 4.

Measuring in reflected polarized light: Zeiler, 1.

Measuring polarizing angles: Quirke, 22.

Measurement of glaciers necessary: Matthes, 22.

Measurements in block diagrams: Ives, 11.

Mechanical analysis.

- Beach sands, local variation: Krumbein, 17.

Mechanical analysis—Continued.

- Bentonites, correl. by: Dorrell, 2.
- Correlation by, bentonites: Dorrell, 2.
- Dynamic interpretation: Spieker, 12.
- Graph for interpretation: Otto, 5.
- Greenland: Moos, von, 1.
- History of methods and principles: Krumbein, 1.
- Lithified sediments: Sanford, 7.
- Methods and principles: Krumbein, 1.
- Phase sampling, sediments: Apfel, 4.
- Principles and methods: Krumbein, 1.
- Sand: Emery, K. O., 1; Gardescu, 1.
- Sedimentary petrography: Krumbein, 15.
- Sedimentary rocks, Niagara Gorge: Sanford, 10.
- Sediments: Gripenberg, 1.

Mechanics and geology: Foley, 3.

Mechanics of metasomatism: Bain, 15.

Meeker quad., Colo.: Hancock, 1.

Meerschaum, Green River fm.: Bradley, W. H., 1.

Meetings. See also Associations.

- 16th Internat. Geol. Cong., Wash. D. C., 1933: Renier, 1; Schumacher, 1.

Megascopic descriptions, Ill. coals: Cady, 9.

Memories of a paleontologist: Scott, W. B., 13.

Meneghinite: Palache, 37.

Mercury. See Quicksilver.

Merosymmetry vs. merohedrism: Rogers, 26.

Merycidodontidae, geog. distrib.: Bump, B., 1; Thorpe, 10.

Mesozoic, undifferentiated.

- Alaska: Capps, 3, 6.
- Geologic fms.: Alcock, 7; Shimer, 3.
- Idaho: Dickey, F. H., 1.
- North America, g. fms.: Shimer, 3.
- Pegmatites, age, distrib.: Landes, 20.
- Washington: Culver, 6.

Mesozoic plant foods and mammalian evolution: Werner, 2.

Mesozoic systems, distrib., thickness: Ver Wiebe, 9.

Metabentonites, Tenn.: Caldwell, R., 1; Davis, F. A. W., 1; Laurence, 1.

Metachelomys and the Edentata: Simpson, 15.

Metallization from basic magmas: Hulin, 3.

Metallogenesis and crustal theory: De Lury, 10.

Metallurgy.

- Earth, cooling: Stauss, 1.

Metals, primordial segregation: De Lury, 28.

Metamorphic orogeny: Willis, B., 6.

Metamorphic rocks.

- Accessory minerals: Reed, J. C., 9.
- Alaska: Mertie, 15.
- Classification: Van Amringe, 6.
- Composition and origin: Runner, D. G., 3.

Metamorphic rocks—Continued.

New England, age correl.: Foye, 6.

Porphyroblasts, quartz, in hornfels: Goodspeed, 9.

Metamorphic terminology: Erwin, 6.

Metamorphism.

- Alaska: Capps, 13; Mertie, 14; Moffit, 11; Smith, P. S., 12; Tuck, 9.

Albite trends, Piedmont: Ingerson, 4.

Appalachians, Talladega ser.: Crickmay, G. W., 16.

Arctic America, Ellesmere Land: Ben- tham, 2.

Arizona: Fairchild, 2; Galbraith, F. W., 3d, 1; Gilluly, 17; Skerrett, 1; Stark, 17.

Astenolith theory: Willis, 16.

Bore-hole inv., Yellowstone: Fenner, 14.

British Columbia: Brock, B. B., 1; Campbell, C. D., 6; Gilluly, 9; Sharpstone, David C., 1; Stevenson, 5.

California: Anderson, C. A., 5; Chapman, R. W., 4; Dudley, 1; Erwin, 4; Fitch, 3; Kelley, 8, 9, 10; Knopf, 18; Larsen, 24; Osborn, E. F., 1; Reiche, 1; Webb, 6.

Canadian Shield: Wilson, M. E., 20.

Carbothermal, magmatic carbonaton: Holden, 10.

Coal: Campbell, M. R., 7; Dapples, 3; McFarlane, 1.

Colorado: Barnes, F. F., 2; Loughlin, 9; Singewald, Q. D., 5; Vander- wilt, 11.

Connecticut: Agar, 10; Moore, F. H., 1. Crude oil: Ginter, 4.

Cuba: Chawner, 1; Rutten, L. M. R., 4; Thladens, 3, 5.

Curaçao, West Indies: Molengraaf, G. J. H., 1-a.

Deserticization: Landon, 4.

Effects on source rocks: Stadnichenko, 2.

Ferric-ferrous ratio in contact meta- morphism: Lasky, 8.

Galena, to anglesite and cerussite: Swartzlow, 2.

General: Runner, D. G., 3; Willis, B., 6. Georgia: Crickmay, G. W., 5; Lester, J. G., 1.

Glen Arm ser., Pa.: Miller, B. L., 8.

Granites, Stone Mtn. area: Lester, J. G., 1.

Granitic rocks, derivations: Collins, 10. Great Smoky fm., Tenn., N. C.: Money- maker, 5.

Greenland: Backlund, 3; Kranck, 2; Maync, 1; Moos, von, 2; Odell, 5; Sablstein, 2; Wager, 3; Wegmann, 5, 6; Wiseman, 1.

Guatemala: Termer, 6.

Idaho: Anderson, A. L., 14; Gillson, 2; Ross, C. P., 22.

Igneous cf. sed. rocks: Spivey, R. S., 1-

Metamorphism—Continued.

- Igneous, of coal beds: McFarlane, 1.
 Influence of replaced rock: Butler, B. S., 7.
 Jamaica, basal complex: Trechmann, 9.
 Kansas: Schaffner, 1.
 Limestones, dolomite, siliceous: Bowen, 22.
 Louisiana, Pleist.: Fisk, 7.
 Maine: Gillson, 5; Philbrick, 2, 4.
 Manitoba: Ambrose, 3; Horwood, 6.
 Maryland: Cohen, 1; Hershey, H. G., 1.
 Massachusetts: Larsen, 9.
 Meteor Crater, Ariz.: Fairchild, 2; Skerrett, 1.
 Meteor Crater, Tex.: Barringer, 1.
 Mexico: Bastin, 13; Inlay, 10; Singewald, Q. D., 12; Valentine, W. G., 1; Woodford, 6.
 Michigan: Lamey, 3, 10.
 Mineral facies, metamorphic: Turner, F. J., 1.
 Minnesota: Bastin, 16; Berg, E. L., 3; Grout, 12; Lamey, 3, 9, 10.
 Minnesota-Michigan, differences: Lamey, 10.
 Montana: Gibson, 4, 5; Taylor, J. H., 1, 2; Wolff, 6.
 Nevada: Bateman, 5; Callaghan, 7, 8; Ferguson, 10; Vitaliano, 1.
 New Brunswick: Alcock, 18; Shaw, E. W., 1.
 New England, regional: Currier, 10.
 Newfoundland: Cooper, J. R., 1; Heyl, 1; Jewell, 2; Twenhofel, 29; Vhay, 1.
 New Hampshire: Billings, M. P., 9, 12, 13, 15, 19; Chapman, C. A., 1; Fowler-Lunn, 1; Hadley, J. B., 1, 2; Kaiser, E. P., 2; White, G. W., 13; Williams, C. R., 2.
 New Jersey: Milton, 5.
 New Mexico: Dunham, 3; Keyes, 386, 437; Landon, 2; Lasky, 11, 12; Schmitt, 10; Spencer, A. C., 1.
 New York: Balk, 11; Barth, 14; Buddington, 17, 23; Dale, N. C., 5.
 North America: Butler, B. S., 16; Waters, 13.
 North Carolina: Murray, G. E., Jr., 4; Vitz, 1.
 Northwest Territories: Furnival, 3; Henderson, J. F., 3.
 Ontario: Bartley, 2; Bateman, J. D., 2; Bruce, 25; Derry, 10; Harding, 4; Horwood, 9; Hurst, 10; Lindner, 1; Perdue, 1; Pettijohn, 15; Phemister, 1; Quirke, 18-a, 18-c; Reid, J. A., 3; Satterly, 4; Thomson, James E., 8; Thomson, R., 2; Yates, 1.
 Oregon: Buddington, 14; Callaghan, 10; Gilluly, 7, 16; Goodspeed, 10, 13, 20.
 Organic sediments and derived oils: White, 26.

Metamorphism—Continued.

- Pennsylvania: Fraser, D. M., 5, 11, 15; Postel, 2; Stadnickenko, 4.
 Pyroclastics: Bramlette, 3.
 Quebec: Auger, 2; Bannerman, 4; Freeman, B. C., 7; Lowther, 1; McKenzie, 4; Mawdsley, 6; O'Neill, 4; Osborne, 22, 24, 26; Stevenson, J. S., 2; Tolman, 12; Weeks, L. J., 5-a.
 Replacement, dikes and sills: Goodspeed, 6.
 Replacement shells around batholiths: Freeman, B. C., 5.
 Retrogressive, and phyllonitization: Knopf, E. F. B., 4.
 Saskatchewan: Weeks, L. J., 9.
 Serpentine-country rock contacts: Phillips, A. H., 3.
 South Carolina: Kesler, 1.
 South Dakota: Gustafson, J. K., 1.
 System CaO-MgO-SiO₂ reactions: Taylor, N. W., 1.
 Tectonic, Appalachians: Becker, H., 3.
 Texas: Stenzel, 9.
 Transfusion of matter: Adams, F. D., 1.
 Tri-State dist.: Fowler, 7.
 Ultrabasic intrusions: Hess, H. H., 5, 6.
 Ultrametamorphism and anatexis: Sederholm, 3.
 Utah: Gilluly, 5.
 Vermont: Bain, G. W., 7, 17; Foyles, 5; Jacobs, E. C., 3.
 Virginia: Furcron, 9; Hess, H. H., 4; Holden, R. J., 7.
 Washington: Culver, 6; Goodspeed, 16, 18; Waters, 4, 14.
 West Virginia: Heck, E. T., 5.
 Wyoming: Horberg, 1.
 Yellowstone Nat. Park: Fenner, 11, 18.
 Yukon: Bostock, 6; Johnston, J. R., 2.
 Metamorphism and igneous action: Read, H. H., 1.
 Metasomatism: Anderson, G. E., 2.
 Meteor craters.
 Arizona: Barringer, 2; Bingham, W. F., 2; Blackwelder, 29; Boon, 7; Delenbaugh, 1; Spencer, L. J., 2, 4; Stutzer, 1, 2.
 Carolina Bays: Cooke, C. W., 13, 17; Johnson, 38; Melton, 10; Wylie, 5.
 General: Fairchild, 21; Nininger, 26.
 Meteorite craters and cryptovolcanic structures: Boon, 3.
 Meteorite scars, Carolina: Cooke, C. W., 13, 17; Johnson, D. W., 38.
 Meteoritic craters and structures: Albritton, 6; Boon, 5.
 Nördlinger Ries crater cf. Arizona: Stutzer, 2.
 Odessa, Tex.: Monnig, 1.
 Spanish Fork Canyon, Utah: Schneider, 5.
 Texas: Barringer, 1; Nininger, H. H., 2.

Meteorites.

- Adams County, Colo. : Nininger, 14.
 Age of : Buddhue, 28; Fisher, C., 1; Oepik, 1.
 American Mus. Nat. History coll. : Reeds, C. A., 15.
 Annual deposit on earth : Wylie, 9.
 Archie, Mo. : Haynes, 1; Nininger, 35, 43.
 Arizona, Meteor Crater : Boon, 7; Colvocoresses, 1; Fairchild, 6; Jakosky, 2; Lundberg, 10; Russell, H. N., 1; Wylie, 7.
 Prehistoric meteorite : Brady, L. F., 1.
 Athens, Ala. : Wylie, 6; Hampton, L. D., 1.
 Bacteria in meteorites : Farrell, 1; Lipman, 2, 3; Nininger, 22; Roy, 11, 14.
 Ballinger, Tex. : Nininger, H. H., 2.
 Bartlett, Tex. : Bullard, F. M., 6.
 Baxter, Mo. : Nininger, 46, 55.
 Beardsley, Kans. : Nininger, 19; Waldschmidt, 2.
 Bear Lodge, Wyo. : O'Hara, 8.
 Beenham, N. Mex. : Leard, 1.
 Bend, Ill. : Nicholas, H. W., 3; Wilson, B. H., 2.
 Bennet Co., S. Dak. : O'Hara, 9.
 Bibliography : Hamilton, S. H., 1; Leonard, F. C., 2.
 Brenham, Kans. : Nininger, 29.
 Bruno, Saskatchewan : Nininger, 37.
 Campbellsville, Ky. : Young, D. M., 1.
 Canyon Diablo, Ariz. : Brady, 15; Ksanda, 2; Nininger, 61.
 Cape York : Figgins, J. D., 1.
 Carbo, Mexico : Palache, 9.
 Carbon content : Buddhue, 8.
 Carolina Bays : Cooke, C. W., 13, 17; MacCarthy, 13; Prouty, 24, 25, 26.
 Casas Grandes, Mex. : Monnig, 4.
 Catalog of falls : Nininger, A. D., 2.
 Chemical composition, mean : Watson, F. G., Jr., 2.
 Cherokee Springs, S. C. : Perry, S. H., 1, 2.
 Chihuahua, Mex. : Nininger, 11.
 Clarion Co., Pa. : Stone, 14.
 Coe College coll. : Dillé, 1.
 Coldwater, Kans. : Nininger, H. H., 4, 6.
 Collections : Dillé, 1; Gordon, S. G., 1; Nininger, 41; Reeds, 15; Anonymous, 46.
 Composition : Merrill, 5; Nininger, 56.
 Continents, meteoric origin : Bartlam, 1.
 Contributions to sediments : Lane, 40.
 Cooldge, Kans. : Nininger, 53.
 Copper, free, in Greenland meteorite : Buddhue, 9.
 Cotesfield, Nebr. : Nininger, 21.
 Covert, Kans. : Nininger, 12.
 Craters and structures : Boon, 6; Nininger, 56-a.
 Cruz del Aire, Mex. : Heineman, 4.
 Deport, Tex. : Palache, 16.
 Depth, and Great Plains gradation : Nininger, 34.

Meteorites—Continued.

- Discoveries of, Aug. 1933-June 1937 : Nininger, A. D., 1.
 Distribution of : Penniston, 1.
 Double heating : Richardson, D. P., 2.
 Doubtful : Buddhue, 10.
 Duchesne, Utah : Nininger, H. H., 1.
 Elden, Ariz. : Brady, L. F., 3, 14.
 Estes Park, Colo. : Van Valkenberg, H. B., 1.
 Falls : Kban, 1; Nininger, A. D., 2; Nininger, 44; Smead, 1.
 Fayetteville, Ark. : Richardson, D. P., 1.
 Flagstaff, Ariz. : Brady, L. F., 2.
 Formation of craters : Wylie, 7.
 Frequency of falls : Fisher, W. J., 1.
 General : Chapman, E. W., 1; Fairchild, 21; Farrington, 2; Henderson, E. P., 13; Kunz, 2; Leonard, F. C., 1; Lucas, F. A., 1; Merrill, G. P., 1; Nininger, 20; Pruett, 1; Reeds, 10.
 Germanium and arsenic in : Papish, 2.
 Goose Lake, Calif. : Leonard, 6, 7, 8; Watson, F. G., Jr., 3.
 Grant, N. Mex. : Henderson, E. P., 7.
 Harding Co., N. Mex. : Wylie, 3.
 Haviland crater, Kans. : Nininger, 25, 51.
 Helt Township, Ind. : Perry, S. H., 5.
 How to recognize : Nininger, 31.
 Huizopa, Mex. : Nininger, 16.
 Impact : Boon, 2; Buddhue, 24, 26.
 Inclusions : Buddhue, 16.
 Institute for research on : Nininger, 33.
 Iron, age : Evans, R. D., 4; Urry, 10.
 Iron, composition : Brady, 14; Buddhue, 4, 7, 15, 20.
 Iron, never fused : Buddhue, 13.
 Kansas since 1925 : Nininger, 42.
 Lanton, Mo. : Cullison, 1.
 Maxaphi, Mex. : Wylie, 4.
 Melrose, N. Mex. : Nininger, 24, 28.
 Metallic etching, preserving : Nininger, 36.
 Meteor Crater, Ariz. : Barringer, 2; Bingham, W. F., 2; Blackwelder, 29; Boon, 7; Dellenbaugh, 1; Fairchild, 6; Spencer, L. J., 2, 4; Stutzer, 1, 2.
 Meteor Crater, Tex. : Barringer, 1.
 Meteor Crater bolide : Fairchild, 6.
 Meteor craters : Fairchild, 21; Nininger, 26.
 Meteoric and supposed craters : Boon, 5.
 Meteorite scars (?) N. C. and S. C. : Cooke, C. W., 13, 17; Johnson, 38; Melton, 10; Wylie, 5.
 Meteoritics, college courses in : Leonard, F. C., 5.
 Mexico : Haro, 1¹; Millerried, 23; Nininger, 9.
 Monahans, Tex. : Buddhue, 31; Nininger, 59.
 Moore Co., N. C. : Henderson, E. P., 10.
 Muroc, Calif. : Nininger, 48, 50.
 Nativitas, Mex. : Nininger, 10.
 Nature and significance : Palmer, C. S., 1.
 New England : Wigglesworth, 1.

Meteorites—Continued.

- Newport, Ark.: Nininger, 15.
 Nickel, weathering loss: Nininger, 52.
 Nininger coll.: Anonymous, 44.
 Nininger Lab. work: Gillespie, D., 1.
 Norfolk, Ark.: La Paz, 1; Nininger, 49.
 North America, distrib.: La Paz, 2.
 Occurrence in sed. rocks: Tarr, 7.
 Odessa, Tex.: Boon, J. D., 8; Nininger, 27.
 Ogallala, Nebr.: Nininger, 17.
 Oklahoma: Monnig, 3.
 Origin: Wimmer, 4; Wylie, 10.
 Osseo, Canada: Marble, 8.
 Oxidation: Buddhue, 30; Nininger, 8.
 Paint Creek, Ohio: Ver Steeg, 21.
 Paragould, Ark.: Wylie, 1.
 Pasamonte, N. Mex.: Foshag, 19; Nininger, 39, 45.
 Peck's Spring, Tex.: Merrill, G. P., 3.
 Pennsylvania: Smithsonian Inst., 2;
 Stone, 9, 15; Anonymous, 99.
 Philadelphia Acad. Sci. coll.: Gordon, S. G., 1.
 Piñon, N. Mex.: Nininger, 24, 57.
 Plantersville, Tex.: Lonsdale, 11.
 Platinum in: Hawley, F. G., 1.
 Pojoaque, N. Mex.: Brady, 4; Nininger, 23, 24.
 Portland, Oregon: Anonymous, 195.
 Protactinium in: Evans, R. D., 6.
 Puente del Zacate, Mex.: Nininger, 10.
 Quartz Mtn., Nev.: Gianella, 7.
 Rate of meteoric accretion: Watson, F. G., 4; Wylie, 8.
 Recovery of: Wilson, B. H., 4.
 Research progress: Leonard, F. C., 3.
 Rhyolite, Nev.: Dake, 10.
 Rock records of: Anonymous, 145.
 Rosebud, Tex.: Bullard, 5.
 Roy, N. Mex.: Heineman, 6; Nininger, 30.
 Salina, Utah: Perry, S. H., 6.
 Sandia Mts., N. Mex.: Nininger, H. H., 3.
 San Francisco Mts. Ariz.: Perry, S. H., 3.
 Sante Fe, N. Mex.: Henderson, E. P., 7.
 Savik, Greenland: Bøggild, 1.
 Scars in ancient rocks: Boon, 4.
 Seneca Township, Mich.: Perry, S. H., 7.
 Shallowater, Tex.: Foshag, 20.
 Showers of: La Paz, 3, 9.
 Siderites: Lauterbach, 1; Müllerried, 23.
 Sioux Co., Nebr.: Barbour, 29.
 Slicing and polishing: Ingalls, 2.
 Soper, Okla.: Wood, F. C., 3.
 Spectra: King, A. S., 1, 2, 3.
 Spectroscopic study: King, A. S., 3.
 Springwater, Saskatchewan: Nininger, 18.
 Structures, meteoric irons: Derge, 1, 2.
 Subsoil: Nininger, 58.
 Surface features: Nininger, 32, 40.
 Surfaces highly heated: Buddhue, 22.
 Survey: Nininger, 54.
 Tectites, meteoric glass: Oswald, 1.

Meteorites—Continued.

- Temperature of: Watson, F. G., Jr., 5.
 Terminology: Leonard, F. C., 4; Nininger, 38.
 Texas: King, R. H., 2-a; Monnig, 2.
 Tilden, Ill.: Crook, 4.
 Times of falls: Meeker, 1.
 Tlacotepec, Mex.: Nininger, 13.
 United States W.: Webb, R. W., 1.
 Varieties: Buddhue, 19.
 Washboul, Wash.: Nininger, 60; Pruett, 2, 4.
 Willamette, Idaho: Dake, 12.
 Willamette, Oreg.: Allen, A. R., 1; Pruett, 3.
 Willamette, Wash.: Wimmer, 1.
 Winona, Ariz.: Heineman, 1.
 Wood's Mtn., N. Car.: Perry, S. H., 4.
 Wyoming: Nininger, 47.
 Meteorodes, fm.: Nininger, 8.
 Methodology in geology: Keyes, 351; Price, G. M., 2.
 Mexico.
 Dislocations of the earth, consequences: Salazar Salinas, 5.
 Geological Survey: Salazar Salinas, 1.
 Geological Survey Annual Repts.: González, E. M., 2; Santillán, 8.
 Geology indispensable for mapping: Salazar Salinas, 2.
 Geology in war: González, E. M., 1.
 Lower Calif., magnetic phenomena: Schwinner, 1.
 Michigan Univ. expeditions: Kellum, 6.
 Sierra Madre de Chiapas: Waibel, 1.
 Areas described.
 Amatlan-Tepetzintla, Veracruz: Cummings, J. L., 3.
 Baja Calif.: Hisazumi, 3; Santillán, 5.
 Bequilla de Don Martin, Coahuila: Waltz, 2.
 Chihuahua, NW.: Brand, D. D., 1.
 Durango, State of: Santillán, 14.
 General: Sorre, 1.
 Lower Calif.: Hisazumi, 3; Santillán, 5.
 Melchor-Ocampo area: Imlay, 10.
 Mezquital Valley, Hidalgo: Blásquez, L., 1.
 Mountains, Coahuila Pen.: Kellum, 10.
 Nuevo Leon: Böse, 1.
 Salazar dist., Michoacán: Núñez, 1.
 San Ignacio, Sinaloa: Pastor, 1.
 Sierra de Parras, Coahuila: Imlay, 2, 4.
 Sonora: Flores, T., 1.
 Tepoztlan, Morelos: Ordóñez, 6.
 Zacualpan mining area: Ramos, R. R., 2.
 Economic geology.
 Asbestos: Flores, T., 3; García, 1.
 Asphalt: Müllerried, 15; Muñoz Lum-bier, 2.
 Bajada placers: Webber, B. N., 2.
 Bauxite: Dovalina, 2, 3.
 Beryllium: Santillán, 11.
 Beryl: Santillán, 11.

Mexico—Continued.

Economic geology—Continued.

- Caribbean region: Waters, 13.
 Chiapas: Müllerried, 5, 10.
 Clay: Barrera, 1; Cumming, 2; Santillán, 3.
 Coal, Hidalgo: Cumming, 4.
 Copper: Edelén, 1; Flores, 6, 7; Kelley, 3; Locke, 6; Perry, V. D., 2; Santillán, 11; Tenney, 5; Warren, H. V., 4.
 Cordillera and Caribbean region: Waters, 13.
 Correlations by Foraminifera: Nuttall, 5.
 Cusihiuiriarchic, Chihuahua: Donald, R. T., 1.
 Diatremes and ore-bearing pipes: Emons, W. H., 13.
 Dikes, veins, Alamo gold dist.: Moehlman, 4.
 Durango, State of: Santillán, 14.
 Durango-Mazatlan: Santillán, 1.
 El Limón, Guerrero: Santillán, 9.
 Eocene, N. E. Mex.: Kane, 2.
 Feldspars, Baja Calif.: Flores, 4.
 Fractures, Pachuca silver dist.: Wissner, 2.
 Garnets, Baja Calif.: Flores, 4.
 Geologic cross-secs., oil fields: Staub, 3.
 Geophysical prosp.: Waitz, 4.
 Geosynclines and petroleum: Villatoro, 1.
 Gold: Barrera, 5; Garrison, 1; Krieger, 3; Moehlman, 4; Salazar Salinas, 3.
 Guerrero: Santillán, 2, 4, 7.
 Gulf Coast oil fields: Barton and Sawtelle, 1.
 Gypsum, Guerrero: Santillán, 4.
 Hidalgo, Mezquitlan Valley: Blásquez L., 1.
 Huizúcar dist., Guerrero: Santillán, 7.
 Iron, Durango: Foshaag, 2.
 Lead: Fletcher, A. R., 1; Hayward, 1; Landenberger, 1.
 Lead and zinc dists.: Sminnov, 1.
 Limestones: Kellum, 14; Muir, J. M., 1.
 Los Lamentos mines, Chihuahua: Foshaag, 12.
 Mezquitlan Valley, Hidalgo: Blásquez, L., 1.
 Mica, Baja Calif.: Flores, T., 4.
 Micropaleontology: Barker, 2.
 Mineral deposits: Flores, 6.
 Mineral res.: Barrera, 25; Flores, T., 2; Gonzáles, J., 1; Juárez, 1; Landero, 2; Santillán, 13.
 Mineral zones, Jalisco, Nayarit: Barrera, 2.
 Mining geology, Sonora: Perry, V. D., 1.
 Natural gas in oil fields: Muir, J. M., 2; Ordóñez, 2.
 Oil fields and poss.: Barton and Sawtelle, 1; Díaz Lozano, 2; Müllerried, 10; Ortega, 1; Santillán, 5; Stipp, 1; Tatum, J. L., 2.
 Oil with lg. rocks: De Golyer, 5.

Mexico—Continued.

Economic geology—Continued.

- Ore deposits: Bastin, 13; Schmitt, H., 5.
 Outcrops of ore shoots: Schmitt, H., 11.
 Pachuca area: Hulin, 4; Santillán, 6.
 Parral area, Chihuahua: Schmitt, H., 2.
 Petroleum: Alvarez, 1; Barton and Sawtelle, 1; Brunet, 1; Cumming, 1; De Golyer, 5; Díaz Lozano, 4, 5; Hisazumi, 1, 2; Kane, 3; Müllerried, 1; Muir, J. M., 4; Muñoz Lumbier, 4; Ordóñez, 2; Parades, 1; Villatoro, 1; Vivar, 1; Zevada Baldebenebro, 1.
 Petroleum industry, history: Baez, 1.
 Phosphate: Dóvalina, 1.
 Pilares pipe, Sonora, origin: Smythe, 1.
 Placers: Barrera, 5.
 Platinum: Santillán, 12.
 Poza Rica dist., Veracruz: Villatoro, 2.
 Providence dist., Guanajuato: Villafañá, 1.
 Quicksilver: Franks, 1; Schuette, C. N., 1; Vaupell, 1.
 Sand: Cumming, 2; Santillán, 3.
 Secondary enrichment at Cananea: Elsing, 1.
 Silver: Fletcher, A. R., 1; Krieger, 6, 7; Landenberger, 1; Warren, H. V., 4; Wissner, 2.
 Sulfur: Barrera, 3.
 Tampico region: Kellum, 11; Keyes, 354; Muir, J. M., 3, 5; Plummer, H. J., 11.
 Tampico-Túzpan oil field: Muir, J. M., 5.
 Taxco mining dist.: Bonillas, 3.
 Tepezala vein deposits: Wandke, 2.
 Tin: MacCoy, 1.
 Tlacolulan, Veracruz: Flores, 10.
 Tourmalines, Baja Calif.: Flores, 4.
 Uraninite, Chihuahua: Krieger, 3.
 Water with oil deposits: Larralde, 1.
 Zacualpan mining area: Ramos, R. R., 2.
 Zinc, Tezuitlan: Edelén, 1.
 Zoning, Sierra Mojada ore-body: Riley, L. B., 1.
Historical geology.
 Acatita, Coahuila: Kelly, W. A., 7.
 Agueguexite fm., Veracruz: Thalmann, 8.
 Ammonites: Imlay, 8, 11.
 Angostura de Teras: Arnold, R. 2.
 Aranjuez area: González, J., 1.
 Arkose deposits in humid tropics: Krynlne, 1.
 Atocay canyon, Balcón del Diablo: Waitz, 6.
 Baja Calif.: Anderson, F. M., 9; Flores, 5; Locke, 6; Manger, 1; Vivar, 3.
 Beryl and berillium area: Santillán, 11.
 Boleo copper area, Baja Calif.: Locke, 6.
 Border region: Hill, 8.
 Cananea Mts., Sonora: Valentine, W. G., 1.
 Canyon of Texcalatlaco: Waitz, 8.
 Caribbean area: Waters, 13.

Mexico—Continued.

Historical geology—Continued.

- Chiapas: Müllerried, 5.
 Coahuila Pen.: Kellum, 10; Kelly, W. A., 7, 10; King, P. B., 25; King, R. E., 4; Singewald, Q. D., 12.
 Coastal zone, Veracruz: Gibson, J. B., 1.
 Comales, Veracruz: Villatoro, J. A., 2.
 Cordillera region: Baker, C. L., 5; Waters, A. C., 13.
 Correlations: Dorr, 2; Imlay, 5; Keller, B. M., 1; Nuttall, 5.
 Cretaceous: Anderson, F. M., 9; Burckhardt, 2; Imlay, 7; Keller, B. M., 1; Keyes, 259.
 Cusiuhuirachic, Chihuahua: Donald, R. T., 1.
 Diastrophism, plutonism, pre-Tert.: Woodford, 8.
 Durango, State of: Santillán, 1, 14.
 El Palmito dam site, Durango: Perera Castillo, 1.
 Eocene, NE. Mex.: Kane, 1, 2.
 Fauna, Taraises fm.: Imlay, 5.
 Foraminifera, correls. by: Nuttall, 5.
 General: Sánchez, 9; Santillán, 13, 15, 16; Sorre, 1.
 Geologic cross-sec., oil fields: Díaz Lozano, 1; Staub, 3.
 Geologic names lexicon: Wilmarth, 2.
 Guadalajara Prov.: Díaz, 1.
 Guayabal fm.: Dorr, 1.
 Guerrero: Santillán, 2.
 Hydrology of river basins: Hernandez, 1.
 Isthmus of Tehuantepec: Baker, C. L., 6.
 Julian region: Donnelly, 1.
 Jurassic: Burckhardt, 2; Imlay, 11; Noé, 15.
 Laguna de Mayran, Cret.: Imlay, 7.
 Las Delicias area: Kelly, W. A., 7.
 Lower Calif.: Anderson, F. M., 9; Flores, 5; Locke, 6; Manger, 1; Vivar, 3.
 Mapimí dist.: Singewald, Q. D., 8.
 Melchor Ocampo region: Imlay, 9, 10.
 Mexico-Mediterranean orogenic zone: Staub, 4.
 Mesozoic: Burckhardt, 1.
 Mezquital Valley: Blásquez L., 1, 3, 4; Müllerried, 34.
 Mountains, Coahuila Pen.: Kellum, 10; Kelly, W. A., 10.
 Northeastern Mexico: Staub, 1; Tatum, J. L., 1.
 Northeastern Mex. oil field: Tatum, J. L., 2.
 Ore deposits, San Carlos Mts.: Bastin, 13.
 Pachuca area: Hulin, 4.
 Paleogeography, N. W. Mex.: Kellum, 7.
 Papantla, Veracruz: Muñoz Lambier, 3; Thalmann, 10.
 Parral area, Chihuahua: Schmitt, H., 2.
 Permian, Coahuila: Miller, 37.
 Petroleum: Díaz Lozano, 4, 5.
 Pleistocene coral lms.: Wittich, 1.
 Pre-Tertiary, Chiapas: Müllerried, 25.
 Road logs, geol.: San Antonio G. S., 1; Tatum, 3.

Mexico—Continued.

Historical geology—Continued.

- San Carlos Mts.: Bastin, 13; Bayley, 8; Kellum, 3, 13; King, P. B., 26; Moore, 45.
 San Quintin Bay, Baja Calif.: Manger, G. E., 1.
 Sierra de Cruillas, Tamaulipas: Imlay, 3.
 Sierra de Jimulco, Coahuila: Kellum, 4.
 Sierra de la Peña, Coahuila: Jones, T. S., 1.
 Sierra del Rosario: Kellum, 5, 8.
 Sierra de Parras, Coahuila: Imlay, 2, 4.
 Sierra Madre del Sur: Schürmann, 1.
 Sierra Madre Occidental: King, R. E., 6.
 Sierra San Pedro Mártir: Harriss, 1; Woodford, 6.
 Sinaloa, N.: Hisazumi, 2.
 Sonora: Imlay, 12; Keller, W. T., 1; King, R. E., 5; Taliaferro, 7.
 Symposium: Levorsen, 8.
 Tamaulipas S.: Müllerried, 1.
 Tampico region: Kellum, 1, 11, 12; Keyes, 354; Lilley, E. R., 2; Muir, 3, 5; Plummer, H. J., 11; Thalmann, 7, 9; Ver Wiebe, 15; White, M. P., 5.
 Tampico-Tuxpan oil field: Muir, 5.
 Taraises fm.: Imlay, 5, 8.
 Taxco mining dist.: Bonillas, 3.
 Tecocomulco Valley: Vivar, 2.
 Tehuacan, Puebla: Müllerried, 16.
 Tertiary, N. E. Mex.: Warner, J. L., 1.
 Tlacolulan, Veracruz: Flores, 10.
 Tuxpan fm., Veracruz: Thalmann, 10.
 Tuxpan-Misantla area: Hisazumi, 1.
 Ucareá area: Hernandez, 3.
 Uncanformities, Tampico area: Thalmann, 9.
 Valley of Morelia, Michoacán: Hernandez, 2.
 Velasco fm., Tampico area: Thalmann, 9.
 Velasco-Mendez contact, Ebano field: Morgan, H. J., Jr., 1.
Mineralogy.
 Aranjuez minerals: González, J., 1.
 Beryl: Santillán, 11.
 Beryllium: Santillán, 11.
 Carbo iron meteorite: Palache, 9.
 Casas Grandes meteorite: Monnig, 4.
 Cerro Mercado, Durango: Foshag, 2.
 Chihuahua meteorite: Nininger, 11.
 Cruz del Aire meteorite: Heineman, 4.
 Dikes, veins, Alamo gold dist.: Moehlman, 4.
 Durango, State of: Santillán, 14.
 Garnets, Morelos: McConnell, 1.
 General: Foshag, 8.
 Huizopa meteorite: Nininger, 16.
 Johannsenite, Puebla: Schaller, 24.
 Lead and zinc dists.: Sminnov, 1.
 Livingstonite, Guerrero: Richmond, W. E., Jr., 2.
 Mazapil meteorite: Wylie, 4.
 Melchor-Ocampo area: Imlay, 10.
 Meteorites: Haro, 1; Müllerried, 23; Nininger, 9, 10.

Mexico—Continued.

Mineralogy—Continued.

Mezquital Valley, Hidalgo: Blásquez L.,
1; Flores, 9; Lozano García, 1.

Mineral collecting and locs.: Stewart, W.
O., 1, 2, 3.

Mineralogical inv.: Fosbag, 13.

Minerals: Landero, 2.

Outcrops of ore shoots: Schmitt, 11.

Silicates, Baja Calif.: Flores, 8.

Silver and gold-silver ores: Krieger, 7, 9.

Sphalerite, Sonora: Leonard, R. J., 1.

Strontianite: Krieger, 5.

Tampico area: Thomas, J. S., 1.

Tlacotepec: Nüniger, 13.

Uraninite, Chihuahua: Wells, R. C., 4.

Veins, La Esmeralda mine: Schmitter, 1.

Zacualpan mining area: Ramos, R. R., 2.

Paleontology.

Actinosiphon, Foraminifera: Vaughan, 5.

Aistopoda, Carb., Gymnophiona ances-
tors: Müllerried, 32.

Ammonites: Adkins, 7; Imlay, 11; Mil-
ler, 37.

Annelida: Gardner, 16.

Aturias, Tert.: Miller, 36.

Badger, Pliocene: Drescher, A. B., 1.

Barrettia, Cret.: Müllerried, 33.

Batrachians, Pliocene: Taylor, E. H., 2.

Biradiolites, Cret.: Müllerried, 31.

Brachiopoda, Tert.: Cole, W. S., 2.

Caecum, growth stages: Collins, R. L., 5.

Camerina petri is Numulites striatoretic-
culatus: Barker, 5.

Cardium, Cret.: Müllerried, 18.

Cephalopoda, Cret.: Renz, 1.

Chiapasella: Müllerried, 8.

Conrad's type fossil locs.: Keyes, 309.

Corrallochama: Müllerried, 11.

Crustaceans: Rathbun, 3.

Decapod crustaceans: Rathbun, 3.

Discocyclina, Eocene: Vaughan, T. W., 4.

Echinodermata, Cret.: Lambert, J. 4.

Echinoidea: Israelsky, 3; Jackson, R. T.,
3; Lambert, J., 5; Müllerried, 22.

Elephant, Pliocene: Müllerried, 17.

Faunas, Mesozoic: Kellum, 9.

Faunas, Pleist.: Grant, 11; Jordan, 1;
Schuchert, 45.

Fish, Tert.: Leriche, 2.

Foraminifera: Barker, 2, 3, 4, 6; Cabo

Rodríguez, 1; Cole, W. S., 3; Cush-

man, 1, 29; Dunbar, 11, 19; Gallo-

way, J. J., 4; Garrett, J. B., Jr., 2;

Nuttall, 1, 2, 3; Thalmann, 1, 2, 6,

11; Vaughan, 6, 25, 28; White,

M. P., 1.

Fossil bed, Mexico City: Díaz Lozano, 3.

Fossils, Tlacolulan, Veracruz: Müller-
ried, 29.

Fusulinidae, Sonora: Dunbar, 19.

Gastropoda: Gardner, J. A., 7, 16.

Hantkenina: Thalmann, 2.

Hippuritidae: Müllerried, 2, 3, 9.

Invertebrata, Cret.: Imlay, 6.

Jurassic: Jaworski, 1; Noé, 15.

Mexico—Continued.

Paleontology—Continued.

Laguna de Mayran, Cret.: Imlay, 7.

Lantera lanteri: Jeannot, 8.

Lepidocyclina: Thalmann, 6; Vaughan,
25.

Limestone, milloid: Kellum, 14.

Marginulina, Tert.: Garrett, 2.

Mezquital Valley: Blásquez L., 1;

Müllerried, 28, 34.

Microfossiliferous zones, Eocene-Olig.:
Harris, 9.

Micropaleontology: Barker, 2.

Miocene diatomite: Hertlein, 6.

Mioegypsinia, Tert.: Nuttall, 3; Thal-
mann, 1.

Mollusca: Anderson, F. M., 9; Hertlein,
8; Palmer, R. H., 4.

Mosasaur: Mehl, 4; Müllerried, 7.

Myelodon harlani: Müllerried, 21.

Notolagus, Pliocene: Wilson, R. W., 17.

Operculina, Operculinoides: Vaughan, 28.

Orbitocyclina: Vaughan, 6.

Pachydonts: Müllerried, 13.

Parafusulina, Perm.: Dunbar, 11.

Pelecypoda, Cret.: Müllerried, 20.

Pisces, Tert.: Leriche, 2.

Plagiolyptichus, Cret.: Müllerried, 4.

Pliocene fauna, Baja Calif.: Hertlein, 6.

Psammodulus, Tert.: Collins, R. E. L., 3.

Rudistids: Adkins, 2; Palmer, R. H., 1.

San Carlos Mts.: Kellum, 13; Moore, 45.

San Quintin Bay fauna: Manger, 1.

Scytinoptera, Perm.: Carpenter, 19.

Sierra de Cruillas: Imlay, 3.

Sierra de la Peña: Jones, T. S., 1.

Sierra Madre Occidental: King, R. E., 6.

Sirenian, Chiapas: Müllerried, 10.

Tehuacan, Puebla: Müllerried, 16.

Tertiary, Great Basin: Axelrod, 6.

Tlacolulan, Veracruz: Flores, 10.

Triplalepidina, Eocene: Vaughan, 36.

Uvigerina, Eocene: Cushman, 1.

Valvulinidae: Cushman, 29.

Verneulinidae: Cushman, 29.

Virgulinidae: Cushman, 29.

Petrology.

Baja Calif.: Hirschi, 2.

Cananea Mts., Sonora: Valentine, W. G.,
1.

Coahuila Pen.: Singewald, Q. D., 12.

Concretions, Mt. Signal, Baja Calif.:
Garner, 1.

Guadalupe Province: Díaz, 1.

Lower Calif.: Hirschi, 2.

Mezquital Valley, Hidalgo: Blásquez L.,
3.

Outcrops of ore shoots: Schmitt, 11.

Pilares Pipe, Sonora: Smithe, 1.

Radioactivity, eruptive rocks, Baja
Calif.: Hirschi, 1.

San Carlos Mts.: Watson, 9.

Sediments, Gulf of Calif.: Revelle, 4.

Sierra de Cruillas, Tamaulipas: Imlay, 3.

Sierra de la Peña: Jones, T. S., 1.

Sierra Madre de Chiapas: Waibel, 1.

Mexico—Continued.

Petrology—Continued.

- Sierra Madre del Sur : Schürmann, 1.
 Sierra San Pedro Mártir : Woodford, 6.
 Silicates, Baja Calif. : Flores, 8.
 Sonora : Hirschi, 5; Imlay, 12.
 Teschenite sills : Watson, E. D., 5.
 Ucareo area : Hernandez, 3.
 Veins, La Esmeralda mine : Schmitter, 1.
 Volcanic rocks : Burri, 1.

Physical geology.

- Acapulco Bay : Sánchez, 2, 4.
 Angostura de Teras Dam : Arnold, R., 2.
 Aranjuez area : González, J., 1.
 Axis, volcanic mts. : Sánchez, 6.
 Border region : Hill, 8.
 Cananea Mts., Sonora : Valentine, W. G., 1.
 Caribbean region : Waters, 13.
 Cave pearls, origin : Davidson, 1.
 Chicón Volcano, Chiapas : Müllerried, 12, 19, 26.
 Coahuila Pen. : Kellum, 10; Singewald, Q. D., 12.
 Colima Volcano : Waitz, 5; Zehle, 1.
 Colorado delta : Fox, C. K., 1.
 Cordilleran area : Baker, C. L., 5; Waters, 13.
 Cusiuhuiriacic, Chihuahua : Donald, R. T., 1.
 Diastrophism, pre-Tert. : Woodford, 8.
 Dislocations of the earth : Salazar Salinas, 5.
 Earthquakes : Lacoste, 1; Muñoz, 1; Robertson, F., 5, 6; Salazar Salinas, 6, 7; Sánchez, 8.
 El Bernal de Horcasitas : Heim, 1.
 El Chicón, Yucatan : Müllerried, 12, 19, 26.
 El Palmito dam site : Perera Castillo, 1.
 Eocene, NW. Mexico : Kane, 2.
 Fractures, Pachuca silver dist. : Wisser, 2.
 General : Sánchez, 9; Sorre, 1.
 Geysers, Iztlan : Salazar Salinas, 4.
 Guadalajara Province : Díaz, 1.
 Isostasy and earthquakes : Sánchez, 8.
 Karst topography : Wittich, 3.
 Laguna de Mayran, Cret. : Imlay, 7.
 Lava caves : Wittich, 3.
 Melchor-Ocampo area : Imlay, 10.
 Mexico-Mediterranean orogenic zone : Staub, 4.
 Mountain windows and nat. bridges : Wittich, 2.
 Mountains, Coahuila Pen. : Kellum, 10; Kelly, W. A., 10.
 Oaxaca earthquake : Ordóñez, 1.
 Ore deposits, San Carlos Mts. : Bastin, 13.
 Pillarez copper mine : Tenney, 5.
 Pre-Tert., Chiapas : Müllerried, 25.
 San Antón area, Morelos : Ordóñez, 5.
 San Carlos Mts. : Bastin, 13; Kellum, 13; King, 26; Moore, 45; Watson, 9.
 Seismic activity, 1932 : Ordóñez, 3.
 Sierra de Cruillas : Imlay, 3.

Mexico—Continued.

Physical geology—Continued.

- Sierra de la Peña, Coahuila : Jones, T. S., 1.
 Sierra de Parras, Coahuila : Imlay, 2, 3.
 Sierra Madre Occidental : King, R. E., 6.
 Sierra San Pedro Mártir : Woodford, 6.
 Sonora : Hirschi, 5; Imlay, 12.
 Structural features : Baker, C. L., 8.
 Tampico region : White, M. P., 5.
 Tepoztlan, Morelos : Ordóñez, 6.
 Unconformities, Tampico : White, M. P., 5.
 Volcanism, recent : Ives, 2.
 Volcanoes, extinct : Coleman, 8.

Physiographic geology.

- Angostura de Teras Dam : Arnold, R., 2.
 Atoyac Canyon, Balcón del Diablo : Waitz, 6.
 Border region : Hill, 8.
 Canyon of Texcalatlaco : Waitz, 8.
 Chihuahua : Brand, D. D., 1.
 Coahuila Pen. : Kellum, 10; Porter, W. W., II, 2, 4.
 Coastal zone, Veracruz : Gibson, J. B., 1.
 Colima Volcano : Friedlaender, I., 1.
 Colorado River delta : Fox, C. K., 1; Kniffen, 1; Lougee, 6; McKee, 14; Sykes, 1, 2, 3.
 Desert floods, Sonoyta Valley : Ives, 5.
 Flords, possibility of : Sánchez, 1.
 General : Baker, C. L., 20; Sánchez, 4, 9; Santillán, 15, 16; Sorre, 1.
 Glacial geology : Jaeger, 1.
 Karst topography : Wittich, 3.
 Laguna de Mayran, Cret. : Imlay, 7.
 Lava caves : Wittich, 3.
 Mezquital Valley, Hidalgo : Blásquez, L., 1, 2, 3.
 Mountain windows and nat. bridges : Wittich, 2.
 Mountains, Coahuila Pen. : Kellum, 10.
 Natural regions : Baker, C. L., 9.
 Orizaba Volcano : Friedlaender, I., 1.
 Paleogeography, NW. Mex. : Kellum, 7.
 Physiographic provs. : Ordóñez, 4.
 Plateau : Weymuller, 1.
 Rio Grande Delta : Price, W. A., 18.
 San Antón area, Morelos : Ordóñez, 5.
 San Carlos Mts. : Kellum, 13.
 San Pedro area, Chihuahua : Waitz, 1.
 Sierra Madre fault zone : Hill, R. T., 4.
 Sierra Madre Occidental : King, R. E., 6.
 Sonora : Imlay, 12.
 Structural features : Baker, C. L., 8.
 Tehuantepec River : Waitz, 7.
 Tepoztlan, Morelos : Ordóñez, 6.
 Tequila Volcano : Friedlaender, I., 1.
 Tlacolulan, Veracruz : Flores, 10.
 Volcanoes, extinct, and glaciation : Coleman, 8.
- Underground water.*
 Baja California : Vivar, 3.
 Hydrology of river basins : Hernandez, 1

Mexico—Continued.

Underground water—Continued.

- Mezquital Valley: Blásquez L., 1; Oritz Mena, 1.
 Sierra Madre Oriental: Dicken, 3.
 Ucareo area: Hernandez, 3.
 Valley of Morelia: Hernandez, 2.
 Water with oil deposits: Larralde, 1.

Mica.

- Argillaceous sediments with: Grim, 10.
 Arkansas, taeniolite: Miser, 15.
 Asterism: Jones, F. T., 1.
 British Columbia: Baker, J. M., 1.
 Canada: Spence, 3.
 Columbia River Basin: Landes, H., 1.
 General: Rowley, D. B., 2.
 Inclusions: Frondel, 14.
 Industrial minerals and rocks: A. I. M. E., 2.
 Mexico, Baja Calif.: Flores, 8.
 New Hampshire: Burbank, B. B., 2;
 Fowler-Lunn, 1; Megathlin, 1.
 New Mexico: Just, 3.
 New York: Frondel, 12.
 North Carolina: Bryson, 7-a; Greaves-Walker, 2; Hornbeck, 1.
 Nova Scotia: Messervey, 18.
 Ontario, phlogopite: Wilson, M. E., 18.
 Polymorphism: Hendricks, S. B., 6.
 Quebec: Meen, 7; Wilson, M. E., 18.
 South Dakota: S. Dak. Plann. Bd., 2;
 Tullis, 7.
 Virginia: Brown, C. B., 3; Pegau, 4.

Michigan.

- Bibliography of geology: Stewart D., Jr., 4.
 Climate changes, pedologic evidence: Veatch, J. O., 1.
 Earth resistivity measurements, Lake Superior area: Hotchkiss, W. O., 2.
 Geothermal measurements, copper dist.: Fisher, J., 2.
 Magnetic vector study: Jenny, 6.
 Pebble, varved glacial: Brigham, E. M., 1.

Areas described.

- High Plains: Davis, C. M., 1.
 Toivola-Challenge mine area: Lamey, 8.

Economic geology.

- Allegan Co.: Newcombe, 14; Riggs, C. H., 2.
 Arenac Co.: Pringle, 1.
 Arsenic in native copper: Broderick, 3; Schwartz, 23.
 Bitumen in Nonesuch fm.: Carlson, C. G., 3.
 Bituminous lms., ss., porosity: Utterback, D. D., 1.
 Clare Co. field: Newcombe, 13.
 Copper arsenides: Schwartz, 23.
 Copper deposits: Broderick, T. M., 2, 3, 4, 5, 7, 10; Butler; B. S., 1;
 Calumet & Hecla Con. Copper Co., 1; Eddy, G. E., 2; Fisher, J., 1.
 Crystal oil field: Eddy, G. E., 1.

Michigan—Continued.

Economic geology—Continued.

- Field work, Huronian, Keweenawan areas: Pardee, F. G., 1.
 Gas sands, Missn.: Hard, E. W., 2.
 Geothermal measurements, copper dist.: Fisher, J., 3; Kraskovsky, 1.
 Gogebic iron dist.: Atwater, 3, 5.
 Gold mine, Ropes: Broderick, 12.
 Gypsum, Grand Rapids: Mathews, A. A., 1.
 Hart oil field: Riggs, C. H., 1.
 Hematite: Eaton, L., 1; Gruner, 8.
 Huronian: Dickey, R. M., 2.
 Iron ores, Lake Superior dist.: Broderick, 6, 8; Gruner, 8, 28; Lake Superior Iron Ore Assoc., 1; Leith, C. K., 2, 10; Rama Rao, B., 1; Royce, 2, 5; Swanson, 5.
 Lake Superior mineral area: Broderick, 6, 8; Fisher, J., 1; Gruner, 8; Hotchkiss, 4; Kraskovsky, 1; Lake Superior Iron Ore Assoc., 1; Leith, C. K., 2, 10; Mich. Acad. Sci., 3; Rama Rao, B., 1; Royce, 2, 5.
 Lavas, Keweenawan: Broderick, 9.
 Magnetic data used in copper and iron ranges: Seaman, W. A., 1; Stratton, 1; Swanson, C. O., 2, 3.
 Marquette Range: Derby, 1; Swanson, 1; Zinn, 1.
 Martite: Wienert, 1.
 Menominee Range area: Dutton, 5; Stratton, 1.
 Michigan Basin: Newcombe, 2, 12; Smith, R. A., 1.
 Microline, native copper: Klein, 1.
 Mineral products: Osgood, 2.
 Molding sands: Brown, G. G., 1.
 Muskegon oil field: Newcombe, 5.
 Natural gas fields: Hake, 6; Newcombe, 6, 7, 9.
 Natural gas reserves: Rawlins, 1; Wasson, T., 2.
 Negaunee iron fm.: Adler, 6.
 Nonmetallic min. res.: Poindexter, 1.
 Ogemaw oil field: Newman, E. A., 1.
 Oil fields: Carlson, C. G., 1; Eddy, G. E., 1; Hake, 6; Newcombe, 5, 7; Newman, E. A., 1, 2; Osgood, 1; Riggs, C. H., 1; Zavolca, 5.
 Oxidation, deep: Moore, E. S., 21.
 Petroleum: Carlson, C. G., 1; Eddy, G. E., 1; Hake, 6; Kirkham, 15; Newcombe, 5, 7, 8; Newman, E. A., 1, 2; Osgood, 1; Riggs, C. H., 1; Zavolca, 5.
 Ropes gold mine: Broderick, 12.
 Saginaw oil field: Carlson, C. G., 1.
 Salt: Exworthy, 1; Poindexter, 5.
 Spore coal: Bergquist, 11.
 Structure, Michigan Basin: Newcombe, 2, 12.
 Toivola-Challenge mine area: Lamey, 8.
 West Branch oil field: Newman, E. A., 1.
 Zoning, copper deposits: Hoffman, R. D., 1.

Michigan—Continued.

Historical geology.

- Alger Co.: Bergquist, 9.
 Allegan Co.: Newcombe, 14; Riggs, C. H., 2.
 Arenac Co.: Pringle, 1.
 Black River and Trenton rocks: Hussey, 1.
 Cambrian-Ozarkian, Alger Co.: Bergquist, 9.
 Clare County field: Newcombe, 13.
 Copper range: Broderick, 7.
 Correlating geol. markers: Newcombe, 1.
 Correlations by graptolites: Decker, 14.
 Cranbrook area: Stanley, G. M., 1.
 Crystal oil field: Eddy, G. E., 1.
 Detroit River ser.: Warthin, 11; Wellman, 1.
 Devonian: Newcombe, 4.
 Dundee fm.: Bassett, 1; Wellman, 1.
 Erosional record, Grand Lodge, Penn.: Kelly, W. A., 4.
 Ford River granite: Dickey, R. M., 3.
 Gas sands, Missn.: Hard, E. W., 2.
 General: Folger, 4; Kans. G. Soc., 8.
 Geologic map, centennial: Hake, 4.
 Gogebic iron dist.: Atwater, 3, 5.
 Grand Ledge: Kelly, W. A., 1, 4, 5.
 Grand Sable dunes: Bergquist, 7.
 Granites, sequence, Upper Mich.: Dickey, R. M., 1.
 Gypsum deposits: Mathews, A. A., 1.
 Hamilton correl.: Warthin, 7.
 Hart oil field: Riggs, C. H., 1.
 Huronian: Dickey, R. M., 2; Zinn, 2.
 Iron deposits, Lake Superior dist.: Lake Superior Iron Ore Assoc., 1; Royce, 2, 5.
 Lake Superior iron dist.: Lake Superior Iron Ore Assoc., 1; Royce, 2, 5.
 Manistique drainage area: Bergquist, 8.
 Marshall fm.: Kirkham, 13; Thomas, W. A., 1.
 Menominee Range area: Dutton, 2, 5.
 Michigan Basin: Newcombe, 12; Pirtle, 1; Smith, R. A., 1.
 Muskegon oil fields: Newcombe, 5.
 Natural gas fields: Newcombe, 7, 9.
 Natural gas reserves: Rawlins, 1.
 Negaunee iron fm.: Adler, 6.
 Northern Peninsula centennial g. map: Martin, H. M., 3.
 Ogemaw Co.: Newman, E. A., 1.
 Oil fields: Newcombe, 7; Zavoica, 5.
 Ordovician: Newcombe, 11.
 Palmer gneiss: Lamey, 5, 6.
 Pennsylvanian: Kelly, W. A., 1, 4, 5, 8; Newcombe, 11.
 Petroleum and gas, geol. occurrence: Hake, 6.
 Pleistocene: Newcombe, 11.
 Port Huron moraines: Taylor, 13.
 Pre-Cambrian, Lake Superior dist.: Becker, H., 2; Rama Rao, B., 1.
 Republic granite: Lamey, 2, 4, 7.
 Rogers City lms.: Ehlers, 5.

Michigan—Continued.

Historical geology—Continued.

- Saginaw fm.: Kelly, W. A., 2.
 Salt-bearing rocks: Newcombe, 3.
 7th Ann. Field Excursion: Anonymous, 118.
 Silurian, Mich. Basin: Cumings, 6.
 Southern Mich.: Lane, 7.
 Southern Peninsula: Mich. Acad. Sci., 1.
 Tahquamenon drainage area: Bergquist, 8.
 Traverse group: Hake, 5; Kirkham, 12; Pohl, 4; Warthin, 8.
 Trenton and Black River rocks: Hussey, 1.
 Unconformities: Kirkham, 12, 13.
 Upper Peninsula: Thwaites, 4.
 Whittlesey Beach decline: Stanley, G. M., 2.

Mineralogy.

- Chlorastrolite: Dustin, 3.
 Copper region: Eddy, G. E., 2; Spiroff, 2.
 Feldspar, Mt. Morris: Stewart, D., Jr., 3.
 Fluorite, Monroe fm.: Fitzgerald, 1.
 Garnets: Alessi, 4.
 Gems, Isle Royal: Dustin, 1.
 Glauconite, Hermansville fm.: Bergquist, 1.
 Gold mine, Ropes: Broderick, 12.
 Grunerite: Richarz, 5.
 Halite: Slawson, 9; Spiroff, 1.
 Ishpeming area: Ales, 3.
 Magnesiosussexite: Gruner, 14.
 Marshall fm.: Stearns, N. D., 2.
 Menominee range area: Dutton, 5.
 Microlite, native copper: Klein, 1.
 Northern Mich.: Ayres, 2.
 Pre-Cambrian, Lake Superior: Tyler, 4.
 Radium, Keweenaw basalt: Urry, 1.
 Rocks and minerals: Poindexter, 4.
 Seamanite: Kraus, 3.
 Seneca Tp. meteorite: Perry, S. H., 7.
 Serpentine: Alessi, 1.
 Sussexite: Slawson, 4.
 Toivola-Challenge mine area: Lamey, 8.
 Tourmaline: Alty, 1, 2, 3; Slawson, 6.

Paleontology.

- Antrim sh. flora: Clark, I. M., 1.
 Arthrodira, Dev.: Case, E. C., 1.
 Atrypa: Fenton, C. L., 5.
 Aulopora, Dev.: Fenton, M. A., 8, 9.
 Brachiopoda: Ehlers, 3.
 Bryozoa: Duncan, H. M., 2; Fenton, M. A., 8; McNair, 2.
 Casteroides: Cabn, 3; Engels, 1.
 Carboniferous fossils in coal pebbles: Bartlett, H. H., 1.
 Cephalopoda, Ord.: Foerste, 18.
 Coal basin flora: Arnold, 11.
 Corals: Fenton, M. A., 8; Sloss, 2.
 Cordaitan wood, Penn.: Arnold, 5.
 Cylandrophyllyum: Ehlers, 2.
 Dundee lms.: Bassett, 1.

Michigan—Continued.

Paleontology—Continued.

- Elephas, Cass Co.: Case, 15.
- Fenestellidae, Dev.: Deiss, 2.
- Flora, Antrim sh.: Clark, I. M., 1.
- Flora, coal basin: Arnold, 11.
- Graptolites: Ehlers, 1.
- Gypidula: Imlay, 1.
- Lepidophyte cone: Arnold, C. A., 4.
- Mastodon: Case, 18.
- Mollusca, Penn.: Kelly, W. A., 6.
- Nephriticerina: Foerste, 11.
- Ostracoda: Van Pelt, 1; Warthin, 6.
- Paleobotanical studies: Arnold, 30.
- Pennsylvanian: Kelly, W. A., 1, 8.
- Pollen analysis, bogs: Houdek, 2; Osvald, 1.
- Pollen showing forest succession: Potzger, 1.
- Postglacial vegetation, Lake Michigan area: Fuller, G. D., 1.
- Reefs, stromatoporoid: Fenton, M. A., 1, 4.
- Scolecodonts, Dev.: Eller, 15.
- Sphenopterid fructification: Arnold, 9.
- Spore coal: Bergquist, 11.
- Stromatoporoid reef: Fenton, M. A., 1, 4.
- Trepotomata; Dev.: Duncan, H. M., 1, 2.

Petrology.

- Bayport chert: Dustin, 2.
- Beach sands, S. Mich.: Pettijohn, 2.
- Detroit River fm. insoluble residues: Wellman, 1.
- Devonian: Eddy, G. F., 1.
- Dikes, Marquette: Ayres, 1.
- Dundee fm., insoluble residues: Wellman, 1.
- Ford River granite: Dickey, R. M., 3.
- Gogebic iron dist.: Atwater, 5.
- Granite-slate contact, Ramsey: Dickey, R. M., 5.
- Grünerite: Richarz, 5; Sundius, 1, 3.
- Heavy minerals, Penn. ss.: Kelly, W. A., 3.
- Igneous rocks: Poindexter, 4.
- Insoluble residues, Dundee, Detroit River fms.: Wellman, 1.
- Manganese-poor grünerites: Sundius, 1.
- Marshall fm.: Stearns, M. D., 1, 2.
- Microline, native copper: Klein, 1.
- Molding sands: Brown, G. G., 1.
- Radium, Keweenawan basalts: Urry, 1.
- Sand, non-wetting, Muskallonge Lake: Tagus, 1.
- Sedimentary rocks: Poindexter, 4.
- Sylvania rocks in oil wells: Alty, 2.
- Traverse group: Hake, 5; Warthin, 8.

Physical geology.

- Allegan Co.: Riggs, C. H., 2.
- Arenac Co.: Pringle, 1.
- Beach cusps, classn., origin: Evans, 13.
- Dikes, Marquette: Ayres, 1.
- Geothermal temperatures, copper mines: Kraskovsky, 1.

Michigan—Continued.

Physical geology—Continued.

- Gogebic iron dist.: Atwater, 5.
- Gold mine, Ropes: Broderick, 12.
- Granite intrusions in Huronian fm.: Lamey, C. A., 1.
- Granite-sequence, upper Mich.: Dickey, R. M., 1.
- Granite-slate contact, Ramsey: Dickey, R. M., 1.
- Iron ores, Marquette range: Swanson, 5.
- Lake Mich., bottom deposits: Hough, 3.
- Lavas, Keweenawan: Broderick, 9.
- Menominee range area: Dutton, 5.
- Metamorphism: Lamey, 10.
- Michigan Basin: Newcombe, 2; Smith, R. A., 1.
- Natural bridges, Mansfield fm.: Dow, 2.
- Republic granite: Lamey, 3, 7.
- Structure, Mich. Basin: Newcombe, 2.

Physiographic geology.

- Allegan Co.: Riggs, C. H., 2.
- Arenac Co.: Pringle, 1.
- Boulders, etched erratic: Hobbs, 15.
- Correlations, Huron-Erie Basins: Leverett, 24.
- Crystal Falls-Iron River dist.: Bergquist, 4.
- Dunes: Bergquist, 7; Dow, 1; Gates, 1; Scott, I. D., 4; Stevenson, E. B., 1.
- Geology, relation to pedology: Veatch, J. O., 2.
- Glacial expression of structure: Newcombe, 10.
- Glacial lake levels: Bay, J. W., 2.
- Glacial till, variation: Krumbeln, 3.
- Grand Sable Dunes: Bergquist, 7.
- Harbor lakes, origin: Evans, O. F., 8.
- Herring Lake embayment: Scott, I. D., 4.
- High Plains: Davis, C. M., 1.
- Huron River abandoned channels: Bay, J. W., 1.
- Iron Co.: Bergquist, 3.
- Keweenawan Pen. glaciation: Bergquist, 10.
- Lake Mich. Basin dunes: Scott, I. D., 4.
- Lake Superior, shore lines, moraines: Leverett, 2.
- Luce Co.: Bergquist, 2.
- Manistique drainage area: Bergquist, 8.
- Michigan Basin: Newman, E. A., 2.
- Moraines: Leverett, 2; Taylor, 13.
- Ogemaw Co.: Newman, E. A., 1.
- Port Huron moraines, correls.: Taylor, 13.
- Sediments, transport on subaqueous terraces: Evans, 17.
- Shore lines, Lake Superior: Leverett, 2.
- Sink holes: Poindexter, 3.
- Southern Peninsula: Mich. Acad. Sci., 1, 2.
- Streams, glacial hist.: Bay, J. W., 3.
- Tahquamenon drainage area: Bergquist, 8.
- Toivola-Challenge mine area: Lamey, 8.

Michigan—Continued.

Physiographic geology—Continued.

Valley-train deposits: Bergquist, 6.

Whittlesey Beach decline: Stanley, G. M., 2.

Underground water.

Big Spring, Schoolcraft Co.: Poindexter, 2.

Ground water: McGuinness, 1.

Micrichnus and Artiodactylus tracks: Caster, 14.

Micro determination of minerals: Blank, 7.

Microfossils in peat, Ark.: Sears, P. B., 5.

Microfossils, sorting apparatus: Franke, A., 1.

Microhardness of minerals: Hodge, H. C., 1.

Microline, native copper, Mich.: Klein, 1.

Microlite, Maine: Palache, 42.

Micomagnetic surveys: Jenny, 10.

Micomagnetometer: Rieber, 1.

Micropaleontology Bull.: Anonymous, 1.

Micropaleontology, Mid-continent: Radler, 1.

Mid-Atlantic islets: Anonymous, 13.

Mid-Atlantic Ridge: Heck, 44; Washington, 8.

Mid-Continent oil structures: Waterschoot van der Gracht, 3.

Middletown quad., Pa.: Stose, 12.

Midland Trail, Ky.: Lobeck, 2.

Midway fauna, relations: Gardner, J. A., 2.

Military classn., fragmentary fossils: Croneis, 35.

Military geology in war: Cron, 1.

Millerite: Gleason, 3; Northup, 4.

Mineral deposits: Lindgren, 7.

Mineral fuels and civilization: Eavenson, 2.

Mineral matter, relation to coalification: Ball, C. G., 4.

Mineral resources (general). See also Economic geology under the names of the States.

Alabama: Barksdale, J., 3, 4, 5; Jones, W. B., 13-a.

Alaska: Karpinsky, 1; Reed, J. C., 11; Smith, P. S., 2, 11, 12.

Arizona, bibliography: Wilson, E. D., 7.

Arkansas: Branner, 2, 19, 20.

Boulder Dam area: Hewett, 12; U. S. Bur. Reclamation, 2.

British Columbia: Gray, J. G., 1; Kerr, F. A., 2, 18; Kindle, E. D., 4; Lay, 4; Macomachie, 1; Mandy, 2; Williams, M. Y., 7.

California: Averill, 4, 5, 6, 8; Bradley, W. M., 10; Erwin, 1; Franke, H. A., 1; Logan, C. A., 2; Merrill, C. W., 2; Pabst, 8; Sampson, R. J., 5; Shedd, 1; Symons, 1; Tucker, W. B., 3, 4.

Canada: Jeffreys, W. A., 1; McLeish, 2; Moore, E. S., 1; Myers, R. E., 2; Robinson, A. H. A., 3; Sawa, 1.

Mineral resources—Continued.

Canadian Shield: Bruce, 6.

Chemical industries: Keller, R. N., 1.

Civilization, mineral: Read, T. T., 1.

Colorado: Henderson, C. W., 4; Seaman, D. M., 2.

Columbia River Basin: Landes, H., 1.

Conservation: Leighton, 30.

Copper, world reserves: Barbour, P. E., 1.

Cuba: Cayado, 1.

Florida: Gunter, 2, 8; Mansfield, G. R., 18.

Fuels, mineral: Bengston, 1.

General: Fitzhugh, 1; Haas, 4; Leith, 6; Parkins, 1.

Georgia: Furcron, 7; Peyton, 1; Smith, R. W., 5.

Gold: Knopf, A., 10.

Greenland: Blüthen, 1; Teichert, 14.

Hawaii, Oahu: Stearns, 28.

Idaho: Campbell, S., 1, 2, 3, 4; Dickey, F. H., 1; Simons, 1, 2.

Illinois: Lamar, 14; Leighton, 15, 28; Voskuil, 1; Anonymous, 84.

Indiana: Fix, G. F., 1.

Iowa: Lees, J. H., 1.

Kansas: Landes, 24; Newell, 1.

Kentucky: Burroughs, W. G., 2; Jillson, 3, 8.

Louisiana: Craft, 1; Shaw, J. A., 1, 2. Manitoba: Cole, G. E., 2; De Lury, J. S., 1.

Massachusetts: Crosby, 5.

Mexico: Blásquez L., 1; Flores, T., 2, 6; Juárez, 1; Landero, 2; Lozano García, 1; Santillán, 13.

Michigan: Osgood, 2; Poindexter, 4.

Miquelon, West Indies: Aubert de la Rue, 7, 9, 10.

Mississippi: Adams, G. I., 8; Foster, V. M., 3, 5; Lowe, E. N., 3.

Missouri: McQueen, 1.

Montana: Dickey, F. H., 2; Kriegel, 1; Spiroff, 5.

Nevada: Carpenter, J. A., 1; Fulton, J. A., 1; Kerr, P. F., 20; Vandenberg, 2.

New Brunswick: Alcock, 18; Wright, W. J., 2.

Newfoundland: Jewell, 2; Rothery, 1; Snelgrove, 8; Trioche, 1.

New Jersey: Johnson, M. E., 2.

New Mexico: Just, 3; Lasky, 7; Talmage, 7; Wells, E. H., 1.

New York: Newland, 8, 14, 19.

North Carolina: Greaves-Walker, 2; Hornbeck, 1; Murray, 4; Pratt, J. H., 2.

North Dakota: Lavine, 1, 2.

Northwest Territories: Camsell, 13, 14; Jolliffe, A. W., 1.

Nova Scotia: Cameron, 6; Cox, E. J., 1; McDonald, D. F., 2.

Ohio: Stout, 13.

Oklahoma: Dott, 10; Gould, 14.

Mineral resources—Continued.

- Ontario: Dyer, 3; Leduc, 1; Ontario Dept. Mines, 1; Rogers, W. R., 1.
- Oregon: Gilluly, 16; Hodge, 23, 27; Moore, B. N., 6, 8; Oregon Dept. Geology, 1; Pardee, 3; Treasher, 2; Anonymous, 23.
- Pacific Northwest: Appleton, 1; Hodge, 27; Taylor, H. P., 1; U. S. Dept. Int., 1.
- Pennsylvania: Ashley, 14, 31; Berkey, 12; Butts, 10; Leighton, H., 6; Richardson, G. B., 4; Stose, 21; Anonymous, 140.
- Puerto Rico: Britton, N. L., 1; Eckel, E. C., 4; Low, B., 1; Meyerhoff, 9; Ray, H. C., 1, 2.
- Quebec: Bell, L. V., 15; Faessler, 11; Gill, 7.
- Saint Pierre, West Indies: Aubert de la Rue, 7, 9, 10.
- Saskatchewan: Worcester, W. J., 3.
- South Carolina: Cooke, C. W., 17.
- South Dakota: O'Harra, 1; Rothrock, E. P., 1, 18; S. Dak. Plann. Bd., 2; Tullis, 6.
- Southern U. S.: Bevan, 35.
- Tennessee: Born, 5.
- TVA region: Eckel, E. C., 3, 5; Prouty, 11.
- Texas: Baker, C. L., 22, 23; Getzendaner, F. M., 2, 3, 4; Plummer, 15-a; Sellards, 10, 12, 30; Anonymous, 4, 5.
- United States: Garfias, 1; U. S. Bur. Mines, 1; U. S. Nat. Res. Bd., 1; U. S. Nat. Res. Comm., 1.
- Utah: Andrews, W. B., 1; Coffman, 1.
- Vermont: Jacobs, 2; Perkins, G. H., 1, 2.
- Virginia: Bates, R. L., 4; Bevan, 4, 14, 28, 29, 31, 33; Brown, C. B., 3; Cooper, B. N., 7; Furcron, 9; McGill, 11, 12; Pegau, 11; Woodward, 13.
- Washington: Bennett, W. A. G., 2; Glover, 3, 4; Anonymous, 74.
- West Virginia: Price, P. H., 14, 17; Read, W. F., 4; Sisler, 3.
- Wyoming: Dietz, C. S., 1, 2; Marzel, 1, 2.
- Yukon: Bostock, 5, 7.
- Mineral springs, Va.: Furcron, 9.
- Mineral waters, W. Va.: Price, P. H., 8-a.
- Mineral wool, British Columbia: Cummings, J. M., 1.
- Indiana: Fix, G. F., 1; Thornbury, 4.
- Mineralogy (general). For areal see names of States. See also Crystallography; Meteorites; Technique.
- Acanthite: Ramsdell, 8.
- Accessory minerals, granite batholiths: Wright, 14.
- Accessory minerals, ig., metamorphic rocks: Reed, J. C., 9.
- Acmite: Bowen, N. L., 3.

Mineralogy—Continued.

- Aenigmatite: Fleischer, 1.
- Agates: Blair, J. M., 2; Cahen, 1; Cas-sirer, 2; Dake, 24; Goddard, M. G., 1; Randolph, 6; Ulke, 5; Wild, 1; Zeihen, 1.
- Age of minerals, pleochroic haloes: Hen-derson, G. H., 1; King, E., 1.
- Age, radioactive minerals: Kovarik, 2, 4.
- Age relation of minerals: Bastin, E. S., 4.
- Akermanite-gehlenite-pseudo-wollasto-nite: Osborn, E. F., 2.
- Albite-sphene binary system: Prince, 2.
- Alkali sulfide solutions action on min-erals: Lindner, 2.
- Allanite, age: Marble, 7.
- Allophane: Ross, C. S., 15.
- Aluminum and silicosis: Emmons, R. C., 11.
- Alunite, crystal structure: Hendricks, S. B., 1.
- Amber: Blair, J. M., 1.
- Amphibole: Berman, 3; Greenwood, 1; Parsons, A. L., 4; Winchell, 4.
- Analyses, rocks and minerals: Wells, R. C., 11.
- Analysis by fluorescence: Ackoff, 2.
- Anauxites: Gruner, 30.
- Andalusite: Insley, 1.
- Anisotropism in metallics: Sampson, E., 1.
- Anthophyllite: Winchell, 15.
- Apatite group: McConnell, 5.
- Applying reagents under microscope: Os-borne, 8.
- Arsenoferrite, non-existence: Buerger 13.
- Asterism in mica: Jones, F. T., 1.
- Atomic structure of minerals: Bragg, 2; Ramsdell, 6; Twenhofel, 28.
- Attapulgit structure: Bradley, W. F., 2.
- Austinite is brickerite: Brendler, 1.
- Authigenic feldspar, N. Y.: Singewald, J. T., Jr., 2.
- Authigenic tourmaline, Oriskany ss.: Stow, 6.
- Axinite: Peacock, 17.
- Barium: Heck, E. T., 3; Specht, 1.
- Bentonite, related clays: Ross, C. S., 18.
- Beryl and ceramics: Luks, 1.
- Beryllium: Brinton, 1; Palache, 11.
- Biaxial mins.: Lane, J. H., Jr., 1.
- Bibliography, mineral luminescence: Gun-nell, E. M., 7.
- Biotite system: Winchell, 12.
- Birefringence determination of minerals: Emmons, R. C., 10.
- Block crystal structure: Buerger, M. J., 4.
- Bloedite: Schaller, 14.
- Blowpipe analysis: Kelley, V. C., 7.
- Book of stones: Meyerhoff, 18.
- Bornite-chalcocite textures: Schwartz, G. M., 1, 28.
- Calaverite: Peacock, 3; Tunell, 12.
- Calcite: Brown, W. L., 3; Patton, 10; Anonymous, 42.

Mineralogy—Continued.

- Calcium sulfate, crystal forms: Ramsdell, 1.
 California, coll. and gems: Melhase, 16; Van Amringe, 2; Vonsen, 3.
 Camssellite: Winchell, A. N., 2.
 Capsular silica, Tex. Burt, F. A., 2.
 Carbon minerals and volcanism: Buddhue, 26.
 Centennial, Dana's System of mineralogy: Kraus, 8.
 Chalcocite-bornite microtextures: Schwartz, G. M., 1, 28.
 Chalcocite-covellite relations: Bateman, A. M., 1.
 Chalcocite-stromeyerite - argentite relations: Schwartz, G. M., 14.
 Chalcopyrite, pyrrhotite in sphalerite: Shenon, 4.
 Chalcopyrite relations: Guild, 3.
 Chalcopyrite unmixing from sphalerite: Buerger, N. W., 2.
 Chlorite system: Winchell, 11.
 Chrome ores, X-ray study: Clark, G. L., 1.
 Chromite: Ross, C. S., 3; Sampson, E., 2; Singewald, J. T., Jr., 4.
 Chromium in lead deposits: Newhouse, 10.
 Cinnabar: Dreyer, R. M., 3.
 Classification of minerals: Lane, 14; Seaman, W. A., 2; Staples, 4.
 Clay minerals: Ross, C. S., 14.
 Clays: Grim, 8, 12; Kerr, P. F., 21; Merwin, 4.
 Cleavage, ionic mins.: Shappell, 1.
 Clerici's solution, restandardizing: Hawkins, H. H., 1.
 Coals, sapropel: Buddhue, 25.
 Collecting, transcontinental: Baum, 4.
 Collections, Cranbrook Inst.: Colburn, W. B., 1.
 Collophane, detrital: Martens, J. H. C., 4.
 Color photography: Shaub, 3.
 Contributions, ceramic tech.: McCaughy, 1.
 Copper arsenides, nat. vs. artificial textures: Schwartz, 23.
 Copper erratics: Crook, A. R., 1.
 Copper ore minerals: Waldo, 1.
 Copper ores, paragenesis: Schwartz, 12.
 Copper pitch ore: Guild, 1.
 Copper replacement minerals: Ward, T. W., 5.
 Copper sulfide minerals: Gaudin, 6.
 Cordierite: Winchell, 14.
 Coronadite redivivus: Lindgren, 10.
 Covellite-chalcocite relations: Bateman, A. M., 1.
 Cranbrook Inst. coll.: Colburn, W. B., 1.
 Cristoballite structures: Bath, 6.
 Crystallographic theory and methods in textbooks: Tunell, 2.

Mineralogy—Continued.

- Crystals.
 Cavities, zeolite area, N. J.: Schaller, 7.
 Classification: Buerger, 20; Goldschmidt, 2.
 Constants, triclinic system: Parsons, A. L., 1.
 Deformation, calcite: Griggs, 6.
 Distribution, symmetry classes: Rogers, 5.
 Etching: Honess, 2.
 Forms, form-names: Rogers, 20.
 Models of structure: Gruner, 11.
 Orientation: Buerger, 20.
 Plasticity: Knopf, E. F. B., 7.
 Structures: Gruner, 4, 11; Posnjak, 1.
 Vectoral chemical alteration: Frondel, 9.
 Cubanite: Buerger, 24.
 Sumington-grünerite ser.: Winchell, 15.
 Cuprobitumthite a mixture: Palache, 41.
 Cuprotungstite: Schaller, 12.
 Crytolite, analysis: Muench, 1, 2, 5.
 Dakeite: Larsen, 18.
 Dana's System of mineralogy, centennial: Kraus, 8.
 Danburite: Morey, G. W., 1.
 Deformation, calcite crystal: Griggs, 6.
 Dendrites: Swartzlow, 5.
 Desert roses: Whitlock, 3.
 Desert sands: White, W. A., 1.
 Determination.
 Axial angles, biaxial minerals: Smith, H. T. U., 3.
 Opaque minerals: Farnham, C. M., 1.
 Specific gravities: Syromyatnikov, 2.
 Development: Graham, R. P. D., 3.
 Diamonds: Kraus, 10; Palache, 17.
 Diatoms, pyritized: Schenck, 3.
 Dickite: Hendricks, S. B., 2; Ksanda, 1; Ross, C. S., 4.
 Diffusion and ore deposition: Duffell, 1.
 Dispersion of minerals: Winchell, A. N., 3.
 Dolomite: Rogers, A. F., 1.
 Domeykite group: Ramsdell, 2.
 Dunite and olivine: Bowen, 13.
 Eclipse plate for petrographic microscope: Lang, W. T. B., 8.
 Elasticity, massive minerals: Birch, 5.
 Elden, Ariz., meteorite: Brady, 3.
 Elements, optical mineralogy: Winchell, A. N., 1.
 Enargite, famatinite, distinction: Harcourt, 3.
 Equilibrium studies: Schoenlaub, 1; Snow, R. B., 1.
 Etching, alpha and beta quartz: Meen, 3.
 Examination, fragmental rocks: Tickell, 1.
 Famatinite, enargite, distinction: Harcourt, 3.

Mineralogy—Continued.

- Fayalite: Ford, E. W., 1.
 Feather quartz: Pabst, 2.
 Feldspars: Alling, 4; Barth, 2; Emmons, R. C., 12; Faust, 1.
 Feldspathoids: Shand, 4.
 Ferrotremolite: Winchell, 6.
 Fluid inclusions, pyrite: Buerger, 9.
 Fluorescence: Barrett, 1; Brown, W. L., 3; Dake, H. C., 11, 17; Melhase, 18, 23; Meyers, 1; Seaman, 6; Slawson, 5; Smith, E. C. S., 7; Smith, L. L., 4; Spencer, L. J., 1; Trudell, 1; Walther, 1; Ward, T. W., 2; Yedlin, 1; Zodac, 9, 10.
 Fluorite: Whitlock, 4.
 Galena: Buerger, M. J., 6; Head, R. E., 3; Howell, 33.
 Gallium in zinc minerals: Papish, 3.
 Garnets: Bramlette, 1; Eckel, E. B., 2; Fleischer, 2; Randolph, 2.
 Gems and gem minerals: Foshag, 1; Howell, D. H., 1; Kraus, 4, 9; Martindale, 2.
 General: Buddhue, 3; Frondel, 1, 5; Hawkins, 6; Kraus, 6; Lewis, J. V., 4; Melhase, 5; Thomson, J. Ellis, 16; Vaughan, H., 2.
 Geodes containing petroleum: Anonymous, 181.
 Geology in mine valuation: Thurlow, 1.
 Georgia geol. mus.: Mitchell, L., 2.
 Getting acquainted with minerals: English, G. L., 1.
 Gillespite: Schaller, 2.
 Glauconite: Galliber, 13; Gildersleeve, 4; Gruner, 22.
 Goethite: Gruner, 9; Tunell, 1.
 Gold: Crawford, 11.
 Granites: Seaman, 7; Wahlstrom, 6.
 Graphite: Randolph, 13.
 Gravity separation: Emmons, R. C., 5.
 Grids for non-opaque minerals: Donnay, 14.
 Grunerite: Richarz, 5.
 Gudmundite: Buerger, 29.
 Gypsum: Pohl, 13.
 Halite: Kennard, 3.
 Halloysite: Hendricks, S. B., 2; Ross, C. S., 15.
 Hanksite: Ramsdell, 7.
 Heavy mineral separation: Brown, I. C., 1.
 Heavy minerals, strat. guide: Edson, 6.
 Hematite in muscovite: Frondel, 12.
 Hematite relations: Guild, 3.
 Hopeite: Wolfe, C. W., 3.
 Hornblende: Barnes, V. E., 1.
 Hydrophilite: Slawson, 1.
 Hydrothermal alteration, ig. rocks: Schwartz, 27.
 Hydrothermal solutions, potassium chloride: Benedict, 1.
 Identification by staining: Head, R. L., 2.
 Igneous rocks: Schairer, 7; Shand, 1.
 Ilmenite: Moore, E. S., 24.

Mineralogy—Continued.

- Immersion liquids: West, C. D., 1.
 Inclusions, oriented: Frondel, 12.
 Incrustations: Frondel, 4, 13.
 Index liquids: Glass, J. J., 2; Slawson, 8.
 Indian arrow-point materials: Dustin, 5.
 Indices of refraction measurements: Quirke, 20.
 Industrial minerals and rocks: A. I. M. E., 2.
 Interference, common minerals, tests: Dreyer, R. M., 1.
 Integrowths, bornite-chalcocopyrite: Schwartz, 7.
 Introduction to study of minerals: Law, L. B., 1.
 Iron ores of U. S.: Cooke, S. R. B., 3.
 Iron oxide minerals: Law, L. B., 1.
 Iron valence in pyrite and marcasite: Buerger, 21.
 Isomorphous substitution of elements: Phillips, A. H., 1.
 Isotopes, uranium and lead: Lane, 41.
 Jade identification: Merritt, P. L., 1.
 Jarosite, crystal structure: Hendricks, S. B., 1.
 Jaspers, Lake Superior: Koelnau, 1.
 Joaquinite: Palache, 15.
 Kaolin minerals: Gruner, 30; Ross, C. S., 4, 5, 6.
 Kaolinites: Gruner, 13, 30.
 Kennecott ore minerals: Lasky, 3.
 Krennerite: Tunell, 12.
 Large crystals: Palache, 18.
 Lattice dimensions, amphiboles: Greenwood, 1.
 Lead ores, primary, origin: Holmes, A., 5; Knopf, A., 15; Wells, R. C., 13.
 Lead and zinc minerals, experiments: Kristofferson, 1.
 Leightonite and polyhalite: Peacock, 16.
 Lepidolites: Stevens, R. E., 4; Winchell, 8.
 Leucoxene: Tyler, 5.
 Limonite from molybdenite: Blanchard, 4.
 Lindgrenite: Palache, 30.
 Linnacite sulfides: Tarr, 17.
 Lithium distrib.: Strock, 3.
 Luminescence, mineral: Brown, W. L., 4; Gunnell, E. M., 2, 5.
 Maghemite or oxymagnite: Winchell, 5.
 Magma and its products: Knopf, 17.
 Magnesian amphibole: Bowen, 4.
 Magnetites: Greig, 5; Guild, 3; Perry, E. L., 8; Schwartz, G. M., 2, 5.
 Manganese: Harper, M. F., 2; Murata, 2; Smitheringale, 1.
 Manuals: Lewis, J. V., 1; Rosevear, 1.
 Marcasite: Anderson, H. V., 2; Buerger, M. J., 3; McKinley, 6; Thomson, J. Ellis, 2; Webber, B. N., 1.
 Measuring polarized angles: Quirke, 22.
 Measuring in reflected polarized light: Zeiler, 1.

Mineralogy—Continued.

- Melilite group: Berman, H., 1.
 Metals, primordial segregation: De Lury, 28.
 Metamorphic terminology: Erwin, 6.
 Meteorite contrib. to sediments: Lane, 40.
 Meteorites: Buddhue, 4, 8, 15, 16, 22, 30; Derge, 1, 2; Evans, R. D., 4; Hamilton, S. H., 1; Henderson, E. P., 13; King, A. S., 1, 3; Nininger, A. D., 1; Nininger, H. H., 33, 52, 56; Urry, 10; Wylie, 10.
 Meyerhofferite: Palache, 36.
 Mica: Grim, 10; Gruner, 22; Hendricks, S. B., 6; Rowley, E. B., 2.
 Microchemical determination of minerals: Staples, 6.
 Microhardness, Mohs scale: Hodge, H. C., 1.
 Microscope, polarizing, use: Fox, W. A., 1.
 Microscopic mineral determinations: Blank, 5, 6, 7; Larsen, 11; Ravitz, 1; Short, 3.
 Migmatites: Trefethen, J. W., 4.
 Millerite coll., Milwaukee: Wisniewski, 1.
 Mineral analysis by spectroscopy: Hablutzel, 1.
 Mineral assoc., high-temperature: Bunting, 9.
 Mineral composition, river sands: King, B. F., 1.
 Mineral determination, absorption spectra: Wherry, E. T., 1.
 Mineral facies, metamorphic rocks: Turner, F. J., 1.
 Mineral grains, mounting: Smith, H. T. U., 11.
 Mineral grains, specific gravity determination: Jahns, 3.
 Mineral loc., New England: Merrill, G. P., 2.
 Mineral names: Schaller, 4; Spencer, 5.
 Mineraloids: Rogers, 21.
 Mineral specific gravity chart: Landes, 4.
 Mineral suites, heavy, correl.: Dryden, 10; Eisenbart, 1.
 Mineral wave lengths: Dake, 23.
 Mineralogical Soc. Am.: Kraus, 2; Van Horn, 1.
 Mineralography tech. at Harvard: Gratton, 11.
 Mineralogy contribs.: Bayley, 7.
 Minerals, collecting, preserving: Zodac, 3.
 Deposited by hot springs: Grieger, 1.
 Fluorescence, phosphorescence: Brock, C. L., 3.
 Microscopic determination: Martindale, 1.
 High-pressure behavior: Bridgman, 4.
 Identification: Bowles, O., 1.
 Introduction to study of: Fabst, 10.
 Layer structures: Hendricks, S. B., 5.
 Medicine, use in: Jones, A. C., 1.
 Mississippi River bed: Russell, P. G., 5.
 Naming: McKinstry, 1.

Mineralogy—Continued.

- Minerals—Continued.
 Ozark region ss.: Cordry, 1.
 Petrographic classn.: Clements, 8.
 Role, internat. situation: Leith, 12.
 Study: Fisher, 17.
 Virginia Coastal Plain: Gunnell, E. M., 1.
 Volcanic regions: Grieger, 1.
 Minerals, metals and gems: Verrill, 1.
 Mixed crystals, shannonite and tephroite: Greer, W. L. C., 1.
 Models of crystals: Smith, H. T. U., 9.
 Molybdenum deposits: Butler, 22.
 Monadnocks containing minerals: Hafer, 1.
 Monticellite ser.: Beliankin, 1; Schaller, 19.
 Montmorillonite in fullers' earth: Kerr, P. F., 6.
 Mordenite-ptilolite group: Schaller, 11.
 Moss agates, fm.: Wild, 2.
 Mottramite nomenclature: Schaller, 18.
 Mounting medium: Galliher, 1.
 Multiple twins, diamonds and sphalerite: Palache, 17.
 Muscovite: Gruner, 34.
 Negative crystal cavities, galena: Buerger, M. J., 5.
 New mineralogy: Winchell, 9.
 New minerals, 1892-1938: English, G. L., 2.
 Newry pegmatite, Maine: Fraser, F. J., 4.
 New York City area: Manchester, J. G., 1.
 Nickel-cobalt-native silver ore type: Bastin, 18.
 Night prosp. with argon bulb: Burbank, B. B., 4.
 Non-opaque minerals, grids: Donnay, 18.
 Nontronites, montmorillonite, relations: Gruner, 21.
 Noselite and haüyne, composition: Barth, 7.
 Nova Scotia: Cox, E. J., 1.
 Observation, induction, experiment: Bowen, 18.
 Octahedrite from titanite: Pough, 2.
 Ontario granites: Bruce, 15.
 Opal: Dake, 11; Taliaferro, 12.
 Opaque minerals, emery ores: Bray, J. M., 1.
 Optical analysis, immersion methods: Saylor, 2.
 Optical identification of minerals: Basore, 1.
 Optical mineralogy, elements: Winchell, 1.
 Ore deposits: Adams, F. D., 7; Butler, G. M., 4.
 Ore mineral assoc.: Merwin, 1.
 Ore minerals, microchemical determination: Fraser, H. J., 5.
 Ore minerals, microscopic study: Schwartz, 10, 26; Thomson, J. Ellis, 20.
 Ore textures: Anderson, 17.

Mineralogy—Continued.

- Orientation in rocks: Fabst, 4.
- Oriented intergrowths in: Gruner, 5.
- Orthoclase-plagioclase equilibrium diagr.: Doggett, 1.
- Orthopyroxenes, Bushveld type: Hess, H. H., 14.
- Outline: Leonard, L. F., 1.
- Ovals of revolution for anisotropic media: Quirke, 23.
- Paragenesis of pyrrhotite: Blanchard, 5.
- Pegmatites, granitic: Vlassov, 1.
- Hydrothermal veins: Landes, 23.
- Included minerals: Seaman, 7.
- Peridotites, serpentinized distrib.: Hess, H. H., 16.
- Persisterite: Parsons, A. L., 2.
- Perthites: Alling, 5.
- Petrofabric diagrs.: Haff, 3.
- Phosphates, field test: Oakes, 1.
- Phosphorescent minerals: Zodac, 11.
- Phosphosiderite symmetry: McConnell, 6.
- Photography, nat. color: Shaub, 12.
- Photography, petrographic thin secs.: Crook, W. J., 1.
- Photo-phosphorescence: Brown, W. L., 2.
- Plagioclase feldspars: Alling, 2.
- Plagioclases: Meen, 1.
- Platinum group: Buddhue, 6.
- Platinum in meteorites: Hawley, F. G., 1.
- Pleochroic baloes: Henderson, G. H., 2, 3.
- Polarity in magnetite: Walker, T. L., 6.
- Polarizing vertical illuminator: Osborne, 9.
- Polishing apparatus for ore minerals: Murdoch, 8.
- Polymorphs of sulphur: Morse, H. W., 2.
- Polymorphous forms, genesis: Bloom, 1.
- Potash fields, N. Mex., Tex.: Schaller, 1.
- Potash minerals: Schaller, 8.
- Precious metal elements: Fraser, H. J., 6.
- Pre-Dana and contemporary lit.: Wilson, B. H., 1.
- Present trends: Palache, 34.
- Projection diagrams: Wright, F. E., 1.
- Projection, direct, optic figs.: Quirke, 18.
- Protactinium, terrestrial, meteoritic: Evans, R. D., 6.
- Pseudocubic quartz crystals: Tarr, W. A., 2.
- Psilomelane: Cooke, S. R. B., 1; Ramsdell, 3.
- Pyrite: Bain, 18; Buerger, M. J., 8; Guild, 2, 3; Mathias, 1.
- Pyroxenes: Barth, 4; Sundius, 2; Winchell, 10.
- Pyrrhotite: Hewitt, R. L., 1, 2; Schwartz, 19.
- Quartz: Dake, 26; Frondel, 3; Furnival, 4; Goodspeed, 5; Hulin, 10; Meen, 4, 5; Moehlman, 3; Mohler, N. M., 2; Randolph, 5; Tarr, W. A., 1; Van Amringe, 1; Wayland, 2.
- Quartz-dioptase-garnet veinlets: Goodspeed, 5.

Mineralogy—Continued.

- Radioactive elements: Wells, R. C., 10.
- Radium content, Pacific Ocean water and sediments: Evans, R. D., 5.
- Rare elements, concentration: Zies, 6.
- Rare metals and minerals: Hess, F. L., 12.
- Rates of wear, common minerals: Cozens, 1.
- Reflectivity and color: Parrish, 1.
- Refractive index determination: Emmons, R. C., 3; Slawson, 7.
- Research, mineralog. trend: Tarr, 23.
- Residues, insoluble, from acetic acid: St. Clair, D. W., 1.
- Rhythmic banding: Cooke, C. W., 1.
- Ring-agate vs. eye-agate: Wilson, B. H., 3.
- Rock analysis method: Goldman, F. H., 1.
- Rock crystal: Zodac, 17, 21.
- Rock-making minerals: Runner, 16.
- Rock-slicing machines: Shaub, 5.
- Rock weathering study: Goldich, 2.
- Roebblingite: Blix, 1.
- Römerite: Wolfe, 2.
- Rosilwal method, modal rock determination: Larsen, 14.
- Salt domes, ceramic deposits: Steinmayer, 3.
- Sampling minerals in polished secs.: Haycock, 1.
- Sands, Mississippi River and tributaries: Russell, R. D., 10, 13.
- Satin spar: Hills, V. G., 1.
- Schiller structure: Colony, 7.
- Scientific illustration: Ridgway, J. L., 1.
- Sedimentary rocks: Pettijohn, 6, 14.
- Sediments, mineral analysis: Pettijohn, 16.
- Sediments, X-ray analysis: Mehmehl, 1.
- Selective incrustation: Frondel, 2.
- Seleniferous soils shown by plants: Beath, 4.
- Selenium, microchemical test: Evans, M. H., 1.
- Sepiolite: Schaller, 21.
- Serendibite, N. Y.: Larsen, 8.
- Serpentines: Gruner, 26, 32; Selfridge, 1; Wells, F. G., 1.
- Shearing experiments: Larsen, 22.
- Silica, chert and flint: Gunnell, E. M., 6.
- Silicates: Berman, 5, 8; Flint, E. P., 1; Gruner, 10; Morey, G. W., 2; Stevens, 3; Swartz, C. K., 5.
- Silicon: Staples, 5.
- Silicosis: Colony, 6; Emmons, R. C., 9.
- Silicification: Randolph, 7.
- Sillimonite group: Riddle, 1.
- Silver, distrib. in ores: Lasky, 9; Warren, H. V., 7.
- Silver minerals: Gaudin, 5; Stephens, M. M., 1.
- Slate, X-ray analysis: Anderson, H. V., 1.
- Smaltite: Short, M. N., 2.
- Solution, colloidal dispersion of minerals in water: Nutting, 4.

Mineralogy—Continued.

- Sodium, potassium chlorides, determination: Slawson, 2.
 Sodium carbonate hydrates: Pabst, 1.
 Specific gravity by index liquids: Meen, 2.
 Spectrograph: Lee, O. I., 2; Stow, 5; Wright, T. A., 1.
 Spectrographic analysis: Ussery, 1.
 Spectroscopic analysis: Claussen, 1.
 Sphalerite: Mitchell, E. M., 4; Palache, 17.
 Spherulites: Colony, 4; Morse, H. W., 1; Wilkinson, W. D., 3.
 Spodumene: Blank, E. W., 2.
 Spotting specimens for cat. nos.: Warthin, 12.
 Staining minerals: Gaudin, 1, 2.
 Standardizing crystal form names: Wherry, 3.
 Stibnite and orpiment, Nev.: Palache, 8.
 Stilpnomelane: Gruner, 23, 31.
 Structural crystallography: Rogers, 12.
 Structural petrology: Lovering, 29.
 Subsoil meteorites: Nininger, 58.
 Succession, temperature, mineral fm.: Lindgren, 15.
 Sulfides: Gruner, 6; Tarr, 17.
 Sulfo salts: Gruner, 7; Palache, 37.
 Sylvanite: Tunell, 12.
 Symmetry classes: Rogers, A. F., 5.
 System Cu-Fe-S: Merwin, 2.
 System $\text{Cu}_2\text{-S-CuS}$ solid phase: Buerger, N. W., 5.
 Table of minerals: Kelly, V. C., 2; Anonymous, 96.
 Tables for mineral determination: Eakle, 3; Ellis, R. W., 1; Rosenholz, 1.
 Taenite: Buddhue, 32.
 Tellurobismuthite: Frondel, 17.
 Temperature of magmas: Larsen, 2.
 Ternary system, leucite-diopside-silica: Schairer, 6.
 Testing minerals by spectroscope: Cutting, 1.
 Textbook: Dana, 1; Ford, W. E., 1.
 Thin-section mineralogy: Rogers, 11.
 Thorium-uranium ratios and lead origin: Kevvii, 3.
 Thullite: Northrop, 6.
 Tin sulfides and compounds: Gaudin, 5.
 Tourmalines: Brown, L. S., 1; Buerger, 25; Frondel, 11; Tompkins, 1; Ward, G. W., 1.
 Translation gliding in crystals: Buerger, M. J., 1, 2.
 Tremolite, role of water in: Posnjak, 2.
 Triboluminescent zinc sulfides: Gunnell, E. M., 4.
 Tungsten: Newhouse, 10; Van Horn, 2.
 Turquoise: Kollida, 2.
 Twin lamellae, dolomite: Parsons, 8.
 Ultra-violet absorption: Mohler, N. M., 1.
 Universal stage, modified: Emmons, R. C., 4.

Mineralogy—Continued.

- Uranium: Lane, 23; Palache, 26.
 Vanadium in lead deposits: Newhouse, 10.
 Variscite-metavariscite: McConnell, 7.
 Vermiculites: Gruner, 20; Hendricks, S. B., 3.
 Violarite: Short, M. N., 1.
 Virginia, Potomac River sediments: Hoffman, J., 1.
 Volcanic rocks, minerals: Melhase, 19.
 Wave lengths of minerals: Dake, 23.
 West Virginia, Potomac River sediments: Hoffman, J., 1.
 Wolframite: Guild, 2.
 Wollastonite: Schairer, 5.
 X-ray study, akermanite: Schairer, 5.
 Antlerite: Richmond, 6; Waldo, 2.
 Brochantite: Waldo, 2.
 Calcite-rhodochrosite ser.: Krieger, 1.
 Cobalt, arsenides and antimonides: Holmes, R. J., 1.
 Diopside: Schairer, 5.
 Nickel, arsenides and antimonides: Holmes, R. J., 1.
 Pseudowollastonite: Schairer, 5.
 Quartz: Clark, G. L., 2.
 Silica minerals: Hurlbut, 5.
 X-rays in mineralogy: Peacock, 18.
 Zeolites: Winchell, 13.
 Zincite in manganese: Frondel, 16.
 Minerals, magnetic properties: Davis, C. W., 3.
 Minerals in medicine: Jones, A. C., 1.
 Mining for oil: Rich, 24.
 Mining geology.
 Aerial reconnaissance and mapping: Eliel, 3.
 Block diagrams for: Johnston, W. D., 12, 15; Nolan, 10.
 Canada, Canadian Shield gold: Bruce, 23.
 Economic application, insoluble-residue method: McQueen, 9.
 Faults, bedding-plane, importance: Behre, 22; Eby, J. H., 2.
 Field study expansion: Behre, 29.
 General: Fowler, 11; Hunt, S. F., 1; Schmitt, 9.
 Geology, basis for: Corral y Alemán, 2.
 Geology and petroleum: Heroy, 2.
 Geomagnetic explor., 1938: Stearn, 12.
 Geophysical delineation of structure: Kelly, 22.
 Geophysical prosp.: Gabriel, 9; Kelly, 14, 16; Landsberg, 15; Rose, 4.
 Inclusions, dislocated, in veins: Douglas, C. B. E., 1.
 Methods of prosp.: Heiland, 23.
 Newfoundland, lead-zinc-copper deposits: George, P. W., 2.
 Ore and structure: Bichan, 2.
 Prospecting handbook: Goodwin, W. L., 4; Gunther, C. G., 1; Manitoba Dept. Mines, Mines Branch, 1; Walker, J. F., 8.

Mining geology—Continued.

- Quebec: Bell, L. V., 15; Derry, 11.
 South Dakota, Black Hills gold: Wright,
 L. B., 4.
 Treasures in the earth: Krumbein, 13.
 Wyoming, Black Hills gold: Wright,
 L. B., 4.

Minnesota.

- Buried river gorges: Wilcox, S. W., 1.

Areas described.

- Kekequable Lake area: Stark, 1.
 Knife Lake ser.: Stark, 16.
 Minneapolis-St. Paul area: Schwartz, 16.

Economic geology.

- Agawa iron fm.: Stark, 2.
 Anorthosites, Lake Superior coast:
 Grout, 23.
 Big Stone Co.: Thiel, 13.
 Building, ornamental stones: Thiel, 8.
 Dolomites: Stauffer, 6.
 Feldspars, calcic: Schwartz, 24.
 Gold prospects: Grout, 19.
 Greenalite, Mesabi Range: Jolliffe, F. J.,
 2.
 Ilmenite, Duluth gabbro: Schwartz, 5.
 Iron ores, Lake Superior area: Brod-
 erick, 6, 8; Gruner, 8, 12; Hotchkiss,
 4; Lake Superior Iron Ore
 Assoc., 1; Leith, C. K., 2; Rama
 Rao, B., 1; Richarz, 4; Royce, 2, 5;
 Zapffe, 3.
 Knife Lake ser.: Stark, 16.
 Lake Superior area: Broderick, 6, 8;
 Gruner, 8, 12, 18; Hotchkiss, 4;
 Lake Superior Iron Ore Assoc., 1;
 Leith, C. K., 2; Ramo Rao, B., 1;
 Richarz, 4; Royce, 2, 5; Zapffe, 3.
 Limestones: Stauffer, 6.
 Magnetites: Gruner, 19; Schwartz, 5.
 Marble: Stauffer, 6.
 Mesabi iron range: Taylor, W. L., 1.
 Minneapolis-St. Paul area: Schwartz, 16.
 Oxidation, deep: Moore, E. S., 21.
 Paragenesis, Duluth and Lake Superior
 areas: Richarz, 4; Sandberg, 5.
 Petroleum, poss.: Thiel, 14.
 Rove fm.: Grout, 9.
 Traverse Co.: Thiel, 14.
- Historical geology.*
 Anorthosites, Lake Superior coast:
 Grout, 23.
 Batholith, Minn.-Ontario boundary:
 Grout, 3.
 Bentonite Ord. zones: Sardeson, 16.
 Big Stone Co.: Thiel, 13.
 Cambrian fm. names: Keyes, 467; Sarde-
 son, 32.
 Cambrian-Ordovician contact: Graham,
 W. A. P., 7.
 Contact, Glenwood-Platteville fms.:
 Elder, 1.
 Correlation, Upper Camb.: Bridge, 7.
 Cuyuna stratigraphy: Zapffe, 1.
 Decorah sh.: Stauffer, 14.
 Devonian: Stainbrook, 1.
 Dresbach fm.: Peterson, El., 1.

Minnesota—Continued.

Historical geology—Continued.

- Dubuque fm.: Kay, G. M., 16.
 Duluth gabbro lopolith: Grout, F. F., 5.
 Dunes, ancient: Copper, W. S., 9.
 Field work, State Survey: Grout, F. F., 2.
 Galena lms.: Sardeson, 41.
 General: Conser, 2; Kans. G. Soc., 8.
 Geologic map: Grout, F. F., 7.
 Glacial drifts: Kruger, 1.
 Glenwood shs: Sardeson, 20; Stauffer,
 11.
 Ground-water deficiency: Thiel, 11.
 Hinckley ss.: Atwater, 1.
 Igneous rocks, origin: Grout, 6.
 Iron deposits, Lake Superior area: Lake
 Superior Iron Ore Assoc., 1; Royce,
 2, 5.
 Iron fm., Mesabe Range: Richarz, 2.
 Isopach maps of fms.: Ball, 13; Edwards,
 1, 2.
 Jordan-Oneota contact: Stauffer, 9.
 Jordan ss.: Keyes, 201; Sardeson, 14.
 Keweenawan, S. Minn.: Sardeson, 5.
 Keweenawan lavas, Duluth: Sandberg, 4.
 Knife Lake area and ser.: Gruner, 1, 2;
 Stark, 16.
 Lake Superior iron areas: Leith, 10;
 Royce, 2, 5.
 Magnesian lms.: Keyes, 241.
 Maquoketan ser.: Keyes, 75.
 Minneapolis-St. Paul area: Grace, 8;
 Schwartz, 16, 17; Anonymous, 199.
 "Minnesota man" in Pleist. sediments:
 Thiel, 10.
 Minnesota River Valley: Cooper, W. S.,
 6; Conser, 2.
 Mississippi Valley, upper: Atwater, 4;
 Kay, G. M., 13; Trowbridge, 8, 9.
 Niagaran bioherms, Milwaukee area:
 Shrock, 18.
 Northwestern Minn.: Allison, 47.
 Ogishkemuncie Lake area: Sleight, 1.
 Ordovician: Allen, V. T., 1; Kay, G. M.,
 13.
 Paleozoic: Stauffer, 8; Thiel, 16.
 Pelican rapids area: Keyes, 407.
 Petroleum poss.: Thiel, 14.
 Platteville fm.: Bays, 2.
 Pleistocene man: Jenks, A. E., 1;
 Thiel, 7, 10.
 Prairie du Chien beds: Powers, W. E., 12.
 Prairie Lake area: Jenks, A. E., 4.
 Pre-Cambrian: Becker, H., 2; Grant,
 U. S., 1.
 Quaternary: Leverett, 13.
 Rove fm.: Grout, 9.
 Saganaga granite batholith: Grout, F. F.,
 2, 18.
 St. Croix River: Clement, 1; Sarde-
 son, 31.
 St. Croixian classn.: Stauffer, 21.
 Saint Peter group: Sardeson, 15.
 Seine-Couthiching problem: Merritt, P.
 L., 2.
 Shakopee dolomite fm.: Keyes, 106, 108,
 269; Sardeson, 22, 26.

Minnesota—Continued.

Historical geology—Continued.

- Snowbank stock: Balk, R., 8.
 Southeastern Minn.: Powell, L. H., 1.
 Stewartville fm.: Kay, G. M., 16.
 Stillwater deep-well records: Stauffer, 13.
 Traverse Co.: Thiel, 13.

Mineralogy.

- Agates, Lake Superior beaches: Alessi, 2.
 Amphibole, Mesabi range: Richarz, 1.
 Catalinite: Berg, E. L., 3.
 Diaspore in quartzite: Berg, E. L., 2.
 Duluth gabbro slate metamorphism: Lamey, 9.
 Feldspar: Gruner, 27, 29; Schwartz, 24.
 Granite, Rockville, crystallization: Tatge, 1.
 Greenalite, Mesabi Range: Gruner, 24; Jolliffe, F. J., 2.
 Magnetite cementing conglomerate: Gruner, 19.
 Magnetite crystals from meteoric solutions: Gruner, 33; Spiroff, 4.
 Paragenesis, amygdular minerals, Duluth: Sandberg, 5.
 Quartz crystals, Soudan mine: Zodac, 23.
 Quartzites: Berg, E. L., 2, 3.
 Sills, Duluth: Schwartz, 29.
 Thomsonite: Combs, A. F., 1; Hanley, 1, 2.

Paleontology.

- Actinoceras: Sardeson, 6.
 Algae, pre-Camb. and Paleozoic: Fenton, 57.
 Annelid jaw, Ord.: Stauffer, 7.
 Batostoma, Ord.: Sardeson, 33.
 Biotic community, late Pleist.: Cooper, W. S., 4.
 Bison, extinct: Eddy, S., 1; Jenks, A. E., 5.
 Brachiopoda, Ord., habits: Sardeson, 1.
 Cambrian Trilobita: Ulrich, 5.
 Cameroceras: Sardeson, 7.
 Cephalopoda: Foerste, 9, 18.
 Conodonts: Furnish, 3; Stauffer, 3, 11, 14, 24.
 Craniae, Ord.: Sardeson, 12.
 Crinoidea, Ord.: Sardeson, 44.
 Cyrtodonta Pelecypoda: Sardeson, 47.
 Dekayella, Ord.: Sardeson, 28.
 Eridotrypa, Ord.: Sardeson, 34.
 Fauna, Shakopee dol.: Stauffer, 18.
 Fauna, Van Osier beds: Stauffer, 23.
 Flora, Cret.: Berry, 63.
 Flora, Pleist.: Rosendahl, 1.
 Forests, postglacial, migration: Voss, 2.
 Gonioceras, Ord.: Sardeson, 21.
 Graptolitoidea, Camb.: Ruedemann, 19.
 Hallopora, Ord.: Sardeson, 29.
 Hemiphragma, Ord.: Sardeson, 33.
 Homotrypa, Ord.: Sardeson, 27.
 Kitchen midden, extinct Bison bones: Eddy, S., 1; Jenks, A. E., 5.

Minnesota—Continued.

Paleontology—Continued.

- Late Pleistocene biotic community: Cooper, W. S., 4.
 Lichenocrinus: Fenton, M. A., 2.
 Man, fossil: Bryan, 39; Jenks, A. E., 2, 3, 4; Madsen, 1; Sardeson, 30, 43; Thiel, 10.
 Mollusca, Shakopee: Stauffer, 16, 17.
 Monotrypa, Ord.: Sardeson, 34.
 Mosses, Pleist.: Williams, R. S., 1, 2.
 Monticulipora, Ord.: Sardeson, 25.
 Niagaran bioherms: Shrock, 18.
 Ostracoda, Decorah fm.: Kay, G. M., 20-a.
 Ozarkian faunas: Powell, L. H., 1.
 Pelecypoda: Sardeson, 47.
 Pleistocene man: Bryan, 39; Jenks, A. E., 2, 3, 4; Madsen, 1; Sardeson, 30, 43; Thiel, 10.
 Pollen analysis, Anoka sand plain: Artist, R. C., 2.
 Prasopora, Ord.: Sardeson, 24.
 Stictopora to Arthropora: Sardeson, 38.
 Stromatotrypa to Pachydictya: Sardeson, 37.
 Trilobita: Ulrich, E. O., 5.
 Vanuxemia, Ord.: Sardeson, 46.
 Wood, glacial and preglacial: Cortner, 1.
- Petrology.*
- Anorthosites: Grout, 14, 23; Schwartz, 13.
 Authigenic feldspars in ss.: Goldich, 1.
 Batholiths, Minn.-Ontario boundary: Grout, 3.
 Cambrian-Ordovician contact: Grout, 10.
 Cambrian ss.: Graham, W. A. P., 4.
 Catalinite: Berg, E. L., 3.
 Dolomitization, Lake Agassiz silts: Sherman, 1; Thiel, 14-a.
 Duluth gabbro slate metamorphism: Grout, 12; Lamey, 9.
 Feldspars: Gruner, 29; Schwartz, 24.
 Glacial drifts: Kruger, 1.
 Glenwood beds: Thiel, 12.
 Gold prospects: Grout, 19.
 Heavy minerals, ig. rocks: Grout, 22.
 Hydrothermal alteration, Pigeon Pt.: Bastin, 16.
 Igneous rocks: Grout, 12, 22.
 Keweenawan lavas, Duluth: Sandberg, 4.
 Knife Lake ser.: Stark, 16.
 Lake Agassiz silts: Sherman, 1.
 Metamorphism, slates: Grout, 12.
 Minerals, Upper Camb.: Graham, W. A. P., 1.
 Quartzites: Berg, E. L., 2, 3.
 Rove fm.: Grout, 9.
 Saganaga granite: Grout, 2.
 Saint Peter ss.: Thiel, 9.
 Sills, Duluth: Schwartz, 29.
 Slates, metamorphism: Grout, 12; Lamey, 9.
 Snowbank Lake stock: Sanders, C. W., Jr., 1.

Minnesota—Continued.

Petrology—Continued.

Tuffs, Ord.: Allen, V. T., 1.

Physical geology.

Anorthosites, Lake Superior coast:
Grout, 23.

Caves, Galena fm.: Bretz, 9.

Dalles, Lake Superior: Swanson, R. W.,
1.

Duluth gabbro: Grout, 20; Lamey, 9.

Fault, Duluth: Sandberg, 1.

Giant current ripples in gravel: Thiel,
4.

Giants Range granite: Grout, 20.

Hydrothermal alteration, Pigeon Pt.:
Bastin, 16.

Keweenawan lavas, Duluth: Sandberg,
4.

Metamorphism: Grout, 12; Lamey, 9,
10.

Ogishkemuncie Lake area: Sleight, 1.

Paragenesis, amygdular minerals, Du-
luth: Sandberg, 5.

Rock weathering study: Goldich, 2.

Saganaga granite batholith: Grout, 18.

Sediments reworked: Thiel, 5.

Snowbank stock: Balk, 8.

Solution, Oneota dol.: Graham, W. A.
P., 6.

Physiographic geology.

Anoka sand plain: Artist, 2.

Big Stone Co.: Thiel, 13.

Cannon River glacial diversion: Sarde-
son, 18.

Cretaceous drainage system: Sardeson,
45.

Dalles, Lake Superior: Swanson, R. W.,
1.

Dunes, ancient: Cooper, W. S., 9.

Glacial chronometer: Sardeson, 19.

Glacial drifts: Kruger, 1.

Glacial outwash and pitted plains:
Sardeson, 40.

Lake Agassiz silts: Sherman, G. D., 1.

Lake Superior area: Merrill, J. A., 1.

Marl beds and glacial deposits, correl.:
Thiel, 2.

Minneapolis-St. Paul area: Schwartz,
16; Anonymous, 199.

Mississippi River glacial diversion:
Sardeson, 17.

Mississippi River, upper: Cooper, W. S.,
6.

Moraines, Lake Superior area: Leverett,
2.

Paleozoic structure: Thiel, 16.

Patrician glaciation: Sardeson, 23.

Pelican Rapids area: Keyes, 407.

Quaternary geology: Leverett, 13.

St. Croix River, Pleist.: Sardeson, 31.

Shore lines, Lake Superior area: Lever-
ett, 2.

Tertiary drainage system: Sardeson, 45.

Traverse Co.: Thiel, 13.

Minnesota—Continued.

Underground water.

Ground-water deficiency: Thiel, 13.

Minneapolis-St. Paul area: Schwartz, 16,
17, 20.

Northwestern Minn.: Allison, 1.

Zones of mineralization: Thwaites, 7.

Miocene. See Tertiary.

Miquelon, Saint Pierre Is.: Aubert de la Rue
1, 2, 4, 7.

Miquelon, West Indies.

Historical geology.

General: Aubert de la Rue, 1, 7.

Mineralogy.

Manganese: Aubert de la Rue, 6.

Minerals: Aubert de la Rue, 10.

Physiographic geology.

General: Aubert de la Rue, 5.

Miscellaneous. See also Addresses.

American doctorates in geology: Went-
worth, 21.

Application of geology to mining:
Schmitt, 3.

Archeology and geology: Terra, de, 3.

Cataclysmal geology: Berry, E. W., 10.

Decentralization, indust. raw materials:
Smith, G. C., 1.

Doctorates in sci.: Hull, C., 1.

Earth as eng. structure: Lambert, 2.

Economic geology, limitations: Porter,
C. A., 3.

Educational function, geol., sci.: Wallace,
R. C., 1.

Field conferences: Gould, C. N., 1.

Geologic advance: Vogt, J. H. L., 1.

Geologic dogmas: Smith, W. D., 3.

Geologic facilities, Library of Congress:
Lane, 12.

Geology from original sources: Agar, W.
M., 1.

Geology, relation to oceanography:
Twenhofel, 8.

Geology, study and relationship: Willard,
1.

Geology and archeology: Terra, de, 3.

Geology and civil eng.: Ries, H., 2.

Geology and geophysics: Wantland, 1.

Manuscript preparation: Lane, B. H., 1.

Mid-Atlantic islets: Anonymous, 13.

Multiple working hypotheses: Chamber-
lin, T. C., 1.

National Research Council, Div. Geology
and Geography, rept.: Bucher, 2;
Palache, 10.

Nature of geol. proof: Davis, 12.

Penrose bequest to G. S. A.: Keyes, 109.

Place of geology among sci.: Merriam,
J. C., 2.

Riddle of the earth: Ehrenfeld, 1.

Serial lit. used by Am. geologists: Gross,
P. L. K., 1.

Services of a geol. survey: Stone, 6.

Slal, origin: Beckner, 3.

State Park geol. activities: Rothrock,
H. E., 2.

Miscellaneous—Continued.

United States Geol. Survey: Mendenhall, 5.

Mississippi.

Bridge site, Yazoo River: Morse, W. C., 7.
State geologists' repts.: Lowe, W. F., 1.
Morse, W. C., 5.

Areas described.

Amory gas field: Swearingen, 1.
Jackson gas field: Monroe, 1.

Economic geology.

Amory gas field: Swearingen, 1.
Artesian water res.: Foster, V. M., 2.
Bauxite: Vestal, 2.
Bentonite: Mellen, 1; Morse, H. M., 1; Vestal, 1.
Bleaching clays: Bay, H. X., 4.
Clays: Bay, H. X., 4; Mellen, F. F., 2; Spain, 2; Works Prog. Adm., 1.
Development, oil and gas: Toler, 1.
Fuller's earth: Vestal, 2.
Gulf Coast oil fields: Barton and Sawtelle, ed., 1.
Highland Church ss.: Morse, W. C., 6.
Jackson gas field: Monroe, 1, 9; Munroe, J. D., 1; Swearingen, 1; Toler, 2, 3.

Lignite: Works Prog. Adm., 1.
Little Bear residuum, clay: Mellen, F. F., 2.

Magnetic vectors: Jenny, 2.
Mineral res.: Adams, G. I., 8; Foster, V. M., 3, 5; Lowe, 3; Mellen, F. F., 3.
Natural gas: Bailey, W. F., 3; Monroe, 1, 9; Munroe, J. D., 1; Swearingen, 1; Toler, 2, 3.
Petroleum poss.: Morse, H. M., 2.
Petroleum and gas: Toler, 2, 3.
Salt dome: Munroe, J. D., 2.
Tripoli: Spain, 5; Vestal, 2.
Water: Foster, V. M., 5.
Winston Co.: Mellen, F. F., 3.
Yazoo Co. oil field: Easton, 10.

Historical geology.

Bucatan-na-Vicksburg contact: Hughes, U. B., 2.
Carboniferous at Jackson: Monroe, 5.
Clarke County, Tert.: Israelsky, 5; Shreveport G. Soc., 3.
Cockfield-Gosport fms., correl.: Blanpied, 1.
Covington Co.: George, W. O., 1.
Cretaceous, Upper: Stephenson, 23.
Deepest rocks, Jackson field: Monroe, 8.
Development, oil and gas: Toler, 1.
Eocene: Grace, 8. Grim, 7; Lowe, E. N., 2.
General: Foster, V. M., 1; Morse, H. M., 1; Shreveport G. Soc., 1.
Gosport-Cockfield fms., correl.: Blanpied, 1.
Gosport sand equiv. to Moodys marl: Cooke, C. W., 22.
Jackson area: Monroe, 7.
Jackson Eocene, Greenville: Fisk, 8.

Mississippi—Continued.

Historical geology—Continued.

Jackson gas field: Monroe, 9.
Legion State Park: Monroe, 9.
Limestone Creek group: Blanpied, 2.
Little Bear residuum, clay: Mellen, F. F., 2.
Owl Creek fm.: Stephenson, 19.
Paleozoic rocks: Morse, W. C., 1.
Pleistocene marine: Richards, 21.
Prairie Bluff chalk: Stephenson, 19.
Pre-Tertiary in borings, Jackson: Monroe, 2.
Salt dome, Scanlan or Midway: Munroe, D. J., 2.
Tertiary correl. zones: Gravell, 5.
Tishomingo State Park: Morse, W. C., 9.
Tombigbee State Park: Morse, W. C., 10.
Vicksburg group: Cooke, C. W., 16; Howe, 15; Mornhinweg, 1.
Vicksburg Nat. Military Park: Morse, W. C., 8.
Wayne Co., Tert.: Shreveport G. Soc., 3.
Winston Co.: Mellen, F. F., 3.
Yazoo Co. oil field: Easton, 10.

Mineralogy.

Bentonite: Vestal, 1.
Calcareous shells replaced by beidellite: Ross, C. S., 31.
Clays, Wilson Co.: Works Prog. Ad., 1.
Lignite, Wilson Co.: Works Prog. Ad., 1.
Mineral res.: Foster, 5; Mellen, F. F., 3.
Water: Foster, 5.

Paleontology.

Amphiophiura, Oligocene: Berry, C. T., 8.
Anadara Pelecypoda: Schenck, 32.
Archaeoceti, Tert.: Kellogg, 9.
Bairdopplata, Miocene, Cret.: Coryell, 12.
Bitubulogenerina, Oligocene: Howe, H. V., 12.
Bolinvinella, Oligocene: Howe, H. V., 1.
Brissopsis, Tert.: Grant, 13.
Calcareous shells replaced by beidellite: Ross, C. S., 31.
Clarke Co., Tert.: Israelsky, 5; Shreveport G. Soc., 3.
Combretum, Eocene: Berry, 42.
Cytherelloidea, Tert.: Howe, H. V., 8.
Cytheridea, Tert.: Stephenson, M. B., 3.
Decapod crustaceans: Stenzel, 7.
Diploschiza, Cret. Stephenson, M. B., 11.
Eogorgia, Eocene: Hickson, 1.
Eucythere, Tert.: Howe, H. V., 20.
Foraminifera: Cushman, 1, 26; Ellis, A. D., 1; Gravell, 2, 6; Hadley, W. H., Jr., 2; Howe, H. V., 2; Vaughan, 17.
Jackson Eocene: Conrad, 1; Fisk, 8; Monsour, 1.
Loxocncha, Eocene: Murray, G. E., Jr., 3.

Mississippi—Continued.

Paleontology—Continued.

- Micropaleontologic analysis, Jackson
 Eocene: Monsour, 1.
 Mollusca, Eocene: Gardner, 15; Palmer, K. E. H. V., 2; Stephenson, 26.
 Mollusks, Pleist.: Richards, 19.
 Musk ox, Pleist.: Hay, 7.
 Nautiloids, Midway: Miller, A. K., 10.
 Ostracoda: Frost, V. L., 1; Howe, 8; Stephenson, M. B., 3.
 Ostrea, large, Tert.: Howe, 27.
 Pectinidae, Tert.: Rowland, H. I., 1; Tucker, 8.
 Tishomingo State Park: Morse, 9.
 Turrids, Eocene: Harris, G. D., 4.
 Uvigerina, Eocene: Cushman, 1.
 Valvulinidae: Cushman, 29.
 Verneulinidae: Cushman, 29.
 Vicksburg group: Mornhinweg, 1.
 Virgulinidae: Cushman, 29.
 Wayne Co.: Israelsky, 5; Shreveport G. Soc., 3.

Petrology.

- Deltas, Mississippi River: Twenhofel, 27.
 Eocene sediments: Grim, 7.
 Tombigbee sands: Needham, 4.

Physical geology.

- Earth cracks: Monroe, 2.
 Erosion: Tharp, 1.
 Slump, Ft. Adams: Russell, R. J., 10.
 Volcanoes, Cret.: Miser, 17.

Physiographic geology.

- Delta, lower Mississippi River: Twenhofel, 26.
 General: Foster, V. M., 1, 4.
 Larto Lake, Mississippi River: Russell, R. J., 6.

Underground water.

- Water res.: Foster, V. M., 2, 5, 6.

Mississippi River, bibliography: Haferkorn, 2.

Mississippi River sedimentary load: Russell, R. D., 16.

Mississippi Valley, upper: Trowbridge, A. C., 2.

Mississippian. See Carboniferous.

Missouri.

- Earth resistivities: Keller, W. D., 2.
 Report of State geologist: Buehler, 1, 2, 4, 5, 8, 9.

Areas described.

- Cardareva quad.: Bridge, 2.
 Edgehill quad.: Dake, C. L., 1.
 Eminence quad.: Bridge, 2.
 Northwest Mo.: McQueen, 10.
 Ozark Mts. area: Schottenloher, 2.
 Potosi quad.: Dake, C. L., 1.

Missouri—Continued.

Economic geology.

- Alnoite pipe, Avon: Ball, S. H., 1.
 Asphalt-bearing ss.: Crabtree, E. H., 1.
 Barite: Tarr, 8; Weigel, 1.
 Blue Springs gas field: Bartle, 1.
 Building and ornamental stone: Brown, C. L., 1.
 Carbon dioxide gas wells: Wells, E. H., 3.
 Cheltenham clay: Allen, V. T., 17, 18.
 Cherokee fm., Kans. City: Bartle, 4.
 Clays: Allen, V. T., 6, 8, 17, 18; Farrar, 1; McQueen, 3; Moore, G. E., 1; Swartzlow, 1-a.
 Coal, Perry area: McQueen, 2.
 Copper: Bridge, 4; Rust, G. W., 1.
 Felsites, Iron Mtn.: Meyer, C., 1.
 Forest City Basin: Osborn, W. G., 2; Anonymous, 187.
 Fuller's earth: Allen, 10.
 Geophysical prosp., oil and gas: Farnham, F. C., 1.
 Halloysite: Smith, A. F., 1; Zvanut, 1.
 Hydrothermal deposit, Wayne Co.: Tarr, 14.
 Iron deposits: Grave, 1; Grawe, 4; Singewald, J. T., Jr., 1; Tarr, 28.
 Lead deposits: Bryan, J. J., 3; Tarr, 21.
 Lead and zinc dists.: Sminnov, 1.
 Limestone in Cheltenham clay: Allen, 14.
 Magnetic surveys: Grohskopf, J. G., 1.
 Magnetometer results: Buehler, 3.
 Marcasite, sink-hole deposits: Tarr, 24.
 Miami-Picher lead-zinc dist.: Fowler, 5; Tarr, 15.
 Mineral production: McQueen, 1.
 Mineralization, Silvermine: Singewald, J. T., Jr., 5.
 Ore deposits, Tri-State dist.: Fowler, G. M., 1, 2, 4, 8, 10; Harbaugh, 1.
 Ore deposition, Avon: Singewald, J. T., Jr., 5.
 Petroleum and gas: Greene, F. C., 2, 4, 5, 7, 8; Wells, E. H., 3.
 Pre-Cambrian iron mineralization: Tolman, 17.
 Recent oil explor.: Hager, 4.
 Rock wool: McQueen, 7.
 Sandstone covered flint clay: Keller, 10.
 Silver Mine area: Tolman, 8, 9.
 Southwestern Illinois-Southeastern Missouri area: Kans. G. Soc., 12.
 Stoddard Co.: Farrar, 2.
 Sulfide ores, origin: Emmons, W. H., 1.
 Tri-State lead-zinc dist.: Fowler, G. M., 2, 4, 7, 8; Harbaugh, 1, 2; Leith, 5.

Historical geology.

- Asphalt-bearings ss.: Crabtree, 1.
 Aux Vases ss.: Keyes, 220, 439.
 Auxvasse Creek quad.: Conselman, 1.
 Balley lms.: Keyes, 483.
 Bainbridge fm.: Ball, J. R., 1, 17, 20.
 Bainbridge lms.: Dunn, 8.
 Baltimore & Ohio route: Grimsley, 1.
 Beloit lms.: Keyes, 500.

Missouri—Continued.

Historical geology—Continued.

- Bentonite, Ord.: Allen, V. T., 5.
 Bethany lms.: Keyes, 42, 378, 383, 470, 471.
 Blue Springs gas field: Bartle, 1.
 Brassfield lms.: Ball, J. R., 1.
 Burlington lms.: Laudon, 12.
 Calloway lms.: Keyes, 477.
 Charette lms. title: Keyes, 341.
 Cherokee fm.: Bartle, 4.
 Clear Creek fm.: Keyes, 493.
 Conodonts, Penn. index fossils: Ellison, 2.
 Correlations, Bainbridge - Henryhouse fms.: Ball, 17.
 Insoluble residues: McQueen, 4.
 Iowa-Missouri, Penn.: Cline, 4.
 Upper Camb.: Bridge, 7.
 Cotter fm.: Grawe, 2.
 Cretaceous, SW. Mo.: Lamar, 4.
 Cross secs.: Condra, 12; Kellett, 2.
 Crowleys Ridge: Matthes, 18.
 Crystal City quad.: Pike, R. W., 1.
 Dam sites, Gasconade, Grand Rivers: Wentworth, 12, 13.
 Decorah volcanic ash-bed: Keyes, 342.
 Devonian correl.: Weller, 31.
 Dickite: Grohskopf, J. G., 2.
 Drum lms.: Sayre, 1.
 Dutchtown, Lower Ord.: McQueen, 6.
 East St. Louis dist.: Ekblaw, 9.
 Fern Glen lms.: Keyes, 394, 463.
 Fern Glen-Reeds Spring fms. relations: Gillerman, 1.
 Fernvale correl.: Shideler, 18.
 Fluorite: Grohskopf, J. G., 2.
 Forbes lms.: Keyes, 358.
 Forest City Basin: McQueen, 11; Osborn, W. G., 2; Anonymous, 187.
 Formation names, Ill.-Mo.: Weller, 33.
 General geology: Folger, 4; Kans. G. Soc., 5, 6, 8; Peery, 1.
 Geologic map: Missouri G. S., 1.
 Granite-rhyolite relations: Tarr, 9.
 Graphiocrinus colony: Keyes, 461.
 Grassy Creek sh.: Weller, 23.
 Hannibal fm.: Branson, 34.
 Index, stratigraphy adjoining areas: Ver Wiebe, 7.
 Insoluble-residue correl.: McQueen, 9.
 Isopach maps: Ball, 13.
 Izard fm.: Keyes, 133, 490.
 Jefferson City fm.: Grawe, 2.
 Kansas City group: Keyes, 357, 473.
 Kimmswick and Plattin: Keyes, 128.
 Kimmswick vs. Charette: Keyes, 498.
 Kinderhookian: Branson, E. B., 3, 20.
 Lead deposits, origin: Tarr, 21.
 Lexington fm.: Keyes, 349.
 Linnian Dev. ser.: Keyes, 476.
 Mapping units in geology: Keyes, 355.
 Megistocrinus zone.: Keyes, 479.
 Mississippi River arch: Howell, J. V., 6.
 Mississippi Valley cross secs.: Workman, 7.
 Mississippian: Branson, 23, 33, 37, 39; Laudon, 4; Moore, 27; Weller, 32.

Missouri—Continued.

Historical geology—Continued.

- Murfreesboro lms.: Ulrich, 34.
 Northeastern Mo.: Grohskopf, J. G., 3.
 Northview fm.: Branson, 34.
 Northwestern Mo.: McQueen, 10.
 Ordovician: Allen, 5, 7; Grohskopf, J. G., 4.
 Osage beds: Cline, L. M., 1; Keyes, 180; Moore, R. C., 19.
 Ozark region: Cline, L. M., 1; Cozzens, 2; Kans. G. Soc., 1; Keyes, 180; McQueen, 4.
 Pennsylvanian: Bailey, W. F., 4; Kans. G. Soc., 9; Knight, J. B., 1, 8; Moore, 31.
 Permian: Kans. G. Soc., 9; Moore, 31.
 Petroleum and gas poss.: Greene, 7.
 Plattin and Kimmswick: Keyes, 128.
 Pre-Cambrian: Graves, 1.
 Prosser lms. invalid: Keyes, 338.
 Reeds Spring-Fern Glen relations: Gillerman, 1.
 Residues, insoluble, strat. guides: McQueen, 4.
 Rockford shs.: Keyes, 436.
 Rock wool: McQueen, 7.
 St. Louis fm.: Clark, E. L., 1.
 Sandstone thickness, Penn.: Bartle, 2.
 Savannah area: Greene, 4.
 Sedalia lms. title: Keyes, 392.
 Shawnee group correl.: Condra, 16.
 Silurian: Ball, J. R., 2, 21, 23.
 Silver mine area: Tolman, 8.
 Southeastern Mo.: Farrar, 1.
 Southeastern Missouri-Southwestern Illinois: Kans. G. Soc., 12.
 Stoddard Co.: Farrar, 2.
 Strontium minerals: McQueen, 8.
 Sulphur Springs fm.: Keyes, 478.
 Sylamore ss.: Keyes, 396.
 Tertiary, SW Mo.: Lamar, 4.
 Tom Sauk lms.: Brightman, 1.
 Tri-State dist.: Fowler, 7.
 Western Mo.: Greene, F. C., 2.
 Wittenberg fm.: Keyes, 491.
Mineralogy.
 Alteration of galena: Swartzlow, 2.
 Archie meteorite: Haynes, E. S., 1; Nininger, 35, 43.
 Baxter meteorite: Nininger, 46, 55.
 Cheltenham clay minerals: Allen, 18.
 Clays, disaspore: Swartzlow, 1-a.
 Dickite: Allen, 15; Grohskopf, J. G., 2; Tarr, 19.
 Felsites, Iron Mtn.: Meyer, C., 1.
 Fluorite: Grohskopf, J. G., 2.
 Galena: Head, 3; Smith, W. S. T., 2.
 Glauconite: Allen, 20.
 Granites: Tolman, 11, 13.
 Gypsum rosettes in cave: Robertson, P., 1.
 Halloysite: Zvanut, 1.
 Iron deposits, Pilot Knob: Tarr, 23.
 Kaolinite from solution: Tarr, 25.
 Labrador-hyper-oranite: Goldich, 3.
 Lanton meteorite: Cullison, 1.

Missouri—Continued.

Mineralogy—Continued.

- Lead belt: Bryan, J. J., 3.
 Lead and zinc dists.: Sminnov, 1.
 Marcasite: Tarr, 24.
 Mendozite: Keller, 4.
 Meteorites: Cullison, 1; Haynes, E. S., 1; Nininger, 35, 43.
 Minerals, rare: Gleason, 3.
 Pre-Cambrian iron: Tolman, 17.
 Septarian concretions: Swartzlow, 6.
 Sericite, Pilot Knob: Meyer, D. B., 1.
 Silver mine: Singewald, J. T., Jr., 3.
 Sphalerite: Smith, W. S. T., 2.
 Strontium minerals: McQueen, 8.
 Tri-State dist. minerals: Palmer, E. J., 1.

Paleontology.

- Allagecrinus, Missn.: Peck, 5.
 Ammonoids: Elias, 20; Miller, 43.
 Annularia: Elias, 3.
 Anthozoa: Ball, 19; Grove, B. H., 3.
 Atrypae: Greger, 11.
 Bainbridge lms.: Ball, J. R., 1.
 Bainbridgia: Ball, J. R., 9.
 Beauvais ss. fauna: Cronels, 8.
 Bellerophons: Weller, J. M., 4.
 Blastoida: Greger, 12; Peck, R. E., 1, 13.
 Bonnetterre fm.: Lochman, 1.
 Brachiopoda: Ball, J. R., 3; Girty, 2; Greger, 6; Ulrich, 27.
 Brassfield lms.: Ball, J. R., 1.
 Burlington lms. fauna: Laudon, 12.
 Camarotoechia: Ball, 8.
 Cambrian, Ozarks: Ulrich, 6.
 Cauloxylon, Missn.: Cribbs, 5.
 Cephalopoda: Ulrich, 24.
 Charophyta: Peck, R. E., 3, 4.
 Clay cast, fossil wood: Keller, 9.
 Conodonts: Branson, E. B., 16, 17, 18, 19, 36, 38; Branson, E. R., 1; Ellison, 1, 2; Gunnell, 1, 2, 8.
 Corals: Ball, 19; Grove, B. H., 3.
 Cordaites: Cribbs, 1, 3.
 Crinoidea: Peck, 14.
 Cryptoblastus: Cline, L. M., 2.
 Drum lms.: Sayre, 1.
 Dutchtown fauna: Cullison, 4.
 Eupachyrinus: Kirk, 18.
 Fauna, Bainbridge lms.: Ball, J. R., 6; Dunn, 9.
 Fauna, Bonnetterre dol.: Lochman, 6.
 Fish, paleoniscid: Case, 23.
 Footprints: Branson, E. B., 15.
 Foraminifera: Dunn, 9.
 Fossil wood: Cribbs, 2.
 Gastropoda: Knight, J. B., 5.
 Goniatite: Bisat, 1.
 Graphiocrinus: Keyes, 461, 472.
 Griffithides: Williams, J. S., 3.
 Gruenewaldtia: Greger, 10.
 Hannibal fm. fauna: Branson, 34.
 Kimmswick lms. fauna: Bradley, J. H., Jr., 2.
 Listracanthus: Hibbard, 11.

Missouri—Continued.

Paleontology—Continued.

- Mammalia: Burrill, 2; Matthew, 16.
 Man, ancient: Cronels, 49.
 Magistocrinus zone: Keyes, 479.
 Mesolobus: Weller, 17.
 Microcrinoids: Peck, 6.
 Mississippian: Branson, 33, 37; Gunnell, 1.
 Mollusca, Pleist.: Greger, 2.
 Münsteroceras: Miller, A. K., 20.
 Nautiloidea: Miller, A. K., 16, 41.
 Northview fm.: Branson, 34.
 Ordovician, Ozarks: Ulrich, 6.
 Ostracoda: Morey, P. S., 2, 4.
 Paleocyclidae: Bassler, 25.
 Paleoniscid brain case: Eaton, T. H., 3.
 Pedicellariae: Geis, 3.
 Pelecypoda: Williams, J. S., 2.
 Pennsylvanian: Bailey, W. F., 4; Knight, J. B., 5.
 Petrified logs, Missn.: Clark, E. L., 2.
 Picea, Pleist.: Hansen, E. B., 1.
 Pisces: Branson, 35; Case, 23.
 Pleistocene: Greger, 2.
 Productidae: Branson, E. B., 6; Girty, 4, 9; Sutton, 14.
 Pseudorthoceratidae: Flower, 9.
 Pteridosperms: Arnold, 28.
 Pycnoxylon: Cribbs, 4.
 Rhynchonellid (?): Ball, 12.
 St. Louis fm., Missn.: Clark, E. L., 1.
 St. Louis outlier fauna: Kellett, 4.
 Schizoblastus: Cline, L. M., 2.
 Scolecodonts: Cronels, 17.
 Septarian concretions: Swartzlow, 6.
 Setigerella: Girty, 9.
 Silurian, SW. Mo.: Ball, J. R., 2.
 Strophalosia: Hinchey, 1.
 Throopella: Greger, 3.
 Trilobita: Lochman, 2.
 Trochiliscaceae: Peck, 7.
 Wedekindellina: Newell, 8.
Petrology.
 Alnoite pipe: Singewald, J. T., Jr., 5.
 Auvasse Creek quad.: Conselman, 1.
 Choutou lms.: Swartzlow, 3.
 Clays: Allen, V. T., 6, 10, 17.
 Correlations: McQueen, 4.
 Cotter fm.: Grawe, 2.
 Dickite: Grohskopf, J. G., 2.
 Fluorite: Grohskopf, J. G., 2.
 Fuller's earth: Allen, 10.
 Granites: Tarr, 9; Tolman, 11.
 Gypsum rosettes: Robertson, P., 1.
 Jefferson City fm.: Grawe, 2.
 Loess, St. Charles: Oefelein, 1.
 Minerals of ss., Ozark: Cordry, 1.
 Mt. Devon diabase porphyry: Mullenburg, 1.
 Porters Creek fm.: Allen, 9.
 St. Francis Mts. granite: Tolman, 10.
 Sandstone covered flint clay: Keller, 10.
 Septarian concretions: Swartzlow, 6.
 Tom Sauk lms.: Brightman, 1.

Missouri—Continued.

Physical geology.

- Buried, resurrected hills, Ozarks: Bridge, 1; Dake, C. L., 3.
 Caves: Burrill, 1.
 Cherts and stylolites: Bastin, 5.
 Crustal structure from earthquakes: Robertson, F., 2.
 Decaturville dome: Tarr, 16.
 Dickite, Perry Co.: Grohskopf, J. G., 2.
 Earthquakes: Bradford, D. C., 3, 5; Macelwane, 16; Ramirez, 1; Robertson, F., 1, 3; Westland, 2.
 Felsites, Iron Mtn.: Meyer, G., 1.
 Fluorite, Perry Co.: Grohskopf, J. G., 2.
 History, seismic: Bradford, D. C., 5.
 Igneous intrus., Farmington: Tarr, 12.
 Igneous rocks, Miss. Valley: Tolman, 16.
 Initial dips around resurrected hills: Bridge, 1.
 Labradorite-hyperoanite: Goldich, 3.
 Lead deposits, origin: Tarr, 21.
 New Madrid earthquake: Ramirez, 1.
 Northeastern Mo.: Grohskopf, J. G., 3.
 Oolites, Holton cave: Keller, 8.
 Post-Cambrian volcanism: Rust, G. W., 2; Tolman, 14.
 Post-Pennsylvanian, Ozark dome: Melton, 7.
 Pre-Cambrian: Graves, 1.
 St. Francis Mts. intrus.: Tolman, 10.
 St. Marys area, seismol. since 1910: Heinrich, 4.
 Secondary oolite: Swartzlow, 1.
 Seismology: Heinrich, 2.
 Stoddard Co.: Farrar, 2.
 Striated rock surfaces: Wentworth, 30.
 Varve-like deposits in solution channel: Keller, 11.
 Volcanism: Rust, G. W., 2; Tolman, 14.
- Physiographic geology.*
 Blue Springs gas field: Bartle, 1.
 Drainage, preglacial, NW. Mo.: Greene, 6.
 Drift exposures, St. Louis area: Robertson, P., 2.
 Glacial striae, Kansas City: Jewett, 4.
 Grays Summit saddle: Walka, 2.
 Loess near St. Louis: Robertson, P., 3.
 Mississippi River, Pleist.: Matthes, 17; Robertson, P., 4.
 Mosby ss. cave: Bartle, 3.
 Northeastern Mo.: Grohskopf, J. G., 3.
 Ozark Province: Cozzens, A. B., 2.
 Pre-Cambrian: Graves, 1.
 Stoddard Co.: Farrar, 2.
 Valley, preglacial, Jackson Co.: Clair, 1.
 Volcanism, SE. Mo.: Rust, G. W., 2.
- Underground water.*
 St. Louis area: Gleason, 2.
 Sink and cave deposits, Ozarks: Buehler, 10.
 Valley, preglacial, NE. Mo.: Clair, 1.
 Missourian ser., sed. cycle: Keyes, 350.
 Moissanite in sediments: Ohrenshall, 1.

Molding sand. See also Sand.

- Alabama: Adams, G. I., 1.
 Canada: Freeman, C. H., 1.
 Illinois: Willman, 1.
 Iowa: Smith, J. E., 3.
 Ohio: Bownocker, 3.
 Quebec: McGerrigle, 8.
 Tennessee: Whitlatch, 20.
- Molds, internal, uses: Cullison, 5.
- Mollusca. See also Cephalopoda; Gastropoda; Invertebrates (general); Pelecypoda.
 Alabama: Gardner, 16; Stephenson, 19.
 Alaska: Clark, 15.
 Alberta: Dyer, 2; McLearn, 9; Russell, L. S., 7, 11, 12, 35; Warren, P. S., 3.
 Alum Bluff, Fla.: Gardner, 9.
 Arizona: Henderson, J., 8; Reagan, 1.
 Arkansas, Carb.: Girty, 2.
 Aspen shale, Wyo.: Reeside, 9.
 Associated with early man: Richards, 13.
 Atlantic Coast Pectinidae: Tucker, 7.
 Barbados coral rock: Trechmann, 5.
 Beidellite replacing calcareous shells: Ross, 31.
 Blakeley fauna, Wash.: Tegland, 4.
 British Columbia: Crickmay, C. H., 7; McLearn, 22; Warren, P. S., 5, 9.
 California: Bramkamp, 1; Bremner, 1; Clark, A., 1; Crickmay, C. H., 16, 19; Grant, U. S., IV, 3, 7, 8; Greger, 5; Hanna, 30; Hertlein, 7; Kleinpell, 8; Kutchka, 1; Loel, 2; Oldroyd, 1; Pillsbury, 8; Vokes, 5; Waterfall, 1; White, R. T., 2; Weidey, 4; Willett, 1, 3; Woodring, 10, 17, 18, 19.
 Canada: Mozley, 2; Richards, 11.
 Clovis gravel pit, N. Mex.: Clarke, W. T., Jr., 1.
 Color patterns: Foerste, 10.
 Connecticut: Cooper, G. A., 1; Knight, J. B., 9.
 Correlation, based on: Clark, 25.
 Cuba: Aguayo, 1, 2; Douvillé, 1; Richards, 9; Sanchez Roig, 3.
 Custer fauna, Tex., Okla.: Newell, 9.
 Exogyra zone: Stephenson, 7.
 Florida: Gardner, 9; Mansfield, W. C., 5, 7, 19, 21, 22, 23; Richards, 10; Smith, M., 1, 2; Tucker, H. I., 5, 6.
 Greenland: Frebold, 6, 8; Noe-Nygaard, 2; Spath, 1.
 Hawaii: Ostergaard, 2.
 Hyatt's unfigured Juras. types, Calif.: Crickmay, C. H., 16.
 Illinois: Baker, F. C., 1, 3, 6, 10, 15.
 Index method for comparing faunules: Schenck, 28.
 Influence of glacial period on: Baker, F. C., 5.
 Jamaica: Woodring, 2.
 Kansas: Baker, F. C., 18; Girty, 1.
 Loess, sequence in: Baker, F. C., 14.
 Louisiana: Fisk, 2; Rukas, 1.

Mollusca—Continued.

- Maine: Whitcomb, 10.
 Mexico: Anderson, D. L. M., 1; Grant, 11; Hertlein, 8; Jaworski, 1; Manger, 1; Müllerried, 16; Palmer, R. H., 4.
 Minnesota: Powell, L. H., 1; Stauffer, 12, 16.
 Mississippi: Stephenson, 19, 26.
 Missouri: Greger, 2.
 Molluscan prov., west U. S.: Henderson, J., 7.
 Montana: Coryell, 2; Russell, L. S., 21.
 Nebraska: Baker, F. C., 18; Lugin, 5.
 Newfoundland: Richards, 12.
 New Jersey: Pilsbry, 6; Richards, 5.
 Nomenclature: Palmer, K. E. H. V., 3.
 Non-marine: Davies, J. H., 1; Henderson, J., 10.
 North Carolina: Henbest, 11; Mansfield, W. C., 13.
 Nova Scotia: Bell, W. A., 2.
 Ontario: Baker, F. C., 7.
 Oregon: Henderson, J., 1, 9.
 Paleozoic plankton: Ruedemann, 24.
 Paleozoic snail borings: Fenton, 22.
 Panama: Li, 1; Pilsbry, 4.
 Pectinidae, preoccupied names: Hertlein, 5.
 Pennsylvania: Brooks, S. T., 1.
 Phosphoria fm.: Branson, C. C., 1.
 Pleistocene: Baker, F. C., 6, 15, 16; Clark, A., 1; Cooke, C. W., 20; Grant, 7; Hertlein, 8; Palmer, R. H., 4; Richards, 15; Shimek, 1.
 Rocky Mts. area: Henderson, J., 8.
 St. Kitts, West Indies: Trechmann, 3.
 Saskatchewan: Russell, L. S., 14, 20.
 Shakopee dol. fauna: Stauffer, 12, 16.
 South Carolina: Cooke, C. W., 20; Mansfield, W. C., 16.
 Texas: Albritton, 9; Clarke, 2; Gardner, J. A., 8; MacNeil, 3; Marshall, W. B., 1; Renick, 5.
 Trinidad: Kugler, 4; Trechmann, 7.
 United States, W.: Henderson, J., 5; Schenck, 17.
 Utah: Berry, E. G., 1; Hasler, J. W., 1.
 Venericardia: Rutsch, 3.
 Washington: Etherington, 2; Henderson, J., 1; Tegland, 4.
 Wyoming: Reeside, 9; Russell, L. S., 9, 84.
 Yukon: Lees, E. J., 1.

Molluscoidea. See Brachiopoda; Bryozoa.

Molybdenite.

- Arizona: Vanderwilt, 12.
 British Columbia, Ft. Fraser area: Armstrong, J. E., 2.

Molybdenum.

- Alaska: Buddington, 4.
 Arizona: Kuhn, 1; Peterson, N. P., 1, 2.
 Arkansas: McKnight, 3.
 British Columbia: Cairnes, 17; Hanson, 1.

Molybdenum—Continued.

- Colorado: Butler, B. S., 4, 5, 9; Chapman, E. P., 2; Coulter, C. C., 1; Goddard, 3; Kissock, 1; Landes, 17; Petar, 1; Staples, 1; Vanderwilt, 3.
 Idaho: Anderson, A. L., 23; Bell, R. N., 3.
 New Brunswick: Pottevin, 3.
 New Mexico: Sundberg, 1.
 Nova Scotia: Messervey, 19.
 Ontario: Freeman, B. C., 4; Moorehouse, 3.
 Quebec: Bell, L. V., 14; Cooke, H. C., 11; Hawley, 6.
 Types of deposits: Butler, 22.
 United States: Rusakov, 1.

Monazite: A. I. M. E., 2.

Montana.

Areas described.

- Argenta area: Shenon, 1.
 Ashland coal field: Bass, 3.
 Bannack area: Shenon, 1.
 Big Horn Co.: Knappen, 2; Thom, 14.
 Big Snowy Mts.: Reeves, F., 3.
 Carbon Co.: Knappen, 2.
 Choteau Co.: Pierce, 7.
 Coopers Lake quad.: Clapp, C. H., 6.
 Crow Indian Reservation: Thom, 14.
 Hill Co.: Pierce, 7.
 Kevin-Sunburst oil field: Collier, 1.
 Liberty Co.: Pierce, 7.
 McCone Co.: Collier, 3.
 Mizpah coal field: Parker, F. S., 2.
 North Moccasin Mts.: Bixt, 1.
 Red Lodge coop. research area: Thom, 6.
 Rochester mining dist.: Sahinen, 4.
 Rosebud coal field: Pierce, 6.
 Sheridan coal field: Baker, A. A., 2.
 Tobacco Root Mts.: Tansley, 1.
 Trail Creek-Canyon Mtn. area: Skeels, 1.

Economic geology.

- Agate: Harstad, 2.
 Alabandite: Hewett, 2.
 Argenta area: Shenon, 1.
 Asbestos: Bowles, O., 4.
 Ashland coal field: Bass, 3.
 Badger Pass mining dist.: Sabinen, 1.
 Baker-Glendive anticline: DeWolf, 4.
 Bannack area: Shenon, 1.
 Big Horn Basin oil and gas fields: Emery, W. B., 3; Field, R. M., 4.
 Big Horn Co.: Thom, 14.
 Block P mine: Spiroff, 3.
 Boulder batholith: Jones, R. H. B., 1.
 Butte mining dist.: Dickey, F. H., 2; Hart, L. H., 2; Perry, E. S., 4.
 Chouteau Co.: Pierce, 7.
 Chromite: Jones, V. E., 1; Salo, 1; Schafer, 8.
 Clay: Warde, 2.
 Coal: Collier, 3; Dobbin, 8; Parker, F. S., 2; Pierce, 2.
 Colorado geosyncline: Harris, G. W., 1.

Montana—Continued.

Economic geology—Continued.

Cut Bank oil field: Perry, 12; Stewart, H. A., 1.
 Deep drilling results: Bartram, 4.
 Elk Basin oil and gas field: Bartram, 1.
 Flathead mine: Shenon, 2.
 Forsyth coal field: Dobbin, 3.
 Gold: Corry, A. V., 1; Crawford, 5, 9;
 Gibson, R., 1; Gilbert, F. C., 2;
 Grassmuck, 1; Jones, V. E., 2;
 Lorain, 1.

Helena area minerals: Pardee, 4.
 Hill, Co.: Pierce, 7.
 Hog Heaven mining dist.: Shenon, 15.
 Kevin-Sunburst oil field Collier, 1;
 Howell, W. F., 1.
 Liberty Co.: Pierce, 7.
 Manganese: Gilbert, F. C., 3.
 Metasomatic replacement deposits: Ray,
 J. C., 1.
 Mineral resources: Sahinen, 2.
 Mining geology at Butte: Linforth, 1.
 Mizpah coal field: Parker, F. S., 2.
 Natural gas: Bartram, 7; Dobbin, 10;
 Perry, 8, 17, 18; Pierce, 2; Rowe,
 J. P., 1.

Neihart mining dist.: Schafer, 1.
 New World dist.: Lovering, 1.
 Nickel: Howland, A. L., 2.
 Nonmetallic minerals: Kriegel, 1.
 Oil fields: Bartram, 5; Link, 10; Perry,
 18; Romine, 1.
 Petroleum: Bartram, 5; Brainerd, 6;
 Dobbin, 10; Link, 10.
 Ore genesis: Shenon, 12.
 Ornamental stone: Mansfield, G. R., 13.
 Phosphate rock: Mansfield, G. R., 1, 10;
 Pardee, J. T., 9; Sabinen, 3.
 Placer mining: Dingman, 1.
 Platinum: Howland, 2.
 Rainy Creek dist.: Pardee, J. T., 2.
 Richey-Lambert coal field: Parker, F. S.,
 1.
 Rochester mining dist.: Sabinen, 4.
 Rocky Mts. area: Uren, 2.
 Rocky Mts. phosphate field: Mansfield,
 G. R., 10.

Rosebud coal field: Pierce, 6.
 Ruby Gulch gold dist.: Dyson, 3.
 Sapphires: Howard, J. W., 1; Murdock, 1.
 Silver, first production: Gilbert, F. C., 1.
 Southeastern Mont.: Perry, 15.
 Spring Hill gold mine: Jones, V. E., 2.
 Stillwater complex: Howland, 2.
 Tobacco Root Mts.: Tansley, 1.
 Vein system, Butte: Ray, J. C., 3.
 Vermiculite: Kriegel, 2.
 York-Confederate Gulch area: Anony-
 mous, 8.

Historical geology.

Algal reefs, bioherms, Belt ser.: Fenton,
 32.
 Algonkian fms., correl.: Clapp, C. H., 1.
 Argenta area: Shenon, 1.
 Baker-Glendive anticline: DeWolf, 4.

Montana—Continued.

Historical geology—Continued.

Bannack area: Shenon, 1.
 Beartooth Mts. area: Bucher, 11, 13;
 Cloos, 9; Chamberlin, 10; Sharp,
 11; Stow, 14; Thom, 16.
 Belt ser.: Fenton, 21, 54; Gibson, 3, 6.
 Benton fm., type sec.: Keyes, 313.
 Big Horn Basin: Bucher, 11, 13; Cham-
 berlin, 10; Emery, 3; Sandidge, 6;
 Stow, 12; Thom, 14, 23.
 Big Horn Basin gas field: Emery, 3.
 Big Horn Basin-Yellowstone Valley:
 Thom, 23; Anonymous, 117.
 Big Horn Co.: Thom, 14.
 Big Snowy Mts.: Deiss, 6.
 Black Hills-Big Horn-Beartooth area:
 Chamberlin, 10; Cloos, 9.
 Block P mine: Sproff, 3.
 Butte mining dist.: Dickey, F. H., 2;
 Hart, L. H., 2.
 Cambrian: Deiss, 4, 7, 8, 10, 11; Howell,
 31.
 Cambrian-Algonkian unconformity:
 Deiss, 4.
 Carboniferous: Scott, H. W., 5.
 Cedar Creek anticline: Dobbin, 11; Erd-
 mann, 2.
 Cenozoic, Three Forks: Wood, H. E., 2d,
 15.
 Choteau Co.: Pierce, 7.
 Cinnabar Mtn. section: Wilson, C. W.,
 Jr., 2.
 Cloverly conglom. correl.: Lammers, 4.
 Colorado geosyncline: Harris, G. W., 1.
 Crazy Mts.: Wolff, 4.
 Cretaceous-Eocene boundary: Brown,
 R. W., 20.
 Cretaceous, Colo. geosyncline: Harris,
 G. W., 1.
 Dating by heavy minerals, Beartooth
 Mts.: Stow, 14.
 Devonian, Big Snowy Mts.: Deiss, 6.
 Dry Creek structure: Wilson, C. W., Jr.,
 15.
 East and cent. Mont.: Perry, E. S., 3.
 Ellis sec., Sweetgrass Hills: Sanderson,
 2.
 Forsyth coal field: Dobbin, 3.
 Fort Union, Crazy Mtn. field: Simpson,
 38.
 General: Perry, E. S., 16.
 Glaciation, Eocene: Scott, H. W., 12.
 Glacier Nat. Park: Fenton, 38, 40, 60;
 Thaxter, 1.
 Gold lodes, Tobacco Root Mts.: Lorain, 1.
 Granodiorite rocks, Libby quad.: Gibson,
 R., 2.
 Ground water, E., cent. Mont.: Perry,
 E. S., 2.
 Hill Co.: Pierce, 7.
 Hog Heaven mining dist.: Shenon, 15.
 Idaho batholith: Langton, 1.
 Igneous rocks, Crazy Mts.: Wolff, 6.
 Laccoliths, Highwood Mts.: Hurlbut, 10.
 Lance-Fort Union correl.: Andrews,
 D. A., 3.

Montana—Continued.

Historical geology—Continued.

- Lewis overthrust: Billings, 6.
 Liberty Co.: Pierce, 7.
 Livingston fm., Nye: Vhay, 2.
 Livingston Peak area: Lammers, 2.
 Madison group: Sloss, 3.
 Medicine Bow Mts.: Neely, 2.
 Mid-Phosphoria unconformity: Thomas, H. D., 2.
 Mizpah coal field: Parker, F. S., 2.
 Natural gas fields: Bartram, J. G., 7; Perry, 18.
 Neihart mining dist.: Schafer, 1.
 New World dist.: Lovering, 1.
 Nye-Bowler lineament: Wilson, C. W., Jr., 11.
 Paleozoic fms., N. W. Mont.: Deiss, 3.
 Phosphoria fm.: Branson, C. C., 1.
 Plains, near Highwood Mts.: Reeves, F., 1.
 Porphyry intrus., Beartooth Mts.: Rouse, 7.
 Pre-Cambrian, Beartooth-Big Horn-Black Hills: Close, 9.
 Pryor Mts.: Blackstone, 1.
 Rainy Creek dist.: Pardee, J. T., 2.
 Red Lodge geol. invest.: Thom, 10.
 Richey-Lambert coal field: Parker, F. S., 1.
 Rochester mining dist.: Sahinen, 4.
 Rocky Mts. area: Bevan, 3; Clapp, C. H., 2, 3, 4; Uren, 2.
 Rosebud coal field: Pierce, 6.
 Rosebud Co.: Renick, 1.
 Rothpletz and pre-Camb., Rocky Mts.: Keyes, 257.
 Ruby Gulch gold dist.: Dyson, 3.
 Southeastern Mont.: Perry, 15.
 Stillwater complex: Peoples, 2.
 Stock, Libby quad.: Gibson, 5.
 Structure, Yellowstone-Beartooth-Big Horn area: Thom, 13.
 Sweetgrass arch: Romine, 1.
 Trail Creek-Canyon Mtn. area: Skeels, 1.
 Treasure County: Hall, G. M., 1.
 Yellowstone-Beartooth-Big Horn area: Field, 4.
 Yellowstone Co.: Hall, G. M., 1.
 Water res., NE. Mont.: Perry, 14.
 Western Mont.: Pardee, J. T., 9.

Mineralogy.

- Block P mine: Spiroff, 3.
 Chromite deposits: Schafer, 3.
 Colusite: Landon, 6.
 Gold lodes: Lorain, 1.
 Gold nuggets: Dake, 25.
 Hastingsite in thermalite: Wolff, 5.
 Heavy minerals, Big Horn Basin: Stow, 12.
 Hedenbergite: Warde, 1.
 Helvite: Hewett, 15.
 Hübnerite: Fisher, D. J., 1.
 Hughesville dist.: Spiroff, 5.
 Madison group: Sloss, 3.
 Mizpah coal field: Parker, F. S., 2.

Montana—Continued.

Mineralogy—Continued.

- Narsarsukite: Graham, W. A. P., 8.
 Neihart dist.: Spiroff, 5.
 Nickel: Howland, 2.
 Pegmatites: Pecora, 1.
 Plagioclase: Phillips, A. H., 2.
 Platinum: Howland, 2.
 Potash analcime: Larsen, 23.
 Pseudoleucite: Larsen, 23.
 Rochester mining dist.: Sahinen, 4.
 Ruby Gulch gold dist.: Dyson, 3.
 Sapphires: Howard, J. W., 1; Murdock, 1.
 Shonkin Sag laccolith: Hurlbut, 3.
 Sills and dikes, Libby quad.: Gibson, 4.
 Stillwater complex: Hess, H. H. 7; Howland, 2.
 Vermiculite: Kriegel, 2.

Paleontology.

- Acrotreta: Bell, C., 1.
 Algae, pre-Camb.: Erdmann, 4; Fenton, 43.
 Algal reefs, bioherms, Belt ser.: Fenton, 32.
 Ammonites, Dev.: Schindewolf, 2.
 Amphicyon: McGrew, 8.
 Ardynomys: Burke, 9.
 Baker-Glendive anticline: DeWolf, 4.
 Bear Creek fauna: Dorf, 14.
 Belt ser.: Fenton, 54.
 Brachiopoda: Campbell, I., 7; Fenton, 30.
 Cambrian: Deiss, 1, 11; Gale, H. R., 8.
 Cercidiphyllum: Brown, 24.
 Coals: Miner, 4.
 Conodonts: Knechtel, 7; Scott, H. W., 3, 4.
 Desmatolagus: Burke, 9.
 Diceratherium: Wood, H. E., 6.
 Dinosaurs: Brown, B., 7; Gilmore, C. W., 1, 4, 8, 18, 25; Harbicht, 1; Jepson, 4; Russell, L. S., 4.
 Elasmosaurus: Riggs, 6.
 Faunas, Upper Camb.: Howell, 25.
 Flora, Colgate mbr., Fox Hills: Brown, 23.
 Fort Union fauna: Simpson, G. G., 3.
 Fort Union flora: Dorf, 14.
 Foraminifera: Sandridge, 5, 6.
 Geomyid rodents: Wood, A. E., 14.
 Glacier Nat. Park: Fenton, 60.
 Glyptostrobos in America: Brown, R. W., 12.
 Heteromyid rodent: Wood, A. E., 4.
 Horatiomys: Wood, A. E., 6.
 Isoetales: Brown, 22.
 Lizards, Tert.: Gilmore, 22.
 Mammalia: Simpson, G. G., 3, 5, 27, 31, 35, 38, 43.
 Meliosma: Berry, 64.
 Meniscoëssus: Simpson, G. G., 31.
 Mollusca: Coryell, 10; Henderson, J., 8; Russell, L. S., 21.
 Multituberculata: Granger, 1.
 Oboloid Brachiopoda: Fenton, 30.

Montana—Continued.

Paleontology—Continued.

- Paramys : Jepsen, 8.
 Primate, Oligocene : Clark, J., 6.
 Productidae : Sutton, 14.
 Protostrix : Wetmore, 39.
 Prototreta : Bell, W. C., 1.
 Pseudocylindrodon : Burke, 6, 11.
 Pterygotus : Ruedemann, 28.
 Shelf fungus : Wieland, 17.
 Sponge spicules : Scott, H. W., 11.
 Stomatopod : Scott, H. W., 13.
 Teleorhinus : Mook, 5, 8.
 Tertiary fossil collecting : Gilmore, 8.
 Trachelocrinus : Ulrich, E. O., 2.
 Triceratops : Osborn, 31.
 Trilobita : Campbell, I., 7; Deiss, 1, 9, 11; Kobayashi, 2.
 Turtle : Case, 24.

Petrology.

- Agate : Harstad, 2.
 Alkaline stock, Libby : Larsen, E. S., 2.
 Belt ser. : Fenton, 54.
 Block P mine : Spiroff, 3.
 Contact zone, Sheep Creek : Taylor, J. H., 2.
 Cretaceous sed. rocks, Black Hills : Rubey, W. W., 3.
 Dating by heavy minerals, Beartooth Mts. : Stow, 14.
 Igneous rocks, Crazy Mts. : Wolff, 6.
 Highwood Mts. : Larsen, 15.
 Laccoliths, Highwood Mts. : Hurlbut, 10.
 Little Belt Mts. : Taylor, J. H., 1.
 Livingston fm. : Vhay, 2.
 Madison group : Sloss, 3.
 Mizpah coal field : Parker, F. S., 2.
 Pegmatites, Bearpaw Mts. : Pecora, 1.
 Plagioclases, Stillwater complex : Phillips, A. H., 2.
 Porphyry intrus., Beartooth Mts. : Rouse, 7.
 Rochester mining dist. : Sabinen, 4.
 Shonkin Sag laccolith : Barksdale, J. D., 1; Osborne, 11; Reynolds, D. L., 2.
 Sills and dikes, Libby quad. : Gibson, 4.
 Stillwater complex : Hess, H. H., 7; Phillips, A. H., 2.
 Stock, Libby quad. : Gibson, 5.
 Trail Creek-Canyon Mtn. area : Skeels, 1.

Physical geology.

- Beartooth Mts. faults, overthrusts : Barksdale, 15; Perry, E. L., 5.
 Big Horn Basin : Gutenberg, 14; Perry, E. S., 13; Stow, 12; Thom, 23; Tomlinson, 10.
 Big Horn Basin-Yellowstone Valley : Thom, 23; Anonymous, 117.
 Big Horn Basin-Yellowstone Valley conf., 1937 : Tomlinson, 10.
 Block P mine : Spiroff, 3.
 Boulder batholith : Grout, 13, 20.
 Butte mining dist. : Hart, L. H., 2.
 Chouteau Co. : Pierce, 7.
 Coal, McCone Co. : Collier, 3.

Montana—Continued.

Physical geology—Continued.

- Contact zone, Sheep Creek : Taylor, J. H., 2.
 Dating by heavy minerals, Beartooth Mts. : Stow, 14.
 Deer Creek volcanics : Parson, W. H., 4.
 Dreikanter : Delo, 2.
 Earthquakes : Gutenberg, 29; Heck, 31, 38; Landsberg, 5; Scott, H. W., 6, 7, 10; Ulrich, F. P., 4; Anonymous, 79.
 Fault scarp, recent, Madison Range : Swanson, R. W., 2.
 Faulting, post-Tert., intermontane basins : Pardee, 11.
 Folds from slumping : Pierce, 1.
 Glacier Nat. Park : Fenton, 38, 60.
 Helena earthquake : Landsberg, 5; Scott, H. W., 6, 7; Ulrich, F. P., 4; Anonymous, 9.
 Idaho batholith : Langton, 1.
 Igneous intrus., Highwood Mts. : Bule, 1; Larsen, 15.
 Igneous rocks, Crazy Mts. : Wolff, 6.
 Laccoliths, Highwood Mts. : Hurlbut, 10.
 Lewis overthrust relations : Billings, 16.
 Little Belt Mts. : Taylor, J. H., 1.
 Livingston fm. : Vhay, 2.
 Livingston Peak area : Lammers, 2.
 Mizpah coal field : Parker, F. S., 2.
 Moyie-Lenia overthrust fault : Kirkham, 6.
 Nye-Boulder lineament : Wilson, C. W., Jr., 11.
 Pictograph and Ghost Caves : Thomson, Ray, 1.
 Porphyry intrus., Beartooth Mts. : Rouse, 7.
 Pre-Cambrian, Laramide structures, Beartooth Mts. : Lammers, 6.
 Rochester mining dist. : Sabinen, 4.
 Rocky Mts. area : Bevan, 3; Chamberlin, 19.
 Ruby Gulch gold dist. : Dyson, 3.
 Shonkin Sag laccolith : Barksdale, J. D., 1; Hurlbut, 3; Reynolds, D. L., 2.
 Sills and dikes, Libby quad. : Gibson, 4.
 Solution-faceted lms. pebbles : Bryan, 5.
 Stillwater complex : Hess, H. H., 13; Peoples, 2.
 Stock, Libby quad. : Gibson, 5.
 Sweetgrass arch : Collier, 1.
 Thrust faults : Reeves, F., 1; Wilson, C. W., Jr., 4.
 Trail Creek-Canyon Mtn. area : Skeels, 1.
 Western Mont. : Pardee, 9.
Physiographic geology.
 Beartooth Mts. area : Hughes, R. V., 3; Sharp, 11.
 Big Horn basin : Perry, 13.
 Boulders and glacial striae, Little Rocky, Mts. : Knechtel, 8.
 Eastern Mont. : Alden, 3.
 Glaciation : Sardeson, 10; Scott, H. W., 12.

Montana—Continued.

Physiographic geology—Continued.

Glacier Nat. Park: Martin, E. S., 1;
Thaxter, 1.

Grinnell Glacier: Elrod, 1; Gibson, G.
R., 1.

Hog Heaven mining dist.: Shenon, 15.

Ice flowage, Clements glacier: Demorest,
M. H., 2.

Lewis overthrust relations: Billings, 16.

Mizpah coal field: Parker, F. S., 2.

Piedmont stream capture: Rich, 29-a.

Richey-Lambert coal field: Parker, F. S.,
1.

Rochester mining dist.: Sahinen, 4.

Rosebud coal field: Pierce, 6.

Snake Butte boulder train: Knechtel, 9.

Snowslide erosion and striations: Dyson,
1, 2.

Terraces, stream: Andrews, 5.

Tunnels, natural, Boulder River: Went-
worth, 23.

Underground water.

Artesian water and wells: Perry, E. S.,
6, 9.

Big Horn Basin: Perry, E. S., 13.

Big Horn Co.: Thom, 14.

Camas Prairie Valley: Perry, E. S., 11.

Chouteau Co.: Pierce, 7.

Crow Indian Reservation: Thom, 14.

Frenchtown Valley: Pierce, 11.

Ground water: Perry, E. S., 2, 3, 6, 7,
10, 14, 15.

Hill County: Pierce, 7.

Judith Basin: Perry, 5.

Liberty Co.: Pierce, 7.

Rosebud Co.: Renick, 1.

Southeastern Mont.: Perry, 15.

Treasure Co.: Hall, G. M., 1.

Yellowstone Co.: Hall, G. M., 1.

Water conservation: Schafer, 2.

Water res., N.E. Mont.: Perry, 14.

Monteirey cherts, Calif.: Taliaferro, 10.

Monticellite system: Beliankin, 1.

Montmorillonite in fuller's earth: Kerr, P.
F., 6.

Montserrat, West Indies.

Mineralogy.

Cristobalites: MacGregor, 2.

Tridymite: MacGregor, 2.

Petrology.

Cristobalites: MacGregor, 2.

Tridymite: MacGregor, 2.

Physical geology.

Earthquake problems: Perret, 8.

General: Lenox-Conyngham, 2.

Seismeter: Perret, 6.

Seismologic inv.: Powell, C. F., 1.

Volcanoes: Lenox-Conyngham, 1.

Volcano-seismic crises, 1933-37: Perret,
7.

Monticellite, Crestmore, Calif.: Rogers, 30.

Moon.

General: Farrington, 3.

Origin: Nissen, 1.

Moon—Continued.

Surface: Barrell, 1; Emmet, 1.

Tectonic features: Matoušek, 1.

Moose Pass-Hope dist., Alaska: Tuck, 4.

Moose River Basin, Ontario: Dyer, 1, 9.

Moraines.

Alaska: Washburn, H. B., Jr., 2, 4.

Alberta: Johnston, W. A., 4; McCoubrey,
1; Nichols, D. A., 1; Warren, 19.

California: Matthes, 32.

Colorado: Ives, 9.

Huron-Erie basins: Leverett, 24.

Illinois: Bretz, 10; Leighton, 31; Voss, 3.

Indiana: Fix, P. F., 1.

Lake Superior area: Leverett, 2, 24.

Michigan: Bergquist, 8; Davis, C. M.,
1; Dow, 1.

New Hampshire: Crosby, 11.

New York: Buddington, 17; Fairchild,
10; Payne, T. G., 1.

North America, last ice age: Hawley,
M. M., 1.

Ohio: White, G. W., 8, 9, 17.

Ontario: Taylor, 11.

Oregon: Hodge, 12.

Port Huron, correlatives: Taylor, 13.

Quebec: Mawdsley, 7; Norman, 12; Wil-
son, J. T., 5.

Ridges, terminal moraine: Engeln, von,
15.

Saskatchewan: Johnston, W. A., 4.

Till sheets: Keyes, 387.

Valparaiso moraine: Krumbein, 3.

Washington: Page, B. M., 2.

Wisconsin: Fries, 1.

Wyoming: Parsons, W. H., 3.

Morphology, rivers: Shulits, 1.

Morrison old field, Okla.: Carpenter, E., 1.

Mosses, fossil: Flowers, 1; Steers, 1.

Mother Lode, Calif.: Logan, C. A., 1.

Mounds.

Arctic America: Macar, 3; Porsild, 1.

Arkansas: Melton, 2.

California: Melton, 11.

Columbia River Plateau: Waters, A. C., 1.

Louisiana: Melton, 2.

Natural mounds: Melton, 2.

Texas: Melton, 2, 11.

Mount Desert Is., Maine: Raisz, 1.

Mountains. See also Orogeny.

Mountain arcs, types: Tokuda, 1.

Phenomena like mtn. bldg.: Broggi, 1.

Mountains of N. Am.: Reger, 8.

Mowry sh., origin: Rubey, W. W., 2.

Mud balls, Belt ser.: Fenton, 54.

Mud cracks.

Belt series: Fenton, 54.

Casts, during compaction: Bradley,
W. H., 7.

Experiments: Kindle, 35.

Hall prints and mud cracks: Fenton, 31.

Montana: Fenton, 60.

New York: Mencher, 2.

1306 BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY, 1929-39

Mud flows.

- California: Keathley, 1; Taylor, C. A., 1.
Wyoming: Parsons, W. H., 2.

Mud volcanoes, Trinidad Kugler, 1; Weeks, W. G., 1.

Multiple grinding thin secs.: Wentworth, 34.

Multiple working hypotheses: Chamberlin, T. C., 1.

Muscovite, N. Am.: Volk, 1.

Museums.

Buffalo Soc. Nat. Sci. ann. rept.: Reimann, 3.

Harvard, Mus. Comp. Zoology repts.: Jackson, 2; Raymond, 3; Sayles, 3; Stetson, H. C., 1, 2.

United States Nat. Mus. Dept. Geology rept.: Bassler, 5, 9.

Mylonitization: Knopf, E. F. B., 4.

Naming subsurface fms.: DeFord, 4.

Napththa, Canada: Rosewarne, 2.

National Parks, geology: Trager, E. A., 1.

Natrolite, Quebec: Poitevin, 5.

Natural bridges.

General: Henderson, J., 7.

Iowa: Keyes, 17.

Kansas: Jewett, 5.

Kentucky: McFarlan, 11-b.

Mexico: Wittich, 2.

Michigan: Dow, 2.

Montana: Wentworth, 23.

Utah: Gregory, H. E., 4, 5; O'Connell, 3.

Virginia: Malott, 3; Reeds, 1; Woodward, 12.

Wyoming: Wentworth, 23.

Natural gas.

Accumulation: Bignel, 5; Herold, S. C., 4; Howard, W. V., 3.

Alabama: Bailey, W. F., 3; Semmes, 1.

Alberta: Allan, 11; Calder, 2; Campbell, W. P., 3; Goodman, 1, 3; Hake, 2; Helland, 19; Howells, 1; Hume, 18, 22, 25, 26, 27, 28, 29, 31, 32; Link, 11; MacKay, 12; Madgwick, 1; Moore, P. D., 3; Owen, R. M. S., 1; Rowe, R. C., 2; Russell, 31, 34-b, 36; Sanderson, 4; Slipper, 2; Spratt, 2; Williams, M. Y., 2.

Appalachian fields: Ashley, 28; Bennett, J., 1.

Arizona: Mackay, D. K., 2; Roe, H., 1.

Arkansas: Bingham, D. H., 1; Branner, 1, 15; Cronels, 2, 23; Easton, 8; Haury, 1; Hendricks, T. A., 8; Jenny, 12; Link, W. K., 2; Moody, C. L., 4; Morgan, C. L., 1; Shearer, H. K., 3, 5; Spooner, 4, 5, 6; Weeks, W. B., 1, 2, 3, 4.

Ark-La-Tex field: Easton, 8.

Arkansas-Louisiana, 1938: Spooner, 5, 6.

Associated gases: Dobbin, 9.

Atlantic Coastal Plain poss.: Postley, 4.

Bartlesville sand, Okla.: U. S. G. S., 12.

Bibliography: Hardwicke, 1.

Structure maps: Postley, 3.

Natural gas—Continued.

Bradford field, Pa.-N. Y.: Fettke, 9, 11.

British Columbia: Hume, 18.

Burbank sands, Okla.: U. S. G. S., 12.

California: Bartosh, 2; Beebe, 1, 2;

Dodd, 2; Eckis, 3; Edwards, M. G.,

2; Hansen, D. C., 1; Hoots, 6, 9;

Howard, P. J., 1; Knox, G. L., 1;

Miller, R. H., 1; Musser, 2; Porter,

L. E., 1; Porter, W. W., II, 8; Rich-

ardson, G. B., 5; Stalder, 3; Stock-

man, 1, 2, 3; Valentine, W. W., 1;

Wernecke, 1; Wilhelm, V. H., 1;

Williams R. N., Jr., 1; Woodring,

12; Wyatt, 1.

Canada: Bell, W. A., 1-a; Goodman, 4; Hume, 14, 34; Irwin, J. S., 4; Wait, 1.

Colorado: Bradley, W. H., 12; Erdmann,

1; Harris, G. W., 1; Hendrickson,

V. J., 2; Kans. G. Soc., 11; Night-

ingale, 1, 3, 4; Shoenfelt, 2; Van

Tuyl, 6, 17; Winchester, 4.

Connate water, oil and gas sands: Bignel, 7; Gardner, J. H., 5; Schilthius, 1.

Eastern interior coal basin: Bell, A. H., 11, 13.

Electrical logging: Gillingham, W. J., 1, 2.

Electrical prosp.: Swartz, J. H., 7.

Estimating reserves: Bell, A. H., 6.

Flow, oil-gas mixture through sands: Reid, L. S., 1.

Fluid phenomena, porous strata: Boatwright, 1.

Fluids, homogeneous, flow through porous media: Fettke, 13; Krumbeln, 20; Muskat, 3, 4.

Fuels, mineral: Bengston, 1.

United States reserves: Garfias, 1.

Gas-fluids, flow through porous media: Muskat, 3, 4.

Gas in oil: Buell, 1.

Gas surveying prosp. method: Sokolov, 1.

General: Hubbell, A. H., 1; Ley, 6; Young, C. M., 1.

Geochemical prosp. methods: Pirson, 10.

Geologic research on: Barton, 43.

Geologist and well-spacing: Kraus, 1.

Geology: De Golyer, 9; Heroy, 2; Ley, 2.

Geology and search for petroleum: Heroy, 2.

Geophysical prosp.: Weaver, P., 1.

Geophysics and geology, relation: Kanenstine, 1.

Ground gas survey: Pirson, 9.

Gulf Coast: Barton, 24; Barton and

Sawtelle, 1; Brace, 6; Logan, J., 5;

Ritz, 1; Rosalre, 5, 8; Teas, 6;

Vanderpool, 2; Zwerger, 2.

Helium, other gases: Dobbin, 12.

Helium-rich nat. gas: Wells, R. C., 3.

Hydrocarbons, concentration in earth: McDermott, 5.

Idaho fields: Kirkham, 14.

Natural gas—Continued.

Illinois: Bell, A. H., 12, 14, 16, 18, 19, 20, 21, 25; Cady, G. H., 7, 8; Col-
lingwood, 4; Ekblaw, 11; Kansas G.
Soc., 12; Moulton, 4; Weller, 24,
25, 28; Anonymous, 193.

Illinois-Indiana-Kentucky Basin field:
Anonymous, 193.

Illinois-Missouri section: Kans. G. Soc.,
12.

Index fossils, Ark-La-Tex area: Cala-
han, 1.

Indiana: Esarey, 3, 5; Freed, 2; Ley, 5;
Logan, W. N., 5.

Iowa: Hager, 4; Lees, 8.

Kansas: Bass, 1, 10, 13; Cadman, 1;
Charles, 1; Folger, 5; Garlough, 1;
Hall, R. H., 2; Hemsell, 1; Hie-
stand, 1; Koester, 1, 3; Landes, 10,
24, 26, 28, 31; Lee, W., 3; Ley, 3;
Lucke, 8; McClellan, 3; Moss, 4;
Ockerman, 3; Pierce, 9; Rutledge,
1, 2; Ver Wiebe, 16, 20, 22, 25.

Kentucky: Arnold, H. C., 1; Bailey, W.
F., 3; Bartle, 5; Hager, D., 1;
Hunter, 1, 2; Jillson, 16, 18, 22, 28,
32, 34, 38; Ky. G. S., 8, 10, 11;
Mayfield, 4; Russell, W. L., 7, 10, 11,
12; St. Clair, S., 1.

Lakin-Hugoton-Guymon area, Kans.-
Okla.: Bartle, 5.

Louisiana: Bingham, D. H., 1; Born-
hauser, 1; Brace, 5; Chawner, 3;
Chisholm, W. D., 1; Clark, C. C., 1;
Craft, 2; Crider, 2, 3, 4; Easton,
H. D., Jr., 2; Eaves, 1; Eby, J. B.,
2; Flisk, 2; Fergus, 1; Gordon, D., 2;
Grage, 1; Grimm, 1; Holston, 1;
Howe, 13, 30, 31; Kamb, 2; Moody,
5, 8; Postley, 5; Shearer, 4, 5;
Taylor, R. E., 3; Thomas, G. D., 1.

Lowlands, S.-cent. and Ouachita prov.:
Ruedemann, P., 3.

Manitoba: Hume, 18; Hutt, 3.

Map, U. S. oil and gas fields: U. S. G. S.,
3.

Mechanics, oil and gas sand correl.:
Sisler, 5.

Metamorphism, organic sediments and
derived oils: White, 26.

Mexico: Kane, 2, 3; Muir, J. M., 2, 3, 5;
Ordonez, 2.

Michigan: Eddy, G. E., 1; Hake, 6;
Hard, E. W., 2; Newcombe, 5, 6, 7,
9, 13; Newman, 1, 2; Osgood, 1;
Pringle, 1; Rawlins, 1; Wasson, T.,
2.

Mid-Continent area: Levorsen, 6; Tom-
linson, C. W., 2.

Migration: McCoy, A. W., 2; Millikan,
2.

Migration and accumulation: McCoy, 2.

Minnesota, poss.: Thiel, 14.

Mississippi: Bailey, W. F., 3; Foster, 5;
Monroe, 1, 3, 9; Munroe, D. J., 1;
Swearingen, 1; Toler, 1, 2, 3.

Mississippi Valley: Easton, 9.

Natural gas—Continued.

Missouri: Bartle, 1, 4; Farnham, F. C.,
1; Greene, F. C., 2, 4, 5, 7, 8; Mc-
Queen, 10; Wells, E. H., 3.

Montana: Bartram, 7; Dobbin, 10; Em-
ery, W. B., 3; Perry, E. S., 8, 17, 18;
Pierce, 7; Rowe, J. P., 1; Thom, 14.

Nebraska: Cook, H. J., 15.

New Brunswick: Hume, 15.

New Mexico: Anderson, C. C., 1; Bybee,
3; Rettger, 4; Winchester, 3, 4;
Zavoico, 6.

New York: Bradley, 13, 19; Brewer, C.,
Jr., 1; Brown, J. S., 1, 7; Garrett,
S. G., 1; Hamilton, S. H., 2; Hart-
nagel, 3; Lucke, 1; Newland, 8, 15,
20; Robinson, J. F., 3, 4; Torrey,
P. D., 1, 3, 5, 8.

Northwest Territories: Hume, 18.

Occurrence: Lahee, 13.

Ohio: Gustafson, J. D., 1; Harper, J. L.,
1; Lamborn, 1; Ley, 5; Lockett, 2;
Stout, 11, 12.

Oil and gas accumulation theory: How-
ell, J. V., 3.

Oil and gas well records: Montgomery,
J. G., Jr., 1.

Oklahoma: Bass, 5, 10, 12; Borden, 2;
Boyd, W. B., 1; Brandenthaler, 1;
Bullard, 1; Bush, F. A., 3; Colton,
E. G., 1; Cotner, 1; Dane, 12; Deck-
er, 23; Hawkins, G. D., 1; Helth-
ecker, 1; Hendricks, 9; Hill, H. B.,
2, 3; Kirk, C. T., 2; Kirwan, 1;
Knechtel, 5; Mills, 12; Paschal, 1;
Richardson, G. B., 6; Rorschach, 1;
Rothrock, H. E., 3; Schoff, 4;
Schwarzenbek, 1; Shea, 1; Stone,
J. A., 1; Swarts, 1; Swigart, 1;
Tomlinson, 6; U. S. G. S., 14, 15;
Vanderpool, 6; Weirich, 1; Westby,
3; Williams, H. L., 1; Wilson, C.
W., Jr., 6, 13; Wilson, W. B., 4;
Wrather, 1; Zavoico, 3.

Oklahoma City oil field: Zavoico, 3.

Ontario: Evans, C. S., 5; Harkness, 1,
2, 4, 5, 6; Williams, M. Y., 14.

Oregon: Kirkham, 14.

Origin: Berl, 1; Hume, 18; Van Tuyl, 8.

Oriskany fm.: Torrey, 4.

Oriskany sand: Appalachian G. S., 1;
Myers, T. H., 1.

Ouachita Paleozoics: Miser, 9.

Pennsylvania: Ashley, 8, 10; Cathcart,
1, 2, 3, 4, 5, 7, 8, 9, 10, 12; Claus, 1;
DeWolf, 1; Fettke, 4, 5, 6, 7, 12;
Gaddess, 1; Hughes, H. H., 1; John-
son, M. E., 1; Leighton, H., 6;
Reeves, J. R., 2; Richardson, G. B.,
2, 3, 4; Robinson, J. S., 1, 3, 4;
Sanders, T. P., 2; Sherrill, R. E., 5;
Simmons, A. C., 1; Sisler, 7, 8;
Stone, 8; Torrey, 4, 6, 8; Waldo, 4;
Anonymous, 124, 175.

Permeability, porous media: Wyckoff, R.
D., 1.

Natural gas—Continued.

- Permeability, reservoir rocks: Hassler, G. L., 1; Tickell, 5.
 Permian basin, Tex., N. Mex.: DeFord, 4.
 Pool structure: Bignel, 8.
 Porosity, oil sands: Tallafarro, D. B., Jr., 1; Tickell, 5.
 Possibilities, E. of Appalachians: Postley, 1.
 Production: Stephens, 4.
 Quebec: Parks, W. A., 1, 3; Snider, 4.
 Reserves, estimation: Biddison, 1; Huntington, 1.
 Reservoirs, classn.: Wilson, W. B., 2, 3.
 Rocky Mtn. area: Coffin, 2; Davies, H. F., 1; Hunt, E. H., 2; Kirby, J. M., 2; Uren, 2.
 St. Peter ss., poss.: Jillson, 40.
 Salt-water table, accumulation by: Gardner, J. H., 4.
 Sands, physical tests: Fancher, 1.
 Saskatchewan: Edmunds, 2; Hume, 3, 18, 24; McLearn, 17; Wickenden, 13-a.
 Shore lines determine oil and gas location: Jones, R. A., 3.
 Soil surveys: McDermott, 6.
 South Dakota: Gries, J. P., 1; Wing, 2.
 Sparta-Wilcox oil field, Tex.-La.: Williams, N., 6.
 Stratigraphy vs. structure, Rocky Mtn. area: Heaton, 4.
 Structural or anticlinal theory: Tucker, R. C., 3.
 Structure, Illinois Basin: Cohee, 5.
 Tennessee: Bailey, W. F., 3; Born, 7, 11; Pond, W. F., 3; St. Clair, S., 1.
 Texas: Adams, J. E., 7; Barton, 40; Bell, O. G., 1; Bingham, D. H., 1; Bowles, R. C., 1; Brace, 1, 5; Bybee, 3, 4, 6; Cotner, 2; Dawson, 1; Deussen, 6; Earl, 1; Eby, J. B., 2, 5; Ferguson, W. B., 1; Fuqua, 2; Giesey, 1; Gordon, D., 1; Gregory, P. P., 1; Halbouty, 8, 9; Hammer, 1; Harvey, C. J. C., 1; Hayes, E. P., 1; Hill, H. B., 1; Imholtz, 1; Ivy, 1; Kendrick, 2; Lahee, 18; Ley, 4; Leyendecker, 1; Liddle, 3; McFarland, F. W., 1; Martyn, 1; Maxwell, R. G., 1; Meyer, W. G., 1; Michaux, 1; Nowlan, 1; Oil and Gas Jour., 1; Plummer, 15-a, 17, 28; Poole, 1; Post, E. S., 1; Price, W. A., 2, 3, 12; Ralston, 1; Rettger, 4; Rogatz, 1, 2; Smith, Eugene R., 1; Tarr, R. S., 1; Teas, 51; Trask, 27; Trowbridge, 6; Tucker, R., 1; Warner, C. A., 1; Weeks, A. J., 4; Wendlandt, 4, 5; Whitaker, 1; Wilson, E. B., 1; Wrather, 1; Young, A., 2.
 United States: Ver Wiebe, 19.
 Utah: Dobbin, 17; Eardley, 6; Gregory, H. S., 4; Miser, 14; Winchester, 4.
 Valuation of properties: Stephenson, E. A., 1.

Natural gas—Continued.

- Virginia: McGill, 2, 13, 15.
 Washington: Culver, 1; Glover, 1, 5; Hammer, 1; Kirkham, 14; Treasher, 6.
 West Virginia: Billingsley, J. E., 1, 2, 4; Heck, E. T., 1; Lafferty, 1, 2, 3; Price, P. H., 8-a, 11, 12, 13, 16, 17; Reger, 10; Sisler, 9; Stephenson, E. E., 1; U. S. Comm., 1.
 Wildcat drilling: Koester, 4; Lahee, 15, 17, 20, 21.
 Wyoming: Boyer, 1; Bradley, W. H., 12; Brainerd, 5; Coffin, 3; Emery, W. B., 1, 3; Irwin, 1; Krampert, 1, 2; Marzel, 2; Nightingale, 1, 2, 3; Richardson, G. B., 1; Tillotson, 1.
 Natural law in geology: Bucher, 17.
 Nautiloidea.
 Harrisoceras, Ill., Ind.: Flower, 7.
 Nebraska.
 Land and water res., conserv.: Condra, 15.
 South-central Neb.: Lugn, 11.
Economic geology.
 Geophysical explor.: Wilson, J. H., 2.
 Petroleum develt. and poss.: Cook, H. J., 15; Lee, M., 1.
 Potash industry: Condra, 1.
 Rocky Mtn. area: Uren, 2.
Historical geology.
 Agate anticline test well: Noble, E. B., 2.
 Badlands, color records: Germann, J. C., 1.
 Big Blue ser.: Condra, 6.
 Cherokee fm.: Roth, 7.
 Correlations: Condra, 16, 18.
 Cretaceous: Hewitt, L. W., 1.
 Cross sec., Neb.-Mo.: Condra, 12.
 Dakota ss.: Keyes, 246.
 Dakota stage: Tester, 3.
 Deep wells: Condra, 5, 19.
 Geinitz's Carbonformation and Dyas: Keyes, 390.
 General: Kansas G. Soc., 5, 8; Neb. State Plann. Bd., 1.
 Grenoble fm.: Condra, 7.
 Index to stratigraphy: Ver Wiebe, 7.
 Isopach maps: Ball, 13; Condra, 12.
 Marmaton fm.: Roth, 7.
 Midland Forster well: Reed, E. C., 1.
 Miocene: Schultz, C. B., 4.
 Niobrara fm.: Keyes, 239; Loetterle, 1.
 Northwestern Neb.: Kans. G. Soc., 2.
 Oligocene: Schultz, C. B., 6.
 Panhandle area: Cook, 15.
 Pennsylvanian: Condra, 2; Dunbar, 4.
 Permian cross-sec., Tex.-Neb.: Mohr, 4.
 Platte's shales, Meek: Keyes, 373.
 Platte valley: Condra, 20.
 Pleistocene: Leverett, 20; Lugn, 2, 3, 5, 15.
 Pleistocene: Leverett, 20; Lugn, 2, 3.
 Rocky Mts. area: Uren, 2.
 Scotts Bluff Nat. Monument: Effinger, 1.
 South-central Neb.: Lugn, 11.

Nebraska—Continued.

Historical geology—Continued.

- Terraces, ancient man: Van Royen, 1.
- Tertiary: Johnson, F. W., 1; Lugn, 14; Meade, 1.
- Valentine beds: Colbert, 7; Johnson, F. W., 1, 2; Lugn, 12.
- Valentine correl.: McGrew, 6.
- Water-bearing fms.: Condra, 14.
- Zones of fossil herbs: Elias, 8.

Mineralogy.

- Cotesville meteorite: Nininger, 21.
- Midland Forster well: Reed, E. C., 1.
- Ogallala meteorite: Nininger, 17.
- Sioux County meteorite: Barbour, E. H., 29.

Paleontology.

- Anebelodon: Barbour, E. H., 1, 2, 4.
- Anserine bird: Compton, 4.
- Antelopes: Furlong, 7.
- Archidiskodon: Osborn, 28.
- Ardynomys: Burke, 9.
- Artiodactyls: Barbour, 28; Cook, H. J., 2, 14.
- Bassariscus: Hibbard, 1.
- Birds: Compton, 4; Wetmore, 6, 7, 18, 22, 23, 29, 35.
- Brachlopoda: Dunbar, 4.
- Burge Pliocene fauna: McGrew, 5.
- Camels: Barbour, 24; Brown, B., 1.
- Casteroides: Barbour, 9; Wood, A. E., 16.
- Cavellina: Lalicker, 3.
- Cephalopoda, nautiloid: Miller, A. K., 8.
- Craterogaz: Gazin, 19.
- Crinoidea: Moore, 48.
- Cynarctoides: McGrew, 7.
- Cynarctus: McGrew, 4.
- Cynodesmus: McGrew, 1.
- Cyrtonyx: Wetmore, 29.
- Desmatolagus: Burke, 9.
- Diplolophus: Barbour, 37.
- Dogs, phylogeny: Loomis, 10.
- Early man: Barbour, 32.
- Elephants: Barbour, 6, 7.
- Entelodonts: Loomis, 5.
- Eporeodon: Thorpe, 2.
- Equids, Miocene: Lewis, G. E., 1.
- Eubelodon: Barbour, 16.
- Extra rib, Miocene artiodactyl: Cook, H. J., 2.
- Faunas, Miocene-Pliocene: McGrew, 6.
- Pleistocene: Anonymous, 93.
- Tertiary: Chaney, 27.
- Geomyid rodents: Wood, A. E., 14.
- Gigantocamelus: Barbour, 36.
- Grasses: Elias, 10.
- Gravels, Platte River: Freeman, J. L., 1.
- Gyraulus: Baker, F. C., 18.
- Hawks: Wetmore, 7, 35.
- Heliscomys: Wood, A. E., 20.
- Mammalia: Barbour, 33, 34, 35; Colbert, 2; Davis, P. B., 1; Matthew, 1, 14; Schultz, C. B., 2; Stirton, 12.
- Mastodons: Barbour, 13, 18, 23; Hesse, 5.
- Megabelodon: Barbour, 27.
- Merycoidodon: Matthew, 15.

Nebraska—Continued.

Paleontology—Continued.

- Mesocyon: Barbour, 18.
- Micropaleontology, Niobrara fm.: Loet-terle, 1.
- Miocene mammal restorations: Colbert, E. H., 2.
- Mollusk: Cook, 13.
- Musk oxen: Barbour, 14.
- Nanodelphys: McGrew, 10.
- Nautiloid Cephalopoda: Miller, A. K., 8.
- Ogallala fm. fauna: Hesse, 3.
- Oreodonts: Barbour, 19.
- Ostracoda: Johnson, W. R., 1; Upson, M. E., 1.
- Ovibovine: Barbour, 25.
- Paleolagus: Dice, 3.
- Phenacelus: Peterson, O. A., 1.
- Platybelodon: Barbour, 19.
- Pleistocene: Cook, 10; Lugn, 5.
- Procyonidae: McGrew, 7.
- Prosthenops: Colbert, 3.
- Rhinoceroses: Cook, 4.
- Scotts Bluff Nat. Monument: Effinger, 1.
- Snake Creek fauna: Matthew, 1.
- Stenomylins, gazelle camels: Burke, 12.
- Tertiary: Meade, 1.
- Titanotheres: Barbour, 15; Osborn, H. F., 1.
- Torynobelodon: Barbour, E. H., 3, 11.
- Trachodon: Barbour, 10.
- Vertebrata: Cook, 11; Gilmore, 11; Hesse, 6; Schultz, C. B., 2-a.
- Woodpecker: Wetmore, 18.
- Woods: Gortner, 1.
- Xenocephalus: Campbell, C. B., 1.

Petrology.

- Garnet, contact: Barksdale, J. D., 3.
- Gravels: Freeman, J. L., 1.

Physical geology.

- Earthquake, 3/1/35: Lugn, 6.
- Panhandle area: Cook, 15.
- Platte Valley, Carb.: Condra, 20.
- Redfield anticline: Condra, 17.

Physiographic geology.

- Box canyons: Hestbeck, 1.
- Drainage basins: Neb. State Plann. Bd., 1; Russell, W. L., 2.
- Erosion: Condra, 11.
- Great Plains: Leighton, 29.
- Gravels, Platte River: Freeman, J. L., 1.
- Lake, Pleist.: MacClintock, 9.
- Land and water res., conserv.: Condra, 15.
- Platte River Valley: Cady, R. C., 6; Lugn, 1.
- Pleistocene: Leverett, 20; Lugn, 5, 15.
- Redfield anticline: Condra, 17.
- Varved sediments: MacClintock, 7.
- Water-bearing fms.: Condra, 14.

Underground water.

- Deep wells: Condra, 19.
- Ground water: Condra, 4, 5, 14, 15, 19; Lugn, 1, 11; Waite, 1, 2; Wenzel, 1, 2, 3, 4, 5.
- Midland Forster well: Reed, E. C., 1.

Nebraska—Continued.

Underground water—Continued.

Platte River Valley: Lugn, 1; Wenzel, 1, 4.

Pleistocene: Lugn, 5.

Resources: Condra, 4, 14, 15; Neb. State Plann. Bd., 1.

Nemaha Mts. oil field, Kans.: Thomas, C. R., 1.

Nepheline-albite-silica in fayalite: Bowen, 19.
Nephrite.

Washington: Anonymous, 188.

Wyoming: Anonymous, 194.

Neptunite, Calif.: Buttengenbach, 1.

Nevada.

Gypsum cave: Stock, 9.

Areas described.

Brucite area, Paradise Range: Callaghan, 2.

Cherry Creek dist.: Schrader, 3.

Goodsprings quad.: Hewett, 4.

Pioche dist.: Westgate, 6.

Scossa mining dist.: Jones, J. C., 3.

Searchlight dist.: Callaghan, 13.

Spruce Mtn. dist.: Schrader, 3.

Economic geology.

Alabandite: Hewett, 2.

Alunite: Helneman, 5.

Austin ores: Merritt, C. A., 2.

Bonanza King mine area: Campbell, D. F., 1.

Borax: Esselink, 2.

Boulder Dam area minerals: Hewett, 12.

Brucite: Callaghan, 2.

Cave Valley: Schrader, 2.

Cherry Creek dist.: Schrader, 3.

Chief dist.: Callaghan, 7.

Clays: Hodge, 24.

Colorado Plateau ore deposits: Butler, B. S., 3.

Comstock Lode area: Ferguson, 8; Gianella, 5, 9; Knochenhauer, 1; Lyman, 1.

Contact mining dist.: Schrader, 6.

Copper: Bateman, 5; Crawford, A. L., 1, 3; Knopf, A., 9; Nolan, 7.

Cottonwood Canyon deposits: Ferguson, 10.

Delamar dist.: Callaghan, 8.

Diatomite: Mulryan, 2.

Gold: Calkins, 3; Rott, 1; Tolman, C. F., 2.

Horse Canyon: Schrader, 5.

Humboldt Range: Cameron, E. N., 2; Jenney, 1.

Limestones: Hodge, 24.

McCoy mining dist.: Schrader, 5.

Magnesia ores: Hodge, 24.

Manganese: Hewett, 6.

Metal, nonmetal occurrences: Stoddard, 1.

Mineral resources: Carpenter, J. A., 1.

Minerals, nonmetallic: Fulton, J. A., 1.

Mining dists.: Ferguson, H. G., 1; Vandenberg, 2, 3, 4.

Pioche dist.: Wheeler, 11.

Nevada—Continued.

Economic geology—Continued.

Placer mining: Smith, A. M., 2; Vandenberg, 1.

Quicksilver deposits: Schuette, C. N., 1, 3.

Rio Tinto copper deposit: Crawford, A. L., 1, 3.

Robinson mining dist.: Pennebaker, 1.

Scheelite-leuchtenbergite vein: Kerr, P. F., 14.

Scossa mining dist.: Jones, J. C., 3.

Searchlight dist.: Callaghan, 13.

Silica deposits: Hodge, 24.

Silver City area: Ferguson, 8; Gianella, 9; Smith, A. M., 1.

Singatse Range channel: Penrose, R. J., 1.

Spruce Mtn. dist.: Schrader, 3.

Tonopah dist.: Nolan, 2, 8.

Tungsten: Kerr, P. F., 9, 17, 20.

Tuscarora mining dist.: Nolan, 9.

Tybo dist.: Ferguson, 5.

Historical geology.

Bonanza King area: Campbell, D. F., 1.

Boulder Reservoir floor: Longwell, 23.

Cambrian: Deiss, 10; Wheeler, 11.

Cedar Mtn.-Fish Lake Valley beds, corals: Stirton, 8.

Cedarville fm.: LaMotte, 9.

Chief dist.: Callaghan, 7.

Comstock Lode area: Ferguson, 8; Gianella, 5, 6; Knochenhauer, 1.

Correlations, Tert. fms.: Carpenter, J. T., 1.

Delamar dist.: Callaghan, 8.

Devonian: Merriam, C. W., 5, 6, 8, 13.

Dikes, Paradise Range: Callaghan, 6.

Ely dist.: Bateman, 5.

Eureka quartzite: Kirk, E., 11.

Fish Lake Valley-Cedar Mtn. beds, corals: Stirton, 8.

Gold, Slumbering Hills: Calkins, 3.

Goodsprings dol. and fauna: Hazzard, J. C., 3.

Granites, Inyo Range: Anderson, G. H., 5.

Halleck quad.: Sharp, R. P., 2.

Hawthorne quad.: Muller, 5, 14.

Helicoprion, paleogeog. significance: Wheeler, 9, 10.

Humboldt Miocene fm.: Sharp, R. P., 4.

Humboldt Range: Cameron, E. N., 2; Jenney, 1.

Jiggs quad.: Sharp, R. P., 2.

Jurassic: Muller, 9.

Liassic fauna: Muller, 2.

Magnesia ores area: Hodge, 24.

Mesozoic: Muller, 2.

Pennsylvanian-Permian boundary: Longwell, 22.

Pilot Mts. faunal horizons: Muller, 3.

Pioche dist.: Wheeler, 11.

Placer mining: Vandenberg, 1.

Pleistocene deposits: Rose, R. H., 1.

Rhaetic, marine: Muller, 7.

Nevada—Continued.

Historical geology—Continued.

- Ruby-East Humboldt Range: Sharp, R. P., 5.
 Searchlight dist.: Callaghan, 13.
 Silica deposits: Hodge, 24.
 Silver City area: Ferguson, 8; Gianella, 9.
 Spring Mts.: Glock, 1; Nolan, 1.
 Tonapah quad.: Muller, 4, 5, 9, 14; Nolan, 2, 8.
 Triassic, Tonapah quad.: Muller, 4, 9.
 Tungsten, Oreana, Silver Dike: Kerr, P. F., 17.
 Tuscarora mining dist.: Nolan, 9.
 Tybo dist.: Ferguson, 5.
 West Nevada: Jenkins, 13.
 White Mtn. quad.: Anderson, G. H., 1, 2.

Mineralogy.

- Agillarite: Coats, 2.
 Andalusite-dumortierite, Oreana: Kerr, 12.
 Barrandite: Clinton, 1.
 Beryl-scheelite, Oreana: Palmer, W. S., 2.
 Bonanza King mine area: Campbell, D. F., 1.
 Cinnabar: Dreyer, R. M., 2.
 Comstock Lode: Knochenbauer, 1; Milton, 4.
 Cottonwood Canyon deposits: Ferguson, 10.
 Creedite: Foshag, 9.
 Delafossite: Pabst, 13.
 Dumortierite-andalusite, Oreana: Kerr, 12.
 Garnets: Barksdale, J. D., 3; Pabst, 12.
 General: Melhase, 3.
 Gold in petrified wood: Palmer, W. S., 1.
 Goldfield: Tolman, C. F., 2.
 Humboldt Range: Cameron, E. N., 2.
 Iron meteorite: Dake, 10.
 Meteorites: Dake, 10; Gianella, 7.
 Mining dists.: Vanderburg, 2, 3, 4.
 Mosesite: Bird, P. H., 1.
 Opals: Dake, H. C., 3; Foster, M., 1.
 Orpiment: Palache, 8.
 Orthoclase twins: Drugman, 1.
 Piedmontite: Gianella, 11.
 Powellite: Pough, 6.
 Quartz Mtn. meteorite: Gianella, 7.
 Searchlight dist.: Callaghan, 13.
 Searlsite: Foshag, 11.
 Scheelite-beryl, Oreana: Kerr, P. F., 11.
 Stibnite: Garaventa, 1; Palache, 8; Stearn, 9.
 Sulfate minerals, Comstock Lode: Milton, 4.
 Thenardite: Heins, 1.
 Thulite: Gianella, 8.
 Tungsten: Kerr, P. F., 17, 20.
 Turquoise: Dake, H. C., 1.
 Vashegylite: Clinton, 1.
 Vivianite: Gianella, 15.
 Wood, Tert., bearing gold: Gianella, 12.
 Zircon: Randolph, 3.
 Zolardite: O'Brien, J. D., 1.

Nevada—Continued.

Paleontology.

- Algae, Ord.: Merriam, C. W., 12.
 Antelope: Stirton, 7.
 Anthozoa, Dev.: Stumm, 1, 2, 3.
 Antiquity in SW. of United States: Stock, 30.
 Artiodactyla: Stirton, 2.
 Cambrian faunas: Mason, J. F., 2, 3, 4.
 Camel: Cockerell, 14.
 Castoridae: Stirton, 5.
 Cedarville flora: LaMotte, 9.
 Coral reefs: Muller, 10.
 Corals: Stumm, 1, 2, 3.
 Cupidinimus: Chaffee, 1.
 Cyathospongiae: Okulitch, 2.
 Decapoda, Tert.: Van Straelen, 3.
 Egg, Pleist.: Wetmore, 46.
 Elephant: Stock, 12.
 Faunas, Camb.: Mason, J. F., 2, 3, 4.
 Flora, 49 Camp: LaMotte, 2.
 Geomys rodents: Wood, A. E., 14.
 Goodsprings dol. and faunas: Hazzard, J. C., 3.
 Goose, Pliocene: Burt, W. H., 1.
 Gypsum Cave fauna: Harrington, M. R., 2; Stock, 10.
 Hawthorne quad.: Muller, 14.
 Hedgehog: Hall, E. R., 1; Matthew, 2.
 Helicoprion, Carb.: Wheeler, 9, 10.
 Humboldt fm.: Sharp, R. P., 4.
 Hypothyridina: Merriam, C. W., 10.
 Invertebrata: MacNeill, 8.
 Lagomorphs: Hall, E. R., 2.
 Merycodonts: Furlong, 6.
 Mitrospira: Kirk, 3.
 Mylodon tracks: Stock, 56.
 Mystipterus: Hall, E. R., 4.
 Nodules like coal balls: Merriam, C. W., 9.
 Nothotherium dung with plants: Lauder milk, 7.
 Oreamnos: Stock, 59.
 Otter: Furlong, 3.
 Peccaries: Colbert, 6.
 Petrified tree: Boak, 1.
 Plants in Nothotherium dung: Lauder milk, 7.
 Pleistocene: Simpson, 26.
 Pliomastodon: Stock, 57.
 Pseudaelurus: Stock, 38.
 Redwood fossil: Walker, P., 1.
 Rodents: Hall, E. R., 2; Wilson, R. W., 12.
 Sapindus: LaMotte, 4.
 Spizaetus: Howard, H., 8.
 Stringocephalus zones: Merriam, C. W., 13.
 Tetracorals: Stumm, 1.
 Trilobita: Deiss, 9; Kobayashi, 2.
 Wood, silicified: Barksdale, J. D., 2.
 Wood, Tert., bearing gold: Gianella, 12.
- Petrology.*
 Batholith, Lincoln Co.: Grout, 4.
 Comstock Lode area: Gianella, 9.
 Dike, porphyritic: Campbell, I., 9.

Nevada—Continued.

Petrology—Continued.

- Domes, intrusive: Coats, 3.
 Dumortierite-andalusite, Oreana: Kerr, P. F., 12.
 Granites, Inyo Range: Anderson, G. H., 5.
 Hawthorne quad.: Muller, 14.
 Humboldt fm.: Sharp, R. P., 4.
 Humboldt Range: Cameron, E. N., 2.
 Pioche dist.: Gillson, 1.
 Quaternary rocks: Piper, 15.
 Sandstone, State Prison: Thompson, W. O., 1.
 Searchlight dist.: Callaghan, 13.
 Silver City area: Gianella, 9.
 Tertiary rocks: Piper, 15.
 Tonopah quad.: Campbell, I., 1; Muller, 14.
 Tungsten, Oreana: Kerr, P. F., 20.
 Volcanics, Cascades types: Thayer, T. P., 3.

Physical geology.

- Andalusite-dumortierite, Oreana: Kerr, P. F., 12.
 Batholith, Lincoln Co.: Grout, 4.
 Bonanza King area: Campbell, D. F., 1.
 Boulder Reservoir floor: Longwell, 23.
 Cedar Mtn. earthquake: Byerly, 24; Gianella, 1, 3, 4.
 Comstock Lode dist.: Calkins, 4; Gianella, 9; Knochenhauer, 1.
 Contact metamorphism, Rye Patch: Vitaliano, 1.
 Cottonwood Canyon: Ferguson, 10.
 Delamar dist.: Callaghan, 8.
 Desert Range faults: Longwell, 15.
 Dike, porphyritic: Campbell, I., 9.
 Domes, intrusive: Coats, 3.
 Dumortierite-andalusite, Oreana: Kerr, P. F., 12.
 Earthquake history: Wood, H. O., 11, 16.
 Earthquakes: Callaghan, 5; Gianella, 1, 3, 4; Page, B. M., 1; Wilson, J. T., 3; Wood, H. O., 11, 16.
 Excelsior Mtn. earthquake: Callaghan, 5.
 Fault scarps, Pleasant Valley: Page, B. M., 1.
 Faulted fans, Sheep Range: Longwell, 6.
 Flood phenomena, Wasatch Mts.: Bailey, R. W., 1.
 Frazier Mtn. overthrust: Buwalda, 15.
 Geyser area, Beowawe: Nolan, 5.
 Great Basin: Hulin, 6; Keyes, 177; Shrock, 8.
 Gypsum Cave, Las Vegas: Stock, 9.
 Hawthorne quad.: Muller, 14.
 High Sierra scarp: Engeln, von, 12.
 Humboldt fm.: Sharp, R. P., 4.
 Humboldt Range: Cameron, E. N., 2; Jenney, 1.
 Jurassic orogeny and faults: Ferguson, 6, 7.
 Muddy Mtn. thrust: Longwell, 13.
 Red beds: Krynlne, 9.
 Ruby-East Humboldt Range: Sharp, R. P., 3, 5.

Nevada—Continued.

Physical geology—Continued.

- Searchlight dist.: Callaghan, 13.
 Scheelite-leuchtenbergite: Kerr, P. F., 14.
 Silver City area: Gianella, 9.
 Subsequent faulting: Hulin, 6.
 Thrust faults: Longwell, 16, 36.
 Tonopah mining dist.: Nolan, 8.
 Tungsten, Silver Dike: Kerr, P. F., 17.
 Tuscarora mining dist.: Nolan, 9.
 Volcanic plug: Burgess, J. A., 1.
 Volcanics, Cascade types: Thayer, T. P., 3.

Physiographic geology.

- Boulder Reservoir floor: Longwell, 23.
 Colorado River, origin: Blackwelder, 37.
 Fault scarps of 1915: Page, B. M., 1.
 Glacial deposits, Reno-Taboe area: Gianella, 13.
 Glaciation: Blackwelder, 35; Sharp, R. P., 3.
 High Sierra scarp: Engeln, von, 12.
 Humboldt fm.: Sharp, R. P., 4.
 Lake Lahonton: Hutchinson, 2; Jones, J. C., 1.
 Lakes, arid regions: Hutchinson, 2.
 Rubble stripes, semiarid mts.: Blackwelder, 48.
 Ruby-East Humboldt Range: Sharp, R. P., 5.
 Sheep Range: Longwell, 6.
 Singatse Range channel: Penrose, R. J., 1.

Underground water.

- Geyser area, Beowawe: Nolan, 5.
 Geophysical prosp. for water: Lee, 8.
 Newlands area water table: Scofield, 1.

New Brunswick.

Areas described.

- Grand Lake area: Fréchette, 1.
 Little Southwest Miramichi-Sevogle Rivers area: Shaw, E. W., 1.
 Plaster Rock area: Rose, B., 1.
 St. John region: Alcock, 18.

Economic geology.

- Clays, shales, Grand Lake area: Fréchette, 1.
 Coal field, Grand Lake: Wright, W. J., 3.
 Gypsum: Bailey, H. B., 1.
 Limestones: Goudge, 5.
 Manganese: Wright, W. J., 4.
 Mineral occurrences: Alcock, 2.
 Mineral resources: Wright, W. J., 2.
 Natural gas: Hume, 15.
 Nickel-copper deposit: Low, B., 2.
 Petroleum: Hume, 15.
 Plaster Rock area: Rose, B., 1.
 Potash salts: Cole, L. H., 3.
 Red Bed copper deposits: Papenfus, 1.
 Salt: Norman, 1.
 Square Lake area: Poitevin, 3.
 Stony Creek oil and gas field: Hume, 15.

Historical geology.

- Chaleur Bay area: Alcock, 13; Canada G. S., 1.
 Devonian: Alcock, 4.

New Brunswick—Continued.

Historical geology—Continued.

- General: Alcock, 6.
- Geologic map: Alcock, 5.
- Grand Lake coal field: Wright, W. J., 3.
- Grand Manan Is.: Gesner, 1.
- Granite ridge, Moncton: Miller, A. H., 3.
- Little Southwest Miramichi-Sevogle Rivers area: Shaw, E. W., 1.
- Plaster Rock area: Canada G. S., 1; Rose, B., 1.
- St. John area: Alcock, 18; Hayes, A. O., 1, 7.
- Sevogle River area: Canada G. S., 1.
- Stony Creek oil and gas field: Norman, 2.
- Tuadook Lake area: Canada G. S., 1.
- Woodstock area: Caley, 2; Canada G. S., 1.

Mineralogy.

- Manganese, Gowland Mt.: Wright, W. J., 4.

Paleontology.

- Agnostians: Howell, 16.
- Conchostraca: Ulrich, 7.
- Paradoxides: Howell, 20.
- Phlyctaenaspis: Hussakof, 3.
- Pisces: Sternberg, R. M., 1.
- St. John area: Hayes, 7.
- Walchia: Darrab, 7.

Petrology.

- St. John area: Alcock, 18.
- Spilitic rocks: Flaherty, 1.
- Woodstock area: Caley, 2.

Physical geology.

- Chaleur Bay area: Alcock, 13.
- Grand Manan Is.: Gesner, 1.
- Little Southwest Miramichi-Sevogle Rivers area: Shaw, E. W., 1.
- St. John area: Alcock, 18; Hayes, 7.
- Slip faulting: Squires, 2.
- Woodstock area: Caley, 2.

Physiographic geology.

- Chaleur Bay area: Alcock, 13.
- Grand Lake coal field: Wright, W. J., 3.
- Grand Manan Is.: Gesner, 1.
- Little Southwest Miramichi-Sevogle Rivers area: Shaw, E. W., 1.
- Plaster Rock area: Rose, B., 1.
- St. John area: Alcock, 18; Hayes, 7.
- Woodstock area: Caley, 2.

New England.

Historical geology.

- Geologic history: Billings, M. P., 3.
- West wall, Trias. lowland: Wheeler, G., 1.

Mineralogy.

- Luminous minerals: Shortle, 2.

Physical geology.

- Caves: Perry, C., 1.
- Cliffs, glaciated: Balk, 16.
- Earthquakes: Collins, M. P., 1; Linehan, 1.
- Microseisms, analysis: Leet, 7.
- Seismic crust studies: Slichter, 7.
- Travel-times, earthquakes: Leet, 16.
- West wall, Trias. lowland: Wheeler, G., 1.

New England—Continued.

Physiographic geology.

- Coast, SE., postglacial: Jones, W. F., 1.
- Coastal movement and marshes: Chapman, V. J., 1.
- Glacial history: Bryan, 32.
- Glacial stages: Flint, 15.
- Glaciation, last, marine stage: Lougee, 8.
- Peneplain: Tarr, R. S., 1.
- West wall, Trias. lowland: Longwell, 26; Wheeler, G., 1.

Newfoundland.

- Geological Survey revived: Snelgrove, 7.
- Geologist's rept., 1929: Baker, H. A., 1.
- Geology and mining laws: Foote, 1.

Areas described.

- Bay of Exploits: Heyl, 1.
- Betts Cove area: Snelgrove, 2.
- Blow-Me-Down area: Snelgrove, 6.
- General: Twenhofel, 40.
- Harbour Deep area: Foley, F. C., 1.
- Hare Bay area: Cooper, J. R., 2.
- Hawke Bay area: Foley, F. C., 1.
- Notre Dame Bay area: Snelgrove, 2.
- Sops Arm, White Bay area: Heyl, 2.
- Tilt Cove area: Snelgrove, 2.
- White Bay area: Heyl, 2.

Economic geology.

- Baie d'Espoir area: Jewell, 2.
- Bay of Exploits: Grace, 1; Heyl, 1.
- Bay of Islands: Cooper, J. R., 1.
- Bay St. George: Hayes, 6, 8.
- Betts Cove area: Snelgrove, 2.
- Buchans ore deposits: Newhouse, 4.
- Canada Bay area: Betz, 1.
- Chromite: Snelgrove, 2.
- Coal, St. George's field: Bryan, A. M., 1.
- Copper, Buchans: George, P. W., 2.
- General: Lundberg, 3.
- Geophysical prosp., Gull Lake: Dougherty, 1.
- Gold deposits: Snelgrove, 5.
- Hare Bay area: Cooper, J. R., 2.
- Iron ore, Wabina: Hayes, A. O., 1, 3.
- Lead, Buchans: George, P. W., 2.
- Marble: Bain, 16, 18.
- Mineral poss.: Trioche, 1.
- Mines and min. res.: Snelgrove, 8.
- Pilleys Is. area: Espenshade, 1.
- Pyrrophyllite: Vhay, 1.
- St. George's coal field: Bryan, A. M., 1.

Historical geology.

- Baie d'Espoir area: Jewell, 2.
- Bay of Exploits area: Grace, 1; Heyl, 1.
- Bay of Islands area: Cooper, J. R., 1; Grace, 2; Snelgrove, 4.
- Bay St. George: Hayes, 6, 8.
- Bibliography: Betts, 1.
- Blow-Me-Down complex, Bay of Is.: Snelgrove, 4.
- Buchans area: George, P. W., 2; Newhouse, 4.
- Canada Bay area: Betz, 1.
- Carboniferous marine: Johnson, H., 3.
- Coal field, St. George's: Bryan, A. M., 1.
- Conception Bay: Hayes, 3; Vhay, 1.

Newfoundland—Continued.

Historical geology—Continued.

- General: Lundberg, 3; Twenhofel, 40.
 Gold deposits: Snelgrove, 5.
 Harbour Deep area: Foley, F. C., 1.
 Hare Bay area: Cooper, J. R., 2.
 Hawke Bay area: Foley, F. C., 1.
 Laccoliths, Trout River area: Ingerson, 2.
 Lead-zinc-copper area, Buchans: George P. W., 2; Newhouse, 4.
 Marble deposits area: Bain, 18.
 Mines and min. res.: Snelgrove, 8.
 Notre Dame Bay: Snelgrove, 1; Twenhofel, 29.
 Ordovician: Dunbar, 8; Snelgrove, 1.
 Pilleys Is. area: Espenshade, 1.
 St. George's coal field: Bryan, A. M., 1.
 Silurian: Heyl, 4; Twenhofel, 29.
 Sops Arm, White Bay area: Heyl, 2.
 Trout River area: Buddington, 18.
 Western Newfoundland: Dunbar, 8; Schuchert, 28.
 White Bay area: Heyl, 2, 4.

Mineralogy.

- Blow-Me-Down intrus. complex: Snelgrove, 4.
 Canada Bay area: Betz, 1.
 Copper, Buchans area: George, P. W., 2.
 Gold: Snelgrove, 5.
 Lead, Buchans area: George, P. W., 2.
 Mines and min. res.: Snelgrove, 8.
 Pyrophyllite: Vhay, 1.
 Zinc, Buchans area: George, P. W., 2.

Paleontology.

- Alga: Howell, 42.
 Bay St. George area: Hayes, 8.
 Cambrian faunas: Howell, 35, 43; Lochman, 5; Resser, 15, 20.
 Canada Bay area: Betz, 1.
 Carboniferous marine fauna: Johnson, H., 3.
 Ehnmanian fauna: Howell, 39-a.
 Faunas, Cambrian: Howell, 35, 43; Lochman, 5; Resser, 15, 20.
 Carboniferous: Johnson, H., 3.
 Pleistocene: Richards, 12, 17.
 Silurian: Shrock, 15.
 Mollusca: Richards, 12.
 Pleistocene faunas: Richards, 12, 17.
 Silurian fauna: Shrock, 15.
 Trilobites, Camb.: Resser, 15.

Petrology.

- Bale d'Espoir area: Jewell, 2.
 Bay of Exploits area: Heyl, 1.
 Bay of Islands ig. complex: Cooper, J. R., 1.
 Hare Bay area: Cooper, J. R., 2.
 Laccoliths: Ingerson, 2.
 Lamphophyres: Heyl, 3.
 Pilleys Is. area: Espenshade, 1.
 White Bay: Heyl, 4.

Physical geology.

- Bale d'Espoir area: Jewell, 2.
 Bay of Exploits area: Heyl, 1, 3.

Newfoundland—Continued.

Physical geology—Continued.

- Bay of Islands ig. complex: Cooper, J. R., 1; Grace, 2.
 Canada Bay area: Betz, 1.
 Earthquake, Newfoundland Banks: Gregory, J. W., 3, 5.
 General: Twenhofel, 40.
 Harbour Deep area: Foley, F. C., 1.
 Hare Bay area: Cooper, J. R., 2.
 Hawke Bay area: Foley, F. C., 1.
 Laccoliths: Ingerson, 2.
 Newfoundland Banks earthquake: Gregory, J. W., 3, 5.
 Pilleys Is. area: Espenshade, 1.
 Pyrophyllite deposits: Vhay, 1.
 St. George's coal field: Bryan, A. M., 1.
 Silurian areas: Twenhofel, 29.
 Sops Arm, White Bay area: Heyl, 2.
 Surface: Twenhofel, 39.
 Thrust faulting, western: Dunbar, 8.
 Trout River area: Buddington, 18.

Physiographic geology.

- Bale d'Espoir area: Jewell, 2.
 Canada Bay area: Betz, 1.
 Conception Bay area: Vhay, 1.
 General: Rothery, 1; Twenhofel, 40.
 Glaciation, Wisconsin: MacClintock, 13.
 Harbour Deep area: Foley, F. C., 1.
 Hare Bay area: Cooper, J. R., 2.
 Hawke Bay area: Foley, F. C., 1.
 Inselberge: Schrepfer, 1.
 Marble deposits: Bain, 18.
 Pilleys Is. area: Espenshade, 1.
 Quaternary changes of level: Flint, 25.
 Sops Arm, White Bay area: Heyl, 2.
 Surface: Twenhofel, 39.
 Western Newfoundland: Schuchert, 28.
 White Bay area: Heyl, 2.

New Hampshire.

Economic geology.

- Cardigan quad.: Fowler-Lunn, 1.
 Garnets: Conant, 2.
 Mica mine: Burbank, B. B., 2.
 Pegmatite dikes: Megathlin, 1; Modell, 1.
 Potash: Billings, 15.

Historical geology.

- Androscoggin watershed: White, G. W., 12.
 Cardigan quad.: Fowler-Lunn, 1.
 Central N. H.: Billings, 7.
 Coastal watershed: White, G. W., 12.
 Connecticut watershed area: Lougee, 9.
 Franconia quad.: Billings, 9; Williams, C. R., 1, 2.
 Gilsum area: Megathlin, 1; Modell, 1.
 Grand Monadnock Chamberlain, A., 1.
 Granites: Kaiser, E. P., 2.
 Hanover granites: Kaiser, E. P., 2.
 Lebanon granites: Kaiser, E. P., 2.
 Littleton quad.: Billings, 5, 8, 12, 13.
 Mascoma quad.: Chapman, C. A., 1; Hadley, J. B., 1.

New Hampshire—Continued.

Historical geology—Continued.

Merrimack, watershed: White, G. W. 13.

Mt. Cube quad.: Hadley, J. B., 1.

Uraninite age, Grafton Center: Shaub, 9.

West, cent. N. H.: Billings, 17.

Mineralogy.

Albite-beryl crystall. vs. replacement: Shaub, 10.

Apatite: Stewart, G. W., 1.

Beryl-albite crystallization vs. replacement: Shaub, 10.

Coos Co.: Verrow, 1.

Cordierite: Conant, 1.

Feldspar in inclusions: Page, 5.

Fluorite: Bannerman, 5.

Grafton area: Baum, 1; Shaub, 9; Shortle, 1.

Minerals and locs.: Shortle, 3.

Mines and minerals: Ulrich, J. M., 1.

Paragenesis, Pegmatite: Shaub, 8; Switzer, 2.

Pegmatites, paragenesis: Shaub, 8; Switzer, 2.

Radioactive minerals, Grafton: Shortle, 1.

Topaz, Baldface Mtn.: Chandler, 1, 2.

Uraninite: Shaub, 13.

Vesuvianite: Stewart, G. W., 1.

White Mtn. magma ser.: Chapman, R. W., 1.

Paleontology:

Brachiopoda, Dev.: Billings, 11.

Littleton area: Billings, 8.

Petrology.

Cardigan quad.: Fowler-Lunn, 1.

Champlain fm. concretions: Tarr, 18.

Cherry Mtn. syenite stock: Chapman, 3.

Concretions, Champlain fm.: Tarr, 18.

Feldspar in inclusions: Page, 5.

Franconia quad.: Williams, C. R., 2.

Garnet: Conant, 2.

Granites: Kaiser, E. P., 2.

Littleton area: Billings, 13.

Mica schist, Mt. Clough: Billings, 11, 14.

Moosilauk area: Billings, 13.

Mt. Clough area: Billings, 11, 14.

Ossipee Mts.: Kingsley, 1.

Petrofabrics, Mt. Clough schist: Billings, 14.

Phenacite: Pough, 5.

Potash: Billings, 15.

Red Hill rocks: Quinn, 3, 4.

Ring dike complexes: Chapman, W. M., 1; Modell, 3.

Syenite: Quinn, 3.

White Mtn. magma ser.: Chapman, R. W., 1.

Physical geology.

Batholithic intrus.: Billings, 17-a.

Bethlehem moraine: Crosby, 11.

Cardigan quad.: Fowler-Lunn, 1.

New Hampshire—Continued.

Physical geology—Continued.

Earthquake, 11/9/36: Collins, M. P., 2.

Franconia quad.: Billings, 9; Williams, C. R., 2.

Frost action, White Mts.: Antevs, 10.

Granites: Kaiser, E. P., 2.

Ice readvance, Littleton: Lougee, 2.

Littleton area: Billings, 10, 12, 13; Lougee, 2.

Mascoma quad.: Chapman, C. A., 1; Hadley, J. B., 1.

Merrimack watershed: White, G. W., 13.

Moosilauke area: Billings, 10, 12, 13.

Mt. Cube: Hadley, J. B., 1.

Ossipee Mts.: Kingsley, 1.

Pegmatite, paragenesis: Shaub, 8; Switzer, 2.

Potash, regional metamorphism: Billings, 15.

Presidential Range: Billings, 10.

Regional granitization, metamorphism: Currier, 10.

Ring dike complexes: Chapman, R. W., 2; Modell, 3.

Syntectonic intrusion: Hadley, J. B., 2.

White Mtn. magma ser.: Chapman, R. W., 1.

Physiographic geology.

Androscoggin watershed: White, G. W., 12.

Cardigan quad.: Fowler-Lunn, 1.

Cirques, striations: Goldthwait, R. P., 3, 7.

Coastal watershed: White, G. W., 12.

Concretions, manganese: Kindle, 24.

Connecticut watershed: Lougee, 9.

Contoocook Valley drift: White, G. W., 15.

Dike, clastic, glacial origin: Kruger, 2.

Franconia quad.: Billings, 9.

Glacial Lake Hitchcock: Lougee, 3.

Glacial striae, Presidential Range: Goldthwait, R. P., 7.

Glaciation date, White Mts.: Johnson, D. W., 27.

Grand Monadnock: Chamberlain, A., 1.

Ice readvance, Littleton: Lougee, 2.

Ice sheet, retreat: Goldthwait, J. W., 7.

Littleton quad.: Billings, 10; Lougee, 2.

Merrimack watershed: White, G. W., 13.

Moosilauke quad.: Billings, 10.

Mt. Washington in ice age: Goldthwait, R. P., 5.

Striations, glacial cirques: Goldthwait, R. P., 3, 7.

Weathered rocks, in and under drift: Goldthwait, J. W., 6.

Underground water.

Artesian wells: Goldthwait, J. W., 8.

Bibliography, Connecticut Valley res.: New England Reg. Plann. Commission, 1.

Connecticut River Valley, res.: New England Reg. Plann. Commission, 1.

New Jersey.

Geologic problems: Johnson, M. E., 4.

Areas described.

Quakertown-Doylestown dist.: Bascom, 1.

Economic geology.

Franklin minerals: Bowen, W. C., 1;

Palache, 1, 2, 28; Tarr, W. A., 3.

Magnetite ores: Smith, L. L., 3.

Mineral deposits: Berkey, 12.

Mineral industry: Johnson, M. E., 2.

Mineral zoning, Trias.: Newhouse, 8.

Natural gas poss.: Postley, 4.

Nonmetallic min. res.: Johnson, M. E., 3.

Petroleum poss.: Postley, 4.

Zinc ores: Bowen, W. C., 1; Palache, 1,

2; Tarr, W. A., 3.

Historical geology.

Baltimore & Ohio routes: Grimsley, 1.

Cape May fm.: Richards, H. G., 2, 5.

Coastal Plain: Kummel, 2.

Delaware Water Gap area: Willard, 2.

General: Berkey, 12; Johnson, M. E., 4.

Geologic map: Lewis, J. V., 2.

Ground-water supply: Critchlow, 1.

Hamilton correls.: Willard, 45.

Hamilton group: Willard, 21.

Jacksonburg lms.: Miller, R. L., 2.

Kummelia, strat. significance: Stephenson, 17.

Miocene, Fairton: Richards, 8.

Monmouth group: Jennings, P. H., 1.

Pensauken fm.: Berry, 51; Campbell, M. R., 12.

Pine Barrens area: Lutz, 2.

Quaternary coastal area: Richards, 5.

Rancocas groups: Jennings, P. H., 1.

Watchung Mts.: Moldenke, 1.

Mineralogy.

Agates: Casperson, 2; Reamer, 1.

Amphibole: Foshag, 15.

Artinite: Ferrari, 1.

Barium-muscovite: Bauer, L. H., 4.

Bentonite: Stephenson, 15.

Beryllium: Palache, 4.

Calcites: Hawkins, 9; Whitlock, 2.

Cavities, crystal: Casperson, 3; Schaller, 8.

Central N. J.: Hawkins, A. C., 1.

Chalcedony: Casperson, 2.

Clays: Hawkins, 3, 7.

Copper, native: Haft, 1.

Crystal cavities: Casperson, 3; Schaller, 7.

Fluorborite: Bauer, L. H., 2.

Fluorescent minerals: Smith, J. L., 1.

Franklin minerals: Bauer, L. H., 1, 3, 4, 5; Berman, 7; Blix, 1; Foshag, 15; Haft, 1; Newhouse, 13; Olpp, 1;

Palache, 1, 4, 28, 35; Schaller, 16;

Tarr, W. A., 3.

Glauberite: Hawkins, 4, 11.

Greenockite: Whitlock, 1.

Hematite balls: Casperson, 1.

Heulandite: Sachs, 1.

Loseyite: Bauer, L. H., 1.

New Jersey—Continued.

Mineralogy—Continued.

Microscopic minerals in clays: Hawkins, A. C., 3.

Mooreite: Bauer, L. H., 2.

Pectolite: Peacock, 5.

Prehnite: Casperson, 2; Anonymous, 164.

Roebbingite: Blix, 1.

Rowelite: Berman, 7.

Sarkinite: Palache, 35.

Sodalite: Smith, L. L., 5.

Sterling Hill minerals: Bauer, L. H., 2;

Newhouse, 13; Palache, 28; Tarr,

W. A., 3.

Tephroite crystal: Schaller, 16.

Trap rock quarry: Northup, 3.

Willemite: Gunnell, E. M., 3.

Xonotlite: Bauer, L. H., 5.

Yeatmanite: Palache, 35.

Zinc ores: Bowen, W. C., 1; Tarr, W. A., 3.

Paleontology.

Ancylocentrum: Chaffee, 3.

Aturoidea: Miller, 30.

Aves: Wetmore, 11.

Bairdopillata: Coryell, 12.

Balanus: Pilsbry, 2.

Breviarca: Stephenson, 10.

Bryozoa: Canu, 1.

Cladoxylon: Read, C. B., 7.

Cliona: Fenton, 24.

Crocodilian remains: Mook, 3.

Cycad: Chrysler, 1.

Cycadeoid: Chrysler, 2.

Dinosaur faunas: Russell, L. S., 4.

Eocene age of "Cretaceous" birds: Wetmore, 11.

Flora, Pensauken: Berry, 51.

Foraminifera: Cushman, 1.

Forest, postglacial: McCulloch, W. F., 1.

Hydrocorallinae: Richards, H. G., 6.

Kummelia: Stephenson, 17.

Mammalia: Wood, H. E., 2d, 18.

Microfauna: Jennings, P. H., 1.

Mollusca: Pilsbry, 6.

Myliobatid: Chaffee, 2.

Pectinidae: Rowland, H. I., 1; Tucker, H. I., 8.

Trigona: Stephenson, 10.

Xanthias: Rathbun, 11.

Xylomites: Chrysler, 3.

Petrology.

Diabase dikes: Milton, 3.

Jacksonburg lms.: Miller, R. L., 2.

Metamorphism, granitic dike: Milton, 5.

Olivine zone, Palisades sill: Butler, J. W., 3.

Merchantville clay: Storm, P. J., 1.

Palisades sill: Butler, J. W., Jr., 1, 3.

Physical geology.

Barnegat Inlet: Hitchcock, C. B., 1; Lucke, 2, 3, 4.

Coast sinking: Richards, H. G., 7.

Dikes, Franklin Furnace: Milton, 3, 5.

Dutchess County: Barth, 14.

New Jersey—Continued.

Physical geology—Continued.

- Earthquakes, local: Lynch, W. A., 1.
- Erosion of beaches: Anonymous, 9.
- Intrusive dikes in basalt: Hawkins, A. C., 2.
- Meadow sod under beaches: Richards, H. G., 3.
- Palisade sill: Walker, F., 1.
- Source of beach sands: Colony, 3.
- Tidal inlets, evolution: Hitchcock, C. B., 1.

Physiographic geology.

- Appalachian region: Johnson, D. W., 8.
- Barneget Inlet: Hitchcock, C. B., 1; Lucke, 3.
- Coastal Plain: Kümmel, 2.
- Correlations, glacial deposits: MacClintock, 6, 11.
- Delaware River preglacial course: Miller, R. L., 3.
- Deltas, Minisink Valley: Happ, 4.
- Gaps in trap ridges: Hubbert, 7.
- Glacial deposits: MacClintock, 6, 11.
- Lagoon deposits: Lucke, 3.
- Pensauken gravel, origin: Campbell, M. R., 12.
- Pleistocene, marine and glacial deposits: MacClintock, 6.
- Swamp, dendritic floor: MacClintock, 12.
- Tidal inlets, evolution: Hitchcock, C. B., 1.
- Till weathering: MacClintock, 12-a.
- Watching Mts.: Moldenke, 1.
- Wisconsin glacier, Delaware Valley: Ward, F., 4.

Underground water.

- Asbury Park ground-water supply: Thompson, D. G., 3.
- Atlantic City ground-water supply: Barksdale, H. C., 2.
- Camden area ground-water supply: Thompson, D. G., 9.
- Chatham area: Thompson, D. G., 8.
- Ground-water supplies: Barksdale, H. C., 1, 2, 3; Critchlow, 1, 2; Thompson, D. G., 3, 8, 9.
- Parlin area: Barksdale, 3; Critchlow, 2.
- Water table fluctuations: Barksdale, H. C., 1; Critchlow, 2.

New Mexico.

- General: Davis, W. M., 1.
- Geologic lit.: Wootton, 1.
- Guidebook, Southern Pacific Lines: Darton, 4.

Areas described.

- Bayard mining dist.: Lasky, 12.
- Carlsbad Caverns: Darton, 2.
- Doña Ana County: Dunham, 3.
- Hobbs field, Lea Co.: Winchester, 2.
- Lordsburg dist.: Lasky, 14.
- Red River dam sites: Powell, W. C., 1.
- Rio Grande Canyon: Bryan, 8.
- Roswell artesian basin: Fielder, 2.
- Sandoval Co.: Renick, 3.
- San Juan Basin: Sears, J. D., 3.

New Mexico—Continued.

Areas described—Continued.

- Santa Rita-Hanover-Flerro area: Landon, 2.
- Socorro Co.: Lasky, 6.
- State Line dam site: Bryan, 7.
- White Sands Nat. Monument: Botkin, 1.

Economic geology.

- Anhydrite: Kroenlein, 2.
- Artesia oil field: David, M. J., 1.
- Bayard mining dist.: Lasky, 12.
- Carbon dioxide: Miller, J. C., 2; Wells, E. H., 4.
- Castile fm.: Kroenlein, 2.
- Central mining dist.: Schmitt, 6.
- Coal fields: Dane, 8; Ellis, R. W., 7; Hunt, C. B., 2; Sears, J. D., 3.
- Colorado geosyncline: Harris, G. W., 1.
- Colorado Plateau ores: Butler, B. S., 3.
- Copper: Koschmann, 3; Lasky, 10; Paige, 1; Stauber, I. J., 1.
- Doña Ana County: Dunham, 3.
- Electric prosp. for molybdenum: Sundberg, 1.
- Eunice oil field: Anderson, C. C., 1.
- Gas and oil fields, maps: Winchester, 1, 5.
- Gold deposits: Wells, E. H., 2.
- Ground Hog mine: Lasky, 4.
- Halite: Mansfield, 23.
- Hanover area: Ransome, F. L., 3.
- Hobbs oil field: Carpenter, C. B., 1; DeFord, 2; Zavolco, 6.
- Iron ores: Keyes, 386.
- Kaolin: Richard, 1.
- Lead, Pecos: Krieger, P., 2.
- Lithium ores: Chambers, 1.
- Lordsburg dist.: Lasky, 14.
- Magnetite: Taft, 1.
- Maps, oil and gas fields: Winchester, 1, 5.
- Mineral resources: Ellis, R. W., 2; Lasky, 6, 7, 14, 16; Talmadge, 7; Wells, E. H., 1.
- Molybdenite: Sundberg, 1; Vanderwilt, 12.
- Monument field: Anderson, W. D., 1.
- Natural gas fields: Bybee, 3, 4, 6; Krampert, 1; Rettger, 4; Winchester, 1, 3, 4, 5.
- Oil fields: Krampert, 1; Winchester, 1, 3, 5.
- Oil and gas fields, maps: Winchester, 1, 5.
- Ore deposits: Lasky, 6; Schmitt, 5.
- Organ Mts.: Dunham, 3.
- Pecos mine: Stott, 1.
- Pegmatites: Just, 3.
- Permian Basin: DeFord, 4; Smith, H. I., 3; Williams, N., 5.
- Petroleum: Bentz, 2; Bybee, 3, 4, 6; DeFord, 4; Krampert, 1; Rettger, 4; Winchester, 1, 3, 5.
- Pewabic mine area: Schmitt, 10.
- Potash: Ageton, R. V., 2; Delacote, 3; Kroenlein, 2; Mansfield, G. R., 4, 6, 11, 15, 20; Smith, H. I., 1, 3; Anonymous, 55.

New Mexico—Continued.

Economic geology—Continued.

- Questa molybdenite deposits: Sundberg, 1; Vanderwilt, 12.
 Rocky Mts. area: Uren, 2.
 Salado halite fm.: Mansfield, 23.
 Salt: Ageton, R. V., 2; Kroenlein, 2.
 Santa Rita mining dist.: Ransome, 3; Spencer, A. C., 1.
 Shiprock dist.: Nowels, 1.
 Sierra Co.: Harley, 1.
 Silver ores, primary: Krieger, 7.
 Virginia mining dist.: Lasky, 11, 13.

Historical geology

- Abiquiu quad.: Smith, H. T. U., 4.
 Alamito coal measures: Keyes, 131.
 Animas ss.: Keyes, 307.
 Basalt flows, age: Keyes, 264.
 Bayard area: Lasky, 12.
 Bernalillo shs. for Red Beds: Keyes, 404.
 Capitan lms.: Lloyd, E. R., 1; Keyes, 427.
 Carthage-Tokay dist.: Needham, 9.
 Ceja del Rio Puerco: Bryan, 35.
 Ceja Glorieta ss. Keyes, 267.
 Central mining dist.: Schmitt, 6.
 Cerro Tucumcari: Keyes, 172.
 Chacra Mesa-La Ventana coal field: Dane, 8.
 Chupadera, invalid: Keyes, 270.
 Cimarron term usage: Keyes, 337.
 Cimarron Valley: Parker, B. H., 2.
 Clovis area: Antevs, 17; Stock, 55.
 Coal fields: Ellis, P. W., 7.
 Correlations, Penn.: Needham, 10; Willis, R., 1.
 Cretaceous: Hansen, G. H., 3; Harris, J. W., 1; Keyes, 263; Pike, W. S., Jr., 1.
 Cross-sections: Dickey, R. I., 1; Thompson, W. C., 2; Woods, 1.
 Delaware Basin: Lang, W. T. B., 4.
 Delaware term, use of: Keyes, 25.
 Eddy County: DeFord, 1.
 El Paso lms.: Kirk, 14.
 Erosion surface, old, Jemez Mts.: Church, F. S., 1.
 Eunice oil field: Anderson, C. C., 1.
 Folsom deposits: Cook, H. J., 1.
 Fusselmann lms.: Keyes, 462.
 General: Kansas G. Soc., 7; Winchester, 3.
 Ground Hog mine: Lasky, 4.
 Guadalupan, ser.: Keyes, 274.
 Guadalupe Mts.: Keyes, 18.
 Gypsum dunes: Keyes, 339.
 Hobbs, other oil fields: Carpenter, C. B., 1.
 Hueco vs. Magdalena: Keyes, 160.
 Jurassic fm. correl.: Baker, A. A., 6.
 Lake Valley lms.: Keyes, 399, 410, 464; Laudon, 19.
 La Ventana-Chacra Mesa coal field: Dane, 8.
 Little Hatchet Mts.: Lasky, 16.
 Lordsburg dist.: Lasky, 14.

New Mexico—Continued.

Historical geology—Continued.

- Magdalena dist.: Koschmann, 1.
 Mesaverde fm.: Hendricks, T. A., 1.
 Mesaverde group: Keyes, 238.
 Mid-Continent area: Lahee, 8.
 Monument field: Anderson, W. D., 1.
 Moreno Valley: Smith, J. F., Jr., 2.
 Mount Taylor field: Hunt, C. B., 2, 4, 4-a.
 Nacimlentan ser.: Keyes, 129.
 Navajo ss.: Keyes, 292.
 Organ Mts.: Dunham, 3; Hunt, W. F., 2.
 Pecos Mine: Stott, 1.
 Pecos River Valley: Robinson, T. W., Jr., 6.
 Pediments, terraces, Rio Puerco: Bryan, 31.
 Pegmatites: Just, 3.
 Percha shales: Keyes, 160.
 Permian: Baker, A. A., 1; Blanchard, W. G., Jr., 1; Cartwright, 2; Crandall, K. H., 1; DeFord, 4; Lang, W. T. B., 6; Lewis, F. E., 1; Willis, R., 3.
 Pewabic mine area: Schmitt, 10.
 Puerco fm.: Dane, 3.
 Questa molybdenum deposits: Sundberg, 1; Vanderwilt, 12.
 Raton Basin: Kans. G. Soc., 3.
 Red beds, age: Keyes, 426.
 Rio Grande depression: Bryan, 36; Needham, 11.
 Rocky Mtn. area: Uren, 2.
 Roswell artesian basin: Morgan, A. M., 1.
 Salada fm.: Lang, W. T. B., 9.
 Sandia fm.: Keyes, 130.
 Sandia Mts.: Keyes, 334.
 San Juan Basin: Hendricks, T. A., 1; Hunt, C. B., 1; Matthew, 17.
 Santa Fe fm.: Denny, 3.
 Santa Rita mining area: Paige, 1; Spencer, A. C., 1.
 Sedimentation, Mesaverde fm.: Hendricks, T. A., 1.
 Shinarump, eastern: Keyes, 270.
 Sierra Co.: Harley, 1.
 Sloan Canyon fm.: Stovall, 18.
 Stratigraphy, Ord.: Keyes, 191.
 Tertiary base: Keyes, 305.
 Tijeras Canyon: Keyes, 437.
 Triassic: Mehl, 1.
 Trinity sec.: Lasky, 15.
Mineralogy.
 Aerolites: Leard, 1; Nininger, 30.
 Agates: Ellermeier, 1.
 Bayard mining dist.: Lasky, 12.
 Beenham aerolite: Leard, 1.
 Cadmium in smithsonite: Schaller, 25.
 Carbon dioxide occurrences: Germann, F. E. E., 1.
 Castle fm.: Kroenlein, 2.
 Fluorine in drinking water: Clark, J. D., 1.
 Grant meteorite: Henderson, E. P., 7.
 Gypsum sands, origin: Potter, F. C., 2.

New Mexico—Continued.

Mineralogy—Continued.

- Harding Co. meteorite: Wylie, 3.
 Iron, magnetitic: Keyes, 386.
 Little Hatchet Mts.: Lasky, 16.
 Lordsburg dist.: Lasky, 10.
 Melrose meteorite: Nininger, 24, 28.
 Meteorites: Brady, 40; Foshag, 19;
 Heineman, 6; Henderson, E. P., 7;
 Nininger, H. H., 3, 23, 24, 28, 39,
 45.
 Microlite: Hirschi, 3.
 Mineral res., nonmetallic: Talmage, 7.
 Monazite, Taos: Muench, 6.
 Pasamonte meteorite: Foshag, 19;
 Nininger, 39, 45.
 Pecos Mine: Stott, 1.
 Pegmatites: Just, 3.
 Pencatite: Hunt, W. F., 2.
 Pinon meteorite: Nininger, 24, 57.
 Pewabic mine area: Schmitt, 10.
 Pojoaque meteorite: Brady, 4; Nininger,
 23, 24.
 Potash: Ageton, R. V., 2; Schaller, 1, 8.
 Pseudo-cubic quartz: Tarr, W. A., 2.
 Quartz crystals: Tarr, W. A., 1, 2.
 Roy meteorite: Heineman, 6; Nininger,
 30.
 Salt, potash mine: Ageton, R. V., 2.
 Samarskite: Hess, F. L., 2.
 Sandia Mtn. meteorite: Nininger, H. H.,
 3.
 Sands, gypsum, origin: Potter, F. C., 2.
 Santa Fe meteorite: Henderson, E. P., 7.
 Sierra Co.: Harley, 1.
 Silver City minerals: Wuestner, 1.
 Silver ores, primary: Krieger, 7.
 Tables, determination, rocks and minerals:
 Ellis, R. W., 1.
 Tellurium minerals: Ballmer, 1; Crawford,
 W. P., 3.
 Thulite: Northrop, 5.
 White sands heavy minerals: Needham,
 12.
 Xenoliths: Dunham, 4.
 Zeolites: Needham, 8.

Paleontology.

- Algae, Carlsbad reef: Johnson, J. H., 33.
 Allognathosuchus: Simpson, 13.
 Antelopes: Stock, 8, 14.
 Antiquity in Southwest U. S.: Stock, 30.
 Artifacts with *Bison*, mammoths: Cotter,
 2; Howard, E. B., 1, 9.
 Birds from cave deposits: Howard, E. B.,
 1; Wetmore, 19.
 Bishops Cap cavern: Bryan, W. A., 1.
Bison with artifacts: Cotter, 2; Howard,
 E. B., 1, 9.
 Cave deposits: Bryan, W. A., 1; Fosberg,
 1; Howard, E. B., 9; Howard, H.,
 3, 6; Miller, Alden H., 6; Schultz,
 C. B., 3; Stock, 11, 14; Wetmore,
 17, 19.
 Cephalopoda: Scott, G., 8; Miller, A. K.,
 6.

New Mexico—Continued.

Paleontology—Continued.

- Ceratopsia: Wiman, 1.
 Cerro Pedernal stone culture: Bryan, 44.
 Clovis area: Antevs, 17; Clarke, 1;
 Cotter, 2; Figgins, 6; Howard, E.
 B., 4, 9; Lohman, E. K., 4; Patrick,
 R., 1; Stock, 55.
 Crocodile: Mook, 2; Wiman, 3.
 Crytoblastus: Cline, L. M., 2.
 Crytogaia: Howard, H., 3.
 Cycadeoids: Wieland, 7.
 Diatoms: Lohman, K. E., 4; Patrick,
 R., 1.
 Dinosaurs, Cret.: Russell, L. S., 4.
 Faunas: Cooper, C. F., 1; Matthew, 17;
 Howard, E. B., 4; Schultz, C. B., 3;
 Stainbrook, 2.
 Folsom deposits: Cook, H. J., 1; Howard,
 E. B., 9.
 Fusulinidae: Needham, 6.
 Gastropoda: Girty, 5, 11.
 Girvanella: Johnson, J. H., 30-a.
 Great horned owl: Wetmore, 17.
 Ground sloth: Eames, 1; Lull, 1, 3.
 Human remains, caves: Stock, 11.
 Hyraxes: Thorpe, 4.
 Insecta, fossil wood: Bruce, 2.
 Insectivora: Reynolds, T. E., 1, 2.
 Jurassic fishes: Koerner, 1.
 Lepidodendrids: Keyes, 131.
 Machaeroprotopus: Stovall, 18.
 Mammalia: Burnet, 1; Cotter, 1; Frick,
 2; Gazin, 20; Granger, 1; Simpson,
 33, 34; Stock, 8, 14; Wood, A. E.,
 10.
 Mammoths and mastodons: Burnet, 1;
 Cotter, 1; Frick, 2.
 Man, fossil: Burnet, 1; Bryan, 42; Cotter,
 1; Figgins, 6; Howard, E. B.,
 11; Thone, 1.
 Man and mammals: Burnet, 1; Cotter, 1;
 Hay, 6.
 Mollusca: Clarke, 1.
 Multituberculata: Granger, 1.
 Nubecularia: Johnson, J. H., 30-a.
 Ostreidae: Stephenson, 12.
 Parasaurolophus: Wiman, 2.
 Plants, Shelter Cave deposit: Fosberg, 1.
 Pre-Amerindian quarries and imple-
 ments: Bryan, 42.
 Pseudococculi: Denison, R. H., 2.
 Pyelorchampus: Miller, Alden H., 4.
 Reptilia: Gilmore, 14; Romer, 22.
 Road-runner: Howard, H., 2.
 Rodents, Tert.: Wood, A. E., 10.
 San Juan Basin: Gilmore, C. W., 2.
 Spirifer, Organ Mts.: Greger, 1.
 Turkey, Tert.: Needham, 5.
 Turtles, Cret.: Wiman, 4.
 Vertebrata: Hay, 6; Needham, 5; Welles,
 1.
 Vertebrata and human remains: Hay,
 6.
 Xiphonax, insect larva?: Cockerell, 7.

New Mexico—Continued.

Petrology.

- Ceja del Río Puerco: Bryan, 35.
 Doña Ana County: Dunham, 3.
 Great white sands: Gould, 18.
 Lordsburg dist.: Lasky, 14.
 Organ Mts.: Dunham, 3.
 Pasamonte meteorite: Foshag, 19.
 Pencatite: Hunt, W. F., 2.
 Pewabic mine area: Schmitt, 10.
 Questa molybdenite: Vanderwilt, 12.
 Sands, gypsum, origin: Potter, F. C., 2.
 Virginia mining dist.: Lasky, 11.
 White sands, heavy minerals: Needham, 12.
 Xenoliths, Organ batholith: Dunham, 4.

Physical geology.

- Abiquiu quad.: Smith, H. T. U., 4.
 Bayard area: Lasky, 12.
 Carlsbad Caverns: Haas, 2.
 Cave, Guadalupe Mts.: Burnet, 1.
 Ceja del Río Puerco: Bryan, 35.
 Chupadera beds, folding: Talmadge, 6.
 Conchas Dam: Crosby, 15.
 Doña Ana County: Dunham, 3.
 Erosion: Bryan, K., 1; Church, F. S., 1.
 Fault border, Sangre de Cristo Mts.: Cabot, 1.
 Fault scarps, Organ Mts.: Reiche, 5.
 Flow units in basalt: Nichols, R. L., 4.
 Ice cave in lava: Peck, A. P., 1.
 Ice, perpetual, under lava: McClary, 1.
 Iron ores, Chupadera Mesa: Keyes, 386.
 Joints, curved columnar, volcanics: Hunt, 6.
 Lavas: Nichols, 7, 10.
 Little Hatchet Mts., min. res.: Lasky, 16.
 Lordsburg dist.: Lasky, 14.
 McCartys basalt flow: Nichols, 12.
 Malpais lava flow: Just, 2.
 Moreno Valley: Smith, J. F., Jr., 2.
 Mount Taylor field: Hunt, C. B., 2, 4, 4-a.
 Oolites, Carlsbad Caverns: Hess, F. L., 1.
 Organ Mts.: Dunham, 3.
 Pecos mine: Stott, 1.
 Pegmatites: Just, 3.
 Pewabic mine area: Schmitt, 10.
 Pisolites, spring deposit: Northrup, 2, 3.
 Postbolson faulting: Dake, C. L., 4.
 Questa molybdenite deposits: Vanderwilt, 12.
 Río Grande depression: Needham, 11.
 Sandia Mts. structure: Keyes, 334.
 Santa Rita dist.: Paige, 1; Spencer, A. C., 1.
 Sediments, South Canadian River: Sidwell, 6.
 Solution-faceted lms. pebbles: Bryan, K., 5.
 Squeeze-ups of lava: Nichols, R. L., 5.
 Temperature gradients, Perm. basin: Lang, W. T. B., 1.

New Mexico—Continued.

Physical geology—Continued.

- Tijeras Canyon clastics: Keyes, 437.
 Tyrone copper dist.: Paige, 1.
 Valles volcano crater: Ross, C. S., 30.
 Ventifacts: Needham, 7.
 Virginia mining dist.: Lasky, 13.
 Viscosity of lavas: Nichols, 11; Ross, C. S., 20.
 Volcanoes, Pliocene: Williams, H., 11.

Physiographic geology.

- Canjilon Divide landslides: Smith, W. S. T., 2.
 Ceja del Río Puerco: Bryan, 35.
 Chama Valley: Smith, H. T. U., 5.
 Colorado Delta: Bateman, 6.
 Earth patterns: Turley, 1.
 Erosion surface, ancient: Church, F. S., 1; McCann, 1.
 Folsom area: Brown, B., 2.
 General: Davis, W. M., 1.
 Glaciation: Ellis, R. W., 6.
 Gypsum dunes: Keyes, 339.
 Gypsum sands: Talmadge, 3.
 Hypsometric map: Northrop, 4.
 Lake San Augustine: Powers, W. E., 13.
 Magdalena dist.: Koschmann, 2; Loughlin, 4-a.
 Meandering arroyos: Leighly, 4.
 Meteoritic scars: Turley, 2.
 Moreno Valley: Ray, L. L., 3.
 Mt. Taylor area: Hunt, C. B., 4-a.
 Pediments: Bryan, 15, 30, 31; Koschmann, 2; Loughlin, 4-a.
 Physiographic provs.: Keyes, 20.
 Red River lobe, Moreno glacier: Ellis, R. W., 4.
 Río Grand depression: Bryan, 36.
 San Jose Valley: Nichols, R. L., 2.
 Scarps, Tularosa Valley: Talmadge, 5.
 Sierra Madre Oriente system: Hill, 7.
 Sinkhole patterns: Melton, 13.
 Tectonics of Southwest: Darton, 13.
 Terraces, Río Puerco: Bryan, 31.
 Tertiary hist., High Plains: Van Tuyl, 2.
 Valles Mtn. volcanic center: Ross, C. S., 9.
 Zuni Mts.: Keyes, 155.
 Zuni Salt Lake: Darton, 5.
 Zuni uplift: Keyes, 124.

Underground water.

- Artesian supply control: Meinzer, 12.
 Earth tides, by well water: Robinson, T. W., Jr., 5.
 Fluorine in drinking water: Clark, J. D., 1.
 General: Piper, 5.
 Ground water: Theis, 3, 5, 10, 11; Waring, 3; White, W. N., 1.
 Hot Springs Basin: Powell, W. C., 2.
 Lea County: Nye, 1.
 Major Johnson Springs: Theis, 12.
 Mimbres Valley: Theis, 11; White, W. N., 1.
 Ogallala fm., Llano Estacado: Theis, 5.

New Mexico—Continued.

Underground water—Continued.

- Pecos River Valley: Robinson, T. W., Jr., 6.
Portales Valley: Theis, 9.
Rio Grande depression: Bryan, 36; Theis, 7, 13.
Roswell artesian basin: Brown, R. H., 1; Fledler, 1, 2; Morgan, A. M., 1.
Sandoval Co.: Renick, 3.
Underground water inv.: Piper, 8.

New York.

- Black mud shales, paleocology: Ruedemann, 27.
Boulders, Long Is.: Gager, 1.
Field conference: Whitcomb, 8.
Field work near New York City: Arnold, H. J., 1.

Areas described.

- Berne quad.: Goldring, 11.
Capital (Albany) dist.: Ruedemann, 7.
John Boyd Thacher Park: Goldring, 7.
Newcomb quad.: Balk, 5.
New York City area: Berkey, 13.

Economic geology.

- Adirondacks, magnetites: Newland, 4; Osborne, 18.
Antwerp quad.: Buddington, 8.
Bradford oil field: Cathcart, 11; Fettke, 9, 11; Newby, 1.
Devonian sh.-Oriskany sand drilling: Bennett, J., 1.
Emery deposits: Butler, J. W., Jr., 2; Gillson, 6; Zodac, 25.
Feldspar: Sbaub, 1.
Gold prospects: Newland, 10.
Golden granite, Peekskill: Fluhr, 3.
Gravel: Nevin, 3.
Gypsum: Brown, J. S., 1, 7; Newland, 2.
Hammond quad.: Buddington, 8.
Iron ores: Miller, W. J., 20; Ruedemann, 12; Stratton, 1.
Limonites: Newland, 13; Ruedemann, 12.
Lowville quad.: Buddington, 8.
Magnetic study, iron deposits: Stratton, 1.
Magnetites: Balk, 14; Dale, N. C., 1; Gallagher, 1.
Medina fm.: Hartnagel, 3.
Mineral res.: Newland, 3, 19.
Mineral waters: Whitnall, 3.
Mining-quarry industries, 1927-33: Newland, 6, 14.
Natural gas: Bradley, 13; Brewer, C., Jr., 1; Brown, J. S., 1, 7; Garrett, S. G., 1; Lucke, 1; Newland, 7, 8, 15, 20; Robinson, J. F., 3, 4; Torrey, P. D., 1, 3, 4, 8.
Oil fields: Brewer, C., Jr., 1; Cathcart, 11; Fettke, 9, 11; Newby, 1.
Oriskany crude oils: Hamilton, 3.
Oriskany ss. gas and oil poss.: Bennett, J., 1; Bradley, 19; Fettke, 12; Garrett, S. G., 1.
Oswegatchie quad.: Dale, 5.

New York—Continued.

Economic geology—Continued.

- Petroleum devel.: Brewer, C., Jr., 1; Lawrence, A. A., 1; Newland, 7.
Piseco Lake quad.: Cannon, R. S., 1.
Potsdam quad.: Reed, J. C., 5.
Salt: Brown, J. S., 1, 7; Hartnagel, 2.
Sand and gravel: Nevin, 3.
Siderite: Ruedemann, 12.
Slate: Larrabee, 1.
Watkins quad.: Bradley, 13.
Zinc mine, Balmat: Brown, J. S., 2.

Historical geology.

- Adirondacks: Alling, 3; Balk, 2; Buddington, 3, 5, 11, 22, 23; Kay, G. M., 1, 5; Longwell, 14; Miller, W. J., 13; Rodgers, 3.
Allegany State Park: Thwaites, 8.
Allegheny cuesta: Dale, 4.
Anorthosite, Adirondacks: Miller, W. J., 13.
Antwerp quad.: Buddington, 8; Gilluly, 13.
Appalachian orogeny: Pepper, 1.
Baltimore & Ohio route: Grimsley, 1.
Berne quad.: Goldring, 11.
Black River group: Young, F. P., Jr., 1.
Black Rock forest: Denny, 2.
Bradford oil field: Fettke, 9, 11.
Cambrian: Resser, 18.
Catskill delta: Chatwick, 15, 18, 19.
Catskill facies: Mencher, 2.
Catskill fm.: Chadwick, 9, 19.
Catskill name, history and value in geology: Chadwick, 31.
Catskill region: Chadwick, 15.
Catskills: Cooper, 25.
Cayuga valley: Fairchild, 15.
Champlain valley: Rodgers, 2.
Chazy fm.: Cooper, 25.
Chemung fm.: Chadwick, 23; Curry, H. D., 1; Eller, E. R., 2; Tester, 1.
Chemung is Portage: Chadwick, 23.
Cherts, Ord.: Ruedemann, 35, 40.
Clinton fm.: Sanford, 5.
Clinton group: Sanford, 8.
Cobourg, Ord.: Sproule, 1.
Correlation by graptolites: Decker, 14.
Correlations, Grenville ser.: Bain, 20.
Correlations, Hamilton group: Willard, 45.
Devonian: Chadwick, 17, 22, 27, 28, 30; Fettke, 2, 8; Wedel, 1.
Dutchess Co.: Balk, 11.
Eastern N. Y.: Cooper, G. A., 10.
Emery deposits: Butler, J. W., Jr., 2.
Erosion, Manlius-Helderberg ser.: Smith, B., 2.
Excursion, geol.: Marell, 1.
Finger Lakes area: Fox, I. W., 1.
General: Torrey, 5.
Genesee country: Payne, T. G., 1.
Genesee River: Fairchild, 19.
Genesee Valley: Fairchild, 18.
Geological summary: Rodgers, 4.
Granite phacoliths: Buddington, 3.

New York—Continued.

Historical geology—Continued.

- Grenville ser.: Bain, 20; Dale, 3.
 Hamilton correls.: Willard, 45.
 Hamilton group: Chadwick, 16; Cooper, G. A., 2, 7, 13, 15, 19; Reeves, J. R., 3; Willard, 21, 45.
 Hammond quad.: Buddington, 8; Gilluly, 13.
 Hounsfield metabentonite: Kay, G. M., 7.
 Hutchinson Valley: Fluhr, 1.
 Ithaca area: Caster, 2.
 John Boyd Thacher State Park: Torrey, R. H., 1.
 Kings Co.: Sanford, J. H., 1.
 Lowville quad.: Buddington, 8; Gilluly, 13; Ruedemann, 25.
 Medina fm.: Hartnagel, 3.
 Metamorphic rocks: Balk, 6.
 Mohawk Valley, Megathlin, 3.
 Natural gas fields: Lucke, 1; Newland, 20; Torrey, P. D., 3, 8.
 New York City area: Fluhr, 4; Kaye, C. A., 1; Manchester, 1; Strzygowski, 2.
 New York to Bear Mtn. Pk.: O'Connell, 1.
 Niagara area: Reimann, 12.
 Oneonta fade-out: Chadwick, 8.
 Ordovician: Kay, G. M., 15, 18; Warthin, 3; Wilson, A. E., 6.
 Oriskany ss.: Bradley, 19.
 Oscillations, Appalachians: Ruedemann, 5.
 Oswegatchie quad.: Dale, 5.
 Paleozoics: Newland, 9; Rodgers, 5; Schuchert, 22.
 Penn-York embayment: Caster, 16.
 Phosphatic nodules, origin: Seiwel, 1.
 Plisco Lake quad.: Balk, 14; Cannon, R. S., 1.
 Pleistocene, Long Is.: Wells, F. G., 8.
 Port Huron moraines, correls.: Taylor, 13.
 Portage sedimentation: Sheldon, P. G., 1.
 Potsdam quad.: Reed, J. C., 5.
 Pre-Cambrian fms.: Newland, 18.
 Pre-Cambrian names: Chadwick, 5.
 Rensselaer graywacke: Vaughan, H., 1.
 Rensselaer grit: Ruedemann, 38.
 Russell quad.: Dale, N. C., 2.
 Santa Clara quad.: Balk, 14; Buddington, 17.
 Saratoga area: Colony, 1.
 Sedimentary rocks, mapping: Goldring, 19.
 Shales, Mohawk Valley: Ruedemann, R., 1, 30.
 Shawangunk conglom.: Swartz, C. K., 2.
 Shawangunk Mts.: Heusser, 1.
 Silurian: Chadwick, 4; Fettke, 2; Reimann, 1; Ruedemann, R., 1; Sanford, J. T., 3; Swartz, C. K., 3.
 Skaneateles quad.: Smith, B., 4.
 Slates, colored: Larrabee, 1.

New York—Continued.

Historical geology—Continued.

- South-central: Berry, G. W., 1.
 Taconic orogeny: Pepper, 1.
 Taconic quad.: Prindle, 1.
 Thirteenth Lake quad.: Balk, 14.
 Thorold ss.: Chadwick, 25; Sanford, J. T., 3.
 Ticonderoga area: Swinnerton, 7.
 Trenton group: Kay, G. M., 10, 19.
 Triassic, Long Is.: Wheeler, G., 2.
 Tully lms. fm.: Cooper, 18; Trainer, 3.
 Watkins quad.: Bradley, 13.
 Western N. Y.: Reimann, 2.
 Willsboro quad.: Whitcomb, 11-a.
 Zinc mine, Balmat: Brown, J. S., 2.
Mineralogy.
 Bertrandite: Pough, 4.
 Calcium carbonates: Apfel, 3.
 Carbon dioxide: Germann, F. E. E., 1.
 Catskill facies: Mencher, 2.
 Celestite: Thibault, 1, 2.
 Chloritoid: Barth, 10.
 Cyrtolite analysis: Muench, 1, 5.
 Dutchess Co.: Barth, 14.
 Epistilbite: Pough, 4.
 Epsomite: McCulloch, R. B., 1.
 Feldspars: Alling, 4; Barth, 2; Singewald, J. T., Jr., 2.
 Fluorescence, quartz: Bernheimer, 1.
 Fluorescent, phosphorescent minerals: Zodac, 8.
 Galena: Brown, J. S., 4.
 Garnets: Miller, W. J., 18; Rowley, E. B., 3.
 Hematite in muscovite: Frondel, 12.
 Hemnite: Zodac, 5.
 Inclusions, muscovite: Frondel, 12.
 Iron ore, Lyon Mtn.: Miller, W. J., 20.
 Kaolinite: Gruner, 13; Kerr, P. F., 1, 5.
 Lead, supergene, Balmat: Dyson, 1-a.
 Limonites: Newland, 13.
 Magnetites: Alling, 11; Frondel, 12; Gallagher, 1.
 Malachite: Fluhr, 2.
 Mineral locs.: McElroy, 1.
 Mineral waters: Whitenall, 3.
 Minerals: Brown, S. C., 1.
 Mountain leather: Zodac, 27.
 Muscovite: Frondel, 12.
 New York City area: Manchester, 1.
 Northeastern N. Y.: Zodac, 16.
 Pitchblende: Zodac, 29.
 Pseudotillite: Warthin, 3.
 Quartz crystals: Hollister, J. S., 1; Newland, 16; Zodac, 19.
 Radioactivity, Saratoga: Baudisch, 2.
 Rock crystal near Napanoch: Zodac, 20.
 Schroeckingerite: Armstrong, E. J., 1.
 Selenite: Zodac, 7.
 Serendibite: Larsen, 8.
 Sphalerite: Brown, J. S., 4.
 Sulfur: Roedder, 1.
 Supergene minerals: Brown, J. S., 4; Dyson, 1-a.
 Tilly Foster mine: Trainer, J. N., 1.

New York—Continued.

Mineralogy—Continued.

- Tourmaline: Butler, S. B., 1; Zodac, 6.
 U-galena in cyrtolite: Kerr, P. F., 13.
 Uraninite in cyrtolite: Kerr, P. F., 13.
 White face Mtn.: Newland, 12.
 White Plains quarry: Zodac, 4.
 Zinc, Balmat mine: Brown, J. S., 2;
 Dyson, 1-a.

Paleontology.

- Algal barrier reefs: Goldring, 17.
 Annelid jaws: Eller, E. R., 2, 3, 5.
 Appalachian, Olenellus zone fauna:
 Resser, 20.
 Archaeopteris macilentia: Arnold, 20.
 Archaeopteris sphenophyllifolia: Ar-
 nold, 20.
 Armstrongia cf. Titusvillia: Caster, 13.
 Aulocaulis: Fenton, M. A., 10.
 Aulopora: Fenton, M. A., 9.
 Bellinurus: Eller, 12.
 Berne quad.: Goldring, 11.
 Bertie fm.: Monahan, 1.
 Blastoids: Reimann, 8.
 Brachiopoda: Ulrich, 27.
 Bryozoa: McNair, 4, 5.
 Calamopitys: Thomas, D. E., 1.
 Callixylon: Arnold, 2, 3.
 Catskill facies: Mencher, 2.
 Cephalopoda: Flower, 1, 2, 6; Foerste, 9.
 Cobourg, Ord.: Sproule, 1.
 Coccosteus: Bryant, 2.
 Conchopeltis: Knight, J. B., 13.
 Conodonts: Branson, E. B., 17.
 Corals: Chadwick, 29; Fenton, 42.
 Crinoidea: Goldring, 9, 12, 13, 14, 18.
 Cryptozoon: Goldring, 15.
 Cyathospingia: Okulich, 2.
 Cystiphyllum: Fenton, 61.
 Devonian faunal differentiation: Chad-
 wick, 22.
 Devonian plant-bearing fms.: Arnold, 25.
 Devono-Carboniferous, southwest N. Y.:
 Caster, 1.
 Diatoms: Lohman, K. E., 6.
 Dipleura, young stages: Cooper, 17.
 Echinocaris: Eller, 7, 11.
 Erie Co.: Reimann, 5.
 Eurypterids: Kjellesvig, 1, 2; Ruede-
 mann, 22; Sanford, J. T., 2; Sharpe,
 C. F. S., 1.
 Fauna of Chemung fm.: Curry, H.
 D., 1.
 Fish: Bryant, 1, 6; Reimann, 14; Wells,
 J. W., 11.
 Flora, Catskill delta: Arnold, 34.
 Foraminifera: Kjellesvig, 3; Shupack,
 1.
 Forest, Gilboa Petrified: Goldring, 1,
 3, 5, 10.
 Fossil exhibits, N. Y. State Mus.: Ruede-
 mann, 15.
 Fraxinus nigra: West, G. F., 1.
 Genesee country: Payne, T. G., 1.
 Gilboa Petrified Forest: Goldring, 1,
 3, 5, 10.

New York—Continued.

Paleontology—Continued.

- Gilboaphyton: Arnold, 26.
 Graptolites: Flower, 10.
 Hamilton group: Cooper, G. A., 7.
 Handbook of paleontology: Goldring, 2,
 6.
 Heliophyllum: Fenton, 61; Wells, J. W.,
 10.
 Holoepa: Knight, J. B., 7.
 Ildraites: Eller, 9.
 Ithaca fauna: Chadwick, 14.
 Koninckocidaris: Sanford, 9.
 Lepidechnoides: Cooper, G. A., 4.
 Mammalia: Smith, B., 1.
 Minisink Valley: Happ, 3.
 Mollusca: Richards, H. G., 1.
 Nautiloidea: Flower, 5.
 Oldest fossil forest: Goldring, 4.
 Oldhamia: Ruedemann, R., 3.
 Ostracoda: Swartz, F. M., 9-a.
 Otario halli: Wheeler, H. E., 5.
 Paleocyclidae: Bassler, 25.
 Palinurid: Rathbun, 6.
 Pelecypoda: Caster, 10, 11.
 Plankton and radiolarian ooze: Ruede-
 mann, 42.
 Plants, Dev.: Arnold, 14.
 Pseudohydnoceras: Reimann, 7.
 Pseudorthoceratidae: Flower, 9.
 Psilophytales: Read, 12.
 Pterygotus: Ruedemann, 28.
 Quaternary Mammalia: Smith, B., 1.
 Radiolaria: Ruedemann, 40, 42.
 Radiolarian ooze: Ruedemann, 42.
 Rust quarry, Trenton Falls: Delo, 4.
 Scolecodonts: Johnson, Helgi, 4.
 Silurian shs.: Ruedemann, R., 1.
 Spongiae: Caster, 12.
 Study of fossils: Ruedemann, 10.
 Terataspis: Reimann, 10.
 Teredo lignite: Fox, J. T., 1.
 Triassic fossils: Hollick, 7.
 Tully fm.: Cooper, 18.

Petrology.

- Adirondack anorthosite: Alling, 6;
 Balk, 1, 2, 3; Buddington, 5; Miller,
 W. J., 1.
 Adirondacks, ig. rocks: Buddington, 3,
 23.
 Augen gneiss: Barbour, G. P., 1; Zodac,
 26.
 Calcium carbonate: Apfel, 3.
 Catskill facies: Mencher, 2.
 Dolomite in serpentine: Pough, 9.
 Dust fall, 11/13/33: Alexander, A. E., 2.
 Dutchess Co.: Balk, 1; Barth, 14.
 Granite phacoliths: Buddington, 3.
 Grenville inclus.: Cushing, 2.
 Lamprophyre dike: Blank, H. R., 1.
 Limonites: Newland, 13.
 Magnetites: Alling, 11; Gallagher, 1.
 Niagara Gorge sediments: Alling, 9; San-
 ford, 10.
 Nodular granite: Brögger, 1.

New York—Continued.

Petrology—Continued.

- Onondaga lms. fm.: Alexander, A. E., 7;
Schwartz, F. W., 1.
Oriskany ss.: Stow, 3, 11.
Poundridge granite: Bell, G. K., Jr., 5.
Santa Clara quad.: Buddington, 17.
Sedimentary rocks, Niagara Gorge: All-
ing, 9; Sanford, 10.
Slates, colored: Larrabee, 1.

Physical geology.

- Adirondack ig. rocks: Buddington, 23.
Adirondack Mtn. area: Rodgers, 3.
Adirondacks, gravity stratification: Bud-
dington, 11.
Black sh. deposition: Hard, E. W., 1.
Bouquet River landslide: Newland, 17.
Bradford oil field: Fetteke, 9, 11.
Caves, Hudson Valley: Zodac, 30.
Champlain Valley: Hudson, G. H., 2;
Rodgers, 2.
Dikes: Filmer, 1; Hudson, G. H., 2, 3;
Smith, B., 3.
Dutchess Co.: Balk, 11; Barth, 14.
Earthquakes: Lynch, W. A., 1; Neu-
mann, 5; Newland, 11.
Faulting and faults: Bradley, 16; Hud-
son, G. H., 1; Megathlin, 2, 3;
Quinn, A. W., 1.
Garnet deposits, origin: Miller, W. J., 18.
Genesee country: Payne, T. G., 1.
Glacial pebbles, faceted and striated.
types: Engeln, von, 2.
Grenville inclus.: Cushing, 2.
Guns of Seneca Lake: DeVarigny, 1; Fair-
child, 14; Ingalls, 1.
Hudson gorge: Thompson, H. D., 1.
Lagoon deposits: Lucke, 3.
Lake Champlain area: Quinn, A. W., 1.
Landslip scars: Whitcomb, 11.
Magnetites: Alling, 11; Gallagher, 1.
Metamorphic rocks: Balk, 6.
Metamorphism, Franklin: Milton, 5.
Niagara Gorge, age: Kirk, 10.
Niagara rock slide: Anonymous, 58.
Ordovician, Adirondack arch: Kay, G.
M., 18.
Oriskany ss.: Bradley, 19.
Oswegatchie quad.: Dale, 5.
Peridotite: Newland, 5.
Potsdam quad.: Reed, J. C., 5.
Pyramidal jointing: Sheldon, P. G., 2.
Sands, Long Is. beaches, origin: Colony,
3.
Santa Clara quad.: Buddington, 17.
Sea level studies: Johnson, D. W., 4.
Selsmographic sensitivity to tilt: De-
laney, 1.
Seneca Lake "guns": DeVarigny, 1;
Fairchild, 14; Ingalls, 1.
Shawangunk Mts.: Heusser, 1.
Slates, colored: Larrabee, 1.
South-cent.: Berry, G. W., 1.
Stylolites, origin: Shaub, 14.
Supergene lead, zinc, Balmat mine:
Dyson, J. L., 1-a.

New York—Continued.

Physical geology—Continued.

- Ticonderoga area: Swinnerton, A. C., 7.
Tilt measurements: Delaney, 1, 2, 3.
Waterfall-crest lines: Conant, 3.
Willsboro quad.: Whitcomb, 11-a.
Physiographic geology.
Adirondack master streams: Ruedemann,
12.
Antwerp quad.: Buddington, 8.
Bar changes, Long Is.: Howard, A. D., 12.
Berne quad.: Cook, J. H., 2; Goldring, 11.
Black Rock forest: Denny, 2.
Boulders, Hudson River fm.: Warthin, 1.
Boulder trains, Allegany Co.: Chadwick,
28.
Capital dist.: Cook, J. H., 1.
Catskill: Mencher, 2; Rich, 17; Ruede-
mann, 14.
Cayuga Valley lake history: Fairchild,
15.
Cazenovia glacial lobe: Apfel, 2.
Champlain Valley glacial history:
Chapman, D. H., 1.
Chittenango Falls, glacial history:
Holmes, C. D., 1.
Closing stage glacial history: Fairchild,
9.
Correlations: Leverett, 24; McClintock,
11.
Deltas, Pleist.: Happ, 4.
Drumlins: Fairchild, 3; Slater, 1.
Erosion surfaces: Cole, 14; Fridley, 1.
Eskers: Chadwick, 6.
Extinct Lake San Augustin: Powers,
W. E., 2.
Finger Lakes area: Koenig, 1.
Genesee country: Payne, T. G., 1.
Genesee River: Fairchild, 19.
Genesee Valley: Fairchild, 5, 18.
Glacial advances, Allegany Co.: Eaton,
H. N., 3.
Glacial drift: Engeln, von, 10.
Glacial erosion, dissected plateau:
Holmes, C. D., 2.
Glacial lake stages: Baker, M. B., 1.
Glacial pebbles, faceted, striated:
Engeln, von, 2.
Glacial problems: Brigham, A. P., 2.
Glaciation: Apfel, 1; Fairchild, 1, 11.
Gorge near Seneca Lake: Engeln, von, 4.
Gotiglacial broadmapping: De Geer,
G. J., 3.
Hammond quad.: Buddington, 8.
Gorge near Seneca Lake: Engeln, von, 4.
Hudson-Delaware-Susquehanna drain-
age: Mackin, 1.
Hudson Gorge: Thompson, H. D., 1.
Hudson River valley: Morris, 5; Sharp,
H. S., 3.
Interglacial deposit, cent. N. Y.: Engeln,
von, 1.
Interglacial valley, upper Hudson: Stol-
ler, 2.
Intrenched meanders: Cole, W. S., 4.
Kaaterskill piracy: Cressey, 1.

New York—Continued.

Physiographic geology—Continued.

- Kings County: Sanford, J. H., 1.
 Lagoon deposits, Long Is.: Lucke, 3.
 Landslip scars, Bouquet River: Whitcomb, 11.
 Linden monocline: Chadwick, 11.
 Long Island area: Fleming, W. L. S., 1; Knight, J. B., 10; Lucke, 3.
 Lowville quad.: Buddington, 8.
 Lyon Mtn. magnetites: Gallagher, 1.
 Meanders modified by floods: Cole, 13.
 Mendon Park area: Fairchild, 4.
 Minisink Valley area: Happ, 3.
 Mohawk Valley: Brigham, A. P., 1; Megathlin, 3; Stoller, 1.
 Moraines: Fairchild, 10.
 New York City area: Kaye, 1; Strzygowski, 2.
 Niagara Falls: Alexander, W. P., 1; Camsell, 3.
 Niagara Gorge: Taylor, F. B., 2.
 Oswegatchie quad.: Dale, 5.
 Piseco Lake quad.: Cannon, R. S., 1.
 Pleistocene deposits: MacClintock, 6.
 Port Huron moraines: Taylor, 13.
 Potsdam quad.: Reed, R. D., 20.
 Pre-Newark peneplain: Sharp, H. S., 3.
 Proglacial waterfalls: Engeln, von, 6.
 Queens County: Sanford, J. H., 1.
 Recessional moraines: Taylor, 10.
 Santa Clara quad.: Baddington, 17.
 Sedimentary rocks, mapping: Goldring, 19.
 Seneca Valley: Fairchild, 17.
 Shawangunk Mts.: Heusser, 1.
 Skaneateles quad.: Smith, B., 4.
 Susquehanna River, N. Br.: Burroughs, 3.
 Till fabric: Holmes, C. D., 3.

Underground water.

- Allegany State Park ground water: Thwaites, 8.
 Artesian water, Genesee Valley: Fairchild, 5.
 Artesian wells, Long Is.: Leggette, 12.
 Balmat Mine area: Dyson, 1-a.
 Brine from Potsdam: Trainer, 4.
 Croton Valley ground water: Jacob, C. E., 1.
 Fluctuations, water levels: Cullings, 1.
 Genesee Valley: Fairchild, 18.
 Ground water, Monroe Co.: Leggette, 6.
 Kings County: Leggette, 10; Sanford, J. H., 1.
 Long Island: Laase, 1; Leggette, 8, 13; N. Y. State Dept. Conserv., 1; Norcom, 1; Suter, 1, 2, 3; Thompson, 11, 12, 15, 16.
 Mineral Waters: Baudisch, 1, 2; Ruedemann, 43; Whitnall, 3.
 Nassau County: Leggette, 10.
 Queens County: Leggette, 10; Sanford, J. H., 1.
 Radioactivity, Saratoga area: Baudisch, 1, 2.

New York—Continued.

Underground water—Continued.

- Rochester area: Leggette, 5.
 Saratoga area: Baudisch, 1, 2; Colony, 1; Ruedemann, 43; Whitnall, 3.
 Suffolk County: Leggette, 10.
 New World dist., Mont.: Lovering, 1.
 Niagara Falls: Boyd, W. H., 1; Camsell, 3.
 Niagara Gorge: Kirk, 10; Taylor, F. B., 2.
 Nicaragua.
 General: Marshall, W. C., 1.
Historical geology.
 General: Sapper, 5.
 Southern Nicaragua: Wegemann, 1.
 Volcanism, Tert., Quat.: Burri, 4.
Petrology.
 Volcanic rocks: Burri, 2, 3, 4.
 Volcanism, Tert., Quat.: Burri, 3, 4.
Physical geology.
 Fumaroles, Masaya: Schönberg, 1.
 Volcanic rocks: Burri, 2, 3, 4.
 Volcanism, Tert., Quat.: Burri, 4.
 Nickel.
 Alaska: Reed, J. C., 15, 17.
 British Columbia: Bostock, 1; Cockfield, 13; Horwood, 3, 4, 8.
 Canada: Collins, 12; Robinson, A. H. A., 5.
 Connecticut: Agar, 3.
 Development and use: Stanley, R. C., 1.
 Dominican Republic: Lengweller, 1.
 General: D'Arcy, 1; Moore, E. S., 12.
 Manitoba: Wright, J. F., 3.
 Meteorites, loss by weathering: Nininger, 52.
 Montana: Howland, 2.
 New Brunswick: Low, B., 1.
 North Carolina: Hunter, C. E., 4; Pawel, 1.
 Northwest Territories: Drybrough, 1.
 Ontario: Bartley, 2; Burrows, 3; Coleman, 1; Collins, W. H., 1, 7; Daddson, 3; Freeman, B. C., 1; Halferdahl, 1; Moore, E. S., 6, 10; Phemister, 3; Tanton, 6; Thomson, J. Ellis, 18, 19; Thomson, R., 1; Walker, 15; Watson, R. J., 2; Yates, 1; Anonymous, 149.
 Ores, nickel-cobalt-native silver type: Bastin, 18.
 Quebec: Dresser, 6.
 Saskatchewan: Cooke, H. C., 24.
 Sudbury nickel area: Burrows, 3; Coleman, 1; Collins, W. H., 1, 7; Phemister, 3; Thomson, J. Ellis, 18, 19; Thomson, R., 1; Walker, T. L., 15; Yates, 1; Anonymous, 149.
 Tennessee Valley area: Eckel, E. C., 8.
 Violarite: Short, M. N., 1.
 Nickel Plate Mtn., British Columbia: Bostock, 1.
 Nigger Creek oil field, Tex.: Pepperberg, 1.

Nitrate.

California: Noble, L. F., 1.

United States: Mansfield, G. R., 12.

Nitrocellulose secs., fossils, rocks: Fenton, M. A., 7.

Nitrogen: Johnson, B. L., 2.

Nodules, Oregon: Renton, 4.

Nomenclature.

Absorption, transpiration, defined: Lee, C. H., 2.

Aechmina crenulata for A. serrata: Stewart, 10.

Agrauius gibbus for A. convexus: Howell, 38.

Aguja for Chiquito: Keyes, 453.

Algonkian: Hinds, 24.

Allogenotype: Howell, 23.

Animas ss., N. Mex.: Keyes, 307.

Aquila antiqua and ferox, types: Wetmore, 32.

Archimedes lms.: Keyes, 451.

Argyrotheca gardnerae: Cooke, C. W., 14.

Arroyos and barrancos: Grant, 9.

Arsenoferrite, non-existence: Buerger, 13.

Atchison sh. vs. Wabaunsee in Iowa: Keyes, 393.

Aubrey, terranall title: Keyes, 320.

Authority citations: Janssen, 1.

Bailey lms., Mo.: Keyes, 483.

Barrancos and arroyos: Grant, 9.

Barrellian ser., Calif.: Keyes, 91.

Beloit lms., Mo., Iowa, Wis.: Keyes, 348, 500.

Benton Cret.: Keyes, 504.

Benton fm., Mont.: Keyes, 313.

Berms: Bascom, 2.

Bernalillo sh. for Red Beds, N. Mex.: Keyes, 404.

Bethany lms.: Keyes, 187, 378, 383, 471.

Biostratigraphic terms: Fenton, C. L., 9.

Bothriolepis stensiöi probably B. canadensis: Robertson, G. M., 4.

Brachyaspidion for Brachyaspid: Miller, B. M., 3.

Breviarca haddonfieldensis for Trigonarca saffordi: Stephenson, 10.

Bryozoa: Bassler, 23.

Buffalo River epoch: Keyes, 187.

Bulimina macilenta: Cushman, 1.

Burlington lms.: Keyes, 143, 395, 470.

Bythocypris bouceki for B. minuta: Teichert, 17.

Callaway for Hutchison lms.: Keyes, 477.

Cambrian fossils: Resser, 9, 22.

Cambrian, redefinitions: Deiss, 7; Keyes, 299, 467, 481; Raasch, 3; Sardeson, 32.

Cambrotrophia for Eostrophia: Ulrich, 30.

Camerina petri is Nummulites striatoreticulatus: Barker, 5.

Camulos fm., Calif.: Keyes, 90.

Nomenclature—Continued.

Canadian Shield pre-Camb.: Brock, R. W., 2.

Cape Fletcher ser., Greenland: Noe-Nygaard, 6.

Carabocrinus and Strophocrinus: Sardeson, 44.

Carboniferous of America: Keyes, 62, 327, 422, 457; Moore, 40.

Cardiidae, pelecypod family units: Keen, 3.

Cardium nixicollis for C. vaughani: Stephenson, 14.

Carlos, Tex., restricted: Speed, 2.

Carsioptychus for Plagiptychus: Simpson, 36.

Cartographic terminology in geology: Kleinpell, 5.

Catskill name, history, value in geology: Chadwick, 31.

Cedar Valley lms., Iowa: Keyes, 488.

Centerpoint volcanics: Hazzard, R. T., 2.

Centrosaurus and Monoclonius, Alberta: Sternberg, 19.

Ceratodus browni for Polyporites browni: Brown, 18.

Chambersburg (Harrisburg) peneplain, Md., Pa.: Campbell, M. R., 11.

Charette lms., Mo., Iowa: Keyes, 341.

Chartresan ser., Iowa: Keyes, 443.

Chester priority: Keyes, 425.

Chetopa fm.: Keyes, 118.

Chonetes acanthophorus: Girty, 3.

Chonetes brazosensis for C. fragilis: King, R. H., 6.

Chouteau vs. Kinderhook: Keyes, 499.

Chupadera fm.: Keyes, 280.

Cimarron ser., Kans.: Keyes, 413.

Cimarron term in N. Mex.: Keyes, 337.

Citronelle fm., Ala.: Roy, C. J., 4.

Clear Creek fm., Mo.: Keyes, 493.

Clipfold: Mathews, 12.

Clithrocrinus for Clistocrinus: Kirk, 17.

Coal, research, descriptions, types: Cady, 9; Stadnichenko, 7; Thiessen, R., 1.

Coastal Plain strat.: Israelsky, 4.

Colognathus for Xenognathus: Case, 12.

Comanche title: Keyes, 258.

Conglomerite: Willard, 5.

Cooper lms., Iowa: Keyes, 482.

Cooperatia for Cooperia: Tolmachoff, 4.

Corals, type species: Wells, J. W., 9.

Correction, generic, specific terms: Roth, 8.

Cotectic: Vogt, J. H. L., 2.

Cretaceous, Rocky Mts., Tex.: Bartram, 8; Thompson, S. A., 1.

Crinoidea Inadunata, Carb.: Kirk, 19.

Crustaceans, decapod: Rathbun, 12.

Cryptozoic and phenozoic: Harris, G. D., 1.

Crystal forms and names: Rogers, 20.

Crystallography: Boldyrev, 1.

Custer fm., Tex.: Roth, 14.

Dakota ss.: Keyes, 319, 322, 382.

Nomenclature—Continued.

- Deer Creek volcanics, Mont.: Parsons, W. H., 4.
 Definitions, unconformable: Evans, 10.
 Deuteric, use of: Gillson, 3; Osborne, F. F., 1; Sederholm, 1.
 Devonian, Iowa: Keyes, 496.
 Devonian lamellibranchs: Cooper, G. A., 5.
 Devonian, Pa.: Willard, 44.
 Dictyoconus and Orbitolina: Davies, L. M., 1.
 Diplotype: Knight, J. B., 11.
 Dunes, lee: Melton, 28.
 Eldoran, Iowa: Keyes, 89.
 Epitonium fallaciosum, Calif.: Woodring, 9.
 Escabrosa lms., Ariz.: Keyes, 445.
 Eucatherium for Taurotragus: Gazin, 6.
 Eulithomyrmex for Lithomyrmex: Carpenter, 13.
 Eutectic: Fenner, 2; Vogt, J. H. L., 2.
 Euzoische Schichtfolge: Schaffer, 1.
 Faults: Gill, 5; Murray, G. E., Jr., 1; Straley, 1.
 Fenstreams: Holden, R. J., 2.
 Ferguson Crossing dome, Tex.: Speed, 3.
 Fern Glen lms.: Keyes, 394, 463.
 Fish, preoccupied names: Whitley, 1.
 Flaws and tear faults: Gill, 5.
 Fletcheria incerta and F. sinclairi: Okulitch, 10.
 Flint Hills vs. Riley lms., Kans.: Keyes, 419.
 Flora, Cret., Tert.: Brown, R. W., 14; Graham, R., 4.
 Folds: Straley, 2.
 Foraminifera, subgeneric: Schenck, 26.
 Forbes lms., Mo., Iowa: Keyes, 358.
 Fossils, fragmentary: Cronels, 40.
 Fractures, faults, joints: Murray, G. E., Jr., 1.
 Fredonia oölite, Ky.: Keyes, 452.
 Frio clay, Tex.: Bailey, T. L., 3; Lahee, 5.
 Galena dolomite: Keyes, 366, 374.
 Galena lms.: Keyes, 119; Sardeson, 41.
 Gastropoda: Knight, J. B., 12, 14.
 Geinitz's Carbonformation and Dyas, Nebr.: Keyes, 390.
 General: Keyes, 46, 71; Wadell, 10.
 Geologic fms.: Alcock, 7; Chadwick, 3; Keyes, 70, 159, 364, 384, 388; Weber, 1; Woodward, 6.
 Geologic fms., Ark., La.: Weber, 1.
 Geologic periods: Keyes, 70.
 Geologic terminology for highway engineers: Runner, D. G., 12.
 Geologic terminology stability: Keyes, 418.
 Geologic time subdivisions: Chadwick, 3; Woodward, 6.
 Geology, earliest use of term: Adams, F. D., 1, 3.
 Geon: Woodward, H. P., 1.
 Geosynclines: Keyes, 96, 148.
 Gauda salt bed, Kans.: Keyes, 403.

Nomenclature—Continued.

- Geyser eruptions: Fix, P. F., 1.
 Glacial tills: Keyes, 240.
 Glacial titles: Keyes, 97.
 Glyptostrobus in America: Brown, R. W., 12.
 Gosport sand is Moodys marl: Cooke, C. W., 22.
 Grand Canyon group title: Keyes, 429.
 Grassy Creek sh. abandoned: Weller, 23.
 Greenhorn lms.: Keyes, 225.
 Greenland, Cape Fletcher ser.: Noe-Nygaard, 6.
 Ground-water classn.: Lee, C. H., 2.
 Group, use of term: Keyes, 237.
 Guadalupe ser.: Keyes, 409.
 Hackberry: Keyes, 226.
 Hampton fm., Iowa: Keyes, 458.
 Hartites for Harttia: Howell, 22.
 Helsteria sapindifolia for Calysites millanensis: Berry, 59.
 Heliocephalus for Malvernia: Delo, 9.
 Hertha title in Iowa: Keyes, 391.
 Homonyms and nomenclators: Oehser, 1.
 Homotaxial principles in geology: Keyes, 340.
 Hueco lms., Tex.: Keyes, 414.
 Hueco vs. Magdalena, N. Mex.: Keyes, 160.
 Hunton fm., Okla.: Maxwell, R. A., 1.
 Hydraulic terms: Straub, 3.
 Idiomorphina for Idiomorpha: Cronels, 44.
 Igneous rocks: Haff, 2; Straley, 3.
 Interbed: Crickmay, G. W., 4.
 Iola lms., Iowa: Keyes, 371, 484.
 Iowa coal measures: Keyes, 118.
 Iowa glacial till titles: Keyes, 492.
 Iowan: Keyes, 158.
 Jackson group, Tex.: Renick, 5.
 Joints: Murray, G. E., Jr., 1.
 Jonesites, Ostracoda: Coryell, 2.
 Jurassic, N. Am.: Baker, F. C., 13.
 Juvenarium of Foraminifera: Henbest, 3.
 Kaibab fm., Ariz., Utah: McKee, 11.
 Kansas City group: Keyes, 473.
 Kansas City oölite: Keyes, 357.
 Kaskaskia lms.: Keyes, 325.
 Kimmswick vs. Charette, Mo.: Keyes, 498.
 Kinderhook vs. Chouteau: Keyes, 494.
 Labette shs., Kans., Okla.: Keyes, 344.
 Lake Valley lms., N. Mex.: Keyes, 399, 410, 464.
 Lamellibranchs, Dev.: Cooper, G. A., 5.
 Lepidostrobus kentuckiensis for L. fischeri: Scott, D. H., 1.
 Lexington fm., Mo., Iowa: Keyes, 349.
 Lexington lms.: Keyes, 79.
 Lillis fm.: Hanna, 14.
 Lindströmia: Willoughby, 1.
 Linnian Dev. ser.: Keyes, 476.
 Linobrachiocrinus for Linocrinus: Goldring, 20.
 Linwood shs., Iowa: Keyes, 385.

Nomenclature—Continued.

- Loculipora implicate* for *L. loculata*: McNair, 3.
 Loess deposits: Leighton, 10.
Lophospira akpatokensis for *L. grandis*: Wilson, A. E., 9.
 Mackentire red beds, Utah: Williams, J. Stewart, 1.
Madreporaria-Hexacorolla check list, 1758-1935: Vaughan, 32.
 Magdalena vs. Hueco, N. Mex.: Keyes, 160.
 Magmatism: Ellis, R. W., 5.
Manticoceras vs. *Gephyroceras*: Chadwick, 20.
 Mappable terranes: Keyes, 211.
 Mapping unit in geology: Keyes, 355.
Marginulina: Garrett, 5; Hanna, 34.
 Meramec, upper Mississippi Valley: Keyes, 440.
 Mesa Verde group: Keyes, 238.
 Metacodon, Oligocene, status: Clark, J., 5.
 Metamorphic terminology: Erwin, 6.
 Meteorites: Leonard, F. C., 4; Nininger, 38.
 Methods, presentation, paleontology: Grant, 5.
 Mineral assoc.: Butler, B. S., 14.
 Mineral names: McKinstry, 1; Schaller, 4.
 Mineraloids: Rogers, 21.
 Mississippian, Lower: Branson, 33.
 Modoc lms., Ariz.: Keyes, 160.
 Mojave: Keyes, 98.
 Mollusca, Eocene: Palmer, K. E. H. V., 3.
 Monoclonius and Centrosaurus, Alberta: Sternberg, 19.
 Monterey fm., Calif.: Galliber, 3.
 Montezuma, Juras.: Keyes, 306, 321.
 Mortonicerias, Meek, genotype: Stanton, 5.
 Mottramite or psittacinite: Schaller, 18.
 Multisolenia cf. Desmidopora: Fritz, 10.
 Naming minerals: McKinstry, 1; Schaller, 4.
 Naming subsurface fms.: DeFord, 4.
 Naticella for Endothyra gallowayi: Henbest, 6.
 Natica teglandi for N. dalli: Hanna, 35.
 Navajo ss.: Keyes, 292.
 Nebraska Tert.: Lugin, 14.
 Nebraskan a synonym: Keyes, 78.
Neosprifer dunbari: King, R. H., 2.
 Neotypes in zoology: Frizzell, 7.
 Niagaran dols., Ohio-Ind.: Busch, 1.
 North Am., late Paleozoic: Moore, 36.
 Nunkowap, Ariz.: Keyes, 454.
 Oologah lms., Okla., Kans.: Keyes, 357.
Operculina barkeri for *O. tuberculata*: Vaughan, 37.
Orbitocyclina Vaughan is *Lepidorbitoides* Silvestri: Rutten, M. G., 6.
Orbitoides is *Gallowayina*: Vaughan, 26.
 Ordovician: Keyes, 40.
 Ore, definition: Fermor, 1.

Nomenclature—Continued.

- Orthocera*: Teichert, 9.
Orthoceras: Teichert, 9, 13.
Orthoceratites: Teichert, 9.
Orthoceros: Teichert, 9.
 Osage group: Keyes, 180.
Ostracoda, Chester: Cronels, 42.
Ostrea battensis for *O. johnsoni*: Stephenson, 14.
 Outcrop vs. exposure: Woodward, H. P., 5.
 Owl Creek fm., Miss.: Stephenson, 19.
 Paleography for paleogeography: DeFord, 6.
 Palmula Lea for Flabellina D'Orbigny: Howe, 23.
Parendoceras for *Saffordoceras*: Ulrich, 28.
 Park City beds, Utah: Williams, J. Stewart, 1.
 Pectinidae, corrections: Hertlein, 5, 9.
Pelecypoda not *Arcidae*: Reinhart, 4.
Pelecypoda, nuculid: Schenck, 34.
 Pella shs., Iowa: Keyes, 441, 492.
 Pennsylvanian ser. emended: Keyes, 377.
 Permian: Adams, J. E., 9; Keyes, 58, 245, 398; Moore, 40.
Perissodactyl suborders: Wood, H. E., 2d, 14.
 Petrofabric analysis: Fairbairn, 4.
 Phenoclast: Erwin, 2; Whitcomb, 6.
 Physa canadensis Whiteaves: Clench, 3.
 Plains: Melton, 20.
 Planational terms: Glock, 6.
 Platte sh., Nebr., Iowa: Keyes, 373.
 Platte Valley, Nebr.: Condra, 20.
 Plattsmouth, Iowa: Keyes, 369.
 Pleistocene: Keyes, 289, 466.
Pleospongia for *Cyathospongia*: Okulitch, 8.
Pleurotomaria pseudostrigillata: Girty, 3.
Polyporites stevensoni is coral: Brown, R. W., 18.
 Prairie Bluff Chalk, Ala.: Stephenson, 19.
 Prairie du Chien title: Keyes, 277.
Pravognathus for *Heterognathus*: Stauffer, 15.
 Pre-Cambrian, Ariz.: Keyes, 423.
 Priority in stratigraphy: Woodward, H. P., 3.
 Priority vs. usage: Keyes, 261.
 Procedure in taxonomy: Schenk, 5.
 Productidae, Carb., taxonomy: Sutton, 14.
 Prosser lms., Mo.: Keyes, 338.
Protostrix leptosteus for *Bubo leptosteus*: Wetmore, 39.
Protostrix n. gen. for *Aquila lydekkeri*: Wetmore, 26.
Protosuchus for *Archaeosuchus*: Brown, B., 10.
 Psittacimite or mottramite: Schaller, 18.
 Pyroclastic rocks: Wentworth, 18.
 Quaternary: Keyes, 102.
 Rayella for Basslerites: Teichert, 17.

Nomenclature—Continued.

- Receptaculites lms., upper Mississippi Valley: Keyes, 336.
 Red clastics, Iowa: Keyes, 352.
 Red Oak fault, Iowa: Keyes, 356.
 Rhacophyllites genotype: Muller, 13.
 Richmond ss., Camb.: Keyes, 203.
 Ring-agate vs. eye-agate: Wilson, B. H., 3.
 River system: Campbell, M. R., 2.
 Roches moutonnées: Longwell, 18.
 Rockford shs., Mo.: Keyes, 436.
 Rock units: Ashley, 15.
 Rocky Mts., terranes: Keyes, 310.
 Rodents, cusps of teeth: Wood, A. E., 12.
 Roundstone: Fernald, 1.
 Sage Breaks sh., Wyo.: Thomas, H. D., 8.
 Salada fm., Perm. basin: Lang, W. T. B., 9.
 Santa Rita lms., Ariz.: Keyes, 412.
 Schizothaerus, Wash.: Henderson, J., 4.
 Sedalia lms., Mo.: Keyes, 292.
 Sedimentation and sedimentology: Wadell, 1, 4.
 Sediments, fine-grained: Twenhofel, 25.
 Setigerites for Setigerella: Girty, 12.
 Shutteridges of active faults: Buwalda, 17.
 Siliceous sediments: Tarr, 27.
 Simmys for Eumysops: Wilson, R. W., 9.
 Slona Canyon fm., N. Mex., vs. Dockum: Stovall, 18.
 Spirancilla for Ancilla buchinoidea: Vokes, 6.
 Sporadoceras for Paralegoceras: Miller, A. K., 27.
 Stage as strat. unit: Schenck, 19.
 Stanton lms., Iowa: Keyes, 379.
 Strath: Bucher, 5.
 Stratigraphic names, uses: Bartram, 9.
 Stratigraphic nomenclature: Alcock, 21; Ashley, 12; Levorsen, 4; Reeside, 12; Schenck, 23, 29; Stanton, T. W., 2; Wilmarth, 1, 2.
 Stratigraphy, U. S.: Reeside, 12.
 Stream terminology: Baulig, 3.
 Strobilopteris for Pterygotus: Ruedemann, 31.
 Subgenus as taxonomic category: Schenck, 31.
 Sulphur Springs fm.: Keyes, 478.
 Sundance fm., Wyo.: Neely, 4.
 Supai, Grand Canyon, Ariz.: Keyes, 324, 408.
 Sylamore ss., Mo.: Keyes, 396.
 Syngony: Rogers, 18.
 Taxonomy, procedure: Cronels, 29.
 Tazewell till, Ill.: Keyes, 408.
 Terminology of sediments: Allen, 16; Krystofovich, 3; Maxson, 9; Wentworth, 32.
 Tertiary, Trinidad: Schmid, 1.
 Tetracorals, Paleozoic: Sanford, W. G., 1.
 Texas, Duval Co.: Sayre, 6.
 Texularia hockleyensis var. malkinae: Coryell, 17.

Nomenclature—Continued.

- Theriosynocum for Morrisonia: Branson, C. C., 12.
 Todilto lms.: Keyes, 308.
 Tophomeotype: Howell, B. F., 3.
 Toroweap fm., Ariz., Utah: McKee, 11.
 Toxostoma redivivus, Calif.: Engels, 8.
 Trenton group: Kay, G. M., 19.
 Trilobita, Camb.: Resser, 15, 16, 17.
 Trinacria: MacNeill, 6.
 Troedssynoceras cf. Striatoceras: Flow-er, 8.
 Turritella kellumi for T. subtilis: Stephenson, 27.
 Tyente ss., Ariz.: Keyes, 306.
 Types, Aquila antiqua and ferox: Wetmore, 82.
 Types in modern taxonomy: Simpson, 47.
 Types, subsurface structural contouring: Rettger, 1.
 Types, terminology: Frizzell, 3.
 Uncompahgran, preoccupied: Keyes, 459.
 United States strat.: Reeside, 12.
 Upthrust, geol. term: Willis, 12.
 Valentine beds: Colbert, 7; Johnson, F. W., 1, 2.
 Valentine problem: Lugn, 12, 13; Stirton, 24.
 Variation, misuse of term: Clark, H. L., 3.
 Volcanism vs. vulcanism: Shepherd, 8.
 Wabaunsee fm.: Keyes, 389.
 Warsaw fm., Ill.: Weller, 19.
 Waucoban: Keyes, 88.
 Wedekindia: Dunbar, C. O., 2.
 Wilcox, usage: Gould, C. N., 11.
 Winterset vs. Bethany: Keyes, 468.
 Wisconsin vs. Cary, glacial tills: Keyes, 400.
 Wisconsin glacial age divs.: Leverett, 15.
 Wisconsin glacial tills: Keyes, 243.
 Wittenberg fm., Mo.: Keyes, 491.
 Yanktown ser. for Benton shs., Iowa: Keyes, 315.
 Yegua problem: Stenzel, 15.
 Yorkic system: Keyes, 152.
 Nonttronite, Mich.: Ayres, 2.
 North America.
 General: Baulig, 1.
Economic geology.
 Asphalts, natural: Woodruff, E. G., 8.
 Coals, classn.: Fieldner, 2.
 Copper deposits: Butler, 16.
 Gold: Emmons, W. H., 12; McLaughlin, 8.
 Lead and zinc dists.: Sminnov, 1.
 Lead and zinc, Europe-N. Am.: Behre, 33.
 Ore dists.: Billingsley, P. R., 5.
Historical geology.
 Age, submarine canyons: Shepard, 58.
 Atlantic Coastal area: Boesch, H. H., 8.
 Cambrian: Hinds, 22; Howell, 40.
 Cambrian-Ordovician systems: Cooper, B. N., 5; Grabau, 5.

North America—Continued.

Historical geology—Continued.

Carboniferous corals, with Europe : Moore, 37.

Carboniferous, Midcontinent area : Moore, 41.

Carboniferous sequence, corrections : Waterschoot van der Gracht, 12.

Cenozoic climates : Chaney, 36.

Coal balls, strat. distrib. : Schopf, 9.

Copper deposits : Butler, 16.

Cretaceous, west interior : Reeside, 13.

General : Ruedemann and Balk, 52.

Ice-age climate : Antevis, 24.

Land-bridge, ancient : Anonymous, 26, 182.

Oligocene-Eocene boundary, western : Scott, W. B., 10.

Ore dists. : Billingsley, P. R., 5.

Orogeny, Paleozoic : Waterschoot van der Gracht, 15, 18.

Paleogeography : Ruedemann, 48.

Paleozoic : Moore, 36.

Paleozoic fms., pulsation theory : Reed, 36.

Paleozoic orogeny : Waterschoot van der Gracht, 15, 18.

Permian : Adams, J. E., 9 ; Keith, B. A., 1.

Pleistocene history : Kay, G. F., 20.

Pre-Cambrian : Hinds, 23, 32, 34.

Quaternary upwarping, N. E. : Antevis, 27.

Reefs, Sil., Dev. : Lecompte, 1.

Stephanien equivalents : Darrah, 9.

Structural features : Schuchert, 57.

Tertiary time-scale : Wood, H. E., 2d, 16.

Volcanism, western Perm. : Wheeler, 13.

Mineralogy.

Black mins. : Abramov, 1.

Lead and zinc dists. : Sminnov, 1.

Lead and zinc, Europe-N. Am. : Behre, 33.

Meteorites, distrib. : La Paz, 2.

Muscovite : Volk, 1.

Ore dists. : Billingsley, P. R., 5.

Radium, ocean sediments, Pacific Northwest : Utterback, C. L., 1.

Paleontology.

Ammonoidea : Miller, A. K., 22, 40, 45, 46 ; Schuchert, 53.

Ancient man : Hagie, 1 ; Hay, 1-a ; Schultz, C. B., 5 ; Sellards, 37-a ; Anonymous, 182.

Artiodactyla, White River : Scott, W. B., 11.

Brachiopoda : Hatai, 1 ; Schuchert, 56 ; Ulrich, 33.

Bryozoa : Bassler, 29.

Cambrian and Ord. pulsations : Grabau, 5.

Camel-like ruminants, Tert. : Scott, W. B., 9.

Cephalopoda, Dev. : Kindle, 39.

Coal balls, strat. distrib. : Schopf, 9.

Correlation, Camb. faunas : Howell, 34.

North America—Continued.

Paleontology—Continued.

Didymograptus protobifidus : Decker, 20.

Dinosaurs, distrib. : Gries, 3.

Eurypterida, Dev. : Ruedemann, 51.

Faunas : Howell, 40, 41 ; Noé, 16.

Fenestrellinidae, Dev. : Fritz, 4.

Floras, Tert., Carb. : Axelrod, 4 ; Berry, 57 ; Darrah, 11 ; Noé, 16.

Foraminifera, submarine cores, Atlantic Coast : Cushman, 1 ; Phleger, 11.

Globotruncana, Cret., distrib. : Thalmann, 13.

Graptolithina, Dev. : Ruedemann, 50.

Hipparion faunas, age : Maxson, 13.

Interglacial man : Hagie, 1.

Land-bridge, ancient : Anonymous, 26, 182.

Man, antiquity of : Anonymous, 182.

Man, Pleist., Europe and America : Hay, 1-a.

Nonionidae, Cret.-Tert. : Cushman, 38.

Ostracoda, Dev. : Warthin, 9.

Parashumardites, Carb. : Ruzhencev, 1.

Pelecypoda : Keen, 10 ; Newell, 10.

Plants, Cenozoic : Chaney, 35.

Pollen deposits, climatic interpretation : Sears, 13.

Reefs, Sil., Dev. : Lecompte, 1.

Rodents, western Pliocene : Wilson, R. W., 15.

Ruminants, horned : Frick, 5.

Snakes, fossil : Gilmore, 23.

Stephanien equivalents : Darrah, 9.

Tempskya, growth evolution : Read, 14.

Tetrapoda, Permo-Carb. : Romer, 14.

Trilobita, phacopid : Delo, 11, 12.

Turritellidae, Tert. : Bowles, E. O., 1.

Xiphosura, Dev. : Ruedemann, 51.

Physical geology.

Atlantic Coastal area : Boesch, H. H., 3.

Copper deposits : Butler, 16.

Deformation, crustal systematic : Keith, B. A., 4.

Earthquake epicenters, Pacific structure : Richter, C. F., 4.

General : Ruedemann, 47.

Ore dists. : Billingsley, P. R., 5.

Orogenic history : Spieker, 13.

Orogeny : Waterschoot van der Gracht, 15, 17, 18 ; Wolff, F. L. von, 1.

Quaternary upwarping, N. E. : Antevis, 27.

Paleozoic orogenies : Waterschoot van der Gracht, 15, 17, 18.

Structural features : Schuchert, 57.

Volcanism, west Perm. : Wheeler, 13.

Volcanoes, active and recently extinct : Chang, 1.

Physiographic geology.

Atlantic Coastal area : Boesch, H. H., 3.

Atlantic coast line : Johnson, D. W., 2-a, 33-b.

Changes of level, late glacial : Wright, W. B., 3.

North America—Continued.

Physiographic geology—Continued.

Correlations, cosmical, glacial epochs: Keyes, 401.

Deserts, sandy areas: Shreve, F., 1.

General: Bretz, 11; Ruedemann, 47; Ruedemann and Balk, 52.

Glacial geology stages: Sardeson, 49.

Glaciation, Quat.: Wright, W. B., 1.

Glaciers: Matthes, 15.

Ice-age: Antevs, 24; Read, W. F., 1.

Ice caps, distrib.: Hawley, M. M., 1.

Lakes, Quat.: Wright, W. B., 1.

Pleistocene glacial strat.: MacClintock, 10.

Structural features: Schuchert, 57.

North Carolina.

Soils, eastern N. C.: Cobb, W. B., 1.

State geologist's rept.: Bryson, 5.

Areas described.

Gaffney-Kings Mtn. quad.: Keith, Ar., 2.

Economic geology.

Asbestos: Bowles, O., 4.

Atlantic Coastal Plain, oil and gas poss.: Postley, 4.

Barite: Penhallegon, 1; Stuckey, 5, 8.

Ceramic minerals: Greaves-Walker, 2.

Chromite: Hunter, C. E., 3.

Clays: Greaves-Walker, 1; Grove, C. S., 1; Hunter, C. E., 1.

Coals, Trias.: Berry, E. Willard, 16.

Copper: Bryson, 2; Ross, C. S., 23.

Cyanite: Fessler, 1; Stuckey, 4, 9.

Dunite: Greaves-Walker, 2.

Feldspars: Bryson, 9.

Gold: Blakemore, P. B., Jr., 2; Bryson, 7; Green, F. M., 2; Pardee, 8; Anonymous, 89.

Kyanite: Dunn, J. A., 1; Mattson, 1; Stuckey, 13.

Lithium: Hess, F. L., 9, 15.

Marble: Stuckey, 6.

Mineral resources: Bryson, 1, 3; Hornbeck, 1.

Mining: Bryson, 7-a.

Nickel: Hunter, C. E., 4; Pawel, 1.

Nonmetallic minerals: Bryson, 4.

Pyrophyllite: Burgess, B. C., 1; Stuckey, 12.

Shales: Greaves-Walker, 1.

Spodumene: Anonymous, 60.

Talc: Moneymaker, 4; Stuckey, 10.

Tin: St. Clair, S., 2.

Triassic coals: Berry, E. Willard, 16.

Vermiculites: Davis, F. A. W., 1; Hunter, C. E., 2.

Historical geology.

Ceramic mineral deposits: Greaves-Walker, 2.

Clay res.: Greaves-Walker, 1; Hunter, C. E., 1.

Coals: Berry, E. Willard, 16.

Coastal Plain: McCampbell, 1; McCarthy, 10; Mansfield, W. C., 15; Prouty, 20.

Columnar sec. fms.: Murray, 5.

Dam sites: Wentworth, 3.

North Carolina—Continued.

Historical geology—Continued.

Deep wells, Coastal Plain: Mansfield, W. C., 15.

Durham Basin: Johnson, W. R., Jr., 1; Murray, 6; Prouty, 3.

Elizabeth City area: Lohman, S. W., 3.

Great Smoky fm.: Moneymaker, 5.

Hiwassee River Basin: Moneymaker, 2, 5.

King's Mtn. area: Frink, 1.

Linville Falls quad.: Hunter, C. E., 1.

Monazite, Mars Hill, age: Marble, 3.

Morgan Creek Dam area: Prouty, 7.

Mt. Mitchell area: Vitz, 1.

Murphy marble with talc: Stuckey, 10.

Shale deposits: Greaves-Walker, 1.

Spruce Pine quad.: Hunter, C. E., 1.

Talc deposits: Stuckey, 10.

Talladega ser.: Crickmay, G. W., 15, 16.

Triassic areas: Brown, C. B., 1; Johnson, W. R., Jr., 1; Murray, 6; Prouty, 3.

* *Mineralogy.*

Allegbaneyite: Rogers, 17.

Argillites: Thiesmeyer, 5-b.

Autunite: Johnson, B., 1.

β -uranotile: Steinoeker, 1.

Biottite: Hess, F. L., 11.

Ceramic mineral deposits: Greaves-Walker, 2.

Clarkeite: Ross, C. S., 8.

Clays: Fabianic, 1; Greaves-Walker, 1; Hunter, C. E., 1.

Dunite: Greaves-Walker, 3.

Feldspars: Bryson, 9.

Garnets: Hall, G. M., 4.

Gems and gem minerals: McIntosh, F. G., 2; Pratt, J. H., 1.

General: Pratt, J. H., 2.

Hiddenite: Colburn, B. S., 1; Palache, 6.

Hyalite: Henderson, J. R., 1.

Kyanites: Stuckey, 13.

Lithium: Hess, F. L., 15.

Manganese minerals: Ross, C. S., 11.

Mineral resources: Hornbeck, 1.

Mining: Bryson, 7-a.

Monazite crystal: Schaller, 17.

Moore Co. meteorite: Henderson, E. P., 11.

Nickel: Pawel, 1.

Pyrophyllite: Burgess, B. C., 1; Stuckey, 12.

Pyroxamangite: Henderson, E. P., 11.

Rhodolite: Henderson, E. P., 3.

Ruby, Glade Mts.: Scroggs, 1.

Shales: Fabianic, 1; Greaves-Walker, 1; Hunter, C. E., 1.

Sphalerite from pegmatite: Ross, C. S., 28.

Spodumene: Anonymous, 160.

Spruce Pine area: Murray, 4.

Tin: St. Clair, S., 2.

Vermiculites: Davis, F. A. W., 1; Hunter, C. E., 2.

Wood's Mtn. meteorite: Perry, S. H., 4.

Zoisite: Hall, G. M., 6.

North Carolina—Continued.

Paleontology.

- Archaeoceti, Tert.: Kellogg, 9.
 Aturia, Eocene: Stenzel, 8.
 Bituminous plant: Prouty, W. F., 2.
 Castle Hayne fossils: Kellum, 2.
 Coals, Trias.: Berry, E. Willard, 16.
 Coastal Plain area: McCampbell, J. C., 1; Richards, 14.
 Comatulids, Eocene: Gislén, 1.
 Cypraea, Miocene: Ingram, W. M., 1.
 Diatoms: Henbest, 11.
 Durham Trias. Basin: Murray, G. E., Jr., 1.
 Equus, Pliocene: Berry, C. T., 1.
 Eucrassatella, Pliocene: MacNeill, 4.
 Fauna, Pamlico: Richards, 14.
 Foraminifera: Cushman, 1, 23, 26; Henbest, 11.
 Mollusca: Henbest, 11; Mansfield, W. C., 13.
 Noetinae: MacNeill, 7.
 Nonion, Miocene: Kjellesvig, 1.
 Nonionella, Miocene: Kjellesvig, 1.
 Pectinidae: Mansfield, W. C., 17; Rowland, H. I., 1; Tucker, 7, 8.
 Torreyia, Cret.: Boeshore, 1.
 Triassic coals: Berry, E. Willard, 16.
 Uvigerina, Eocene: Cushman, 1.
 Whales, Miocene: Prouty, 2.

Petrology.

- Argillites: Thiesmeyer, 5-b.
 Dunite deposits: Greaves-Walker, 3.
 Gems: McIntosh, F. G., 2.
 Great Smoky fm.: Moneymaker, 5.
 Hiddenite deposit: Colburn, B. S., 1; Palache, 6.
 Kaolinized volcanic ash: Stuckey, 3.
 King's Mtn. area: Frink, 1.
 Magnetite: Ross, C. S., 2.
 Sands, variegated: Cobb, W. B., 1.
 Sediments, coastal: Tylor, S. A., 2.
 Slates: Alexander, A. E., 1.
 Transition zone, granite-gneiss: Sharpe, L. K., 1.

Physical geology.

- Dikes: Johnson, W. R., Jr., 2, 4.
 Durham Trias. Basin: Murray, G.
 Fulgurites: Petty, 5.
 Geophysical prosp. Carolina bays: Prouty, 23.
 Granite intrus., Wake Co.: Parker, J. M., 1.
 Jonesboro fault scarp: Goldston, E. F., 1.
 King's Mtn. area: Frink, 1.
 Magnetic anomalies, Wilmington: MacCarthy, 12.
 Mt. Mitchell area: Vitz, 1.
 Pedestal rocks: Petty, 3.
 Pegmatite dikes: Johnson, W. R., Jr., 4.
 Spruce Pine area: Murray, 4.
 Transition zone, granite-gneiss: Sharpe, L. K., 1.
 Volcanics, pre-Camb.: Stuckey, 11.

North Carolina—Continued.

Physiographic geology.

- Artesian water and Carolina bays: Johnson, D. W., 39.
 Carolina bays: Frink, 2; Johnson, D. W., 39; MacCarthy, 11, 13; Melton, 10, 26, 26-a; Prouty, 8, 12, 18, 21, 24, 25; Watson, F. G., Jr., 1; Wylie, 5.
 Coastal Plain: Johnson, W. R., Jr., 3; MacCampbell, 1; MacCarthy, 8; Prouty, 20.
 Drainage changes: Wright, F. J. 1.
 Dune sands: Cobb, C., 2.
 Eolian soils: Cobb, C., 2.
 Erosion: Fuller, G. L., 2.
 Iron meteorites and Carolina bays: Wylie, 5.
 Jonesboro fault scarp: Goldston, E. F., 1.
 Meteor craters and Carolina bays: MacCarthy, 11; Melton, 10; Prouty, 8; Wylie, 5.
 Meteorite scars (?): Melton, 10.
 Meteorites, iron, and Carolina bays: Wylie, 5.
 Mt. Mitchell area: Vitz, 1.
 Settlement influenced by physiography: Norburn, 1.
 Stream piracy: Norburn, 2; Wright, F. J., 2.

Underground water.

- Artesian water and Carolina bays: Johnson, 39.
 Crystalline rocks, ground water: Stuckey, 1, 2.
 Elizabeth City area: Lohman, S. W., 2, 3.
 Geology and water res.: Bryson, 6.
 Ground water: Bryson, 6; Foster, M. D., 1; Stuckey, 1, 2.
 Water resources: Bryson, 6; Stuckey, 1, 2.

North Dakota.

- Black Butte and its "eruption": Leonard, A. G., 4.
 Geology: Leonard, A. G., 1.

Areas described.

- Edgeley quad.: Hard, H. A., 1.
 La Moure quad.: Hard, H. A., 1.
 Minot area: Andrews, 6.

Economic geology.

- Bentonite: Anonymous, 71.
 Geophysical prosp.: Wilson, J. H., 2.
 Glauber salt deposits: Lavine, 1, 2.
 Gold: Anonymous, 71.
 Gravel: Leonard, A. G., 3.
 Minot area: Andrews, D. A., 1, 6.
 Natural gas poss.: Leonard, A. G., 2.
 Petroleum poss.: Leonard, A. G., 2.
 Rocky Mtn. area: Uren, 2.
 Sand: Leonard, A. G., 3.

Historical geology.

- Cretaceous-Eocene boundary: Brown, 20.

North Dakota—Continued.

Historical geology—Continued.

General: Leonard, A. G., 2; Simpson, H. E., 1.

Glauber salt deposit: Lavine, 2.

Harney Peak area: Runner, J. J., 4.

Lance-Fort Union correls.: Andrews, D. A., 3.

Minot area: Andrews, D. A., 1, 6.

Rocky Mtn. area: Uren, 2.

Mineralogy.

Fluoride, ground waters: Abbott, G. A., 1.

Glauber salt deposits: Lavine, 1.

Paleontology.

Cercidiphyllum: Brown, R. W., 24.

Conifers, Cret.: Brown, R. W., 9.

Flora, Fox Hills, Colgate mbr.: Brown, R. W., 23.

Glyptostrobus: Brown, R. W., 12.

Lignite: Gauger, 1.

Polyporites: Brown, R. W., 13.

Rodents. Tert.: Wood, A. E., 10.

Petrology.

Concretions, Black Hills: Hamilton, R. G., 1; Runner, J. J., 4.

Physiographic geology.

Lake, Pleist.: MacClintock, 9.

Lake Souris, glacial: Andrews, D. A., 2.

Minot area: Andrews, D. A., 1, 6.

Soil drifting, Great Plains: Leighton, 29.

Surface features: Leonard, A. G., 2.

Underground water.

Artesian waters: Meinzer, 1; Simpson, H. E., 6, 8.

Drought, 1934, effect: Sayre, 5.

Edgeley quad.: Hard, H. A., 1; Meinzer, 1.

Fluoride in ground water: Abbott, G. A., 1.

Ground water: Abbott, G. A., 1, 2; Hard, H. A., 1; Meinzer, 1; Simpson, H. E., 1, 3, 4, 7; Voedisch, 1; Anonymous, 66, 67.

La Moure quad.: Hard, H. A., 1; Meinzer, 1.

Minot area: Andrews, D. A., 6.

State Water Geologists' repts.: Simpson, H. E., 3.

Water conservation, res. and utilization: Anonymous, 66, 67.

Northwest, U. S., earliest life: Keyes, 376.

Northwest Territories.

Areas described.

Beaulieu River area: Henderson, J. F., 4, 6.

Coppermine River area: Duncan, G. G., 2; Gilbert, G., 1; Kidd, D. F., 1.

Echo Bay dist., Robinson, H. S., 1.

Ferguson River area: Weeks, L. J., 4.

General: Camsell, 13, 14.

Great Bear Lake dist.: Kidd, D. F., 1; Reid, J. A., 2.

Great Slave Lake area: Bell, J. M., 1; Lausen, C., 1.

Northwest Territories—Continued.

Areas described—Continued.

Maguse River area: Weeks, L. J., 4.

Mistake Bay area, Hudson Bay: Weeks, L. J., 2.

Rankin Inlet area: Weeks, L. J., 3.

Economic geology.

Beaulieu River area: Henderson, J. F., 4, 6.

Chalcocite: Riley, C., 2.

Copper deposits: Burwash, E. M. J., 2; Drybrough, 1; Duncan, G. G., 2.

Echo Bay dist.: Robinson, H. S., 1.

Eldorado mine area: Kidd, 6; Ryan, J. P., 1.

General: Camsell, 13, 14.

Gold: Hawley, 13; Henderson, J. F., 5; McMeekan, 1.

Gordon Lake area: Riley, 4.

Great Bear Lake area: Kidd, D. F., 2, 3, 5, 7; Knight, C. W., 1; Marble, 6; Piggot, 4; Pochon, 1; Riley, C., 1, 2; Robinson, H. S., 1; Ryan, J. P., 1; Spence, 9, 10, 11, 13; Wright, H. M., 1.

Leads, isotopic: Piggot, 4.

Mineral poss.: Jolliffe, A. W., 1; Stockwell, 3.

Mineralization, Great Bear Lake area: Kidd, D. F., 5.

Natural gas: Hume, 17, 18.

Nickel-copper deposits: Drybrough, 1.

Petroleum: Hume, 16, 17, 18.

Pitchblende: Furnival, 5; Haycock, 3; Kidd, D. F., 2; Knight, C. W., 1; Marble, 5, 6; Palache, 19; Pochon, 1; Robinson, H. S., 1; Spence, 9, 10, 11, 13.

Prosperous Lake-Yellowknife Bay area: Jolliffe, A. W., 2.

Radium: Pochon, 1; Wright, H. M., 1.

Rae to Great Bear Lake area: Kidd, D. F., 7.

Silver-pitchblende deposits: Furnival, 5; Kidd, D. F., 2; Spence, 9, 10, 11.

Snare River area: Lord, C. S., 1.

Tin: Hawley, 13.

Tungsten: Hawley, 13.

Yellowknife area: Jolliffe, F. J., 3.

Yellowknife Bay-Prosperous Lake area: Jolliffe, A. W., 2.

Historical geology.

Age, Great Bear Lake pitchblende: Marble, 6.

Beaulieu River area: Henderson, J. F., 4, 6.

Contact Lake, silver-pitchblende deposits: Furnival, 5.

Echo Bay dist.: Furnival, 3.

Eldorado mine, Great Bear Lake: Ryan, J. P., 1.

Fishing Lake area: Jolliffe, A. W., 3.

Fort Smith area: Wilson, J. T., 8.

Gordon Lake area: Riley, 4.

Granite porphyries, Great Bear Lake: Riley, C., 3.

Northwest Territories—Continued.

Historical geology—Continued.

- Great Bear Lake area: Canada G. Soc., 1; Kidd, 3, 6, 7; Marble, 5, 6; Riley, C., 1, 3.
 Great Slave Lake area: Canada G. Soc., 1; Stockwell, 4, 8.
 Lead age, Great Bear Lake area: Marble, 5, 6.
 Mineral poss.: Jolliffe, A. W., 1.
 Nonacho Lake area: Canada G. Soc., 1; Henderson, J. F., 3.
 Prosperous Lake area: Jolliffe, A. W., 3.
 Quyta area: Jolliffe, A. W., 3.
 Rae-Great Bear Lake area: Canada G. Soc., 1; Kidd, D. F., 6, 7.
 Silver-pitchblende deposits, Contact Lake: Furnival, 5.
 Snare River area: Lord, C. S., 1.
 South Nahanni River area: Cameron, 5.
 Taltson Lake, g. map: Canada G. Soc., 1.
 Tertiary plateaus, MacKenzie River Basin: Williams, M. Y., 12.
 Uraninite, Beaver Lake, age: Bruner, 2.
 Yellowknife Bay-Prosperous Lake area: Jolliffe, A. W., 2.
 Yellowknife-Gordon Lake area: Henderson, J. F., 5.
 Yellowknife River area: Jolliffe, F. J., 3.

Mineralogy.

- Anthraxolite: Rutherford, R. L., 16.
 Cordierite: Rutherford, R. L., 8.
 Eldorado mine: Kidd, D. F., 6; Thomson, J. Ellis, 10.
 General: Camsell, 13, 14.
 Gold: Hawley, J. E., 13; Henderson, J. F., 5.
 Great Bear Lake area: Furnival, G. M., 2; Kidd, D. F., 5, 6.
 Great Slave Lake area minerals: Ellsworth, 10.
 Leads, isotopic: Piggot, 4.
 Mineralization, Great Bear Lake area: Kidd, D. F., 5.
 Pitchblende: Furnival, 5; Haycock, 3; Merkel, 1; Palache, 19; Spence, 13.
 Silver: Furnival, 5; Thomson, J. Ellis, 12.
 Thorium: Merkel, 1.
 Tin: Hawley, 13.
 Uraninite: Bruner, 1; Thomson, J. Ellis, 12.
 Vesuvianite: Meen, 9.

Paleontology.

- Algae: Fenton, 57.
 Algal structures: Rutherford, R. L., 2.
 Ammonites, Cret.: Warren, 16.
 Bryozoa, Ord.: Oakley, 2.
 Chaetetes, Ord.: Oakley, 1.
 Crinoids Dev.: Goldring, 16.
 Graptolites, Sil.: Ruedemann, 44.
 South Nahanni River area: Cameron, 5.

Petrology.

- Echo Bay dist.: Furnival, 3.
 Granite porphyrites: Riley, C., 3.

Northwest Territories—Continued.

Petrology—Continued.

- Pitchblende ores: Furnival, 5; Haycock, 3.
 Silver deposits: Furnival, 5.

Physical geology.

- Beaulieu River area: Henderson, J. F., 4, 6.
 Contact Lake area: Furnival, 5.
 Echo Bay dist.: Furnival, 3.
 Eldorado mine area: Ryan, J. P., 1.
 Gordon Lake area: Henderson, J. F., 5; Riley, 4.
 Granite porphyrites: Riley, 3.
 Great Bear Lake area: Furnival, 2; Kidd, D. F., 7; Riley, C., 3.
 Great Slave Lake area: Hawley, 13; McMeekan, 1.
 Nonacho Lake area: Henderson, J. F., 3.
 Outpost Is., Great Slave Lake: Hawley, 13.
 Prosperous Lake-Yellowknife Bay area: Jolliffe, A. W., 2.
 Rae-Great Bear Lake area: Kidd, D. F., 7.
 Silver-pitchblend deposits, Contact Lake: Furnival, 5.
 Snare River area: Lord, C. S., 1.
 Yellowknife Bay-Prosperous Lake area: Jolliffe, A. W., 2.
 Yellowknife-Gordon Lake area: Henderson, J. F., 5.

Physiographic geology.

- Beaulieu River area: Henderson, J. F., 4, 6.
 Eskers, Great Slave Lake area: Wilson, J. T., 9.
 Nonacho Lake area: Henderson, J. F., 3.
 Tertiary plateaus, Mackenzie River Basin: Williams, M. Y., 12.
 Wood Buffalo Park: Soper, J. D., 1.

Nothrotherium, N. Mex.: Lull, 13.

Nova Scotia.

Areas described.

- Amherst area: Roliff, 1.
 Cumberland Co.: Imperial Oil Ltd., 1.
 Horton-Windsor dist.: Bell, W. A., 1.
 Pictou Co.: Imperial Oil Ltd., 1.
 Scotsburn anticline: Stewart, J. S., 1.

Economic geology.

- Anhydrite plasters and cements: Flynn, 1, 2.
 Antimony: Messervey, 13.
 Barytes: Messervey, 12.
 Clays: Fréchet, 2.
 Copper: Beaton, 1; Messervey, 9; Papenfus, 1.
 Diatomaceous earth: Messervey, 4.
 Dolomites: Messervey, 5.
 Feldspar: Messervey, 17.
 Fuller's earth: Messervey, 4.
 Gold: Alcock, 9; Goodwin, W. M., 6; Malcolm, 1; Messervey, 8; Newhouse, 15.
 Gold River area: Davison, E. H., 1, 2.

Nova Scotia—Continued.

Economic geology—Continued.

- Granites : Messervey, 1.
 Graphite : Messervey, 17.
 Grindstones : Messervey, 3.
 Gypsum : Bailey, H. B., 1, 2; Messervey, 2.
 Johnson Brook area : Cameron, H. L., 1.
 Lake Ainslie area : Norman, 5.
 Lead : Messervey, 10.
 Limestones : Goudge, 5; Messervey, 5.
 Malagash salt deposit : Bancroft, 2; Miller, Andrew H., 8.
 Manganese : Bancroft, 3; Messervey, 13.
 Mica : Messervey : 18.
 Mineral deposits : Goranson, E. A., 2.
 Mineral resources : McDonald, D. F., 2.
 Mines, ann. repts. : Cameron, A. E., 4, 6.
 Molybdenum : Messervey, 19.
 Oil shale : Swinnerton, A. A., 1, 2.
 Paragenesis, gold quartz veins : Harrison, R. B., 1.
 Petroleum : Eastern Gulf Oil Co., 1; Norman 3; Swinnerton, A. A., 1, 2.
 Post-Carboniferous mineralization : Messervey, 11.
 Potash : Cole, L. H., 3; Hayes, A. O., 2.
 Red-bed copper deposits : Papenfus, 1.
 Road materials : Picher, 1, 2.
 Salt deposits : Bancroft, 2; Miller, Andrew H., 8; Norman, 1.
 Sandstones : Messervey, 3.
 Shales : Fréchette, 2.
 Silica : Goranson, E. A., 1; Messervey, 6.
 Slate : Messervey, 7.
 Tin : Davison, E. H., 2; Messervey, 20.
 Tungsten : Messervey, 14.
 Zinc : Messervey, 10.

Historical geology.

- Boring, Springhill : McCall, 1.
 Bras d'Or sheet : Canada G. S., 1.
 Cape Breton Is. : Bailey, H. B., 2; Eastern Gulf Oil Co., 1.
 Deposition, Halifax ser. : Douglas, 5.
 Drumlins : Wilson, J. T., 4.
 General : Cox, E. J., 1.
 Glace Bay sheet : Canada G. S., 1.
 Gold River area : Davison, E. H., 1.
 Goldenville-Halifax boundary : King, E., 2.
 Gypsum deposits : Bailey, H. B., 2.
 Halifax fm. : Belyea, 1; King, E., 2.
 Hants Co. : Faribault, 2.
 Johnson Brook area : Cameron, H. L., 1.
 Kejimikujik Lake sheet : Canada G. S., 1.
 Kings Co. : Faribault, 2.
 Lake Ainslie sheet : Canada G. S., 1; Norman, 5.
 Liverpool sheet, g. map : Canada G. S., 1.
 Lunenburg Co. : Faribault, 1, 2.

Nova Scotia—Continued.

Historical geology—Continued.

- Malaga Lake sheet, g. map : Canada G. S., 1.
 Malagash salt area : Bancroft, 2; Miller, Andrew H., 8.
 Minudie anticline : Moore, P. D., 2; Roundy, 1.
 Nova Scotia's sheet : Canada G. S., 1.
 Purcell's Cove, Halifax Co. : Howse, 1.
 Salt deposits, Malagash area : Bancroft, 2; Miller, Andrew H., 8.
 Sherbrook Lake area, g. map : Canada G. S., 1.
 Springfield area, g. map : Canada G. S., 1.
 Springhill sheet, g. map : Canada G. S., 1.
 Sydney sheet, g. map : Canada G. S., 1.
 Windsor area : Bell, W. A., 2.

Mineralogy.

- Feldspar in basalt : Cries, 1.
 General : Cox, E. J., 1.
 Gold : Goodwin, W. M., 6.
 Hematite veins : Hornor, 1.
 Heulandite : Parsons, 6.
 Johnson Brook area : Cameron, H. L., 1.
 Lavas, Trias. : Hornor, 1.
 Magnetite : Hornor, 1.
 Natrolite : Parsons, A. L., 5.
 Nickeliferous pyrrhotite : Douglas, 6.
 Paragenesis, gold quartz veins : Harrison, R. B., 1.
 Radium content, ocean-bottom core : Pig-gott, 9.

Paleontology.

- Amphidia, Carb. : Steen, 2.
 Carboniferous tracks : Sternberg, 14.
 Conchostraca, Camb. : Ulrich, 7.
 Corals, Carb. : Lewis, H. P., 1.
 Cretaceous fossils : Stephenson, 13.
 Fauna, Carb., Windsor area : Bell, W. A., 2.
 Flora, Carb., Sydney coal field : Bell, W. A., 4.
 Microfossils, Phalen coal : Newman, W. R., 1.

Petrology.

- Differentiation, Cape Spencer flow : Lund, 1.
 Feldspar in basalt : Cries, 1.
 Granitic intrusions : Wright, W. J., 1.
 Hematite veins : Hornor, 1.
 Lavas, Trias. : Hornor, 1.
 Magnetite : Hornor, 1.

Physical geology.

- Acadian-Newfoundland earthquake : McIntosh, D. S., 1.
 Coast submergence, SE. : Rousseau, 3.
 Concretions, manganese : Kindle, 19, 24.
 Earthquake, Newfoundland Banks : Gregory, J. W., 5; McIntosh, D. S., 1.
 Gold mineralization, zonal : Newhouse, 15.
 Granitic intrusion : Wright, W. J., 1.

Nova Scotia—Continued.

Physical geology—Continued.

- Gypsum area, Cape Breton: Bailey, H. B., 2.
 Hematite veins: Hornor, 1.
 Johnson Brook area: Cameron, H. L., 1.
 Lacustrine manganese concretions: Kindle, 19.
 Lavas, Trias.: Hornor, 1.
 Magnetite area: Hornor, 1.
 Manganese concretions: Kindle, 19, 24.
 Slip faulting: Squires, 2.

Physiographic geology.

- Concretions, manganese: Kindle, 19, 24.
 Drumlins: Wilson, J. T., 4.

Nuées ardentes, mechanics: Finch 11.

Numerical field tabulation, ig. rocks: Spearman, 2.

Oahu. See also Hawaii.

- Bibliography, annotated: Stears, N. D., 2.
 General: Stearns, H. T. 12, 14.
 Geologic history: Palmer, H. S. 3.
 Minerals: Eakle, 2.

Observation, induction, and exper.: Bowen, 18.
 Oceans.

- Age: Knopf, A., 4, 7.
 Atlantic: Groeber, 1.
 Basins: Dietz, R. S., 1; Field, 11, 16, 17, 23; Gutenberg, 23, 35.
 Bottom geol. mapping: Shepard, 21.
 Bottom sampling apparatus: Hough, 6.
 California, sea-floor basins: Dietz, R. S. 1.
 Caribbean: Groeber, 1.
 Charting sea bottom: Colbert, L. O., 1.
 Continental borders: Thom, 24.
 Cores, deep-sea: Bradley, 18, 20; Cushman, 34; Emery, K. O., 2; Piggot, 5, 7, 8.
 Currents and glaciation: Luby, 1.
 Currents, sea bottom: Revelle, 5.
 Deep-sea cores: Bradley, 18, 20; Cushman, 34; Emery, K. O., 2; Piggot, 5, 7, 8.
 Earth's crustal structure: Gutenberg, 34.
 Evolution: Keyes, 359.
 General: Ewing, 16; Vaughan, 33.
 Geological misconceptions: Shepard, 11.
 Geophysical explor. of basins: Field, 23; Anonymous, 191.
 Geophysical Lab. repts.: Day, 1.
 Geophysics and submarine geology: Field, 22.
 Gravity at sea: Hoskinson, 3.
 Gravity surveys, West Indies: Ewing, 13.
 Hawaii, waves from submarine earthquakes: Jagger, 7.
 Levels. Cenozoic: Fretz, 1.
 Magnetization, Atlantic sediments: McNish, 2, 3.
 Movements and sedimentation: Fleming, R. H., 1.
 North Am., Pacific Northwest, ocean sediments: Utterback, C. L., 1.
 Oceanography and submarine geology: Sverdrup, 1.

Oceans—Continued.

- Origin: Keyes, 323.
 Pacific Basin structure: Gutenberg, 35.
 Physiography of: Keyes, 397.
 Preglacial sea levels: Miller, A. A., 1.
 Salinity and sea levels: Mencher, 1.
 Seismograph measurements, floors: Ewing, 11.
 Seismology and geol. explor.: Field, 21.
 Structure: Fleming, J. A., 2.
 Suboceanic relief maps: Joerg, 2.
 Undertow: Evans, 15.

Ocher.

- Alabama: Barksdale, 6.
 Quebec: Faessler, 3.
 United States: Burt, 4.
 Vermont: Burt, 4.

Ohio.

- Blue Hole of Castalia: Ver Steeg, 15.
 White clays, S. Ohio: Westgate, 5.

Areas described.

- Cleveland dist.: Cushing, 1.
 Jefferson Co.: Lamborn, 1.
 Nelson Ledge State Pk.: Ver Steeg, 11.

Economic geology.

- Appalachian oil and gas fields: Ashley, 28.
 Brines: Stout, 7.
 Clays: Bognar, 1; Lamborn, 4; Stout, 2, 4, 8, 19; Westgate, 5.
 Clinton gas sand: Gustafson, J. D., 1.
 Coals: Bownocker, 1, 2; Eavenson, 3; Ray, F. A., 1; Stout, 3.
 Devonian sh. and Oriskany sand drilling: Bennett, J., 1.
 Glass sand: Bownocker, 3.
 Gypsum, Sandusky: Jones, V. E., 3.
 Kelley's Is.: Ver Steeg, 23.
 Lake beds, uses: Hubbard, 12.
 Mineral resources: Stout, 13.
 Molding sands: Bownocker, 3.
 Monongahela-Dunkard contact, Wash. Co.: Frye, 1.
 Natural gas: Billingsley, J. E., 1; Fetteke, 12; Harper, J. L., 1; Ley, 5; Lockett, 2; Stout, 11, 12.
 Oil fields: Billingsley, J. E., 1; Carman, 5; Cottingham, 1; Harper, J. L., 1; Lockett, 1, 3; Rison, 1; Stout, 12.
 Oriskany sands: Fetteke, 12; Lockett, 2; Hamilton, S. H., 3.
 Petroleum: Billingsley, J. E., 1; Carman, 5; Cottingham, 1; Hamilton, S. H., 3; Harper, J. L., 1; Lockett, 1; Rison, 1; Stout, 12.
 Pittsburgh coal bed: Eavenson, 3.
 Shales: Lamborn, 4.
 Southwest Ohio, oil-gas area: Harper, J. L., 1.

Historical geology.

- Allegheny fm.: Sturgeon, 1.
 Baltimore & Ohio route: Grimsley, 1.
 Berea ss.: Van Horn, 8.
 Bone beds, Delaware lms.: Westgate, 7.
 Brassfield lms.: Cummins, 1.

Ohio—Continued.

Historical geology—Continued.

- Cincinnati arch: Lockett, 3.
 Cincinnati area: Chappars, 3; Shideler, 19.
 Clays: Bognar, 1; Lamborn, 4; Stout, 19.
 Clinton Co.: Austin, G. M., 1.
 Coal-bearing rocks: Stout, 17, 19.
 Coal-fm. clays: Stout, 19.
 Correlations, Penn.: Mitchell, R. H., 5; Wanless, 16.
 Crinoidal sands, Delaware lms.: Westgate, 7.
 Cromwell oil field: Rison, 1.
 Cryptovolcanic rocks: Bucher, 15-a.
 Cycles, Penn.: Stout, 5.
 Delaware lms.: Westgate, 7.
 Dolomites: Busch, 1; Stout, 18.
 Euclid bluestone: Van Horn, 3.
 General: Kans. G. Soc., 8.
 Gypsum, Sandusky: Jones, V. E., 3.
 Highland Co.: Rogers, J. K., 2.
 Highland Rm, Missn.: Klepser, 1.
 Hillsboro ss.: Carman, J. E., 1, 2.
 Hocking Co. State Park: Ver Steeg, 17.
 Illinoian drift area: White, G. W., 11.
 Kelley's Is.: Ver Steeg, 23.
 Lawrence Co. clay: Stout, 4.
 Limestones, Penn.: Mitchell, 5.
 Mississippian, Highland Rm: Klepser, 1.
 Mohican Forest Park: Ver Steeg, 26.
 Monongahela-Dunkard contact, Wash. Co.: Frye, 1.
 Monongahela ser.: Stout, 1.
 Ohio River Valley: Meinzer, 16.
 Olenitangy sh. fossils: Stewart, G. A. 12.
 Oregonia-Ft. Ancient area: Wolford, 3.
 Oriskany sand: Lockett, 2.
 Ostracoda, index fossils: Stewart, G. A., 12.
 Paleogeography, Cincinnati area: Shideler, 19.
 Pennsylvanian corals: Mitchell, 5; Wanless, 16.
 Pennsylvanian cycles: Stout, 5.
 Pre-Cambrian: Hubbard, 5.
 Saluda div., Whitewater fm.: Strete, 1.
 Sedimentary ser.: Lamborn, 3.
 Shales: Lamborn, 4.
 Silurian: Ball 21; Cumings, 2; Foerste, 6, 24; McFarlan, 18.
 Southwest Ohio oil-gas area: Harper, J. L., 1.
 Sub-Trenton fms.: Wasson, I. B., 1.
 Sylvania ss.: Carman, 6.
 Unconformity, top Trenton fm.: Ver Wiebe, 2.
 Whitewater fm.: Strete, 1.

Mineralogy.

- Celestite: Morrison, R. B., 1.
 Cleveland dist. concretions: Van Horn, 4.
 Concretions: Greene, G. U., 1; Van Horn, 4.
 Conglomerate, glacial: Wuestner, 2.
 Fluorite: Morrison, R. B., 1.

Ohio—Continued.

Mineralogy—Continued.

- Gems: Schiefer, 1.
 Glass sands: Bownocker, 3.
 Ironstone concretions: Greene, G. U., 1.
 Meteorite, Paint Creek: Ver Steeg, 21.
 Molding sands: Bownocker, 3.
 Marcasite concretions: Van Horn, 4.
 Paint Creek meteorite: Ver Steeg, 21.
 Pyrite concretions: Van Horn, 4.
 Sands: Bownocker, 3.
 Selenite: Birkheimer, 1; Greene, G. U., 2.
 Sphalerite in concretions: Greene, G. U., 1.

Paleontology.

- Actinopterygian jaws: Cooper, C. L., 9.
 Alethopteris: Arnold, 16, 24.
 Amphibia: Steen, 1.
 Brachiopoda: Ulrich, 27.
 Calcified wood: Brand, L. S., 2.
 Callixylon: Berry, E. Willard, 9, 17; Hoskins, J. H., 2.
 Casteroides: Cahn, 3; Whipple, R. W., 1.
 Cephalopoda: Foerste, 9, 19; Sturgeon, 2.
 Charophyta: Peck, R. E., 4.
 Cincinnati area: Chappars, 3.
 Cincinnati fossils: Bucher, 21.
 Cladoselache: Woodward, A. S., 4.
 Conemaugh fm. fauna: Laird, W. M., 1.
 Conodonts: Branson, E. B., 17; Cooper, C. L., 3; Stauffer, 19.
 Corals: Schuchert, 50; Stewart, G. A., 1, 4, 11.
 Cordaitan wood: Arnold, 5.
 Crinoids: Foerste, 29.
 Dipnoans: Romer, 10.
 Faunas, Allegheny fm.: Sturgeon, 1.
 Conemaugh fm.: Laird, W. M., 1.
 Olenitangy sh.: Stauffer, 20.
 Flora, Freeport coal: Berry, E. Willard, 12.
 Footprints: Mitchell, R. H., 2, 3.
 Fusulinids: Thompson, M. L., 5.
 Gastropoda: Bucher, 18.
 Glacial plant migrations: Braun, 1.
 Gymnotrachelus: Dunkle, 3.
 Lichenocrinus: Faber, 1.
 Linguloids: Girty, 10.
 Mastodon, The Plains: Ver Steeg, 29.
 Niagaran rocks: Priddy, 1.
 Ostracoda: Stewart, 9, 12.
 Paleobotany: Berry, E. Willard, 6.
 Paleocypoda: Stewart, G. A., 5.
 Phyllocarid: Stewart, G. A., 6.
 Pollen, fossil: Sears, P. B., 2, 3.
 Polychaeta: Stauffer, 22.
 Pseudorthoceratidae: Flower, 9.
 Pterygotus: Caster, 11-a.
 Scolecodonts: Gries, P., 1.
 Silica sh.: Stewart, G. A., 2.
 Solenochilus: Sturgeon, 3.
 Sponge spicules: Bucher.
 Tetrapoda: Burke, 5; Romer, A. S., 3.
 Trigonocarpus: Berry, E. Willard, 8.

Ohio—Continued.

Paleontology—Continued.

- Trochiliscus : Hacquaert, 1.
Troedissonoceras : Flower, 8.
Types, Ohio State Univ. Mus. : Stewart, G. A., 3.
Uvigerina : Cushman, 1.
Willow, Pleist. : Berry, E. Willard, 13.

Petrology.

- Cave in calcareous tufa : Swinnerton, A. A., 4.
Cincinnati area : Chappars, 3.
Clays : Lamborn, 4.
Concretions : David, A., 1; Rogers, M., 1.
Correlations, Penn. lms. : Mitchell, 5.
Insoluble residues, correls. by : Mitchell, 5.
Limestone correls. : Mitchell, 5.
Niagaran rocks : Priddy, 1.
Shales : Lamborn, 4.

Physical geology.

- Beach sands, Cedar Pt., variation : Pettijohn, 3, 4.
Cryptovolcanic structure : Bucher, 10, 15-a.
Devonian cherts, origin : Westgate, 4.
Earthquakes : Rouse, 8; Stechshulte, 7.
Hillsboro ss. : Carman, J. E., 2.
Hocking Co. State Park : Ver Steeg, 17.
Kirkland Lake gold mines : Brenne-man, 1.
Lake Erie shore : Stout, 9.
Landslides, Cincinnati area : Von Schlichten, 2.
Marl balls, Miami Valley : Rouse, J. T., 1.
Pegmatite dike, metamorphosed : Lindner, 1.
Radio transmission survey : Higgy, 1.
Sedimentation, artificial lake : Mitchell, 7.
Sediments deformed by ice thrust : Glock, 4.
Seismic activity : Westland, 7.
Structural features : Stout, 14.

Physiographic geology.

- Appalachian Plateaus erosion surfaces : Cole, 12.
Broadway moraine : White, G. W., 9.
Buried topography : Ver Steeg, 20.
Cincinnati area : Brand, 3, 4; Desjardins, 1-a.
Clinton Co. : Austin, G. M., 1.
Correlation, erosion surfaces : Ver Steeg, 31.
Correlations, Huron-Erie Basins : Leverett, 24.
Drainage changes : Carman, 3; Coffey, 1; Happ, 1; Perry, E. S., 1; Scranton, 1; Ver Steeg, 5, 8; White, G. W., 7.
End moraines : White, G. W., 17.
Erosion surfaces : Cole, W. S., 10, 11; Ver Steeg, 6, 31.
Geomorphic devel. : Sharp, H. S., 6.
Glacial deposits : Ver Steeg, 19.

Ohio—Continued.

Physiographic geology—Continued.

- Glacial drift thickness : Ver Steeg, 28.
Glacial erratic, large : Wolford, 7.
Glacial stagnation : Ver Steeg, 16.
Glaciation, Holmes Co. : White, G. W., 2.
Glacier stagnation : White, G. W., 3.
Highland Co. : Rogers, J. K., 2.
Hockington State Park : Ver Steeg, 17.
Ice sheet retreat : White, G. W., 19.
Illinoian drift : Leverett, 25; White, G. W., 11, 16.
Kelley's Is. : Ver Steeg, 23.
Lake beds, titled, abandoned : Hubbard, 10.
Lakes, promorainal : Hubbard, 7.
Lowell col : Frye, 2.
Minford silts : Stout, 6.
Mohican Forest Park : Ver Steeg, 26.
Newark drainage system : Lamborn, 2.
Ohio River evolution : Fowke, 2.
Ottawa Co. : Conrey, 1.
Pleistocene : Kelley, J. A., 1; White, G. W., 4.
Powell moraine : White, G. W., 9.
Preglacial topography : Ver Steeg, 25, 27.
Pre-Illinoian glaciation : Desjardines, 1.
Pro-glacial lakes : Hubbard, 9.
Relief, relative : Smith, G. H., 2.
Ripplemarks, Cincinnati area : Sanger, 1.
Scioto glacial lobe : White, G. W., 8.
Scioto Valley : Rich, 18.
Slate, varved, erratics : White, G. W., 18.
Southeastern Ohio : Stout, 15; White, G. W., 14.
Stagnation, last ice sheet : White, G. W., 5.
Structure, major features : Stout, 14.
Tillite erratics : White, G. W., 18.
Upper Ohio River Valley : Leverett, 26.
Varved clay : White, G. W., 1.
Varved slate erratics : White, G. W., 18.
White clays : Westgate, 5.
Wisconsin-Illinoian drift boundary : White, G. W., 6.
- Underground water.*
Drought and levels of : Ver Steeg, 12.
General : Stout, 10.
Ground-water problems : Klaer, 1.
Levels and drought : Ver Steeg, 12.
Ohio River Valley : Meinzer, 16.
Water tables, perched : Potter, W. D., 1.
- Oil.* See Petroleum.
Oil and coal, geophys. factors effect on : White, 24.
Oil sands : Melhase, 10; Nutting, 3.
Oil shale. See also Bituminous rocks : Petroleum.
Bartlesville sand : Leatherock, 3.
Burbank sand : Leatherock, 3.
California : Hoots, 1.
Colorado : George, R. D., 1.
Eastern U. S. : Jillson, 2.
Experimental inv. : Uwatoko, 1.
General : Hill, H. H., 1; Schreiter, 1.

Oil shale—Continued.

- Impregnations, porous material, studies:
 - Waldo, 3.
- Indiana: Logan, W. N., 5.
- Kentucky: Bizot, 1.
- Nova Scotia: Swinnerton, A. A., 1, 2.
- Organic content and origin: Hawley, J. E., 1; Rand, W. P., 1.
- Petroleum permeability: Clough, 1.
- Petroleum reserve: Norris, C., 1.
- Quebec: Swinnerton, A. A., 2.
- Shearing pressures: Hawley, J. E., 1.
- Virginia: Holden, 12-a.

Oklahoma.

- Arbuckle Mts. geophys. prosp.: Weatherby, 2.
- Biennial rept.: Dott, 9.
- Deep well temperatures: McCutchin, 2.
- Field confs.: Gould, C. N., 1.
- Isocon map, Ord. waters: Dott, 1.
- Work, Geol. Survey: Cooper, C. L., 1.

Areas described.

- Adair Co.: Cram, 2.
- Arbuckle Mts.: Gould, C. N., 6.
- Beaver Co.: Six, 2.
- Blaine Co.: Six, 1.
- Cherokee Co.: Cram, 2.
- Cimarron Co.: Six, 2.
- Cotton Co.: Cloud, W. F., 3.
- Criner Hills: Stone, J. A., 3.
- Custer Cox: Six, 1.
- Delaware Co.: Ireland, 2.
- Dewey Co.: Six, 1.
- Haskell Co.: Stone, J. A., 1.
- Hughes Co.: Boyle, J. P., 2.
- Jefferson Co.: Bunn, 1.
- Johns Valley: Gould, C. N., 3.
- Johnston Co.: Melton, 4.
- Kiowa Co.: Sawyer, 1.
- Latimer Co.: Stone, J. A., 1.
- Lefflore Co.: Stone, J. A., 1.
- Lincoln Co.: Radler, 2.
- Love Co.: Bullard, 1.
- Marshall Co.: Bullard, 1.
- Mayes Co.: Ireland, 2.
- Murray Co.: Melton, 4.
- Okfuskee Co.: Boyle, J. P., 2.
- Oklahoma Co.: Travis, 1.
- Ottawa Co.: Ireland, 2.
- Ozark Mtn. area: Schottenloher, 2.
- Pottawatomie Co.: Weirich, 3.
- Roger Mills Co.: Six, 1.
- Sequoyah Co.: Stone, J. A., 1.
- Texas Co.: Schoff, 4; Six, 2.
- Tulsa Co.: Cloud, W. F., 4.

Economic geology.

- Accumulations of oil: Rich, 3.
- Arbuckle group: Decker, 23, 25.
- Arbuckle lms. asphalts: Decker, 23.
- Ardmore oil dist.: Tomlinson, 9.
- Asphalts, Arbuckle lms.: Decker, 23.
- Bartlesville sands: Bass, 7, 10; Leatherrock, 1.
- Base replacement studies: Case, L. C., 2.
- Blaine fm.: Muir, J. L., 1.

Oklahoma—Continued.

Economic geology—Continued.

- Burbank oil field: Bass, 7, 10; Markham, E. C., 1; Sands, 1.
- Burbank sands: Bass, 7, 10; Leatherrock, 1; Sands, 1; Weirick, 1.
- Caliche: Gould 13.
- Carbon ratios: Fisher, D. J., 8; Hendricks, T. A., 6.
- Carboniferous, Upper: Kans. G. Soc., 10.
- Cement oil pool: Swindell, 2.
- Clays: Sheerar, 1, 2; Wright, 17.
- Coal: Hendricks, T. A., 2; Moose, von, 1; Young, C. M., 2.
- Coal fields: Hendricks, T. A., 7; U. S. G. S., 7, 8, 9, 10, 11.
- Comanche oil-gas field: Swigart, 1.
- Crinerville oil field: Powers, S., 1.
- Cromwell oil field: Grawe, 1; Langworthy, 1; Rison, 1.
- Crude oils, Cherokee shale: Bass, 14.
- Cushing oil-gas field: Wardwell, 1; Weirich, 1.
- Davenport oil field: Brandenthaler, 2.
- Deaner oil field: Kirkwan, 1.
- Deep well near Marlow: Paschal, 1.
- Delaware Extension oil pool: Lewis, J. O., 2.
- Depew area: Martin, H. M., 1.
- Dora pool: Ingham, 1.
- Dutcher oil pool: Carlson, C. G., 2.
- Earth temperature, Dilworth field: McCutchin, 5.
- Edmond oil field: Jones, L. W., 1.
- Fitts oil pool: Dott, 7; Hyatt, 1; Tels, 1.
- Garber oil field: Gish, W. G., 1.
- Geothermal gradients in oil fields: McCutchin, 1, 3, 4.
- Glass sands: Beach, 2.
- Glenn oil pool: Wilson, W. B., 1.
- Gravel: Bloesch, 2.
- Greater Seminole dist.: Levorsen, 1.
- Gypsum, Fayetteville sh.: Giles, 9.
- Hematite: Williams, A. J., 1.
- Hewitt oil field: Burton, G. E., 1.
- Hobart oil field: Tarr, R. S., 3.
- Hughes Co.: Boyle, J. P., 2.
- Iron ores, Wichita Mts.: Merritt, 7.
- Jesse oil pool: Boyd, W. B., 1.
- Keokuk pool: Rau, 1.
- Lakin-Hugoton-Guymon area: Bartle, 5.
- Lehigh coal field: Knechtel, 5.
- Lincoln Co.: Radler, 2.
- Lucian field: Zavoico, 2.
- McAlester coal field: Hendricks, 9.
- Magnetic vectors: Jenny, 2.
- Magnetite, Wichita Mts.: Merritt, 5.
- Mapping structure by reflection: Goldstone, 1.
- Miami-Picher zinc-lead dist.: Fowler, 5; Tarr, 11, 15; Weidman, 2, 4.
- Midcontinent oil fields: Bass, 8; Hiestand, 2; Miser, 9.
- Migration of oil: Brauchli, 3; Whiteside, 2; Wilson, W. B., 4.
- Mineral raw materials: Shead, 1.

Oklahoma—Continued.

Economic geology—Continued.

- Mineral res. ex. oil and gas: Dott, 10; Gould, 14.
 Morrison oil field: Carpenter, E., 1.
 Muskogee oil field: Wilson, C. W., Jr., 6.
 Muskogee-Forum dist.: Borden, 2; Wilson, C. W., Jr., 13.
 Natural gas fields: Colton, E. G., 1; Tomlinson, 6.
 Natural gas reserves: Heithecker, 1.
 Naval Reserve oil field: Vanderpool, 6.
 Nonmetallics: Ham, 2.
 Oil fields: Bass, 6; Clark, S. K., 1; Fowler, 3; Stephenson, C. D., 1; Vanderpool, 5; Westby, 3.
 Oil and gas fields: Richardson, G. B., 6; Wrather, 1.
 Oklahoma City oil-gas field: Brauchli, 1, 2; Charles, 2; Clawson, 1; Clifford, O. C., 1; Clifton, 2; Foley, 5; Hill, H. B., 2, 3; McGee, 1; Riggs, R. J., 1; Turk, 1; Zavolco, 1, 3.
 Oklahoma-Kansas mining field: Fowler, G. M., 6.
 Olympic oil pool: Tillotson, 2.
 Oolitic hematite: Hayes, 4.
 Ore deposits: Ageton, R. V., 1; Fowler, G. M., 1, 10; Speer, 1.
 Osage Co. oil-gas fields: Bass, 5, 12; Kirk, C. T., 2; U. S. G. S., 14, 15.
 Pennsylvania cycles: Moore, R. C., 12.
 Petroleum devel.: Bush, F. A., 3; Shea, 1.
 Petroleum origin: Case, L. C., 1.
 Petroleum source beds: Trask, 35.
 Petroleum and gas: Bush, F. A., 3; Hawkins, G. D., 1; Rorschach, 1; Williams, H. L., 1.
 Petroliferous provs. and sedimentation: Lauer, 3.
 Phosphate: Oakes, 2.
 Pottawatomie Co.: Weirich, 3.
 Pre-Marmaton oil: Whiteside, 3.
 Quinton-Scipio coal field: Dane, 12; Rothrock, H. E., 3.
 Road materials: Wolfard, 1.
 Rock wool: Wood, F. C., 2, 4.
 Rocky Mts. oil fields: Uren, 2.
 Seminole oil and gas fields: Brandenthaler, 1; Swarts, 6.
 Shales: Sheerar, 1.
 Slick oil field: Schwarzenbek, 1.
 Tatums pool: Grimes, 1.
 Texas Co.: Schoff, 4.
 Timbered Hills group: Decker, 25.
 Tri-State mining dist.: Fowler, G. M., 2, 4, 8; Harbaugh, 1, 2; Leith, 5.
 Turkey Mtn. lime pools: Ruedemann, P., 1.
 Union Valley ss.: Hollingsworth, 3.
 Volcanic ash and tripoli: Beach, 1.
 Water encroachment: Snow, D. R., 2.
 West Edmond oil pool: Wallace, P. A., 1.
 Wichita Mts. oil field: Millison, 2.
 Wilcox sand: Knowlton, D. R., 1.

Oklahoma—Continued.

Historical geology.

- Anadarko Basin: Frele, 1.
 Arbuckle Mts. group: Decker, 6, 22, 25; Dott, 4, 8; Kans. G. Soc., 4; Tomlinson, 5; Van Weelden, 2.
 Ardmore area: Floyd, 1.
 Bartlesville sand: Bass, 7, 10; U. S. G. S., 12, 13.
 Basal sed. rocks, Wichita Mts.: Decker, 19.
 Basement, structure, W. Okla.: Becker, C. M., 2.
 Bendian, Ouachita Mts.: Harlton, 9.
 Bethany lms.: Keyes, 383.
 Benton fm.: Gould, C. N., 2.
 Bigfork chert, origin: Henbest, 8.
 Big lime: Greene, F. C., 3.
 Black Knob Ridge: Hendricks, 10, 15.
 Bluejacket ss.: Dane, 9.
 Bochito fm.: Redfield, J. S., 2.
 Boone chert: Giles, 10.
 Bone ser.: Laudon, 10.
 Boulder, Caney sh.: Kramer, 1; Waterschoot van der Gracht, 7.
 Burbank sand: Bass, 7, 10; U. S. G. S., 12, 13.
 Cambrian-Ord. boundary, Arbuckle lms.: Bridge, 6.
 Combro-Ord. rocks: Hickock, 1.
 Carboniferous: Hilseweck, 1; Kans. G. Soc., 10.
 Chattanooga sh.: Leatherock, 2.
 Cherokee fm., Midcontinent: Roth, 7.
 Cherokee structural hist.: Lowman, 5.
 Cherts, lead-zinc dist.: Weidman, 1.
 Cimarron Valley: Stovall, 12.
 Coal fields: Hendricks, T. A., 4, 5, 7.
 Coal maps: U. S. G. S., 7, 8, 9, 10, 11.
 Comanche oil and gas field: Swigart, 1.
 Contacts, Honey Creek-Reagan fms.: Decker, 24.
 Correlations: Ball, 17; Decker, 13, 14; Ireland, 4.
 Cretaceous: Daugherty, C. G., Jr., 1.
 Criner Hills: Tomlinson, 7.
 Cromwell ss.: Hollingsworth, 1.
 Davenport oil field: Brandenthaler, 2.
 Deaner oil field: Kirwan, 1.
 Deep well near Marlow: Paschal, 1.
 Dinosaurs, Juras.: Stovall, 17.
 Dolomite region: Suffel, 1.
 Dora pool: Ingham, 1.
 Edmond oil field: Jones, L. W., 1.
 Faulting, en echelon: McCoy, 4.
 Flitts pool: Hyatt, 1.
 Fort Riley fms.: Gould, D. B., 2.
 Fort Sill fm.: Ulrich, 15.
 Frederick deposits: Gould, C. N., 2; Sel-lards, 26.
 Garber fm.: Ross, J. C., 1.
 General: Folger, 4; Kansas G. Soc., 6, 7, 8; Oklahoma City G. Soc., 1; Sheerar, 1.
 Geologic cross sec.: Thompson, W. C., 2.
 Geology State Parks: Gould, C. N., 16.
 Graptolite horizon, Sil.: Decker, 8.

Oklahoma—Continued.

Historical geology—Continued.

- Gravel deposits: Bloesch, 2; Evans, O. F., 4.
- Gravity anomalies: Hendricks, 16.
- Hobart oil field: Tarr, R. S., 3.
- Honey Creek fm.: Ulrich, 15.
- Hoxbar fm.: Tomlinson, 4.
- Hunton fm.: Maxwell, R. A., 1.
- Index to strat.: Ver Wiebe, 7.
- Iron ores, Wichita Mts.: Merritt, 7.
- Jackfork fm.: White, C. D., 23.
- Jesse pool: Boyd, W. B., 1.
- Johns Valley sh.: Moore, R. C., 24.
- Keokuk pool: Rau, 1.
- Labette shs., preoccupied: Keyes, 344.
- Lake Murray dam site: Tomlinson, C. W., 3.
- Lakin-Hugoton-Guyon area: Bartle, 5.
- Lehigh dist. coal field: Knechtel, 1, 5.
- Lower Penn.: Lowman, 4.
- Lucien oil field: Zavolco, 2.
- Luta lms.: Boos, M. F., 3.
- McAlester coal field: Hendricks, 9.
- Marmaton fm.: Roth, 7.
- Mayes-Boone correl.: Brant, 1.
- Midcontinent oil fields: Cheney, 3; Hiestand, 2.
- Mississippian fms.: Dille, 3; Roth, 2.
- Morrow group: Moore, C. A., 1; Roth, 2.
- Muskogee Co.: Wilson, C. W., Jr., 6.
- Muskogee-Porum dist.: Borden, 2; Wilson, C. W., Jr., 13.
- Natural gas fields: Tomlinson, 6.
- Naval Reserve oil field: Vanderpool, 6.
- Namana granite ridge: Bale, 2.
- Northeast Okla.: Powers, S., 4.
- Oklahoma City anticline: Foley, 7.
- Oklahoma City oil and gas field: Bale, 1; Charles, 2; Foley, 4; Hill, H. B., 3; McGee, 1; Zavolco, 1, 3.
- Oklahoma-Kansas mining dist.: Fowler, 3, 6.
- Olympic pool: Tillotson, 2.
- Oolitic horizons, Arbuckle fm.: Stone, J. A., 2.
- Oologah lms.: Keyes, 353.
- Ordovician: Cram, 3.
- Osage Co. oil and gas field: Bass, 5, 12; Kirk, C. T., 2; U. S. G. S., 14, 15.
- Osage fm., Ozarks: Cline, L. M., 1.
- Osage Missn. ser.: Laudon, 16.
- Ostracode horizon, Perm.: Harris, R. W., 3.
- Ouachita Basin: Dixon, 1.
- Ouachita boulder problem: Kramer, 6; Waterschoot van der Gracht, 12.
- Ouachita Mts.: Fitts, 1; Harlton, 8; Kans. G. Soc., 4; Miser, 2, 5, 6, 7, 8, 9.
- Ouachita orogeny: Melton, 5.
- Paleozoic classn.: Ulrich, E. O., 3.
- Pawhuska lms.: Keyes, 69.
- Pennsylvanian: Dott, 3, 8, 14; Green, D. A., 1; Ryniker, 2; Tomlinson, 1.

Oklahoma—Continued.

Historical geology—Continued.

- Pennsylvanian corals.: Dott, 8, 14; Moore, R. C., 7.
- Permian: Anderson, G. E., 1; Buckstaff, 1; Clifton, 1; Dott, 2; Evans, N., 1; Graham, W. L., 1; Green, D. A., 1, 2; Greene, F. C., 1; Mohr, 4; Patterson, J. M., 1.
- Permian corals.: Dott, 2.
- Petroleum, nat. gas poss.: Hawkins, J. D., 1.
- Phosphate deposits: Oakes, 3.
- Pre-Cambrian ig. rocks: Ham, 1.
- Pre-Marmaton oil horizons: Whiteside, 3.
- Pre-Mississippian: Edson, 5; McClellan, 1.
- Proctor oil well: Mills, 12.
- Quaternary: Savage, D. E., 1.
- Quinton-Scipio oil field: Dane, 6, 12; Rothrock, H. E., 3.
- Rengan ss.: Six, 3.
- Rocky Mts. area: Uren, 2.
- Royer fm.: Ulrich, 15.
- Sand barites, Perm.: Tarr, 10.
- Sandstones in Arbuckle lms.: Decker, C. E., 2.
- Seminole oil and gas fields: Brandenthaler, 1; Swarts, 1.
- Seminole uplift: Cram, 5.
- Shinarump: Keyes, 279.
- Signal Mtn. fm.: Ulrich, 15.
- Silurian, Mississippi Valley: Ball, 21.
- Siluro-Devonian rocks: Atchison, 1.
- Simpson group: Decker, C. E., 3, 4; Roth, 6; Ulrich, 16, 31; Weirich, 2, 4.
- Slick oil field: Schwartzembek, 1.
- South Burbank pool: Markham, E. C., 1.
- Spavinaw granite, age: Ireland, 3.
- Structure, strat.: Becker, C. M., 1.
- Sylvan sh.: Decker, 11; Oklahoma, G. S., 1; Thomas, H. S., 1.
- Talibina chert sec.: Gardner, J. H., 2.
- Tatums pool: Grimes, 1.
- Tectonics: Edson, 4; Gardner, J. H., 3.
- Tertiary: Savage, D. E., 1.
- Texas Co.: Schoff, 4.
- Timbered Hills group: Decker, 25.
- Treasury Mtn. dome: Vanderwilt, 4.
- Triassic: Anderson, G. E., 1; Roth, 11.
- Tri-State dist.: Fowler, 7.
- Unconformities: Brown, O. E., 1; Edson, 3.
- Verden ss.: Bass, 15.
- Viola lms.: Decker, 7.
- Volcanic deposits: Ross, C. S., 1.
- Wapanucka fm.: Luman, 1.
- Washita River Valley, Pleist.: Strain, 1.
- Wichita Mts.: Cram, 1; Hoffman, M. G., 1; Kansas G. Soc., 4; Merritt, C. A., 5, 6, 7; Millison, 1, 2; Van Weelden, 2.
- Zeolitic rocks, Wichita Mts.: Merritt, 6.

Oklahoma—Continued.

Mineralogy.

- Dolomite pseudomorphs: Merritt, C. A., 4.
 Enargite: Ransome, A. L., 1.
 Gypsum crystals: Merritt, C. A., 3.
 Hematite: Williams, A. J., 1.
 Iron ores: Merritt, C. A., 7.
 Leucoxene: Coil, 1.
 Magnetite: Merritt, C. A., 5.
 Meteorite fall, 8/17/36: Monnig, 3.
 Mineral provinces: Evans, O. F., 9.
 Ore deposits: Speer, 2.
 Rock wool: Wood, F. C., 2, 4.
 Sand barite rosettes: Boos, 16.
 Soper meteorite: Wood, F. C., 3.
 Sphalerite: Hassler, E. L., 1.
 Tourmaline: Brown, L. S., 1.
 Tri-State dist. minerals: Palmer, E. J., 1.

Paleontology.

- Actinopterygian jaws: Cooper, C. L., 9.
 Algae of fossil red salt: Tilden, 1.
 Allagecrinus: Kirk, 15.
 Amphicrinus: Laudon, 13.
 Amphissites revision: Roth, 1.
 Ampyx: Decker, 5.
 Ankyropteris: Read, 11.
 Anthracoceras: Miller, 43.
 Asteriaform fossils: Jones, D. John, 1.
 Atopochara: Peck, 12.
 Basslerina: Moore, R. C., 4.
 Brachiopoda: Ulrich, 27.
 Bones and artifacts: Gould, 9.
 Callixylon: Arnold, 13.
 Cephalopoda: Miller, A. K., 13, 25, 33, 38; Newell, 3; Smith, H. J., 1.
 Cimarron Valley: Stovall, 12.
 Conodonts: Bush, F. A., 1; Cooper, C. L., 3, 4, 11, 12; Harris, R. W., 6; Jones, D. John, 2, 3.
 Cotylorhynchus: Stovall, 15.
 Crinoidea: Laudon, 18; Moore, 44, 48; Strimple, 1, 2, 3.
 Crustaceans: Cooper, C. L., 5; Ruedemann, 33.
 Custer fauna: Newell, 9.
 Didymograptus: Decker, 15.
 Dinosaurs: Stovall, 17.
 Elephant wallow: Price, L. L., 2.
 Elephas jaw: Stovall, 5.
 Euceratherium: Stovall, 14.
 Eurypteris: Decker, 17.
 Fauna, Quinton-Scipio field: Williams, J. S., 9.
 Fish: Stovall, 16.
 Floras: Chaney, 27; White, 29.
 Foraminifera: Galloway, J. J., 2; Harlton, 2; Harris, R. W., 4; Ireland, 7; Moreman, 1, 3; Tappan, 1; Vanderpool, 4.
 Fossil leaves: Tate, 1.
 Frederick deposits: Evans, O. F., 3; Gould, C. N., 4; Hay, 2.
 Fusulinids: Skinner, 1; Thompson, M. L., 3.
 Goniatoceras: Elias, 20.

Oklahoma—Continued.

Paleontology—Continued.

- Graptolites: Decker, 9, 10, 11, 14-a; Ruedemann, 26.
 Invertebrates, Penn.: Newell, 3.
 Isotelus: Laudon, 15, 17.
 Jurassic: Stovall, 3.
 Kirkbya revision: Roth, 1.
 Luta lms.: Boos, M. F., 1.
 Mammalia, Tert.: Stovall, 7.
 Microfauna: Constant, 1; Harlton, 6; Harris, R. W., 1, 2.
 Microfossils, Trinity: Vanderpool, 4.
 Micropaleontology: Harlton, 7; Warthin, 2.
 Mississippian fms.: Roth, 2.
 Morrow fm.: Roth, 2.
 Muskogee-Forum dist.: Wilson, C. W., Jr., 13.
 Ostracoda: Bradfield, H. H., 1; Coryell, 4, 11; Harlton, 2, 3; Harris, R. W., 5, 7; Roth, 5; Wilson, C. W., Jr., 1.
 Parapavo: Sandoz, 1.
 Peccary: Johnston, C. S., 1.
 Pennsylvanian, Ardmore Basin: Tomlinson, 1.
 Phacopinae: Delo, 8.
 Plancterus: Stovall, 19.
 Pneumatocysts on Monograptus: Decker, 18.
 Prairie dog: Wood, A. E., 5.
 Quinton-Scipio coal field: Dane, 12.
 Reptilia: Gould, C. N., 7.
 Simpson group: Harris, R. W., 1; Ulrich, 31.
 Staffella: Thompson, M. L., 2.
 Symbolos: Stovall, 11.
 Synerocrinus: Laudon, 11.
 Tapirus: Stovall, 4.
 Trophocrinus: Kirk, 7.
 Ursus: Stovall, 8, 10.
 Verden ss.: Bass, 15.
 Vertebrates: Hay, 6; Hesse, 13, 14.
 Walnut: Berry, E. W., 14.

Petrology.

- Ardmore Basin ss.: Lucas, E. L., 2.
 Bartlesville sand: Leatherock, 3.
 Black sh., Cromwell dome: Grawe, 1.
 Burbank sand: Leatherock, 3.
 Cambro-Ordovician rocks: Hickock, 1.
 Concretions, Fayetteville sh.: Giles, 12.
 Contacts. Honey Creek-Reagan fms.: Decker, 24.
 Correlations by insoluble residues: Ireland, 4.
 Dolomites: Merritt, C. A., 1.
 Gypsum: Giles, 9.
 Heavy minerals, Springer fm.: Lucas, E. L., 1.
 Pre-Cambrian ig. rocks: Ham, 1.
 Rock wool poss.: Wood, F. C., 2.
 Verden ss.: Bass, 15.
 Volcanic ash: Harper, H. J., 1.
 Wichita Mts.: Hoffman, M. G., 1; Merritt, C. A., 6.
 Zeolitic rocks: Merritt, C. A., 6.

Oklahoma—Continued.

Physical geology.

- Arbuckle group: Decker, 25.
 Basement rocks, structure: Becker, C. M., 2.
 Beach markings, Wichita Mts.: Evans, O. F., 1.
 Black Knob Ridge: Hendricks, 10.
 Criner Hills: Tomlinson, 7.
 Crustal movement, Ouachita Mts.: Knechtel, 2.
 Earthquake, 4/11/34: Sellards, 31.
 En échelon faulting: Kramer, 2; Link, T. A., 2; McCoy, 4; Sherrill, 1.
 Erosion: Murphy, H. F., 2.
 Faulting: Cram, 6; Dott, 6; Kramer, 2; Link, T. A., 2; McCoy, 4; Melton, 12; Sherrill, 1; Tomlinson, 8.
 Fitts pool: Hyatt, 1; Teis, 1.
 Folds, Osage type: Brown, R. W., 1; Clark, S. K., 2.
 Fracture patterns: Melton, 12.
 Jesse pool: Boyd, W. B., 1.
 Joints: Melton, 3.
 Keokuk pool: Rau, 1.
 McAlester coal field: Hendricks, 9.
 Mountains: Cloos, H., 1.
 Mushroom rock: Redfield, J. S., 1.
 Muskogee-Forum dist.: Wilson, C. W., Jr., 13.
 Ouachita orogeny: Keyes, 469; Knechtel, 2.
 Overthrusts, Arbuckle Mts.: Dott, 6; Tomlinson, 8.
 Permo-Carboniferous orogeny: Waterschoot van der Gracht, 5.
 Quartermaster unconformity: Evans, N., 2.
 Sedimentation, Lake Spavinaw: Kesler, 2.
 Thrusts, opposed: Tomlinson, 8.
 Timbered Hills group: Decker, 25.
 Uplifts: Nevin, 2.
 Volcanic ash: Harper, H. J., 1.
 West Edmond oil pool: Wallace, P. A., 1.
 Wichita Mts. oil field: Millison, 2.

Physiographic geology.

- Canadian River, history: Hendricks, T. A., 3, 11.
 Dolomite region: Suffel, 1.
 Eskers: Reichert, 1.
 Meanders, underfit: Melton, 27.
 Muskogee-Forum dist.: Wilson, C. W., Jr., 13.
 North-South Canadian Rivers, drainage changes: Williams, A. J., 2.
 Ouachita orogeny, sedimentation: Keyes, 470.
 Pawhuska rock plain: Melton, 29.
 Relief map: Bollinger, C. J., 1.
 Ripple marks, Carb.: De Bethune, 4.
 Soil drifting, Great Plains: Leighton, 29.

Underground water.

- Arbuckle group: Decker, 25.
 Cushing oil field: Wardwell, 1.

Oklahoma—Continued.

Underground water—Continued.

- Ground water: Schoff, 3; Theis, 3; White, W. N., 5; Anonymous, 192.
 High Plains, ground water: Theis, 3; White, W. N., 5.
 Muskogee-Forum dist.: Wilson, C. W., Jr., 13.
 Panhandle, ground water: Schoff, 3.
 Prospecting for water, elec.: Wood, F. C., 1.
 Seminole oil and gas fields: Brandenthaler, 1.
 Subsurface water, characteristics: Case, L. C., 3.
 Timbered Hills group: Decker, 25.
 Oklahoma-Kansas oil fields, paleogeology: Hiestand, 2.
 Oligocene. See Tertiary.
 Olivine.
 Greenland: Deer, 2.
 North Carolina: Greaves-Walker, 3.
 Oregon: Fuller, 16.

Ontario.

- Borings: Johnston, W. A., 7.
 Geophysical inv.: Eve, 3; Gilchrist, 2.
 Niagara Falls Survey: Boyd, W. H., 1.

Areas described.

- Algoma-Ranger Lake-Garden River area: Hurst, 1.
 Ashigami Lake area: Fairbairn, 15.
 Bannockburn gold area: Rickaby, 1.
 Beardmore-Nezah gold area: Langford, 1.
 Bigstone Bay, Lake of the Woods: Suffel, 2.
 Burntbush River area: Thomson, 4.
 Cartier-Stralak area: Osborne, 3.
 Cat River-Kawingans Lake area: Harding, W. D., 2.
 Favorable Lake area: Bateman, J. D., 3.
 Ft. William-Port Arthur area: Tanton, 1.
 German-Currie area: Laird, 3.
 Goudreau-Michipicoten gold areas: Moore, E. S., 11.
 Groundhog-Kamiskotia area: Graham, A. R. 5.
 Heron Bay area: Thomson, James E., 1, 2.
 Horwood Lake area: Harding, W. D., 4.
 Huronian gold mine: Watson, R. J., 1.
 Janes-McNish-Pardo-Dana Tps.: Bruce, E. L., 8.
 Kakagi Lake area: Burwash, E. M. J., 4.
 Keezhik-Miminska Lakes area: Prest, V. K., 1.
 Kowkash-Ogoki gold area: Kindie, L. F., 3.
 Lake Savant area: Moore, E. S., 2.
 Little Long Lac area: Bruce, 16.
 Lochalsh-Missinaibi area: Burwash, 9.
 Long Lake area: Fairbairn, 11.
 Manitou-Stormy Lakes area: Thomson, James E., 4.

Ontario—Continued.

Areas described—Continued.

- Michipicoten River area: Matheson, 1; Weeks, L. J., 1.
 Minaki-Sydney Lake area: Derry, 5.
 Moose Mtn.-Wanapitci area: Kindie, L. F., 3.
 Moose River Basin: Dyer, 1, 9.
 North shore, Lake Huron: Moore, E. S., 6.
 North Spirit Lake area: Bateman, J. D., 2.
 Oba area, Algoma: Maynard, J. E., 1.
 Obonga Lake area: Graham, A. R., 4.
 Ontario-Manitoba boundary: Derry, 6.
 Opepeesway Lake area: Laird, 7.
 Pashkokogan-Misebkow area: Dyer, 18.
 Pelee Is., Lake Erie: Kindie, 34.
 Pickle Lake-Crow River area: Hurst, 5.
 Porcupine dist.: Laird, H. C., 1.
 Rowan-Straw Lakes area: Thomson, James E., 8.
 Rush River area: Bannerman, 1.
 Sachigo River area: Meen, 6.
 Sapawe Lake area: Hawley, J. E., 2.
 Shebandowan Lake area: Watson, R. J., 2.
 Shoal Lake area: Greer, L., 1.
 Shonia Lake area: Laird, H. C., 2.
 South Onaman area: Moorhouse, 3.
 Steeprock Lake area: Bartley, 1.
 Straw-Manitou Lakes area: Thomson, James E., 5.
 Stull Lake area: Satterly, 3.
 Sturgeon Lake area: Graham, A. R., 3.
 Sturgeon River-Beardmore area: Laird, 10.
 Sudbury Basin area: Burrows, 2.
 Swayze area: Furse, 2.
 Three Duck Lakes area: Laird, 4.
 Tyrrell-Knight area: Graham, A. R., 6.
 Woman-Narrow-Confederation Lakes: Bruce, E. L., 1.
 Woman River-Ridout areas: Emmons, R. C., 1.

Economic geology.

- Afton-Scholes area: Moore, E. S., 18.
 Algoma lead-zinc deposits: Hurst, 2.
 Amber: Wilson, M. E., 18.
 Anhydrite, Porcupine dist.: Langford, 3.
 Aplites in cobalt-silver ores: Bastin, 8.
 Ashigami Lake area: Fairbairn, 15.
 Atigogama Lake area: Burwash, E. M., J., 2.
 Bannockburn gold area: Rickaby, 1.
 Beardmore-Nezab gold area: Langford, 2.
 Beryl-pegmatite dikes: Freeman, B. C., 9.
 Birch-Springpole Lakes area: Harding, 3; ANONYMOUS, 121.
 Bituminous lms.-ss.: Utterback, D. D., 1.
 Boston-Skead gold-copper dist.: Bell, L. V., 2.
 Brownsville gas field: Evans, C. S., 5.
 Calumet Is.: Osborne, 31.
 Canadian Shield mining dists.: Wright, 21.

Ontario—Continued.

Economic geology—Continued.

- Casummit Lake area: Horwood, 12.
 Cat River-Kawinogans Lake area: Harding, W. D., 2.
 Caviar Lake gold area: Burwash, E. M. J., 2.
 Chromite, Thunder Bay: Hurst, 6, 8.
 Clays: Crozier, 1; Dyer, 14, 19; Hilder, 1; Montgomery, R. J., 1, 2.
 Cobalt ores: Keil, 1; Osborne, F. F., 2; Thomson, J. Ellis, 4; Young, J. W., 1.
 Cobalt-nickel-bismuth-silver ores: Keil, 1.
 Cochrane-Timiskaming dists.: Gledhill, 1.
 Copper: Tanton, 6; Watson, R. J., 2.
 Cross Lake ores: Thomson, J. Ellis, 6, 9.
 Darkwater mine area: Horwood, 11.
 Dillabough Lakes area: Burwash, E. M. J., 3.
 Favorable Lake area: Bateman, J. D., 3; Hurst, 4.
 Fire clay: Dyer, 14.
 Fluorspar: Wilson, M. E., 1.
 Fort Hope gold area: Burwash, E. M. J., 1.
 Frood mine: Freeman, B. C., 1; Halferdahl, 1.
 General: Goodwin, W. L., 1.
 Geological structure, Keeley mine: Boydell, 2.
 Geophysical prosp., Porcupine: Kelly, 18.
 Geophysics, Falconbridge: Galbraith, F. M., 1.
 Gold: Bain, G. W., 2; Brenneman, 1; Bruce, 16, 22, 24, 26; Burwash, E. M. J., 1, 2; Cormie, 1; Cross, J. G., 1; Dyer, 17; Froberg, 1, 2, 3; Horwood, 7, 9; Hurst, 12; Kindie, E. D., 1; Kindie, L. F., 1; Mather, W. B., 1; Mawdsley, 8; Moore, E. S., 16; Reid, J. A., 4; Rickaby, 1; Ringsleben, 1; Spearman, 3; Thomson, James E., 7, 9, 10, 12, 14.
 Gowganda silver area: Campbell, A. D., 1.
 Grenville ser.: Goodwin, W. M., 1.
 Groundhog River area: Graham, A. R., 2.
 Hematite deposits: Bartley, 1; Goodwin, W. M., 3.
 Heron Bay-White Lake area: Thomson, James E., 3.
 Hollinger gold mine: Ringsleben, 1.
 Horwood Lake area: Harding, 4; Laird, 8.
 Hull-Gloucester-Hazeldean faults area: Miller, Andrew H., 1.
 Iron Mask cobalt silver mines: Osborne, F. F., 2.
 Jellicoe-Sturgeon River area: Bruce, 20, 21.
 Kakagi Lake area: Burwash, 4.
 Keefer-Eldorado area: Harding, 5.

Ontario—Continued.

Economic geology—Continued.

Kirkland Lake gold mines: Brenneman, 1.

Kowgash gold area: Kindle, L. F., 1.

Lake Huron area: Canada G. S., 1.

Lake Iroquois: Coleman, 9.

Lake Ontario, N. shore: Coleman, 10.

Lake of the woods: Thomson, James E., 11.

Lake Savant area: Moore, E. S., 2.

Lake Shore area: Robson, 1.

Lake Superior region: Hotchkiss, 4; Rama Rao, B., 1.

Late gold, implications: Mawdsley, 8.

Lead-zinc deposits: Hawley, 3; Osborne, 10; Tuck, 2.

Lebel Township: Dyer, 22.

Lignite: Dyer, 7, 8, 11, 15; Gilmore, R. E., 1; Hawkins, R. H., 1; Miller, Andrew H., 4; Ontario Research Foundation, 1.

Limestones: Dyer, 4; Goudge, 1, 5.

Little Long Lac gold area: Bruce, 16, 22, 24.

Little Long Lac-Jellico area: Bruce, 20.

Little Long Lac-Sturgeon River area: Thomson, J. Ellis, 14.

Long Lake area: Fairbairn, 11.

McIntyre mine, Porcupine area: Langford, 4.

Magnetite, Sudbury dist.: Moore, E. S., 13.

Makwa-Churchill area: Laird, 5.

Manitoulin Islands: Williams, M. Y., 14.

Manitou-Stormy Lakes area: Thomson, James E., 4.

Martin-Bird mines: Dyer, 21.

Matachewan gold area: Dyer, 17.

Matachewan-Kenogami lake: Dyer, 20.

Matawin iron range: Tanton, 2.

Mica: Wilson, M. E., 18.

Michipicoten area: Burwash, 8; Matheson, 1.

Michipicoten-Missinaibi area: Burwash, 8.

Miller Lake O'Brien mine: Thomson, J. Ellis, 11.

Mineral industry: Goodwin, W. L., 1; Leduc, 1; Ontario Dept. Mines, 1; Rogers, W. R., 1.

Mineral prosp.: Goodwin, W. L., 1.

Mongowin Tp. area: Rickaby, 5.

Moose River Basin: Dyer, 1, 12; Hawkins, R. H., 1.

Natural gas: Harkness, 1, 2, 4, 5, 6.

Nepheline syenites: Davis, N. B., 1.

Niccolite-chalcocopyrite intergrowth: Laussen, 3.

Nickel: Bastin, 18; Coleman, 1; Collins, W. H., 5; Lee, 6; Moore, E. S., 10; Phemister, 1; Watson, R. J., 2; Yates, 1.

Nickel-cobalt-native silver deposit: Bastin, 18.

Nonmetallic min. res.: Dyer, 3; Osborne, 6.

Ontario—Continued.

Economic geology—Continued.

North Spirit Lake area: Bateman, J. D., 2.

Obonga Lake area: Graham, A. R., 1; Kidd, 4.

Obonga-Kashishibog area: Kidd, 4.

Oil and gas fields: Harkness, 1, 2, 5, 6; Spearman, 1.

Onakawana lignite: Dyer, 10.

Onaman area: Moorhouse, 1.

Opeepeesway Lake area: Laird, 7.

Ore deposition: Dadson, 4.

Oxidation, deep: Moore, E. S., 21.

Pagwachuan Lake area: Macdonald, R. D., 1.

Pashkokogan-Misehkwow area: Dyer, 18.

Patricia gold mine: Reid, J. A., 4.

Petroleum: Harkness, 2, 4, 5, 6.

Pickle-Crow gold area: Bothwell, 1; Hurst, 3; Thomson, James E., 13.

Platinum-nickel-copper deposit: Watson, R. J., 2.

Porcupine dist.: Graton, 5; Hurst, 10, 11.

Radium, Wilberforce: Spence, 2, 4.

Ramore area: Moore, E. S., 17.

Red Lake area: Bruce, 14.

Renfrew Co. min. deposits: Freeman, B. C., 4.

Rock wool: Goudge, 4, 6.

Rowan-Straw Lake area: Thomson, James E., 8.

Rush Lake area: Bannerman, 3.

Sachigo River area: Meen, 6.

Sandstone, Hawkesbury: Cole, L. H., 8.

Sandy Lake area: Hurst, 4; Satterly, 4.

Schreiber area: Harcourt, 4.

Shabumeni-Birch Lakes area: Furse, 3.

Shoal Lake gold: Thomson, James E., 12.

Silica, Minaki: Wright, 20.

Silver: Campbell, A. D., 1; Moore, E. S., 15; Osborne, F. F., 2.

Sioux Lookout area: Hurst, 9.

South Onaman area: Moorhouse, 3.

Stocks, Goudreau: Emmons, W. H., 10.

Strathy Tp.: Savage, W. S., 1.

Straw-Manitou Lakes area: Thomson, James E., 1.

Stull Lake area: Satterly, 3.

Sturgeon River area: Tanton, 5.

Sturgeon River-Beardmore sec.: Laird, 10.

Sudbury dist.: Burrows, 3; Coleman, 1; Collins, W. H., 5, 7; Eve, 2; Mawdsley, 5; Moore, E. S., 10; Nicholls, 1;

Phemister, 3; Thomson, R., 1; Yates, 1; Anonymous, 149.

Sultana gold mine: Cross, J. G., 1.

Superior Junction-Sturgeon Lake area: Horwood, 10.

Swayze gold area: Laird, 9; Rickaby, 2, 3, 4.

Sylvania ss.: Dyer, W. S., 5.

Talcum, Madoc: Wilson, M. E., 7.

Tashota-Sturgeon River area: Flaherty, 2.

Ontario—Continued.

Economic geology—Continued.

- Telluride ores: Thomson, J. Ellis, 13, 15.
 Three Duck Lakes area: Laird, 4.
 Tinstone, Eagle Lake: Burwash, 11.
 Titaniferous magnetite: Hurst, 7.
 Uchi Lake area: Bateman, J. D., 1; Thomson, James E., 16.
 Uchi-Slate Lake areas: Bateman, J. D., 1.
 Veln fm., Porcupine: Hurst, 10; Reid, J. A., 3.
 Vipond gold mine: Dougherty, 2, 3.
 West Shiningtree area: Laird, 9.
 Wilberforce radium: Spence, 2, 4.
 Woman River dist.: Bannerman, 2.

Historical geology.

- Abram Lake conglom.: Pettijohn, 5.
 Afton-Scholes area: Moore, E. S., 16, 18.
 Argosy mine: Horwood, 9, 12.
 Ashigami Lake area: Fairbairn, 15.
 Bentonite, Collingwood: Maddox, 4.
 Birch Lake batholith: Tolman, C., 1.
 Birch-Springpole Lakes area: Harding, 3; Anonymous, 121.
 Black River group: Young, F. P., Jr., 1.
 Block Creek area: Jolliffe, F. J., 1.
 Blue lms., Hastings Co.: Wilson, M. E., 10.
 Borings: Maddox, 3.
 Burntbush River area: Thomson, R., 4.
 Calumet ls.: Osborne, 31.
 Canadian Shield: Wilson, M. E., 13; Wright, 21.
 Carroll Lake sheet: Canada, G. S., 1.
 Casummit Lake area: Horwood, 12.
 Cat-River-Kawinogans Lake area: Harding, W. D., 2.
 Chert, Lockport, Onondaga fms.: Laird, 6.
 Claire River area: Wilson, M. E., 11.
 Cobalt: Thomson, J. Ellis, 4.
 Cobourg, Ord.: Sproule, 1.
 Copper Cliff sheet: Canada G. S., 1.
 Cornwall area: Wilson, A. E., 3.
 Cow River area: Canada G. S., 1.
 Crow River area: Thomson, James E., 15.
 Darkwater mine area: Horwood, 11.
 Deer Lake sheet: Canada G. S., 1.
 Delamere sheet: Quirke, 5.
 Devonian: Warthin, 10.
 Devonian fossil zones: Fritz, 9.
 Dore ser.: Cooke, H. C., 25.
 East Bay, Minnitiaki Lake: Pettijohn, 9.
 Eastern Ontario: Harkness, 6.
 Eramosa fm., Ontario Pen.: Shaw, E. W., 2.
 Erosional intervals, Ottawa: Wilson, A. E., 7.
 Espanola sheet: Canada G. S., 1.
 Favorable Lake area: Bateman, J. D., 3.
 Favorable Lake-Sandy Lake area: Bateman, J. D., 3; Hurst, 4.
 Fire clay, Moose River Basin: Dyer, 13.
 Fort Hope gold area: Burwash, E. M. J., 1.
 French River area: Quirke, 2.

Ontario—Continued.

Historical geology—Continued.

- Geneva Lake dist.: Tuck, 2.
 Gold areas: Kindie, E. D., 1; Moore, E. S., 16; Spearman, 3; Thomson, James E., 7, 9, 10, 14.
 Grenville ser.: Bain, 20; Goodwin, W. M., 1; Harding, W. D., 1.
 Guelph fm.: Harkness, 5; Shaw, E. W., 2.
 Hamilton corals: Warthin, 7.
 Hearst-Kapuskasing area: Canada G. S., 1.
 Hematite deposits, Steeprock Lake: Bartley, 1.
 Heron Bay-White Lake area: Thomson, James E., 3.
 Hollinger gold mine: Ringsleben, 1.
 Horwood Lake area: Harding, 4; Laird, 8.
 Huronian complex: Quirke, 7.
 Huronian, disappearance: Quirke, 3.
 Ignace sheet: Canada G. S., 1.
 Intrusions, Maisonneville Tp.: Derry, 1.
 Jellico-Sturgeon River area: Bruce, 21.
 Kashabowie Lake area: Perdue, 1.
 Keefer-Eldorado area: Harding, 5.
 Keewatin-Timiskaming boundary: Moore, E. S., 5.
 Keezhik-Miminska Lakes area: Prest, 1.
 Kenora g. map: Tanton, 4.
 Key Harbour map: Quirke, 4.
 Lake Huron map: Canada G. S., 1; Collins, W. H., 3.
 Lake Iroquois: Coleman, 9.
 Lake Nipigon area: Bruce, 26; Canada G. S., 1.
 Lake Ontario: Coleman, 10.
 Lake of the Woods: Thomson, James E., 11.
 Lake Shore area: Robson, W. T., 1.
 Lake Superior area: Leith, 10; Sandberg, 2.
 Lava flows, Lake Superior dist.: Sandberg, 2.
 Lebel, Tp.: Dyer, 22.
 Limestones: Goudge, 5.
 Little Long Lac gold area: Bruce, 16, 20, 22, 24; Canada G. S., 1.
 Little Long Lac-Jellico area: Bruce, 20.
 Lochalsh-Missinaibi area: Burwash, 9.
 Long Lake area: Fairbairn, 11.
 Loon Lake pluton: Cloos, 8.
 McIntyre mine, Porcupine area: Langford, 4.
 Maisonneville Tp.: Derry, 1.
 Makwa-Churchill area: Laird, 5.
 Manitoba-Ontario boundary: Derry, 3.
 Manitoulin ls.: Canada G. S., 1; Williams, M. Y., 11, 14.
 Martin-Bird area, Hearst Tp.: Dyer, 21.
 Matachewan-Kenogami area: Dyer, 20.
 Michipicoten gold area: Froberg, 3, 4.
 Michipicoten-Missinaibi area: Burwash, 8.
 Mine Centre area: Canada G. S., 1.
 Mines and min. res.: Ontario Dept. Mines, 1.

Ontario—Continued.

Historical geology—Continued.

- Moose River Basin: Dyer, 12.
 Natural gas fields: Harkness, 4.
 Northern Ontario: Rickaby, 6.
 North Spirit Lake area: Bateman, J. D., 2.
 Obonga-Kashishibeg area: Kidd, 4.
 Onaman area: Moorhouse, 1.
 Opeepeesway Lake area: Laird, 7.
 Ordovician: Caley, 1; Kay, G. M., 22; Maddox, 5; Okulitch, 18; Wilson, A. E., 6.
 Ottawa dist.: Wilson, M. E., 2.
 Ottawa lowlands: Wilson, A. E., 10.
 Ottawa sheet: Canada G. S., 1.
 Pigwachuan Lake area: Macdonald, R. D., 1.
 Paleozoic, Albany River: Dyer, 6.
 Pamela mbr., Black River fm.: Wilson, A. E., 4.
 Panache sheet: Collins, W. H., 4.
 Papaonga River area: Canada G. S., 1; Wright, W. I., 1.
 Pashkokogan-Mishekow area: Dyer, 16.
 Pickle Crow area: Bothwell, 1; Thomson, James E., 13.
 Pigeon River area: Canada G. S., 1.
 Porcupine area: Hurst, 10, 11.
 Port Huron moraines: Taylor, 13.
 Pre-Cambrian: Derry, 10; Kranck, 1; Lawson, 1; Rama Rao, B., 1.
 Quetico sheet: Canada G. S., 1.
 Rainy River dist.: Hawley, 4.
 Ramore area: Moore, E. S., 17.
 Red Lake area: Bruce, 14; Hurst, 12.
 Renfrew Co.: Freeman, B. C., 4.
 Ridout sheet: Thompson, J. Ellis, 1.
 Rowan-Straw Lake area: Thomson, James E., 8.
 Rush Lake area: Bannerman, 3; Canada G. S., 1.
 Sachigo River area: Meen, 6.
 Saganaga granite: Grout, F. F., 2, 18.
 Sandy Lake area: Satterly, 4.
 Savant Lake area: Rittenhouse, 3.
 Schreiber area: Bartley, 2; Harcourt, 4.
 Seine-Coutchiching problem: Gill, J. E., 2; Merritt, P. L., 2.
 Shabumeni-Birch Lakes area: Furse, 3.
 Shebandowan area: Canada G. S., 1.
 Shoal Lake area: Thomson, James E., 12.
 Siderite, Grand Rapids: Dyer, 14.
 Silurian: Cumings, 6, 7.
 Sioux Lookout area: Hurst, 9.
 South Onaman area: Moorhouse, 3.
 Strathy Tp.: Savage, W. S., 1.
 Straw-Manitou Lakes area: Thomson, James E., 5.
 Stull Lake area: Canada G. S., 1; Satterly, 3.
 Sturgeon River area: Canada G. S., 1; Laird, 10; Tanton, 5.

Ontario—Continued.

Historical geology—Continued.

- Sudbury nickel dist.: Burrows, 3; Collins, 7; Cooke, H. C., 27; Lausen, 3; Moore, E. S., 10; Phemister, 1, 3; Yates, 1; Anonymous, 149.
 Superior Junction-Sturgeon Lake area: Horwood, 10.
 Swayze area: Laird, 9; Rickaby, 3, 4.
 Syenites, Coldwell area: Thomson, James E., 6.
 Tashota-Sturgeon River area: Flaherty, 2.
 Thunder Bay area: Canada G. S., 1.
 Thunder Lake area: Pettijohn, 15.
 Trenton group: Kay, G. M., 19.
 Uchi Lake area: Thomson, James E., 16.
 Uchi-Slate Lakes area: Bateman, J. D., 1.
 Uraninites, age: Alter, 1; Khlopov, 1.
 Vermilion Tp.: Pettijohn, 7.
 Wilberforce uraninite, age: Alter, 1.

Mineralogy.

- Anthraxolite: Ellsworth, 9.
 Aplites in cobalt-silver ores: Bastin, 8.
 Argentite: Walker, T. L., 3.
 Beach sand mineral concentrates: Trainer, D. W., Jr., 1.
 Beryl-pegmatite dikes: Freeman, B. C., 9.
 Birch-Springpole Lakes area: Anonymous, 121.
 Calcite crystals, Godfrey: Parsons, A. L., 15.
 Cancrinite: Meen, 8.
 Celestite: Fairbairn, W. M., 1.
 Cenosite: Graham, R. P. D., 1.
 Cobalt ores: Thomson, J. Ellis, 4.
 Cross Lake ores: Thomson, J. Ellis, 9.
 Crow River area: Thomson, James E., 15.
 Cubanite: Peacock, 11.
 Cyrtolite: Muench, 3, 5.
 Echellite, nonexistence: Bowen, 6.
 Feldspar twinning: Chapman, W. M., 1.
 Fluorescent, phosphorescent minerals: Shaw, H. L., 1.
 Fluorite: Brown, W. L., 1.
 Fluorspar, radioactive: Hess, F. L., 4.
 Gadolinite: Ellsworth, H. V., 6.
 Gold: Bruce, 26; Horwood, 7; Mather, W. B., 1.
 Grenville-Potsdam: Harding, W. D., 1.
 Hackmanite: Lee, S. O. I., 1.
 Heavy minerals, granites: Bruce, 15.
 Heavy minerals in ss.: Fraser, F. J., 4.
 Hematite: Bartley, 1.
 Hornblende: Parsons, A. L., 4.
 Horwood Lake area: Harding, 4.
 Interpenetration twins on gypsum: Parsons, 12.
 Jellico-Sturgeon River sec.: Bruce, 21.
 Keefer-Eldorado area: Harding, 5.
 Kirkland Lake gold: Brenneman, 1.
 Little Long Lac-Sturgeon River areas: Thomson, J. Ellis, 14.

Ontario—Continued.

Mineralogy—Continued.

- Metallic minerals, Ashley mine: Thomson, J. Ellis, 8.
 Michipicoten gold: Froberg, 3.
 Miller Lake O'Brien mine: Thomson, J. Ellis, 11.
 Mines, minerals res.: Ontario Dept. Mines, 1.
 Monazite: Ellsworth, H. V., 5.
 Nickel, Sudbury: Coleman, 1; Collins, 7; Phemister, 1, 3; Yates, 1.
 Nickel-cobalt-native silver ore: Bastin, 18.
 Nickeliferous pyrite: Thomson, J. Ellis, 19.
 Ore deposition: Dadson, 2, 4.
 Ore minerals: Thomson, J. Ellis, 18.
 Pegmatite minerals: Spence, 5.
 Perthite: Goldich, 4.
 Plagioclase in granite: Walker, T. L., 9.
 Porphyry, quartz diabase: Burwash, 3.
 Potential ser., Timiskaming dist.: Dadson, 3.
 Pyroaurite: Ellsworth, 11.
 Pyrrhotite-cubanite-chalcopyrite intergrowth: Newhouse, 5.
 Rammelsbergite: Peacock, 19.
 Renfrew Co.: Freeman, B. C., 4.
 Ribbed concretions: Walker, T. L., 10.
 Riebeckite: Froberg, 4; Hawley, 12.
 Sandy Lake area: Satterly, 4.
 Silver: Walker, T. L., 3.
 Stephanite: Walker, T. L., 3.
 Sudbury nickel: Coleman, 1; Collins, 7; Phemister, 1, 3; Yates, 1.
 Syenites: Quirke, 13.
 Tellurides: Thomson, J. Ellis, 7, 13, 15.
 Thomsonite: Combs, 1; Walker, T. L., 8.
 Thucolite: Spence, 6.
 Tinstone: Burwash, 11.
 Tourmaline: Harcourt, 1.
 Twin lamellae, dol.: Parsons, 8.
 Twinned beryl: Parsons, 11.
 Uraninite: Alter, 2; Ellsworth, H. V., 3; Parsons, 9.
 Vein fm., Porcupine: Hurst, 10.
 Wire gold, Porcupine: Burrows, 1.
 Zircon: Parsons, 7, 10.

Paleontology.

- Amplexopora: Fritz, 1.
 Aparcites: Fritz, 11.
 Beckmantown, Black River: Wilson, A. E., 5.
 Bryozoa: McNair, 1, 2.
 Cephalopoda: Foerste, 1, 9, 18, 19, 29.
 Cobourg. Ord.: Sproule, 1.
 Conodonts: Branson, E. B., 17; Stauffer, 19.
 Cornwall, Ord.: Wilson, A. E., 3.
 Crinoids, Hamilton: Goldring, 9.
 Devonian fossil zones: Fritz, 9.
 Endodiscosorus: Teichert, 2.
 Eramosa fm.: Shaw, E. W., 2.
 Fauna, Cataract fm.: Johnson, H., 2.
 Fletcheria: Okulitch, 10.

Ontario—Continued.

Paleontology—Continued.

- Guelph fm.: Shaw, E. W., 2.
 Homalophyllum: Stewart, 8.
 Lichenaria: Okulitch, 17.
 Mollusca, interglacial: Baker, F. C., 7.
 Multisolenia: Fritz, 5, 10.
 Ordovician: Caley, 1; Okulitch, 18.
 Ostracoda: Coryell, 14; Kay, G. M., 12; Turner, M. C., 1.
 Paleocyclidae: Bassler, 25.
 Pollen analysis, peat bogs: Janson, 1.
 Polychaeta: Stauffer, 22.
 Valvata: La Rocque, 1.
 Wood, Dev., Lake Huron: Russell, J. W., 1.
 Zitteloceras: Fritz, 1.
Petrology.
 Afton-Scholes area: Moore, E. S., 18.
 Alexoite: Walker, T. L., 4.
 Beach sands, minerals: Trainer, D. W., Jr., 1.
 Birch Lake batholith: Tolman, C., 1.
 Blue Mtn. intrusive: Keith, M. L., 1, 4.
 Burntbrush River: Thomson, R., 4.
 Chert, Lockport, Onondaga fms.: Laird, 6.
 Claire River syncline: Fairbairn, 5.
 Diorite: Freeman, B. C., 2.
 Dore ser.: Cooke, H. C., 25.
 Egan Chute nepheline: Osborne, 5.
 Favorable Lake area: Bateman, J. D., 3.
 Feldspar twinning: Chapman, W. M., 1.
 French River area: Quirke, 2.
 Gabbro, Frood mine: Freeman, B. C., 3.
 Granite: Brøgger, 1; Cram, 4; Grout, 2; Osborne, 4.
 Grenville lms.: Bruce, 25; Osborne, 7.
 Heavy minerals, Ord. sediments: Derry, 7, 8.
 Intrusions, Maisonville Tp.: Derry, 1.
 Intrusives, Bancroft: Chayes, 1.
 Jellico Sturgeon River sec.: Bruce, 21.
 Killarney intrusives: Quirke, 21.
 Killarney contact zone: Quirke, 18-a.
 Killarney rocks: Jones, W. A., 1.
 Lake of the Woods area: Thomson, James E., 11.
 Little Long Lac area: Bruce, 16.
 Lochalsh-Missinaibi area: Burwash, 9.
 Magnetic differentiation, Sudbury: Walker, 15.
 Matachewan-Kenogami area: Dyer, 20.
 Michipicoten gold deposits: Froberg, 3.
 Nepheline syenites: Davis, N. B., 1; Quirk, 13.
 Pagwachuan Lake area: Macdonald, R. D., 1.
 Pillow lavas, origin: Moore, E. S., 8.
 Quartz, Okanagan dist.: Walker, 16.
 Quartz-olivine gabbro: Freeman, B. C., 3.
 Ramore area: Moore, E. S., 17.
 Rowan-Straw Lakes area: Thomson, James E., 8.
 Saganaga granite: Grout, F. F., 2.

Ontario—Continued.

Petrology—Continued.

- Savant Lake area: Rittenhouse, 3.
- Schist-granite transition zone: Osborne, 4.
- Schreiber area: Harcourt, 4.
- Shoal Lake gold area: Thomson, James E., 12.
- Slate, varved: Pettijohn, 8.
- South Onaman area: Moorhouse, 3.
- Sturgeon River-Beardmore sec.: Laird, 10.
- Sudburite: Thomson, R., 2.
- Sudbury irruptive: Phemister, 1.
- Sudbury nickel field: Buddington, 10; Burrows, 3; Collins, 7; Phemister, 1; Thomson, R., 1, 3.
- Syenites: Davis, N. B., 1; Quirke, 13; Thomson, James E., 6.
- Thunder Lake area: Pettijohn, 15.
- Vesicular carbonaceous sediments: Thomson, James E., 17.
- Xenoliths, Sudbury gabbro: Jones, W. A., 2.

Physical geology.

- Afton-Scholes area: Moore, E. S., 18.
- Anhydrite, McIntyre mine: Langford, 3.
- Argosy mine area: Horwood, 12.
- Ashigami Lake area: Fairbairn, 15.
- Brch-Springpole Lakes area: Harding, 8.
- Blue Mtn. intrusive: Keith, M. L., 1, 4.
- Burntbush River area: Thomson, R., 4.
- Canadian Shield mining dists.: Wright, 21.
- Casummit Lake area: Horwood, 12.
- Cat River-Kawinogans Lake area: Harding, W. D., 2.
- Claire River syncline: Fairbairn, 5.
- Crow River area: Thomson, James E., 15.
- Cutler batholith: Quirke, 18-b.
- Cylindrical structure in ss.: Hawley, 11.
- Dore ser. Michipicoten dist.: Cooke, H. C., 25.
- Earthquake, 11/1/36: Hodgson, 12.
- East Bay, Minnitaki Lake: Pettijohn, 9.
- Elongation, deformed rocks: Fairbairn, W. M., 1.
- Erosional intervals, Ottawa: Wilson, A. E., 7.
- Favorable Lake area: Bateman, J. D., 3.
- Fossil quick sands: Hart, G., 1.
- Gold areas: Bruce, 26; Horwood, 9; Ringsleben, 1; Spearman, 3.
- Granite contact: Horwood, 1.
- Granite masses: Derry, 4.
- Grenville lms., quartzites: Bruce, 25.
- Hollinger gold mine: Ringsleben, 1.
- Horwood Lake area: Laird, 8.
- Intrusives, acid, variation: Bruce, 12.
- Intrusives, Bancroft area: Chayes, 1.
- Keshik-Miminiska Lakes area: Prest, 1.
- Killarney contact zone: Quirke, 18-a.
- Lake of the Woods area: Thomson, James E., 11.
- Lake Shore area: Robson, 1.

Ontario—Continued.

Physical geology—Continued.

- Lebel Tp.: Dyer, 22.
- Little Long Lac area: Bruce, 16, 22, 24.
- Long Lake area: Fairbairn, 11.
- Lookout Is. metamorphism: Quirke, 18-c.
- Martin-Bird mines: Dyer, 21.
- Matachewan-Kenogami area: Dyer, 20.
- Michipicoten area: Froberg, 3.
- Michipicoten-Missinabi area: Burwash, 8.
- Mongowin Tp. area: Rickaby, 5.
- North Spirit Lake area: Bateman, J. D., 2.
- Opeepeesway Lake area: Laird, 7.
- Ottawa-Bonnechere graben: Kay, G. M., 21.
- Pagwachuan Lake area: Macdonald, R. D., 1.
- Pickle Crow mine: Bothwell, 1; Thomson, James E., 13.
- Point Pelee, Lake Erie, erosion: Kindle, 20.
- Porcupine area: Hurst, 10, 11.
- Pre-Cambrian structure: Derry, 10.
- Ramore area: Moore, E. S., 17.
- Ripple marks, Perth: Wilson, M. E., 4.
- Rowan-Straw Lake area: Thomson, James E., 8.
- Saganaga granite batholith: Grout, 18.
- Sand fall: Lloyd, H., 1.
- Sandy Lake area: Satterly, 4.
- Savant Lake area: Rittenhouse, 3.
- Schreiber area: Bartley, 2; Harcourt, 4.
- South Onaman area: Moorhouse, 3.
- Steepprock Lake area: Bartley, 1.
- Stocks, auriferous veins: Emmons, W. H., 10.
- Straw-Manitou Lakes area: Thomson, James E., 5.
- Structure, NE. Ontario: Kay, G. M., 20-b.
- Stull Lake area: Satterly, 3.
- Sturgeon River area: Tanton, 5.
- Sturgeon River-Beardmore area: Laird, 10.
- Sudbury nickel dist.: Burrows, 3; Collins, 7; Cooke, H. C., 27; Fenner, 12; Phemister, 1; Reynolds, D. L., 1; Thomson, R., 1; Yates, 1; Anonymous, 149.
- Tashota-Sturgeon River dist.: Flaherty, 2.
- Thunder Lake area: Pettijohn, 15.
- Uchi Lake area: Thomson, James E., 16.
- Vein fm., Porcupine: Hurst, 10; Reid, J. A., 3.
- Vermillion Tp.: Pettijohn, 7.

Physiographic geology.

- Algonquin beaches, Georgian Bay: Stanley, 4, 5, 6.
- Argosy mine area: Horwood, 12.
- Beaches, Algonquin, Georgian Bay: Stanley, 4, 5, 6.

Ontario—Continued.

Physiographic geology—Continued.

Birch-Springpole Lakes area: Harding, W. D., 3.

Casummit Lake area: Horwood, 12.

Cat River-Kawinogans Lake area: Harding, W. D., 2.

Clays, surface, origin: Wright, 17.

Correlations, Huron-Erie basins: Leverett, 24.

Erratic, Perth: Wilson, M. E., 9.

Esker, Tweed: Wilson, M. E., 6.

Frost circles: Williams, M. Y., 9.

Glacial lake stages, E. Lake Ontario: Baker, M. B., 1.

Glacial Lake Ponask: Satterly, 2.

Glacial Lake Sachigo: Satterly, 2.

Horwood Lake area: Harding, E. D., 4.

Jellico-Sturgeon River sec.: Bruce, 21.

Keezhik-Mimminiska Lakes area: Prest, 1.

Lake Iroquois: Coleman, 9.

Lake Ontario, N. shore: Coleman, 10.

Lake Ponask: Satterly, 2.

Lake Sachigo: Satterly, 2.

Lake Superior area: Merrill, J. A., 1.

Little Long Lac area: Bruce, 16.

Matachewan-Kenogami area: Dyer, 20.

Moraines, Toronto area: Taylor, 11.

Northern Ontario: Rickaby, 6.

North Spirit Lake area: Bateman, J. D., 2.

Pagwachuan Lake area: Macdonald, R. D., 1.

Pelee Is., Lake Erie: Kindle, 34.

Pleistocene, Toronto area: Coleman, 5.

Port Huron moraines: Taylor, 13.

Potholes, Cloche Mts.: Stanley, G. M., 1.

Pre-Cambrian structures: Derry, 10.

Roche moutonneés, Kaladar: Wilson, M. E., 8.

Savant Lake area: Rittenhouse, 3.

Schreiber area: Bartley, 2.

Shorelines, abandoned, Georgian Bay: Stanley, 7.

South Onaman area: Moorhouse, 3.

Stull Lake area: Satterly, 3.

Varved clays: Burwash, 10; Rittenhouse, 2.

Varves, Toronto area: Coleman, 2.

Watercourses near French River, origin: Quirke, 12.

Underground water.

Pelee Is., Lake Erie: Kindle, 34.

Oolites.

Formation: Hess, F. L., 1.

Gas bubbles as nuclei for: Eckel, 13.

Great Salt Lake, Utah: Eardley, 11; Mathews, A. A. L., 3.

Missouri, Holton Cave: Keller, W. D., 8.

Origin: Davidson, S. C., 1.

Secondary: Swartzlow, 1.

Utah, Green River fm.: Schoff, 1.

Oolitic lms., hydrolitic dissociation: Ger-
mann, F. E. E., 2.

Opal.

California: Anderson, C. A., 1, 4; Lewis, W. S., 1; Swartzlow, 9.

Colorado: Minor, W. C., 2; Seaman, D. M., 3.

Columbia River basalt: Fernquist, 1.

Fluorescence: Dake, 11.

General: Blank, 3; Randolph, 9; Shepherd, 4; Taliaferro, 12.

Geology: Hart, G., 1.

Georgia, hyalite: Chapman, J. R., 1.

Idaho: Olson, B. H., 1.

Morgan gem coll.: Whitlock, 5.

Nevada, Virgin Valley: Dake, H. C., 3; Foster, M., 1.

Oregon: Melhase, 20, 22; Renton, 3.

United States Nat. Mus. coll.: Foshag, 10.

Utah: Alexander, A. E., 8.

Optical mineralogy, elements: Winchell, A. N., 1.

Opemiska dist., Quebec: Moehlman, 1; Tolman, 7.

Ophiuroidea.

Amphiophiura, Miss.: Berry, C. T., 10.

Brittle-star, Calif.: Merriam, C. W., 2.

Ordovician. See also Paleontology, Ordovician.

Alabama: Johnston, W. D., Jr., 6; Jones, W. B., 16.

Alaska: Buddington, 1; Mertie, 4, 10, 13, 14, 16; Smith, P. S., 12.

Alberta: Allan, 7; Hake, 2; Raymond, 4.

Antillean-Caribbean region: Schuchert, 31.

Appalachia: Nelson, 6.

Appalachian Plateau, Mississippi River valley: Butts, 12.

Arctic America: Benthams, 2; Foerste, 3; Kindle, 40; Teichert, 12.

Arizona: Butler, 18, 19; Roe, H., 1; Stoyanow, 5.

Arkansas: Croneis, 2; Decker, 11; Giles, 1; Kans. G. Soc., 6; McKnight, 2; Miser, 1.

Base of, Canadian Rockies: Raymond, 5.

Beloit lms., Wis., Iowa: Keyes, 348.

Bentonites: Rosenkrans, 5; Whitcomb, 2, 5.

Bighorn fm. correls.: Miller, A. K., 2.

Bradford field, Pa.-N. Y.: Fettke, 9, 11.

British Columbia: Evans, C. S., 4.

California: Hazzard, 7; Hopper, 3;

Noble, L. F., 3; Anonymous, 60.

Canada: Alcock, 13; Cox, 3; Goodman, 4; Hume, 34; Kindle, 40; Teichert,

12; Weeks, L. J., 5.

Canadian system: Ashley, 30.

Chaleur Bay sec., Canada: Alcock, 13.

Champaign Valley, N. Y.-Vt.: Rodgers, 2.

Charette lms., Mo.-Iowa: Keyes, 341.

Cincinnati arch devel.: McFarlan, 21.

Clays, fire, in U. S.: Chelikowsky, 1.

Ordovician—Continued.

- Colorado: Behre, 10, 32; Brainerd, 3; Burbank, W. S., 4, 16; Cross, C. W., 2; Kans. G. Soc., 11; Kessler, F. C., 1; Lovering, 4, 14; Rohlfing, 1; Singewald, Q. D., 1, 10; Ulrich, 32; Vanderwilt, 8, 11; Van Tine, 1.
- Connecticut: Cook, T. A., 1.
- Correlations: Foerste, 18; Ulrich, E. O., 4; Whitcomb, 2.
- Decorah shale: Stauffer, 14.
- Distribution, thickness: Ver Wiebe, 6.
- Dubuque fm.: Kay, G. M., 16.
- Eastern New York-W. New England: Longwell, 14.
- Ellenberger lms., Tex.: Dake, C. L., 2.
- Fernvale corals.: Shideler, 18.
- Frederick lms., Md.: Keyes, 343.
- Galena dol., Mississippi Valley: Kay, G. M., 14.
- Galena fm., base: Kay, G. M., 8.
- Galena lms.: Keyes, 119.
- Gaspé, S. E.: Kindle, C. H., 3.
- Georgla, g. map: Georgia G. S., 1.
- Gratz mbr., Cynthiana fm., Ky.: Wolford, 6.
- Great Britain and America: Field, R. M., 2.
- Greenland: Bentham, 2; Büttler, 3; Koch, L., 2, 6, 10, 11, 12, 13; Moos, von, 1; Odell, 5; Oepik, 1; Poulsen, 1, 7; Teichert, 3, 8, 14, 16; Troedson, 2; Wegmann, 8.
- Guidebook, Pa. geologists conf., 1938: Bevan, 34.
- Harding ss., Colo.: Kirk, 8.
- Hounsfield bentonite: Kay, G. M., 6, 7.
- Idaho: Mansfield, G. R., 2; Ross, C. P., 21, 22, 31; Umpleby, 1.
- Illinois: Bell, 28; Bretz, 10; Cady, 8; Ekblaw, 15; Fisher, 16; Greger, 9; Payne, J. N., 1; Wanless, 1; Weller, J. M., 24, 28; Weller, S., 3.
- Illinois Basin field: Moulton, 4; Weller, 25.
- Illinois-Missouri sec.: Kansas G. Soc., 12.
- Indiana: Esarey, 5; Logan, W. N., 2, 8; Shrock, 3, 5, 11.
- Iowa: Kay, G. M., 3; Thiel, 9; Trowbridge, 9.
- Jacksonburg lms., Pa.-N. J.: Miller, R. L., 2.
- Jordan ss. fauna: Sardeson, 14.
- Kansas: Bass, 9; Bunte, 1, 2; Dalrymple, 1; Kans. G. Soc., 11; Kidd, R. L., 1; Koester, 2; Landes, 28; McLellan, 1, 3; Ockerman, 3; Osborn, W. G., 2; Rutledge, 2; Ver Wiebe, 16, 22; Wilhelm, C. J., 1.
- Kentucky: Beckner, 1; Edson, 9; Freeman, L. B., 2; Jillson, 40; Knapp, 1; McFarlan, 11, 16, 17; Robinson, L. C., 4; Souder, 1; Twenhofel, 4; Welch, 1; Wesley, 1, 3; Wolford, 8.
- Lexington lms., synonym: Keyes, 79.
- Lower Ordovician: Kay, G. M., 24.

Ordovician—Continued.

- Lowlands S.-cent. and Ouachita provs.: Ruedemann, P., 3.
- Maine: Philbrick, 1; Ruedemann, 34.
- Manitoba: Stockwell, 7; Wickenden, 11; Wright, 13.
- Maquoketa sh.: Ladd, H. S., 1, 2.
- Maquoketa ser.: Keyes, 47.
- Marble belt, Vt.: Bain, G. W., 7.
- Maryland: Cloos, 14; Jonas, 11; Stose, 11, 16; Whitcomb, 7.
- Massachusetts, Taconic quad.: Prindle, 1.
- Maysville-Richmond boundary: Shideler, 13.
- Mexico: King, R. E., 5, 6.
- Michigan: Hake, 6; Hussey, 1; Newcombe, 9; Zavolco, 5.
- Minnesota: Clement, 1; Couser, 2; Graham, W. A. P., 7; Powell, L. H., 1; Sardeson, 15, 16, 22; Schwartz, 10; Stauffer, 8, 13; Thiel, 9, 14; Trowbridge, 8, 9; Anonymous, 199.
- Mississippi Valley: Bastin, 20; Kansas G. Soc., 8; Kay, G. M., 13; Workman, 7.
- Missouri: Bridge, 2; Condra, 12; Conselman, 1; Cordry, 1; Dake, C. L., 1; Farar, 2; Gleason, 2; Grawe, 2; Grohskopf, J. G., 2, 3, 4; Kans. G. Soc., 6; Keyes, 342; McQueen, 4, 6, 8.
- Mohawkian, Kans.: Kay, G. M., 2.
- Montana: Bevan, 3; Lammers, 2; Lovering, 1; Skeels, 1; Thom, 14; Wilson, C. W., Jr., 2.
- Murfreesboro lms., Mo.-Ark.: Ulrich, 34.
- Nebraska: Condra, 12, 14, 18, 19; Lugin, 4; Reed, E. C., 1.
- Nevada: Ferguson, 5; Kirk, 11; Westgate, 6.
- New Brunswick: Alcock, 18; Hayes, 7.
- Newfoundland: Bain, 18; Betz, 1; Cooper, J. R., 1, 2; Espensshade, 1; Foley, F. C., 1; George, P. W., 2; Hayes, 3; Heyl, 1, 2; Ingerson, 2; Schuchert, 28; Snelgrove, 2, 5; Twenhofel, 40.
- New Hampshire: Billings, 7, 9, 10, 13; Chapman, C. A., 1; Chapman, R. W., 2; Hadley, J. B., 1; Williams, C. R., 2.
- New Mexico: Dunham, 3; Keyes, 191; Lasky, 12; Spencer, A. C., 1; Talmage, 7; Winchester, 3.
- New Richmond ss., Wis.: Needham, 3.
- New York: Balk, 11; Berkey, 13; Buddington, 8; Chadwick, 15; Colony, 1; Goldring, 11; Hartnagel, 3; Kay, G. M., 10, 15, 18; Megathlin, 3; Newland, 10, 20; Pepper, 1; Prindle, 1; Reed, J. C., 5; Rodgers, 5; Ruedemann, 7, 28, 30, 40; Schuchert, 22; Swinnerton, 7; Torrey, P. D., 5, 8; Torrey, R. H., 1; Whitcomb, L., 11-a.

Ordovician—Continued.

- New York and Ontario, Black River group; Young, P. F., Jr., 1.
 North Am., Atlantic Coast: Boesch, H. H., 3.
 Cordillera and Caribbean areas: Waters, 12.
 Paleozoic: Waterschoot van der Gracht, van, 15.
 Structures: Schuchert, 57.
 Systems: Cooper, B. N., 5; Graubau, 5.
 Northwest Territories: Jolliffe, F. J., 3.
 Ohio: Bucher, 10, 15-a; Chappars, 3; Harper, J. L., 1; Lamborn, 3, 4; Rogers, J. K., 2; Shideler, 19; Stout, 18; Strete, 1; Ver Wiebe, 2; Wolford, 3.
 Oklahoma: Bass, 12; Boyd, W. B., 1; Brandenthaler, 1; Bridge, 6; Cram, 2; Decker, 6, 7, 11, 22, 26; Hendricks, 10; Hickock, 1; Hoffman, M. J., 1; Hyatt, 1; Ireland, 2, 4; Kans. G. Soc., 6; Kirk, C. T., 2; McClellan, 1; Markham, E. C., 1; Melton, 4; Millison, 1; Rau, 1; Sawyer, 1; Sheerar, 1; Teis, 1; Thomas, H. S., 1; Ulrich, 16; Weirich, 2, 4; Whiteside, 2, 3; Wrather, 1; Zavolco, 2, 3.
 Ontario: Caley, 1; Coleman, 10; Harkness, 5; Kay, G. M., 20-b, 22; Maddox, 5; Moore, E. S., 6; Okulitch, 18; Sproule, 1; Williams, M. Y., 14; Wilson, A. E., 3, 4, 6.
 Ozark Mts. area: Schottenlohr, 2.
 Paleozoic, lower: Ulrich, 18.
 Pennsylvania: Bascom, 1, 3, 6; Berkey, 12; Butts, 8, 10, 13; Cleaves, 1, 5; Detrick, 2; Foose, 1; Fraser, 11, 15; Gorman, J. P., 1; Hills, J. M., 1; Jonas, 2, 4, 9; Knopf, E. F. B., 3; Lohman, S. W., 4; Miller, B. L., 4, 7, 8, 13, 15, 17; Miller, R. L., 1, 4; Moyer, 1; Piper, 7; Rogers, R. D., Jr., 1; Rosenkrans, 2; Stose, G. W., 1, 8, 11, 12, 17, 21; Ward, F., 5; Whitcomb, 3, 7; Willard, 2, 49, 50, 51, 53, 54, 55, 57, 58, 60.
 Plattin, Kimmswick: Keyes, 128.
 Post-Keweenawan age by helium: Urry, 8.
 Prairie du Chien group: Powers, E. H., 1, 2, 3.
 Pre-Ordovician age by helium: Lane, 29.
 Prosser lms., Mo.: Keyes, 388.
 Quebec: Burton, F. R., 1; Clark, T. H., 2, 6, 10, 11; Cooke, H. C., 12, 18, 22; Crickmay, G. W., 2; Denis, 3; Faessler, 9, 22; Graham, R. P. D., 2; Henderson, J. F., 1; Jones, I. W., 2, 4, 6, 7, 8, 12, 14, 15; Kindle, 38; Laverdiere, 1, 4, 6; McGerrigle, 3, 4, 8, 9; Maddox, 5; Morin, 1; Northrop, 10; Okulitch, 4, 14; Osborne,

Ordovician—Continued.

- 29; Parks, 3, 4; Retty, 4; Schuchert, 9; Snider, 4; Tolman, 12; Twenhofel, 6, 31; Wilson, A. E., 8.
 Richmond fm.: Jones, J. A., 1.
 Rocky Mtn. area: Bartram, 10; Warren, P. S., 2.
 St. Peter fm.: Howell, J. V., 5; Jillson, 40; Lamar, 11.
 Silurian-Ordovician uncon., Pa.: Stose, 5.
 Simpson group, Okla.: Decker, 4.
 South Dakota: Connolly, 3; Gries, J. P., 1; Rothrock, 16.
 Southern Appalachians: Butts, 4.
 Southwestern U. S.: Effinger, 4.
 Stewartville fm.: Kay, G. M., 16.
 Sylvan, Polk Creek, Cason, Maquoketa shs.: Husband, 1.
 Taconic quad.: Prindle, 1.
 Tennessee: Bailey, W. F., 2; Bassler, 8; Born, 4, 5, 6, 10, 11; Hall, G. M., 7; Jewell, 1; Laurence, 1; Oder, 4; Piper, 3; Theis, 4; Wilson, C. W., Jr., 7, 12, 17, 18-a, 20.
 Terminology: Keyes, 40.
 Texas: Arick, 2; Cordry, 2; King, P. B., 7, 29; Kirk, 14; Lowman, 2; Sel-lards, 28, 36, 38.
 Trenton group: Kay, G. M., 19; Keyes, 146.
 United States, E.-cent.: Ballard, N., 1.
 Utah: Nolan, 3, 6.
 Vermont: Dale, T. N., 1; Doll, 2; Foyles, 1, 2; Keith, Ar., 1; Larrabee, 1; McGerrigle, 1; Perry, E. L., 1; Prindle, 1; Richardson, C. H., 2, 3, 4, 5, 6, 7; Schuchert, 27, 43.
 Virginia: Bates, R. L., 1, 3, 4; Bevan, 9; Butts, 5, 14; Cady, R. C., 4; Cooper, B. N., 1, 6, 7; Edmundson, 7; Jonas, 3; Kay, G. M., 15; Rosenkrans, 1, 4; Stose, 13; Woodward, 8, 11, 13.
 Washington: Culver, 6; Park, 9.
 West Virginia: Lafferty, 1; McCue, 1; Martens, 12; Price, P. H., 8-a, 14; Reeves, F., 5.
 Wisconsin: Bates, R. E., 4; Bays, 1; Behre, 14; Ekern, 1; Jones, J. A., 1; Raasch, 4; Sardeson, 22; Shrock, 14, 17; Thiel, 9; Trowbridge, 8, 9; Wannenmacher, 2.
 Wisconsin-Illinois lead-zinc dist.: Behre, 14.
 Wyoming: Fanshawe, 1; Horberg, 1; Jones, C. T., 2; Love, J. D., 1, 6; Stevens, E. H., 2; Wilson, C. W., Jr., 18.
 Ore-body zoning: Riley, L. B., 1.
 Ore deposits, origin. For ore deposits in general see Economic geology (general).
 Age relation of minerals: Bastin, 4.
 Alabama: Park, 4; Wiser, 5.

Ore deposits—Continued.

- Alaska: Buddington, 2; Mertie, 16; Reed, J. C., 3, 18.
- Aldermac ore, Quebec: Cooke, H. C., 7.
- Alkali sulphide solutions action on minerals: Lindner, 2.
- Alteration, pyrite to pyrrhotite: Stevens, R. E., 2.
- Arizona: Butler, 17, 18, 19, 20, 21; Fowler, 14; Garrett, S. K., 1; Gilluly, 20; Hernon, 1; Kuhn, 1; Peterson, N. P., 1, 2; Rasor, 2; Rubly, 1; Schmitt, 5; Schwartz, 25; Short, 6; Tenney, 1, 4; Anonymous, 179.
- Arkansas: McKnight, 2; Reed, J. C., 16; Stearn, 11.
- Asbestos, chrysotile: Hess, H. H., 5.
- Banding, assure veins: Shaub, 2.
- Barite, Va.: Edmundson, 2; Laurence, 3.
- Bauxite: Harder, 1.
- Bedding plane movements: Behre, 13.
- Beryl-molybdenite, Colo.: Landes, 19.
- Biochemical reduction, sulfate waters: Thiel, 1.
- Bornite-chalcocite intergrowth: Schwartz, G. M., 1, 28.
- Boxwork siderite: Trischka, 2.
- British Columbia: Cleveland, 1; Cockfield, 15, 16; Dolmage, 6; Ebbutt, 2; Goranson, E. A., 3; Gunning, 7; Hanson, 9, 12; Hedley, M. S., 1; Horwood, 8; Joralemon, 3; Kerr, F. A., 20, 22; Lang, A. H., 7; Nelson, H. E., 1; Schofield, 2; Sharpstone, David C., 1; Stevenson, J. S., 4; Warren, H. V., 9, 10; Wright, L. B., 5.
- California: Cloos, 10; Henderson, L. H., 2; Knaebel, 1; Johnston, W. D., 14; Kelley, 8, 10; Knopf, A., 1, 2; Moorhouse, 2; Schroter, 1, 2.
- Canada: Bichan, 1; Bruce, 17, 23; Dougherty, 4, 5; Royce, 2; Wright, L. B., 2.
- Carbonates in veins: Charlewood, 1; Platts, 1.
- Celestite by replacement: Morrison, R. B., 1.
- Chalcopyrite, hematite, pyrite, magnetite, relations: Guild, 3.
- Chalcopyrite, sphalerite: Buerger, N. W., 2.
- Chemical constituents, minor, ign. rocks: Harcourt, 2.
- Chromite: Fisher, L. W., 3; Ross, C. S., 3; Sampson, E., 2; Singewald, J. T., Jr., 4.
- Cobalt-nickel-bismuth-silver ores: Keil, 1.
- Colorado: Behre, 2, 6, 16, 21, 32; Buddington, 12; Burbank, W. S., 3, 4, 10; Butler, B. S., 3; Coulter, C. C., 1; Cross, C. W., 2; Eckel, 7; Fischer, R. P., 1; Goddard, E. N., 1, 2, 3, 5; Koschmann, 6; Loomis, F. B., Jr.,

Ore deposits—Continued.

- Colorado—Continued.
- 1; Loughlin, 9, 10, 11, 12, 14; Lovering, 6, 17, 20, 25, 30, 31; Moehlman, 6; Murray, C. R., 1; Singewald, Q. D., 3, 11; Vanderwilt, 9, 11; Wahlstrom, 4; Walker, S. M., 1; Wilkerson, 4, 5.
- Contact deposits, U. S.: Ranguin, 2.
- Copper: Anderson, A. L., 4; Bastin, 6; Bateman, A. M., 4; Beaton, 1; Butler, B. S., 1; Dolmage, 4; Donnay, 3; Fenner, 13; Finch, J. W., 4, 6; Kania, 4; Locke, 4; Molengraaff, G. J. H., 1; Nishio, 2; Page, L. R., 8; Papenfus, 1; Ransome, 7; Ross, C. S., 22, 23, 27; Schwartz, 7, 9, 12; Touwaide, 1.
- Covellite-chalcocite relationships: Bateman, A. M., 1, 3.
- Criteria, mineral age-relations: Knox, H. H., 1.
- Cuba: Brodermann, 1.
- Curacao, West Indies: Molengraaff, G. J. H., 1.
- Deuteric, term: Gillson, 3; Osborne, F. F., 1; Sederholm, 1.
- Diaschistic dikes and ore deposits: Spurr, 1.
- Diatomite, pumice, Oreg.: Moore, B. N., 5.
- Diatremes and ore pipes: Emmons, W. H., 13.
- Differentiation and deposits: Lane, A. C., 30; Lindgren, 8; Ross, C. S., 13.
- Diffusion in ore genesis: Duffell, 1; Whitman, 1.
- Diopside pegmatite in dol.: Watson, E. D., 2.
- Distribution of primary ores: Wernicke, 1.
- El Dorado ores, Northwest Territories: Kidd, 6.
- Emery, N. Y.: Gillson, 6.
- Enargite, Okla.: Ransome, A. L., 1.
- Epithermal base-metal deposits: Burbank, 9.
- Epithermal precious-metal deposits: Nolan, 4.
- Europe-N. Am. lead and zinc: Behre, 33.
- Ferrie-ferrous ratio, contact metam. deposits: Lasky, 8.
- Ferroalloys: Burchard, 7.
- Field study: Sales, 3.
- Fluorite: Morrison, R. B., 1.
- Fluorspar: Bastin, 2.
- Formation of: Bastin, 19.
- Fractures, ore-bearing, origin: Emmons, W. H., 8.
- Galena: Anderson, A. L., 6.
- Galena-sphalerite intergrowths: Tuck, 3.
- General: Bastin, 7; Boydell, 1; Butler, G. M., 4; Erich, 1; Fenner, 3; Fitzhugh, 1; Keyes, 7; Ray, J. C., 3; Ropes, 1; Ross, C. S., 17.

Ore deposits—Continued.

- Genesis and petrog. processes; Cullis, 1.
 Geologic factors, mine valuation: McLaughlin, 9.
 Georgia, Battle Branch gold mine: Park, 7.
 Gogebic iron dist., Mich.-Wis.: Atwater, 8, 5.
 Goethite, hematite, stability relations: Gruner, 9; Tunell, 1.
 Gold: Bell, L. V., 6; Bruce, 26; Connolly, 6; Dougherty, 2, 3; Ferguson, H. G., 2, 4; Fetzer, 1; Freise, 1; Froberg, 1; Frondel, 15; Graton, 13; McLaughlin, 8; Mather, W. B., 1; Milner, R. L., 1; Park, 7; Reid, J. A., 1.
 Hematite, magnetite, pyrite, chalcopyrite, relations: Guild, 3.
 History: Adams, F. D., 7.
 Hydrothermal deposits: McLaughlin, 5.
 Hydrothermal depth-zones: Graton, 4, 6.
 Hydrothermal solutions: Benedict, 1.
 Hypogene deposits: Butler, B. S., 2; Singewald, J. T., Jr., 9.
 Idaho: Anderson, A. L., 4, 5, 7, 18, 23; Bailey, H. D., 1; Dickey, F. H., 2; Lorain, 2; McConnel, 1; Reed, J. C., 14; Ross, C. P., 7, 31; Shenon, 16, 17, 18.
 Igneous rocks and minerals, correlates: Buddington, 7.
 Ilmenite in copper deposits: Greig, 2.
 Inclusions, dislocated, in veins: Douglas, C. B. E., 1.
 Influence of replaced rock: Butler, 7.
 Intergrowth, bornite, chalcopyrite: Schwartz, 3, 7.
 Iron: Aldrich, H. R., 1; Burchard, 5; Foreman, 1; Gruner, 8, 9, 12, 13, 28; Hawley, 9; Hayes, A. O., 1; Hewett, 3; Hickock, 5; Lake Superior Iron Ore Assoc., 1; Lasky, 5; Leith, C. K., 2; Moore, E. S., 4; Nishio, 1; Richarz, 4; Royce, 4, 5; Schwartz, 5; Singewald, J. T., Jr., 1; Zapffe, 3.
 Iron-manganese concretions: Hewett, 3.
 Jamesonite, sphalerite, tetrahedrite, oxidation: Anderson, F. M., 1.
 Kennecott ores, colloidal origin, Laskey, 3.
 Kentucky, magmatic ore dist.: Robinson, L. C., 5.
 Lake Superior region: Gruner, 28; Lake Superior Iron Ore Assoc., 1; Nishio, 2; Royce, 4, 5; Zapffe, 3.
 Lead ores, primary: Holmes, A., 5; Knopf, A., 15; Wells, R. C., 13.
 Lead-zinc deposits: Behre, 14, 23, 24, 25, 27, 30; Bell, J. M., 3; Fowler, G. M., 1, 2, 6, 10; Krieger, 2; McKnight, 1; Sales, 1; Scott, E. R., 1; Tuck, 2.

Ore deposits—Continued.

- Limonite: Blanchard, R., 1, 3; Boswell, 1; Newland, 13; Stone, J. B., 1.
 Liquid inclusions: Yuster, 1.
 Lodestone, genesis: Bandy, 1; Gruner, 6; Newhouse, 1.
 Magma and ore deposits: Osborne, 27.
 Magmatic differentiation: Bowen, 5.
 Magmatic segregations: Singewald, J. T., Jr., 10.
 Magnetite: Callaghan, 1; Davis, C. W., 3; Guild, 3; Merritt, 5; Moore, E. S., 13.
 Magnetite, hematite, pyrite, chalcopyrite, relations: Guild, 3.
 Maine, Blue Hill area: Gillson, 5.
 Manganese: Harper, M. F., 2; Hewett, 9; Holden, 3; Savage, W. S., 2.
 Manitoba: Baker, W. F., 1; Bruce, E. L., 2; Shepherd, F. D., 1; Stockwell, 9, 10, 11; Wright, 21.
 Massachusetts, Taconic limonites: Newland, 13.
 Mechanics of metasomatism: Bain, 15.
 Mesothermal gold deposits: Connolly, 6.
 Mesothermal silver-lead-zinc deposits: McKnight, 1.
 Metallization from basic magmas: Hullin, 3.
 Metals primordial segregation: De Lury, 28.
 Metasomatic replacement deposits: Ray, J. C., 1.
 Mexico: Bastin, 13; Flores, 7; Kelley, 3; Krieger, 6, 7, 9; Riley, L. B., 1; Santillán, 11; Schmitt, H., 2, 5; Singewald, Q. D., 12; Tenney, 5; Wandke, 2.
 Michigan: Broderick, T. M., 9, 10, 12; Calumet & Hecla Con. Copper Co., 1; Dickey, R. M., 2; Dutton, 5; Klein, 1; Mich. Acad. Sci., 3; Royce, 2; Swanson, 5.
 Microscopic exam. of ores: Erimesco, 1; Short, 3.
 Microscopic relations, magnetite, hematite, pyrite, chalcopyrite: Guild, 3.
 Mineral assoc., high-temperature: Buddington, 9; Butler, 14.
 Mineral deposits: Lindgren, 7.
 Mineral veins, origin: Behre, 17.
 Mineral zoning, Trias.: Newhouse, 8.
 Mineralization, primary, changes: Stočes, 2.
 Minerals and superheated water: Crowley, Arthur J., 1.
 Mining geology: Schmitt, 9.
 Minnesota: Royce, 2; Sandberg, 5; Stark, 2.
 Mississippi Valley region: Bastin, 20; Graton, 7.
 Missouri: Ball, S. H., 1; Buehler, 3; Meyer, C., 1; Rust, G. W., 1; Tarr, 14, 21, 24, 28.

Ore deposits—Continued.

- Molybdenite, Colo.: Staples, L. W., 1.
 Montana: Dickey, F. H., 2; Dyson, 3;
 Gibson, R., 1; Hart, L. H., 2; Jones,
 R. H. B., 1; Jones, V. E., 2; Lorain,
 1; Ray, J. C., 3; Sahinen, 4;
 Schafer, 3; Shenon, 12, 15; Spiroff,
 3.
 Muscovite: Gruner, 34.
 Nevada: Bateman, 5; Calkins, 3; Cal-
 laghan, 13; Cameron, E. N., 2;
 Campbell, D. F., 1; Ferguson, H. G.,
 1, 10; Kerr, P. F., 12, 17; Merritt,
 C. A., 2; Nolan, 9; Pennebaker, 1;
 Schrader, 6; Westgate, 6.
 Newfoundland: Espenshade, 1; George,
 P. W., 2; Newhouse, 4.
 New Hampshire, pegmatite dikes: Me-
 gathlin, 1.
 New Jersey, zinc ores: Bowen, W.
 C., 1.
 New Mexico: Dunham, 3; Krieger, 7;
 Landon, 2; Lasky, 12, 13, 14, 16;
 Schmitt, 5, 6, 10; Spencer, A. C., 1;
 Stott, 1; Vanderwilt, 12.
 New York: Alling, 11; Bryson, J. S., 2,
 4; Dyson, 1-a; Gallagher, 1; Mil-
 ler, W. J., 20; Newland, 13.
 Nickel: Bastin, 18; Freeman, B. C., 1.
 Nickel-cobalt-silver ore type: Bastin, 18.
 North America, copper deposits: Butler,
 16.
 Lead and zinc deposits: Sminnov, 1.
 Ore dists.: Billingsley, P., 5.
 North Carolina, gold: Bryson, 7.
 Northwest Territories: Furnival, 5;
 Hawley, 18; Kidd, 7; Ryan, J. P., 1.
 Nova Scotia, gold: Newhouse, 15.
 Occurrence of: Porter, C. A., 2.
 Oklahoma: Fowler, 6; Speer, J. H., 1;
 Williams, A. J., 1.
 Oklahoma-Kansas mining field: Fowler,
 6.
 Ontario: Bartley, 1; Bastin, 8; Bate-
 man, J. D., 3; Bothwell, 1; Bruce,
 24; Burrows, 3; Burwash, 6; Col-
 lins, 7; Corless, 1; Cormie, 1; Dad-
 son, 2, 4; Emmons, W. H., 10;
 Flaherty, 2; Horwood, 10, 11;
 Hurst, 10, 11; Kindie, E. D., 1;
 Langford, 3, 4; Moore, E. S., 15, 16;
 Osborne, F. F., 2; Reid, J. A., 3, 4;
 Robson, 1; Spearman, 3; Thomson,
 James E., 13, 14, 15, 16; Young,
 J. W., 1.
 Ontario-Quebec, pre-Camb. gold areas:
 Spearman, 3.
 Ore, location: Harvey, 1.
 Microscopic research: Haycock, 5.
 West U. S.: Anderson, J. C., 1; Locke,
 5.
 Ore and orogeny: Billingsley, P., 4.
 Ore and structure: Andrews, E. C., 1;
 Bichan, 2; Burbank, 8; Butler, 10;
 Newhouse, 3.
 Ore bodies, environment: Wisser, 4.
 Localization: Bruce, 18.

Ore deposits—Continued.

- Ore deposition: Porter, C. A., 1;
 Wandke, 1.
 Ore deposits, relation to structure: An-
 drews, E. C., 2; Bichan, 2; Bur-
 bank, 8; Butler, 10; Hullin, 1; New-
 house, 3.
 Zone of flowage: Andrews, E. C., 1.
 Ore from magmas or deeper: Graton, 12.
 Ore genesis and shoots: Hullin, 1.
 Ore mineral assoc.: Merwin, 1.
 Ore minerals, origin criteria: Schwartz,
 10.
 Ore shoots: Douglas, G. V., 1, 3; Hullin,
 1.
 Ore solutions chemistry: Schmedeman,
 1.
 Oregon: Callaghan, 10; Goodspeed, 7, 8,
 17; Hodge, 17; Oregon Dept. Geol-
 ogy, 1; Pratt, A. F., 1; Schuette,
 C. N., 5.
 Outcrops: Eby, J. H., 1.
 Oxides, manganese, and ground water:
 Hewett, 11.
 Paragenesis in valuing deposits: Stočas,
 1.
 Pegmatites: Landes, 23; Schaller, 15.
 Pennsylvania: Miller, B. L., 15; Staples,
 J. M., 1; Yaklish, 1.
 Physical-chemical factors: Ross, C. S.,
 12.
 Placers, west U. S.: Pardee, F. G., 5.
 Platinum, allied metals, Canada: O'Neill,
 3.
 Plumbojarosite, Okla.: Ransome, A. L.,
 1.
 Pneumatic processes: Fenner, 7.
 Porphyries and ore deposits: Singewald,
 Q. D., 9.
 Pressure zones and ore deposits: Wright,
 L. B., 1.
 Pseudo-eutectic textures: Lindgren, 2;
 Schwartz, 6.
 Pyrite, magnetite, hematite, chalcop-
 yrite, relations: Guild, 3.
 Pyrometamorphic deposits: Knopf, A.,
 6.
 Quebec: Backman, 1, 2; Bell, L. V., 12,
 14, 15, 16; Derry, 11; Gunning, 15;
 Gussow, 1; Hawley, 10; McGer-
 rigle, 5; Okulitch, 13; O'Neill, 4, 6;
 Osborne, 29, 30; Ross, S. H., 1; Stev-
 enson, J. S., 2; Suffel, 3; Wilson,
 H. S., 1; Wilson, M. E., 17.
 Quicksilver: Ross, C. P., 34; Schuette,
 C. N., 4; Vaupell, 1.
 Relations, ore deposits and batholiths:
 Emmons, W. H., 5.
 Replacements: Schouten, 1; Shaub, 4.
 Rhode Island, Copper Hill mine: Quinn,
 5.
 Rock-ore association: De Lury, 27.
 Rutile, Va.: Ross, C. S., 16.
 Saskatchewan: Alcock, 17; Cameron, A.
 E., 3; Cooke, H. C., 24.
 Schistose sulfide ores: Newhouse, 2.

Ore deposits—Continued.

- Secondary enrichment, Cananea, Mexico: Elsing, 1.
 Serpentinization: Chawner, 1; Hess, H. H., 5, 6.
 Silver: Anderson, 16; McKnight, 1.
 Solvents, organic acids on iron oxides: Harrar, 1.
 Solution flow, mineral fm.: Newhouse, 16.
 Source of metals: Sabsay, 1.
 Source of ore: Fletcher, A. R., 2.
 South Dakota, Black Hills: Gardner, E. D., 2; Tullis, 6; Wright, L. B., 3, 4.
 South Dakota-Wyoming, Black Hills gold: Wright, L. B., 4.
 Structural control of: Hulin, 1; Koerberlin, 1.
 Succession of minerals, temp. of fm.: Lindgren, 15.
 Sulfide ores: Emmons, W. H., 1; Gruner, 15; Kania, 3; Shenon, 3; Verhoo-gen, 3.
 Sulfide sols and copper: Kania, 3.
 Supergene cassiterite: Koerberlin, 2; Singewald, J. T., Jr., 6.
 Supergene enrichment: Emmons, W. H., 6.
 Supergene martite: Geijer, 1.
 Synthetic sulfide ore replacement: Ray, J. C., 2.
 Tectonic position, Rocky Mtn. ore dists.: Billingsley, P. R., 2, 3.
 Taylor's theory, petroleum-coal genesis: Gale, H. S., 1.
 Temperature of fm.: Boydell, 3.
 Tennessee, zinc: Currier, 3.
 Texas, brown iron: Eckel, 11.
 Textures, pseudo-eutectic: Anderson, 17.
 Theories of fm.: Cooke, H. C., 14.
 Thorium-uranium ratios and lead: Keevil, 3.
 Tri-State dist.: Fowler, 5, 7, 13; Ridge, 1; Tarr, 15.
 United States, copper, vanadium-uranium, silver deposits: Koerberlin, 3.
 United States, W., sed. ore deposits: Fischer, R. P., 2.
 Unsupported inclusions: Talmage, 2.
 Uranium, etc. sed. deposits: Hess, F. L., 6.
 Utah: Andrews, W. B., 1; Callaghan, 9, 11; Gilluly, 5; Johnson, E. S., 1; McEuen, 1; Nolan, 6; Stringham, 2; Wells, F. G., 10.
 Vanadium, etc., lead deposits: Newhouse, 10.
 Vein solutions: Berg, G., 1; Newhouse, 6.
 Vermont limonites: Newland, 13.
 Virginia: Brown, W. H., 3; Currier, 2, 3; Holden, 7; Kearfoot, 1; Park, 6.
 Volatiles, role in ore genesis: Weed, 2.
 Washington: Culver, 14; Richarz, 6.
 Waters, magmatic, meteoric: Lindgren, 12.

Ore deposits—Continued.

- Western States: Finch, J. W., 3.
 Wisconsin: Behre, 14, 23, 24, 25, 27, 30; Dickey, R. M., 4; Royce, 2; Scott, E. R., 1.
 Wisconsin-Illinois lead-zinc dist.: Behre, 14, 23, 24, 25, 27, 30; Scott, E. R., 1.
 Wyoming, Black Hills, gold: Wright, L. B., 3.
 Zinc: Palache, 1; Tarr, W. A., 3; Ulrich, 8.
 Zinc-lead ores: Behre, 14, 23, 24, 25, 27, 30; Bell, J. M., 3; Currier, 1, 3; Fowler, G. M., 1, 2, 6, 10; Krieger, P., 2; McKnight, 1; Sales, 1; Scott, E. R., 1; Tuck, 2.
 Zones, ore: Butler, G. M., 4.
 Zoning, hypogene in lodes: Emmons, W. H., 11.
 Ore deposits of the Western States: Graton, 9.
 Ore micr. research: Haycock, 5.
 Ore minerals, micr. study: Schwartz, 26.
 Ore shoots. See Economic geology (general); Ore deposits, origin.
 Ore solutions chemistry: Schmedeman, 1.
 Ore zones: Butler, G. M., 4.
 Oregon.
 Bibliography of geology: Hodge, 18.
 Biennial rept., 1st, 37-38: Strayer, 1.
 Bureau Mines rept. 21-22: Parks, H. M., 1.
 Geological excursion: Smith, W. D., 10.
 Lava cast forest: Alford, 1.
 Owyhee tunnel: Bryan, K., 3; Hines, 1; Smith, W. D., 2.
 Progress in geology since 1925: Hodge, 8.
 Spokane flood: Allison, 2.
 Areas described.
 Baker quad.: Gilluly, 16.
 Blue Creek dist.: Shenon, 6.
 Cascade Plateau prov.: Hodge, 22.
 Cascade Range: Callaghan, 10.
 Dalles region: Piper, 4.
 Deschutes River basin: Stearns, 7.
 Harney basin: Piper, 17.
 Humdinger mine: Shenon, 6.
 Keating copper dist.: Gilluly, 5.
 Northeastern Ore.: Oregon Dept. Geology, 1.
 Robert E. mine: Shenon, 6.
 Robertson mine: Shenon, 6.
 Steens Mtn. area: Fuller, 4.
 Sumpter quad.: Hewett, 5.
 Takilma-Waldo dist.: Shenon, 6.
 Economic geology.
 Baker quad.: Gilluly, 16.
 Beach placers: Fardee, 6.
 Bibliography, geology and min. res.: Treasher, 2.
 Blue Creek dist.: Shenon, 6.
 Cascade Range deposits: Callaghan, 10.
 Chieftan mine: Wells, F. G., 8.

Oregon—Continued.

Economic geology—Continued.

- Chromite: Allen, J. E., 2; Byram, 1.
 Clays: Hodge, 24; Wilson, H., 4.
 Coal field, Coos Bay: Libbey, 1.
 Columbia River Basin: Landes, H., 1.
 Continental mine: Wells, F. G., 3.
 Copper: Gilluly, 4, 10; Shenon, 7.
 Diatomaceous deposits: Smith, W. D., 1.
 Diatomaceous earth: Eardley-Wilmot, 2; Smith, W. D., 4.
 Diatomite: Lazell, 3; Moore, B. N., 5; Mulryan, 2.
 General: Waters, 5.
 Gold-quartz veins: Goodspeed, 8, 17.
 Humdinger gold mine: Shenon, 5.
 Iron: French, 1; Hodge, 16; Melhase, 8.
 Lakes, saline: Stafford, 1.
 Limestones: Hodge, 24.
 Limonite: Williams, I. A., 1.
 Manganese: Hodge, 21.
 Mineral deposits: Hodge, 23; Pardee, J. T., 2.
 Mineral survey: Anonymous, 23.
 Mines handbook: Oregon Dept. Geology, 1.
 Mining dists., E.: Gilluly, 6.
 Natural gas fields: Kirkham, 14.
 Nonmetallic min. res.: Moore, B. N., 6, 8.
 Ore deposits: Hodge, 17.
 Placers: Treasher, 3.
 Platinum: Kellogg, A. E., 1.
 Porphyry copper deposits: Bell, R. N., 1.
 Pumice: Moore, B. N., 5.
 Quicksilver: Schuette, C. N., 1, 5; Wells, F. G., 7.
 Robert E. gold mine: Shenon, 5.
 Robertson gold mine: Shenon, 5.
 Sand: Thomas, C. E., 1.
 Silica deposits: Hodge, 24.
 Sulfides in serpentine: Shenon, 3.
 Sumpter quad.: Hewett, 5.
 Takilma-Waldo dist.: Shenon, 6.
 Tellurides: Goodspeed, 7.

Historical geology.

- Baird Missn. fauna: Packard, 2.
 Baker quad.: Gilluly, 16.
 Batholiths: Hodge, 13.
 Bibliography, geology and min. res.: Treasher, 2.
 Bonneville dam area: Berkey, 18; Holdredge, 3.
 Cascade Mts.: Callaghan, 3, 4, 10; Chaney, 1; Hodge, 3; Thayer, T. P., 2.
 Cascade Plateau prov.: Hodge, 22.
 Cenozoic, E.-cent.: Lupher, 5.
 Central Oreg.: Chaney, 13.
 Clarno Basin: Mackay, 1.
 Clarno fm. age: Chaney, 22.
 Climatic changes, Tert.: Hodge, E. T., 2.
 Coast line: Smith, W. D., 5.
 Columbia River Basin: Hodge, 25; Landes, H., 1.
 Correlation, Tert. fms.: Carpenter, J. T., 1.

Oregon—Continued.

Historical geology—Continued.

- Crater Lake, age: Williams, H., 14.
 Cretaceous: Anderson, F. M., 12, 14; Packard, 1.
 Dallas fm.: Buwalda, 6.
 Dayville quad., Tert.: Wilkinson, W. D., 4.
 Dekkas volcanics, Klamath Mts.: Wheeler, 12.
 Early man, Great Basin: Cressman, 1.
 Eastern Oreg.: Gilluly, 6; Moore, B. N., 8.
 General: Adams, W. C., 1; Large, 1.
 Geologic history: Waters, 5.
 Gold quartz veins, Cornucopia: Goodspeed, 8, 17.
 Harney Basin: Piper, 14, 17.
 Hood River fm.: Buwalda, 6.
 John Day fm.: Hodge, 10.
 John Day region: Buwalda, 19; Hodge, E. T., 1.
 Jurassic, cent. Oreg.: Lupher, 2, 8.
 Keasey fm.: Schenck, 9.
 Lane Co.: Smith, W. D., 11.
 Limestones: Hodge, 24.
 McKenzie Valley: Stearns, H. T., 3.
 Malheur Co.: Renick, 2.
 Marine Eocene: Turner, F. E., 1, 3.
 Maschall fm.: Merriam, J. C., 10.
 Medford quad. geol. map: Wells, F. G., 11.
 Mines handbook: Oregon Dept. Geol., 1.
 Natural gas fields: Kirkham, 14.
 North cent. Oreg. g. map: Hodge, 5.
 North Santiam sec.: Thayer, T. P., 2, 5.
 Ochoco Range: Lupher, 3, 4.
 Oligocene marine: Packard, 7.
 Owyhee Valley intrus.: Fuller, 9.
 Painted Hills, John Day valley: Lewellen, 1.
 Paleozoic, John Day area: Packard, 4.
 Pittsburgh Bluff fauna: Schenck, 2.
 Roseburg quad, ig. rocks: Wells, F. G., 6.
 Saddle Mtn. State Pk.: Layfield, 1.
 Salem Hills area: Thayer, T. P., 1, 5.
 Satsop fm., Columbia River: Buwalda, 2.
 Silica deposits: Hodge, 24.
 Skamania mining dist.: Pratt, A. F., 1.
 Southwestern Oreg.: Jones, B. E., 1; Wells, F. G., 6.
 Stratigraphy and Mollusca: Turner, 5.
 Suplee area: Kelly, J., 1.
 Tertiary: Schuchert, 48; Weaver, C. E., 7.
 Triassic, Ochoco Range: Schenck, 3.
 Umpqua fm.: Wells, F. G., 9.
 Wallowa Mts.: Goodspeed, 6, 20; Ross, C. P., 32.
 Western Oreg.: Jones, B. E., 2.
 Willamette Sound: Allison, 9.
 Willamette Valley: Hodge, 26.

Mineralogy.

- Agates: Dake, 8; Forbes, P. L., 3; Renton, 4; Southwick, 1.

Oregon—Continued.

Mineralogy—Continued.

- Andorite: Schaller, 23.
 Awaruite: Buddhue, 11.
 Bibliography, geology and min. res.:
 Treasurer, 2.
 Cascade Range mineral deposits: Cal-
 laghan, 10.
 Chalcodony: Dake, H. C., 5.
 Chalcopyrite in sphalerite: Shenon, 4.
 Chromite: Allen, J. E., 2; Byram, 1;
 Swarthley, 1.
 Cinnabar: Lewellen, 3.
 Cristobalite: Dutton, Carl E., 2.
 Fluorescent minerals: Dake, H. C., 9.
 Garnets: Arneson, 2; Kayser, 1.
 Gem minerals: Dake, H. C., 7, 19.
 General: Dake, H. C., 6.
 Gold quartz veins, Cornucopia: Good-
 speed, 17.
 Heavy minerals, plutonic rocks: Reed,
 J. C., 1.
 Hyalite opal: Renton, 3.
 Josephinite: Buddhue, 11.
 Lakes, saline: Melbase, 14; Stafford, 1.
 Livingstonite: Anonymous, 44.
 Mineral deposits: Pardee, 3.
 Mineral locs.: Dake, H. C., 2.
 Mineral survey: Anonymous, 23.
 Mines handbook: Oregon Dept. Geology,
 1.
 Mordenite: Dake, H. C., 16.
 Nodules, opal, agate filled: Renton, 4.
 Obsidian: Forbes, P. L., 1; Randolph,
 10; Anonymous, 45.
 Opal: Dake, H. C., 5; Fernquist, 1; Mel-
 base, 20, 22; Renton, 4.
 Plagioclase, andesite basalt: Fisk, 1.
 Porphyroblasts, quartz, in hornfels:
 Goodspeed, 9.
 Portland meteorite, 7/2/39: Anonymous,
 185.
 Pyrite crystals, Klamath Falls: Mel-
 base, 13.
 Pyrrhotite in sphalerite: Shenon, 4.
 Quartz minerals: Hughes, G., 1.
 Quartz-diopside-garnet veinlets: Good-
 speed, 5.
 Quicksilver: Schuette, C. N., 5.
 Rainbow agate: Dake, H. C., 4.
 Rhodonite: Randolph, 1.
 Sagenite agate: Renton, 1, 2.
 Saline lakes: Melbase, 14; Stafford, 1.
 Schwartzite: Modell, 2.
 Star garnet: Kayser, 1.
 Sunstone: Anonymous, 57.
 Valentinite: Schaller, 23.
 Willamette meteorite: Allen, A. R., 1;
 Pruett, 3.
 Zeolites: Fernquist, 8; Melbase, 11.

Paleontology.

- Acla: Schenck, 27.
 Allocyon: Merriam, C. W., 1.
 Antelope: Furlong, 2.
 Aturia, Cephalopoda: Schenck, 5.
 Auklet: Miller, Alden, H., 3,

Oregon—Continued.

Paleontology—Continued.

- Briaster: Clark, H. L., 5, 6.
 Carnivora: Stock, 6.
 Cedrela: Arnold, 23.
 Celtis: Berry, 31.
 Cephalopoda, Aturia: Schenck, 5.
 Cercidiphyllum: Brown, R. W., 24.
 Cetothere: Packard, 5.
 Comstock flora: Sanborn, E. I., 2.
 Cone, Mosier: Lazell, 4.
 Cophocetus: Packard, 6.
 Cretaceous: Anderson, F. M., 12, 14.
 Cycads: Chaney, 31.
 Crooked River Tert.: Anonymous, 106.
 Demostylus: VanderHoof, 11.
 Diatoms: Lohman, K. E., 3.
 Dipoides: Wilson, R. W., 7.
 Discocyclus: Turner, F. E., 1.
 Eastern Oreg.: Gidley, 3.
 Elephants: Arneson, 1; Avery, O. P., 2.
 Fagesia: Anderson, F. M., 5.
 Faunas, Eocene: Merriam, C. W., 7.
 Ferns: Wharton, J. R., 1.
 Floras, Tert.: Arnold, 27; Brown, R. W.,
 14; Chaney, 29, 33, 34; MacGinitie,
 1; Oliver, 1; Sanborn, E. I., 2, 5;
 Smith, H. V., 2, 3.
 Foraminifera: Berthiaume, 1; Cush-
 man, 1.
 Forests, ancient: Chaney, 33; Sanborn,
 E. I., 3.
 Fossils, field collecting, preparing: Al-
 len, J. E., 3.
 Fresh-water Mollusca: Henderson, J., 1.
 General: Adams, W. C., 1, 2.
 Goshen flora: Chaney, 5, 16.
 Glyptostobus: Brown, R. W., 12.
 Lagomorphs: Wilson, R. W., 14.
 Lane Co.: Smith, W. D., 11.
 Lava Cast Forest: Anonymous, 177.
 Legumes: Brown, R. W., 16.
 Mahonia: Arnold, 21.
 Mammalia: Colbert, 6; Elftman, 1; Fur-
 long, 2; Gazin, 4; Packard, 8;
 Scharf, 1; Wilson, R. W., 14.
 Man, early: Cressman, 1.
 Marine shells: Lewellen, 2.
 Miocene leaves, fruits, seeds: Brown,
 R. W., 8.
 Mollusca: Henderson, J., 1, 9; Turner,
 F. E., 5.
 Mustelid: Hall, E. R., 6.
 Nothocyon: Hall, E. R., 5.
 Oak, Quercus: Berry, 33.
 Oligocene, marine: Packard, 7.
 Painted Hills, John Day area: Lewel-
 len, 1.
 Peccaries: Colbert, 6.
 Pelecypoda: Schenck, 32.
 Petrified woods: Forbes, P. L., 2.
 Pleurotomarid: Schenck, 12.
 Pseudotsuga: Arnold, 18.
 Raninidae: Rathbun, 8.
 Rodents: Wilson, R. W., 14; Wood, A. E.,
 8, 10, 14.

Oregon—Continued.

Paleontology—Continued.

- Rudistids: Lupper, R. L., 1; Packard, 3.
 Stratigraphy and Mollusca: Turner, F. E., 5.
 Tereido wood: Lazell, 2; Wharton, J. R., 1, 2, 4.
 Tilia: LaMotte, 5.
 Tritropidoceras: Schenck, 4.
 Trout Creek flora: MacGinitie, 1.

Petrology.

- Albite granite, Sparta: Gilluly, 7.
 Baker quad.: Gilluly, 16.
 Basalt crystallization: Fuller, 8.
 Basaltic flows alteration: Fuller, 7, 15.
 Batholiths, Wallowa Mts.: Goodspeed, 4.
 Cascade Range: Buddington, 14; Thayer, T. P., 3.
 Collapsed pumice: Fuller, 12.
 Gold quartz veins, Cornucopia: Goodspeed, 8, 17.
 Heavy minerals, plutonic rocks: Reed, J. C., 1.
 Hornfels-granodiorite, Cornucopia: Goodspeed, 17.
 Keratophyres: Gilluly, 12.
 Lava flows alteration: Fuller, 7, 15.
 Malheur Co.: Renick, 2.
 Newberry Volcano: Williams, H., 9.
 Obsidian: Forbes, P. L., 1.
 Olivine, basaltic flows: Fuller, 16.
 Porphyroblasts: Goodspeed, 9, 14.
 Pumice: Becker, C. P., 1; Fuller, 12.
 Quaternary rocks: Piper, 15.
 Recrystallization, xenoliths: Goodspeed, 2.
 Sand: Thomas, C. E., 1.
 Spherulites: Wilkinson, W. D., 1, 2, 3.
 Tertiary rocks: Piper, 15.
 Umpqua fm. basalts: Wells, F. G., 9.
 Wallowa Mts.: Goodspeed, 4, 20.
 Xenoliths, recrystallization: Goodspeed, 2.

Physical geology.

- Basalt-latitude, contemporaneous activity: Fuller, 14.
 Cape Lookout area: Barr, 2.
 Cascade Mts.: Buddington, 14; Callaghan, 10; Thayer, T. P., 2, 3.
 Cascade Plateau prov.: Hodge, 22.
 Columbia River Basin: Hodge, 25; Landes, H., 1.
 Crater Lake: Allen, J. E., 1; Atwood, W. W., Jr., 11; Waesche, 5; Williams, H., 12, 14.
 Dekkas volcanics: Wheeler, 12.
 Earthquakes, 1846-1938: Treasher, 10, 11.
 Fissure eruptions, Bend: Nichols, 9-a.
 Fumaroles: Holdredge, 2; Phillips, K. N., 1.
 Gold quartz veins, Cornucopia: Goodspeed, 17.
 Granodioritic blocks formed by metamorphism: Goodspeed, 13.
 Great Basin lake sediments: Shrock, 8.

Oregon—Continued.

Physical geology—Continued.

- Harney Basin: Piper, 14, 17.
 Hornfels-granodiorite, Cornucopia: Goodspeed, 10.
 Horst-graben structure: Fuller, R. E., 1.
 John Day region: Buwalda, 19.
 Keratophyres: Gilluly, 12.
 Lane Co.: Smith, W. D., 11.
 Lava Cast Forest: Anonymous, 177.
 Lava flows, Tert.: Fuller, 15.
 Metchoshin volcanics: Weaver, 11.
 Mines handbook: Oregon Dept. Geology, 1.
 Mount Mazama: Atwood, W. W., Jr., 6; Smith, W. D., 9; Treasher, 7.
 Newberry Volcano: Williams, H., 9.
 North Santiam dist.: Thayer, T. P., 2, 4, 5.
 Olivine in basaltic flows: Fuller, 16.
 Overthrust fault: Livingston, D. C., 1.
 Owyhee Valley intrus.: Fuller, 11.
 Portland earthquake, 11/12/39: Treasher, 10.
 Pumice, Crater Lake: Moore, B. N., 4.
 Recrystallization, xenoliths: Goodspeed, 2.
 Saddle Mtn. State Park: Layfield, 1.
 Salem Hills area: Thayer, 5.
 Shear-control, dikes, sills: Washburne, 8.
 Skamania mining dist.: Pratt, A. F., 1.
 Snake River Canyon: Freeman, O. W., 8.
 Stalagmites, Ice, Malheur Cave: Dake, 13.
 State-line earthquake, 7/15/36: Brown, B. H., 1.
 Suplee area, Paleozoic: Kelly, J., 1.
 Temperatures, lava bends: Van Orstrand, 12.
 Volcanic, seismic history: Hodge, 15.
 Volcanoes, Cascade Range: Jaggard, 27.
 Wallowa Mts.: Goodspeed, 20; Ross, C. P., 32.
 Willamette Valley: Hodge, 26.
 Xenoliths, recrystallization: Goodspeed, 1.

Physiographic geology.

- Anomalous moraines: Hodge, 7.
 Beach placers, coastal: Pardee, 6.
 Cape Lookout area: Barr, 2.
 Cascade Mts. glaciers: Phillips, K. N., 2, 3.
 Cascade Plateau prov.: Hodge, 22.
 Coast: Smith, W. D., 5, 6.
 Columbia River: Buwalda, 6; Hodge, 4, 6, 7, 9, 11, 22, 25; Landes, H., 1; Piper, 2; Randolph, 11; Waters, A. C., 1.
 Columbia River fault: Hodge, 4, 11.
 Crater Lake: Atwood, W. W., Jr., 1, 3, 11; Kettner, 1; Matthes, 8; Rosset, 1.
 Crescent Lake: Holdredge, 1.
 Dunes: Cooper, W. S., 5; Thomson, J. P., 3.

Oregon—Continued.

Physiographic geology—Continued.

- Forests, drowned, Columbia River gorge: Lawrence, D. B., 1, 2.
 Glacial erratics: Allison, 4.
 Glacial till, Crater Lake: Atwood, W. W., Jr., 3.
 Glaciers: Marshall, E. A., 1; Phillips, K. N., 2, 3; Richards, C. P., 1.
 Harney Basin: Piper, 14, 17.
 John Day region: Buwalda, 19.
 Lake Labish: Smith, J. B., 14.
 Lakes: Smith, W. D., 12.
 Lane Co.: Smith, W. D., 11.
 Mounds, Columbia River Plateau: Waters, A. C., 1.
 Morainlike deposits: Hodge, 12.
 Mount Hood: Phillips, K. N., 2.
 Mount Mazama: Atwood, W. R., 1; Atwood, W. W., Jr., 6.
 Neocene erosion surface: Buwalda, 5.
 North Santiam River: Thayer, 4, 5.
 Pacific shoreline: Smith, W. D., 5.
 Pleistocene alluvial stages: Allison, 6.
 Salem Hills area: Thayer, 5.
 Saline lakes: Melhase, 14.
 Silvies surface fm.: Luper, 6.
 Snake River Canyon: Freeman, O. W., 8.
 Suplee area Paleozoic: Kelly, J., 1.
 Willamette Sound: Allison, 9.
 Willamette Valley: Allison, 4; Felts, 1; Hodge, 26.

Underground water.

- Butter Creek area: Anonymous, 86.
 Dalles area: Piper, 4.
 Deschutes River Basin: Stearns, H. T., 7.
 General: Piper, 5.
 Ground-water problem: Oregon Agr. Exper. Sta., 1.
 Harney Basin: Piper, 12, 17.
 Investigations: Piper, 8.
 McKenzie Valley: Stearns, H. T., 3.
 Temperatures, lava beds: Van Orstrand, 12.
 Thermal springs: Waring, 5.
 Walla Walla Basin: Piper, 11.
 Organic content of rocks: Russell, W. L., 13.
 Organization of geol. groups: Speed, 4.
 Orientation of cores: Macready, 1.
 Orientation of minerals in rocks: Pabst, 2, 4, 6.
 Origin of continents: Stille, 3.
 Origin of earth and moon: Fairchild, 21.
 Orogeny.

- Age of mountains: Berry, E. W., 2.
 Alaska: Mertie, 5, 22.
 Antillean-Caribbean area: Schuchert, 31.
 Appalachian drainage: Mackin, 11; Meyerhoff, 14, 17.
 Appalachian geosyncline: Morris, 4; Ver Wiebe, 14.
 Appalachian Mts.: Ashley, 34; Boesch, H., 2; Holden, 4; Jonas, 1; Schuchert, 11.

Orogeny—Continued.

- Appalachian revolution: Holden, 4.
 Arizona: Brown, W. H., 4; Butler, 18; Davis, 13; Trischka, 4; Wilson, E. D., 8.
 Asthenolith theory: Willis, 16.
 Atlantic and Caribbean: Groeber, 1.
 Basin-Range problem: Keyes, 256; Longwell, 30.
 Basin Ranges: Davis, 7.
 Big Horn Basin, Mont.-Wyo: Stow, 12.
 Big Horn Basin-Yellowstone Valley area: Anonymous, 117.
 Black Hills isostasy: Lawson, 3.
 Border area, Tex.-Mex.: Hill, 8.
 British Columbia: Williams, M. Y., 15.
 British Columbia-China correls.: Schofield, 4.
 California: Anderson, G. H., 3, 7; Atwood, W. W., Jr., 11; Buwalda, 13; Clements, 6; Eaton, 9; Grace, 7; Hewett, 16; Hinds, 17, 18; Hopper, 1; Lawson, 12; Louderback, 1; Luce, 1; MacDonald, J. A., 1; MacGinitie, 7; Matthes, 24; Mayo, 13; Oakeshott, 1, 2; Reed, R. D., 17, 25, 26; Stille, 2, 6; Willis, 18.
 Canada, Rocky Mts. area: Warren, 20.
 Chaleur Bay area: Alcock, 18.
 Selkirk Mts. area: Warren, 20.
 Western: Goodman, 4.
 Canadian Shield: Chamberlin, 16; Wilson, M. E., 20.
 Cascade Range, age: Buwalda, 6.
 Central America: Müllerried, 30; Sonder, 1; Wolff, F. L. von, 1.
 Chaleur Bay, Canada: Alcock, 18.
 Champlain Valley, N. Y.-Vt.: Rodgers, 2.
 Climatic cycles and geology: Gillette, H. P., 1.
 Colorado: Burbank, 16; Effinger, 3; Lovering, 24; Stark, 15; Van Tuyl, 11.
 Columbia River Basin, Wash.-Oreg.: Landes, H., 1.
 Connate water, oil and gas: Gardner, J. H., 5.
 Connecticut: Cook, T. A., 1.
 Continents, origin, motion, stability: Gunn, 1, 2.
 Cordilleras, American: Arkell, 1; Stille, 4, 5.
 Cuba: MacGillivray, 4; Rutten, M. G., 4, 6; Thidens, 3; Vermunt, 4.
 Cycles, orogeny and erosion: Baulig, 4.
 Deformation, earth's crust: Bucher, 8; Moore, 30.
 Desert ranges, origin: Keyes, 27.
 Discontinuous orogenic deformation: Bucher, 3.
 Earth history and crustal movements: Reed, 27.
 Energy sources, earth's crust: Helm, 2.
 European-N. Am. mtn. systems: Suess, 1.
 Flotation of mts.: Kimbrell, 1; Lawson, 10.

Orogeny—Continued.

- Folded mts., origin: Prouty, 5, 17.
 Forces in crust: Gutenberg, 34.
 Front Range: Higgins, 1.
 Galluro Mts., Ariz.: Davis, W. M., 4.
 General: Brodshaug, 1; Chamberlin, R. T., 3; Cloos, H., 1; Daly, 20; Link, 5; Longwell, 5; Nádaí, 1; Schuchert, 38; Stille, 6.
 Geological periods, diastrophic circuits: Keyes, 435.
 Georgia, Cartersville dist.: Kesler, 4.
 Geosynclines, geo-basins, origin: Rich, 28.
 Grand Canyon area: Keyes, 300.
 Great Basin: Fenneman, 4; Keyes, 5, 162.
 Greenland: Büttler, 5; Koch, 10, 12, 14; Madsen, 2; Odell, 2, 5; Oepik, A. A., 1; Rittman, 1; Teichert, 14; Vischer, 2; Wegemann, C. E., 1, 8, 9, 10; Wordie, 1.
 Guatemala: Termer, 7.
 Hawaii: Wolff, F. L. von, 1.
 Idaho, Dixie dist.: Capps, 14.
 Illinois: Ekblaw, 15.
 Iowa: Keyes, 421.
 Isostasy and mtn. bldg.: Hoffman, 7.
 Jamaica: Kùchler, 1.
 Kentucky: Russell, W. L., 15.
 King's Mtn. area, N. C. and S. C.: Frink, 1.
 Labrador: Odell, 6.
 Lowlands, S.-cent. and Ouachita provs.: Ruedemann, P., 3.
 Maine, Mount Desert Is.: Chadwick, 33.
 Mechanics, N. Am. uplifts: Cloos, H., 4.
 Metamorphic orogeny: Willis, B., 6.
 Mexico: Baker, C. L., 5; Díaz, 1; González, J., 1; Imlay, 2; Kellum, 10; Kelly, W. A., 10; Moore, 45; Sánchez, 3; Wissler, 2.
 Mexico-Mediterranean orogenic zone: Staub, 4.
 Midcontinent region: Keyes, 322.
 Mississippi River arch: Howell, J. V., 6.
 Mississippi Valley, upper: Kans. G. Soc., 8.
 Modern mtn. ranges, origin: Andrews, E. C., 2.
 Montana: Billings, 16; Bucher, 11, 13; Clapp, C. H., 5; Fenton, 38, 60; Lammers, 2; Skeels, 1; Stow, 14.
 Mountain arcs: Tokuda, 1.
 Mountain building: Brown, I. O., 1; Douglas, 9; Griggs, 11; Gunn, 3; Longwell, 33, 34; Seidl, 2, 3; Woodworth, J. B., 1.
 Mountain chains, origin: Bruet, 1.
 Mountain structure: Longwell, 5; Mitchell, R. H., 4.
 Mountains of N. Am.: Brown, I. O., 1; Reger, 8; Schottenloher, 1; Seidl, 2, 3.
 Mountains, origin: Longwell, 33, 34.
 Nevada: Engeln, von, 12; Ferguson, 7; Kerr, P. F., 20.

Orogeny—Continued.

- New Brunswick: Shaw, E. W., 1.
 Newfoundland: Cooper, J. R., 2; Espen-shade, 1; Twenhofel, 40.
 New Mexico: Hunt, 4-a; Keyes, 334, 386; Schmitt, 6.
 New York: Buddington, 17, 23; Heusser, 1; Mencher, 2; Pepper, 1; Strzygowski, 2.
 North America: Boesch, H. H., 3; Broggi, 1; Brown, I. O., 1; Grabau, 5; Schottenloher, 1; Schuchert, 67; Seidl, 2, 3; Spieker, 13; Waters, 13; Waterschoot van der Gracht, 15, 17, 18; Wolff, F. L. von, 1.
 North Carolina: Murray, 6.
 Oklahoma: Bale, 2; Dott, 6; Fitts, 1; Foley, 7; Gardner, J. H., 3.
 Ontario: Derry, 10; Thomson, James E., 11.
 Oregon: Buwalda, 19; Oregon Dept. Geol., 1; Thayer, T. P., 2.
 Orogenic process: Thom, W. T., Jr., 2.
 Orogenic overthrusting: Keyes, 116.
 Ouachita Mts., Ark.-Okla.: Keyes, 469.
 Ouachita orogeny: Melton, 5.
 Overthrusts: Keyes, 469; Stose, 15.
 Ozark Mts., area: Schottenloher, 2.
 Pacific States: Berry, E. W., 19.
 Paleozoic: Waterschoot van der Gracht, 11, 14.
 Paleozoic, Europe-N. Am.: Waterschoot van der Gracht, 14.
 Panama: MacDonald, D. F., 1.
 Pennsylvania: Ashley, 35; Butts, 10, 13; Cleaves, 1; Foose, 1; Itter, 1; Miller, B. L., 15; Stose, 17; Willard, 52, 59; Anonymous, 86, 119.
 Periodicity: Born, A., 1; Keyes, 183, 255; Schuchert, 19.
 Permo-Carboniferous, southern U. S.: Waterschoot van der Gracht, 5, 6, 7.
 Pre-Cambrian buried surface, U. S.: Moss, 3.
 Puerto Rico: Meyerhoff, 10.
 Quebec: Derry, 10; Jones, I. W., 15; Keith, 10.
 Radioactive heating as cause: Rich, 25.
 Rio Grande depression: Bryan, 36.
 Rocky Mt. area: Atwood, W. W., 7, 10, 11; Bartram, 10; Chamberlin, 19; Hares, 6; Keyes, 236, 288; Parker, 7; Strzygowski, 1.
 Rotational stress and crustal deformation: Baker, C. L., 15.
 Rhythmic nature: Keyes, 202.
 Sierra Nevada: Cloos, H., 1, 2; Lawson, 8; Locke, 8; Panzer, 1.
 South Dakota: Tullis, 5.
 Southwestern, U. S.: Effinger, 4.
 Structural features crossing Atlantic: Baker, H. B., 3.
 Structural, magmatic processes: Hoffman, 8.
 Submountain structures, desert ranges: Keyes, 23.
 Taconian orogeny: Schuchert, 11.

Orogeny—Continued.

- Tectonic relations, N. Am.-Europe:
 Stille, 1, 3; Suess, 2.
 Tertiary mts., correlates: Taylor, F. B., 3.
 Texas: Gardner, J. H., 3; Keyes, 480;
 King, 19; Kinkel, 1; Sellards, 30;
 Stenzel, 9.
 Theory of: Cheney, M. G., 1.
 Thermal history: Holmes, A., 2.
 Trinidad: Kugler, 2; Lehner, 1.
 Tungsten, Oreana, Nev.: Kerr, P. F., 20.
 Uinta Mts., Utah-Colo.: Forrester, 1;
 de Lyndon, 1; Lawson, 3; Spieker, 9.
 United States Nashville-Ozark domes:
 Wilson, C. W., Jr., 19.
 Western, pre-Camb.: Hinds, 29.
 Utah: Beutner, 2; Dobbin, 17; Eardley,
 12; Schoff, 2; Spieker, 6.
 Vermont: Jacobs, 2; Schuchert, 43.
 Virginia: Bevan, 15, 24, 25; Cooper, B.
 N., 1; Holden, 6.
 Wasatch Mts., Utah: Eardley, 4.
 Washington: Culver, 6; Weaver, 11.
 Washington-Oregon: Weaver, 11.
 West Indies: Meyerhoff, 10; Rutten, L.
 M., R., 6; Wolff, F. L. von, 1.
 Wyoming: Bucher, 11, 13; Chamberlin,
 21; Fanshawe, 1; Horberg, 1; Jones,
 C. T., 2; Knight, S. H., 8, 9; Lam-
 mers, 6; Love, 3, 5, 6; Wilson, C.
 W., Jr., 18.

Orthoclase.

- Alberta: Rutherford, 15.
 Nevada: Drugman, 1.
 Orthopyroxenes, Bushveld type: Hess, H.
 H., 14.

Oscillation. See Changes of level.

Oscillation theory of diastrophism: Long-
 well, 9.

Oshawanan series: Keyes, 76.

Ossipee Mts., cauldron subsidence: Kingsley,
 1.

Ostracoda. See also Crustacea.

- Aechmina crenulata for A. serrata:
 Stewart, 10.
 Alabama: McGlamery, 3.
 Amphissites, revision: Roth, 1.
 Arkansas, Cret.: Alexander, 16; Israel-
 sky, 2.
 Bairdia: Coryell, 8; Harlton, 5; Howe,
 11; Kellett, 3; Roth, 9.
 Bairdopplata, Miss., N. J.: Coryell, 12.
 Basslerina, Tex., Okla.: Moore, R. C., 2.
 Beyrichiidae revision. Swartz, F. M., 9.
 Black Hills, S. Dak.: Harper, M. F., 1.
 Bythocypris bouceki for B. minuta:
 Teichert, 17.
 California, Poway Eocene fauna: Dusen-
 bury, 1.
 Carboniferous: Coryell, 20; Delo, 1;
 Harris, R. W., 5; Kellett, 4.
 Cavellina, Neb.: Lalicker, 3.
 Choctaw Bluff, Ala.: McGlamery, 3.
 Choctawhatchee, Fla.: Howe, 17.
 Chouteau fm., Mo.: Morey, P. S., 4.
 Cincinnati fauna: Shideler, 17.
 Colorado, McCoy fm.: Roth, 8.

Ostracoda—Continued.

- Cooperatia for Cooperia: Tolmachoff, 4.
 Correction, generic, specific names:
 Roth, 3.
 Cretaceous, Tex.: Alexander, C. I., 10, 13.
 Cypridella, Kans.-Mo.: Rogers, A. R., 1.
 Cypridinella, Kans.-Mo.: Rogers, A. R., 1.
 Cythereis, La.: Gooch, 1.
 Cytherelloidea, Tert.: Howe, 8.
 Cytheridea: Alexander, C. I., 8; Berry,
 E. Willard, 11; Stephenson, M. B.,
 2, 3, 4.
 Cytheropteron: Alexander, C. I., 9; Mar-
 tin, J. L., 1.
 Decorah fm.: Kay, G. M., 20-a, 12.
 Devonian: Stewart, 9; Swartz, F. M.,
 9-a; Warthin, 9.
 Dimorphism and orientation: Swartz,
 F. M., 5.
 Eucythere, Miss.: Howe, 20.
 Florida, Tert.: Stephenson, M. B., 4.
 Ft. Worth fm., Okla.-Tex.: Constant,
 D. L., 1.
 Glyptopleura: Coryell, 3.
 Graphiodectylus: Roth, 4.
 Greenland: Teichert, 11; Troedsson, 2.
 Gulf Coast, Ark.: Israelsky, 2.
 Hollinella: Blake, C. H., 1; Kellett, 1;
 Knight, J. B., 4.
 Hull fm. fauna: Kay, G. M., 12.
 Idiomorphina for Idiomorpha: Croneis,
 44.
 Illinois: Coryell, 20; Croneis, 37, 38, 39,
 -43, 45, 46.
 Index fossils, Olentangy sh.: Stewart, 12.
 Indiana: Coryell, 13; Geis, 1; Payne, K.
 A., 1; Shrock, 11, 12.
 Iowa, Ord.: Spivey, R. C., 1.
 Jackson Eocene, La.: Howe, 16; Whar-
 ton, J. B., Jr., 1.
 Jonesites for Placentula: Coryell, 2.
 Kansas: Delo, 3; Morrow, 1.
 Kirkbya: Roth, 1.
 Leperditia, Ill.: Scott, H. W., 1.
 Louisiana: Chawner, 3; Fisk, 2; Gooch,
 1; Howe, 10, 25; Rukas, 1; Whar-
 ton, J. B., Jr., 1.
 Loxoconcha, Eocene: Murray, G. E.,
 Jr., 3.
 McAlester sh., Okla.: Wilson, C. W., Jr.,
 1.
 Mexico: Diaz Lozano, 3.
 Michigan, Bell sh.: Van Pelt, 1; War-
 thin, 6.
 Microcheilinella for Microchellus: Geis,
 2.
 Microfaunas: Harlton, 7; Harris, 9;
 Jennings, 1; Loetterle, 1; Monsour,
 1; Stephenson, M. B., 1; Warthin,
 2; Wharton, J. B., Jr., 1.
 Micropaleontology of fms.: Harlton, 7;
 Loetterle, 1; Monsour, 1; Warthin,
 2.
 Mississippi: Fisk, 8; Frost, V. L., 1;
 Monsour, 1; Shreveport G. Soc., 3.
 Mississippian: Morey, P. S., 2, 3.

Ostracoda—Continued.

- Missouri: Branson, 33; Cullison, 4; Kellett, 4.
 Mohawkian: Kay, G. M., 9.
 Montana: DeWolf, 4.
 Morrison, Black Hills: Roth, 12.
 Nebraska: Johnson, W. R., 1; Upson, M. E., 1.
 New names, Cret. species: Alexander, C. I., 4.
 Nineveh fm., Pa.-W. Va.: Holland, W. C., 1.
 North American Dev.: Warthin, 9.
 North Carolina, Trias.: Murray, G. E., 1.
 Notes: Blake, C. H., 2.
 Nowata sh., Okla.: Coryell, 4.
 Ohio: Harris, R. W., 2, 12; Stauffer, 20.
 Oklahoma: Constant, 1; Coryell, 11; Harris, R. W., 1, 7; Roth, 5; Vanderpool, 4; Warthin, 2.
 Ontario: Caley, 1; Coryell, 14; Fritz, 9, 11; Okulitch, 18; Shaw, E. W., 2; Turner, M. C., 1.
 Orientation of carapace: Bonnema, 1; Kummerow, 1; Warthin, 5.
 Paleozoic, bibl. index: Bassler, 13.
 Panama: Coryell, 16.
 Paraechimima, Ind.: Berry, E. Willard, 4.
 Pennsylvania: Cleaves, 8; Holland, W. C., 1; Swartz, F. M., 4, 9; Willard, 52, 56, 59.
 Pennsylvanian: Bailey, W. F., 4; Bradfield, 1; Coryell, 5, 6; Harlton, 1; Kellett, 3.
 Permian: Kellett, 3.
 Photography and preparation: Swain, 1.
 Preparation and study: Alexander, C. I., 7; Swain, 1.
 Primitidiidae, revision: Swartz, F. M., 9.
 Quebec, Mingan Is.: Twenhofel, 31.
 Rayella for Basslerites: Teichert, 17.
 Rocky Mtn. continental fms.: Peck, 15.
 Sexual dimorphism: Alexander, C. I., 5.
 Simpson group, Okla.: Harris, R. W., 1.
 Taxonomy: Cronels, 42; Parker, R. W., 2.
 Tennessee: Wilson, C. W., Jr., 8.
 Texas: Alexander, C. I., 1, 11, 14; Coryell, 5, 6, 7, 9; Harlton, 1; Sutton, 16.
 Theriosynoecum for Morrisonia: Branson, C. C., 12.
 Thlipsuridae, revision: Swartz, F. M., 4.
 Traverse group, Mich.: Warthin, 6.
 Trinity, Okla.: Vanderpool, 4.
 Types, Dev., N. Am.: Warthin, 9.
 Vermont: Raymond, 19; Schuchert, 43.
 Virginia, Powell Valley: Bates, R. L., 4.
 West Virginia: Coryell, 18; Price, P. H., 17.
 Wyoming: Branson, C. C., 14; Morey, P. S., 1.
 Ostracoderms, Heterostrachi, morphology: Stetson, 14.
 Ostrea, Gulf Coast Tert.: Howe, 27.
 Otoliths, fish: Campbell, R., 1.
 Ouachita Mts.: Miser, 2.
 Ouachita orogeny: Melton, 5.
 Outcrops of ore shoots: Schmitt, 11.
 Ovals of revolution, anisotropic media: Quirke, 23.
 Overite, Utah: Larsen, E. S., 3d, 1.
 Overthrusts and overthrusting.
 Alberta: Link, 12; Sanderson, 4.
 Appalachian Mts. area: Straley, 7.
 California: Eaton, 9; Noble, L. F., 4.
 Colorado: Burbank, 16.
 Distinguished from underthrusting: Lovering, 12.
 Greenland: Odell, 5.
 Metamorphic terranes: Balk, 10; Knopf, E. F. B., 6.
 Montana: Billings, 16; Lammers, 2; Skeels, 1.
 Newfoundland: Buddington, 18; Cooper, J. R., 2.
 North America, Cordillera, Caribbean areas: Waters, 13.
 Ontario: Kay, G. M., 20-b.
 Pennsylvania: Bascom, 6; Fraser, 12; Stose, 21, 22; Willard, 55, 59.
 Tennessee: Laurence, 4.
 Texas, Marathon area: King, 29.
 Utah: Dobbin, 11; Eardley, 12.
 Vermont: Jacobs, 2, 3.
 Virginia: Butts, 14; Cooper, B. N., 1, 7, 8; Currier, 2; Furcron, 9.
 Wyoming: Baker, C. L., 27; Beckwith, 5; Bucher, 12; Fanshawe, 1; Horberg, 1; Jones, C. T., 2; Knight, S. H., 11; Love, 6; Pierce, 8; Rouse, 6; Stevens, E. H., 2.
 Owen Lake, British Columbia: Lang, A. H., 1.
 Owyee irrigation project, Oreg.: Bryan, K., 3.
 Oxford House area, Manitoba: Wright, J. F., 12.
 Ozark Mts. area: Grobshkopf, J., 1.
 Ozarkian: Dake, C. L., 2; Kobayashi, 1; Ulrich, 9, 15.
 Packing, differential, and bedding: Keller, 12.
 Paleobotany. See also Paleontology.
 Age records, Paleozoic plants: White, C. D., 19.
 Alaska: Chaney, 32; Cooper, W. S., 1, 3; Hollick, 9; Smith, P. S., 12.
 Alberta: Berry, E. W., 4, 5, 6, 22; Ellis, 3.
 Alethopteris: Arnold, C. A., 4, 16.
 Algae: Clark, L. M., 1; Elias, 3-a; Erdmann, 4; Fenton, 32, 46, 51, 52, 56, 57, 58; Goldring, 17; Howe, M. A., 2, 4, 6; Howell, 42; Johnson, J. H., 13-a, 16, 18, 24, 26, 30, 32, 33; Merriam, C. W., 12; Resser, 28; Shrock, 13; Tilden, 1; Ulke, 7; Weikert, 1; Wieland, 6.
 Algal reefs and deposits: Fenton, 32; Gill, J. P., 1; Goldring, 17; Howe, M. A., 2, 4, 6; Johnson, J. H., 27, 28, 32, 33; Wieland, 6.

Paleobotany—Continued.

- Amber: Buddhue, 1; Carpenter, 11, 16; Farrington, 1; Lengweiler, 1; Murdoch, 1; Walker, 9, 13, 17.
- Ampelocissites, Tex.: Berry, E. W., 12.
- Amygdalus, Wash.: Berry, E. W., 13.
- Anacardium, Tex.: Berry, E. W., 11.
- Andros Is., Bahamas, flora: Black, 4.
- Angiosperms: Harris, T. M., 5; Thomas H. H., 1; Wieland, 8, 13, 16.
- Ankyropteris, Okla.: Read, 11.
- Annularia, Mo.: Elias, 3.
- Antillean floras: Maury, 2.
- Appalachian Plateau and Mississippi Valley: Butts, 12.
- Appalachians, S.: Resser, 21.
- Archaeopteryx, Ky.: Scott, D. H., 2.
- Archaeopteris, Pa.: Arnold, 17, 35.
- Archaeopteris of Lesquereux: Arnold, 20.
- Arctic America: Berry, E. W., 13, 16; Teichert, 12.
- Arizona, Grand Canyon: White, C. D., 1.
- Artocarpus: Ball, O. M., 1.
- Asphalt flora, Calif.: Chaney, 15.
- Atopochara, Tex., Okla.: Peck, 12.
- Attalea, Fla.: Berry, E. W., 27.
- Bahamas, Andros Is. flora: Black, 4.
- Beartooth Butte, Wyo.: Dorf, 5.
- Belt ser. flora: Fenton, 54.
- Berberis, Colo.: Cockerell, 16.
- Bexar Co., Tex.: Parks, H. B., 1.
- Biorbia, nomenclature: Cockerell, 9.
- Biotic community, Minn.: Cooper, W. S., 4.
- Bituminous plant, N. C.: Prouty, W. F., 2.
- Black Hills, S. Dak.: McIntosh, A. C., 1.
- Blue Mts., Oreg.: Oliver, E. S., 1.
- Bogs, pollens, floras: Artist, 1, 2; Barkley, 1; Barnett, 1; Bowman, P. W., 2; Cain, 1; Cocke, 1, 2; Deevey, 1; Erdtman, 2; Geisler, 1; Hansen, H. P., 1, 3, 4, 6; Houdek, 1, 3; Howell, J. W., 1; Janson, 1; Lindsey, 1; Otto, J. H., 1; Osvald, 1, 2; Potzger, 1; Prettyman, 1; Richards, R. R., 1; Sears, P. B., 1, 2, 4, 10, 11, 12, 13; Smith, Wm. M., 1; Truman, 1; Voss, 3, 4; Wodehouse, 1, 4.
- Botryopteris fruits, Iowa: Darrah, 23.
- British Columbia: Berry, E. W., 18; Osvald, 2.
- Calamopteryx, Ky.: Read, 8.
- Calamopteryx, N. Y.: Thomas, D. E., 1.
- Calathiops: Arnold, 29.
- Calicified wood: Brand, 2.
- Calcophysoides balli not a fossil: Berry, 58.
- California floras: Axelrod, 1; Chaney, 14; Herold, C. L., 1; LaMotte, 13; MacGinitie, 2, 3, 4; Stock, 62.
- Callixylon: Arnold, C. A., 1, 2, 3, 6, 12, 13; Berry, E. Willard, 9, 17; Clark, I. M., 1; Hoskins, J. H., 2; Miser, 12.

Paleobotany—Continued.

- Canada: Carpenter, 11; Kindle, 40; Walker, 13.
- Canadian Shield: Wilson, M. E., 20.
- Carboniferous floras, N. Am.: Darrah, 11; Jongmans, 1, 2.
- Europe and N. Am.: Jongmans, 2.
- Cardiocarpon: White, C. D., 13.
- Cauloxylon, Mo.: Cribbs, 5.
- Caytonia, Greenland: Harris, T. M., 3.
- Cedarville flora, Calif.-Nev.: LaMotte, 9.
- Cedrela, Oreg.: Arnold, 23.
- Cedrus, Calif.: Barghoorn, 1.
- Celtis: Berry, 31; Brooks, B. P. W., 1; Watt, 1.
- Cenozoic floras, N. Pacific Basin: Chaney, 23.
- Cercidiphyllum: Brown, 24.
- Cercis, Idaho: Berry, 24.
- Charophyta: Peck, R. E., 2, 4, 8, 9, 10.
- Cladophora, coal, and lake balls: Kindle, 23.
- Cladoxylon, N. Y.: Read, 7.
- Climatic changes and forest succession: Sears, 7.
- Climatic meanings, Penn. flora: Noé, 3; White, C. D., 9.
- Coal: Bergquist, 11; Berry, E. Willard, 16; Cady, G. H., 3, 4; Dapples, 4; Fieldner, 8, 9, 10, 11; Miner, 4, 5; Thiessen, 9; White, C. D., 15.
- Opaque material: Thiessen, 8.
- Preparing thin sections: Thiessen, 10.
- Resins and waxes: Dapples, 4.
- Water in fm.: White, C. D., 15.
- Coal balls: Cady, G. H., 4; Fisher, M. C., 1; Graham, R. I., 3; Kindle, 23; Noé, 5; Schopf, 2, 8, 9, 10.
- Coal floras: Bergquist, 11; Bertrand, 1; Darrah, 3, 4; Hoskins, 3; Jones, I. W., 10; McCabe, L. C., 1; Newman, 1; Thiessen, 7, 8, 9, 10; Wilson, L. R., 5, 9.
- Coal pebbles in glacial drift: Bartlett, H. H., 1.
- Colorado: Berry, 40; Hollick, 1; Johnson, J. H., 11, 17.
- Codonotheca: Darrah, 13.
- Combretum, Miss.: Berry, 42.
- Comstock flora, Oreg.: Sanborn, E. I., 2.
- Conifers: Brown, R. W., 9; Wherry, 4.
- Copper fossilizing minerals: Ward, T. W., 5.
- Cordaites wood: Arnold, 5; Steidtmann, W. E., 1.
- Cordaites: Cribbs, 1, 3; White, C. D., 14.
- Correlations, N. Am.-Europe: Jongmans, 2; Moore, 38.
- Correlations, Tert. plants: Chaney, 30.
- Correlations and floral provs., Carb.: Jongmans, 3.
- Corylus, Calif.: Mason, H. L., 5.
- Cretaceous, Greenland: Seward, 4.
- Crinoids on fossil wood: Wickwire, 1.
- Crossotheca: Darrah, 13.
- Cryptozoon: Bøgvad, 3; Goldring, 15.
- Cuba, floras: Berry, 47; León, 1.

Paleobotany—Continued.

- Cupressinoxylon, S. Dak.: Lutz, 1.
 Cycadeoids: Chrysler, 2; Dahlgren, 1; Wieland, 2, 7, 14, 19, 21.
 Cycadofilicnean roots, Ill.: Hoskins, 4.
 Cyads: Chaney, 31; Chrysler, 1; Wieland, 23; Anonymous, 110.
 Cypress swamp, Pleist., Md.: Berry, C. T., 4.
 Dadoxylon, Ill.: Miner, 5.
 Denver flora, Colo.: Knowlton, F. H., 1; Krystofovich, 1.
 Devonian: Arnold, 15, 19; Read, C. B., 9.
 Diatomite: Greig, J. W. D., 1.
 Diatoms: Cocke, 1; Hanna, 24.
 Diichnia, Ky.: Read, 8.
 District of Columbia Pleist. flora: Berry, 38.
 Douglas Canyon flora, Wash.: Hoffman, A. D., 2.
 Drepanolepis, Alaska: Berry, 34.
 Ellensburg flora, Wash.: LaMotte, 7.
 Endemism, Calif. flora: Mason, H. L., 1.
 Ephedra, Tert.: Wodehouse, 2; Anonymous, 53.
 Equisetites, Sundance lms.: Black, 2.
 Equisetum, Saskatchewan, Berry, E. W., 1.
 Etching, Ill. coals: McCabe, W. S., 1.
 Evolution of plants: Berry, 36.
 Ferns: Sanford, S. N. F., 2; Wharton, 3.
 Ficus, Va.: Berry, 53.
 Floras, Alaska: Hollick, 9; Krystofovich, 1.
 Arizona: Daugherty, L. H., 3; Le Duchat d'Aubigny, 1.
 Arkansas: White, 28, 29.
 California: Axelrod, 2, 3; Condit, C., 2; LaMotte, 13; Potbury, 2.
 Catskill delta, N. Y.-Pa.: Arnold, 25, 34; Butler, R. D., 3.
 Coal balls: Cady, G. H., 4; Darrah, 23; Fisher, M. C., 1; Graham, R., 2, 3; Noé, 5; Schopf, J. M., 2, 8, 9, 10.
 Coal Basin, Mich.: Arnold, 11.
 Colgate: Brown, 23.
 Colorado: Dorf, 10; Elias, 5, 10; Knowlton, F. H., 1; Krystofovich, 1; MacGinitie, 5.
 Comstock: Sanborn, E. I., 2.
 Cretaceous: Graham, R., 4.
 Cuba, Miocene: Berry, 62.
 Denver flora: Knowlton, F. H., 1; Krystofovich, 1.
 Devonian: Høeg, 3.
 Florissant, Colo.: Cockerell, 17; MacGinitie, 5.
 Fort Union: Dorf, 13, 14.
 49 Camp: LaMotte, 2.
 Fox Hills: Brown, 23; Dorf, 10.
 Frontier fm., Wyo.: Berry, E. W., 7.
 Gilboa, N. Y.: Goldring, 1, 3, 4, 5, 10, 18.
 Goshen flora: Chaney, 5.
 Grand Canyon: White, C. D., 1, 4.

Paleobotany—Continued.

- Floras—Continued.
 Grand Coulee, Wash.: Berry, 28.
 Great Plains, Cenozoic: Clements, F. E., 1.
 Greenland: Arnold, 19; Halle, 1; Harris, T. M., 2, 4; Iverson, 1; Mathiesen, 2; Oishi, 1.
 Green River fm.: Berry, 23; Bradley, W. H., 6; Brown, R. W., 1, 5; Cockerell, 17.
 Hermit shale: White, C. D., 4.
 High Plains, Tert.: Chaney, 27.
 Hog Creek, Idaho: Smith, H. V., 1, 2, 4.
 Idaho: Ashlee, 1; Dorf, 6; Gillette, N. J., 2; Olson, B. H., 2; Smith, H. V., 1, 2, 4.
 Illinois: Fuller, G. D., 2; Henbest, O. J., 1; Hoskins, 1; McCabe, L. C., 2; Noé, 9, 10, 12, 18; Reed, F. D., 2; Tehon, 1; Voss, 5.
 Indiana: Potzger, 3.
 Interglacial: Fuller, G. D., 2; Noé, 18; Voss, 5.
 Iowa: Darrah, 23; Keyes, 501.
 Jackfork ss.: White, 29.
 Jackson group, Tex.: Renick, 5.
 Kansas: Elias, 5; Williams, J. S., 12.
 Lamar Valley: Read, C. B., 2, 3.
 Lance-Fort Union: Dorf, 13.
 Lance-Laramie: Dorf, 8.
 La Porte, Calif.: Potbury, 2.
 Latah, Idaho: Ashlee, 1; Berry, E. W., 17.
 Louisiana, Pleist.: Brown, C. A., 1.
 Massachusetts, glacial sediments: Sayles, 9.
 Medicine Bow fm.: Dorf, 8, 10.
 Mexico: Noé, 5.
 Michigan: Kelly, W. A., 8.
 Midcontinent, Stephanian: Elias, 14.
 Midway, Tex.: Parks, H. B., 2.
 Minnesota, Cret.: Berry, 63; Rosendahl, 1.
 Montana: Brown, 22; DeWolf, 4; Fenton, 60; Simpson, 38.
 Nebraska, grasses: Elias, 10.
 New Brunswick: Alcock, 18.
 New York: Arnold, 25, 34; Goldring, 1, 3, 4, 5, 10, 13; McCulloch, W. F., 1.
 North America: Axelrod, 4; Berry, 57; Chaney, 24, 35; Darrah, 11; Noé, 16; Waterschoot van der Gracht, van, 18.
 Nova Scotia: Bell, W. A., 4.
 Oklahoma: White, 29.
 Oregon: Arnold, 27; Chaney, 29, 33, 34; Sanborn, 5; Smith, H. V., 2, 3.
 Pennsylvania: Arnold, 25, 34; Butler, R. D., 3; Jongmans, 7; Willard, 48, 57.
 Permian of America: White, 27.
 Pocono: Jongmans, 7.
 Pottsville flora, Colo.: Read, C. B., 6.

Paleobotany—Continued.

Floras—Continued.

- Rhaetic, Greenland: Harris, T. M., 1.
 Scoresby Sound, Greenland: Harris, T. M., 2.
 Stanley sh., Okla.: White, 29.
 Sucker Creek, Oreg.: Brooks, B. P. W., 2; Smith, H. V., 2, 3.
 Tertiary, N. Am.: Arnold, 27; Axelrod, 2, 3, 4; Ball, O. M., 4, 5; Beck, 13, 14; Berry, 55, 56, 57, 62; Brown, R. W., 14, 17, 22; Chaney, 24, 27, 29, 30, 33, 34, 35, 39; Clements, F. E., 1; Condit, C., 2; Dorf, 6; Fuller, G. D., 2; Graham, R., 4; Hollick, 9; Kirn, 2; Krystofovich, 1; MacGinitie, 5; Noé, 18; Olson, B. H., 2; Parks, H. B., 2; Potbury, 2; Renick, 5; Sanborn, 5; Smith, H. V., 1, 2, 3, 4; Voss, 5.
 Texas: Ball, O. M., 4, 5; Dorf, 11; Kirn, 2; Lee, W., 1; Parks, H. B., 2; Renick, 5.
 Trinidad, Tert.: Berry, 55, 56.
 Trout Creek, Oreg.: Arnold, 27.
 United States: Brown, R. W., 14, 17; Jongmans, 4; Krystofovich, 1.
 Utah: Chaney, 21; Thiesen, 9.
 Virginia: Berry, 61; Brown, W. R., 1; Cooper, B. N., 2; Jongmans, 7.
 Washington: Beck, 13, 14; Berry, 60; Hansen, H. P., 2; LaMotte, 12.
 Wedington ss., Ark.: White, 28, 29.
 West Virginia: Jongmans, 5; Price, P. H., 14, 17.
 Wilcox: Berry, 21.
 Wisconsin: Hansen, H. P., 5.
 Wyoming: Avery, O. P., 1; Brown, 22; Dorf, 7, 10, 12.
 Floral evolution, S. Appalachians: Core, 2.
 Flowering plants, antiquity: Keyes, 486.
 Forests.
 Coal age: Dahlgren, 2.
 Compass of the past: Krystofovich, 2.
 Gilboa, N. Y.: Goldring, 1, 3, 4, 5, 10, 13.
 Ginkgo, Wash.: Beck, G. F., 2, 4, 7, 13; Dake, 18.
 Lava Cast Forest, Oreg.: Anonymous, 177.
 Oregon: Sanborn, 3; Anonymous, 177.
 Petrified Forests: Dake, 22; Jaggar, 11; Wieland, G. R., 1, 20; Anonymous, 27.
 Postglacial migration: Voss, 2.
 Fossil wood, Greenland: Høeg, 1.
 Fossils, fragmentary, classn.: Croneis, 35, 40.
 Miocene lake, Colo.: Caplan, 1.
 Plant-animal, time discrepancies: Sahn, 1.
 Plants, evolution: Darrah, 16.
 Transfer study method: Darrah, 21.
 Foxtail pine, Colo.: Cockerell, 13.
 Fraxinus, N. Y.: West, G. F., 1.

Paleobotany—Continued.

- Fresh-water algae, Colo.: Bradley, W. H., 6.
 Frontier fm., Wyo.: Berry, E. W., 7.
 General: Chaney, 7; Janssen, 3; Lull, 4; Merriam, 17; Noé, 2; Reimann, 13; Seward, 1; Thiesen, R., 4; Wieland, 22.
 Gilboa Fossil Forest, N. Y.: Goldring, 1, 3, 4, 5, 10, 13.
 Gilboaphyton, N. Y.: Arnold, 26.
 Ginkgo: Seward, 5.
 Ginkgo Petrified Forest, Wash.: Beck, G. F., 2, 4, 7, 13; Dake, 18.
 Girvanella: Hazzard, 6; Johnson, J. H., 30-a.
 Glacial, postglacial vegetation: McCulloch, W. F., 1; Sears, 9.
 Gleicheniopsis, Greenland: Miner, E. L., 2; Tutin, 1.
 Glyptostrobus in America: Brown, R. W., 12.
 Grasses, Tert., High Plains: Elias, 5, 10.
 Great Basin: Axelrod, 6; Hazzard, 6.
 Greenland: Arnold, 7; Bierther, 1; Halle, 1; Harris, T. M., 1, 2, 4; Iverson, 1; Mathiesen, 1, 2; Maync, 2; Olsh, 1; Sæve-Söderbergh, 6; Seward, 4; Teichert, 14.
 Green River flore: Berry, 23; Bradley, W. H., 8; Brown, R. W., 1, 5; Cockerell, 17.
 Guatemala, Cret.: Stephenson, L. W., 2.
 Gymnosperms: Chamberlain, C. J., 1; Wodehouse, 3.
 Helsteria, Tenn.-La.: Berry, 59.
 Howe, M. A., on calcareous algae: Weikert, 1.
 Humus stratigraphy, Okla.: Sears, 8.
 Idaho: Berry, 32; Brooks, B. P. W., 2; Dorf, 6.
 Illinois: Artist, 1; Darrah, 9-a; Henbest, O. J., 1; Hoskins, J. H., 1; McCabe, L. C., 2; Noé, 4, 9, 10, 12.
 Indiana: Houdek, 1; Lindsey, 1.
 Insect-cut leaf, Eocene: Berry, 29.
 Insects, borings in fossil wood: Brues, 2.
 Introduction, study of fossils: Shimer, 2.
 Iowa: Lane, G. H., 1.
 Isoetales, Wyo., Mont.: Brown, 22.
 Jurassic plants, Mexico: Noé, 15.
 Kansas: Buddhue, 18, 23; Elias, 11; Miner, E. L., 3.
 Kansasite, fossil resin, Kans.: Buddhue, 18, 23.
 Knowltonella, Wyo.: Berry, 41.
 Laccopteris, Kansas: Miner, E. L., 3.
 Lagenospermum, Pa., Va.: Arnold, 33.
 Lake, Cladophora, and coal balls: Kindle, E. M., 23.
 Lake bogs: Galloway, E. F., 1; Wilson, L. R., 6.
 Lake Michigan area, postglacial veg.: Fuller, G. D., 1.
 Lake Uinta, Colo.-Utah: Bradley, 15.

Paleobotany—Continued.

- Land Connection, Asia-N. Am.: Berry, 45.
 Land plants, origin: Campbell, D. H., 1.
 La Porte flora: Potbury, 2.
 Lava Cast Forest, Oreg.: Anonymous, 177.
 Leaves, dicotyledonous, Tex.: Ball, O. M., 3.
 Leaves, fruits, seeds, Miocene: Brown, R. W., 8.
 Legumes, fossil: Brown, R. W., 15, 16.
 Lepidocarpon, Ill.: Reed, F. D., 1.
 Lepidodendroids, N. Mex.: Keyes, 131.
 Lepidophyte, Carb.: Arnold, C. A., 4, 32.
 Lepidopteris zones, Greenland: Oishi, 1.
 Lepidostrobus: Arnold, C. A., 15; Scott, D. H., 1.
 Lesleya, Lesquereux, Ill.: Florin, 1.
 Life, ancient, around Pacific: Williams, M. Y., 8.
 Lignite, N. Dak.: Gauger, 1.
 Liquidambar, Wyo.: Brown, R. W., 4.
 Lithothamninae, Calif.: Howe, M. A., 6.
 Logs, petrified, Mo.: Clark, E. L., 2.
 Louisiana: Fisk, 4; Huner, 1.
 Lowlands and Ouachita provs.: Ruedemann, P., 3.
 Lycopod seeds, Ill.: Schopf, 5.
 Mahonia, Oreg.: Arnold, 21.
 Manitoba, amber: Carpenter, 11.
 Marine plants: LaMotte, 8; Setchell, 2.
 Maryland: Defandre, 1.
 Medullosa, Ill.: Schapf, 7; Steidtmann, W. E., 2.
 Megalopteris: Florin, 1; White, C. D., 13.
 Meliosma: Berry, E. W., 13, 64.
 Mesaverde cycadeoids: Wieland, G. R., 2.
 Mesozoic food plants and mammalian evolution: Werner, 3.
 Mexico: Müllerried, 16, 29.
 Michigan: Arnold, 30; Houdek, 2.
 Microfossils: Galloway, E. F., 1; Wilson, L. R., 6, 8, 10.
 Microtechnique: Noé, 11.
 Miocene floras, Wash.: Berry, E. W., 19, 28.
 Miocene, Idaho: Berry, 43.
 Montana: Fenton, 32, 43; Dorf, 14.
 Mosses: Cheney, L. S., 1, 2; Steere, 1.
 Neroly fm., Calif.: Condit, C., 1.
 Neuropteris: Jongmans, 6; Williams, L., 1.
 Nevada: Boak, 1; LaMotte, 2; Lauder-milk, 7; MacNell, 8; Palmer, W. S., 1; Sharp, R. P., 4.
 New England, coastal marshes: Chapman, V. J., 1.
 Newfoundland, Sil.: Shrock, 15.
 New Jersey: MacClintock, 6.
 New Mexico: Fosberg, 1; Johnson, J. H., 30-a; Keyes, 131.

Paleobotany—Continued.

- New York: Goldring, 4, 5; Hollick, 7; MacClintock, 6; Mencher, 2; Smith, B., 4.
 Nomenclature, authority citations: Jansen, 1.
 North America-Asia land bridge: Anonymous, 26.
 North polar regions: Berry, 25.
 Nubecularia, Pa., N. Mex.: Johnson, J. H., 30-a.
 Ohio: Berry, E. Willard, 12; Braun, 1; Noé, 10; Sears, P. B., 3.
 Ohio Valley coal balls: Noé, 10.
 Oklahoma: Tate, 1.
 Oldhamia: Ruedemann, R., 3, 38.
 Oligocarpia, Ill.: Darrah, 15, 17.
 Oligocene florule, Vancouver Is., British Columbia: LaMotte, 6.
 Ontario, Dev. fossil zones: Fritz, 9.
 Oregon: Berry, 33; Chaney, 16; Forbes, P. L., 2; Lazell, 4; MacGinitie, 1; Sanborn, E. I., 2; Smith, W. D., 11; Wharton, J. R., 1; Anonymous, 106.
 Origin of angiosperms: Cockerell, 15; Thomas, H. H., 1.
 Ovate bodies on ground-sloth hair: Hausman, 1.
 Paleozoic plants: Arnold, 22; Bassler, 19; Elias, 13.
 Palms: Noé, 14; Anonymous, 120.
 Parallelopora, Wyo.: Johnson, J. H., 31.
 Passage Hills, Greenland: Sæve-Söderbergh, 4.
 Peat: Cocke, 2; Potzger, 2; Sears, 6.
 Peel method: Darrah, 10; Graham, R., 1.
 Pennsylvania: Arnold, C. A., 8; Darrah, 1, 3, 4; Moore, 33; White, C. D., 20.
 Pennsylvanian: Bailey, W. F., 4; Noé, 3.
 Pensauken fm., N. J.: Berry, 51.
 Permian plants: Elias, 13; White, 27.
 Petrified forests: Dake, 22; Jaggard, 11; Wieland, 1, 20; Anonymous, 27.
 Petrified wood with teredo borings: Hughes, G., 2.
 Phytotic theories: Wieland, 8.
 Picea, Mo.: Hansen, E. B., 1.
 Piceoxylon, Greenland: Høeg, 2.
 Pines, closed-cone, Calif.: Mason, H. L., 3.
 Pinoxylon, Black Hills: Kräusel, 1; Read, C. B., 4.
 Pinus: Berry, 46, 54.
 Pityoxylon, Yellowstone: Conard, 1.
 Plankton, radiolarian ooze, N. Y.: Ruedemann, 42.
 Plant distrib., age determination: Chaney, 25.
 Plant fossils in the making: Chaney, 32-a; Anonymous, 134.
 Plant life and philosophy of geology: Gordon, W. T., 1.
 Plant life S. of glacial ice front: Hollick, 5.

Paleobotany—Continued.

- Plants, fossil, collecting, preserving: Sanborn, 4.
- Plants in *Nothotherium* dung, Ariz.: Lauder milk, 11.
- Plants in petroleum mother rocks: White, C. D., 3.
- Platanus stipules*: Berry, 34.
- Pleistocene plants: Berry, 49; Chaney, 26; Hollick, 6; Voss, 1; Williams, R. S., 1, 2.
- Pliocene plants, Calif.: Dorf, 1.
- Pollen and pollen analysis: Barkley, 1; Barnett, 1; Bowman, P. W., 2; Cain, 1; Cocke, 1, 2; Deevey, 1; Erdtman, 2; Geisler, 1; Hansen, H. P., 1, 3, 4; Houdek, 3; Howell, J. W., 1; Janson, 1; Otto, J. H., 1; Oswald, 1; Potzger, 1; Prettyman, 1; Richards, R. R., 1; Sears, P. B., 1, 2, 4, 10, 11, 12, 13; Smith, Wm. M., 1; Voss, 4; Wodehouse, 1, 4.
- Pollen profiles, type: Sears, 10.
- Polyporites: Brown, R. W., 14, 18; Wieland, 17.
- Post-glacial forests and vegetation: McCulloch, W. F., 1; Wilson, L. R., 4, 7.
- Pottsville flora, Colo.: Read, C. B., 6.
- Pre-Cambrian: Moore, E. S., 22.
- Pre-Kansas bog: Nielsen, E. L., 1.
- Principles of: Darrah, 20.
- Protolpidodendron, Va.: Berry, 39.
- Prunus*, Va.: Berry, 54.
- Psaronius*, Ill.: Gillette, N. J., 1; Hoskins, 6; Moon, 1.
- Pseudotsuga*, Oreg.: Arnold, 18.
- Psilophytales, N. Y.: Read, 12.
- Psilophyton, Gaspé: Lang, W. H., 1.
- Pteridosperms: Arnold, 28; Darrah, 2, 12; Seward, 2.
- Pterophyllum*, Utah: Berry, 26.
- Ptychocarpus*, Ill.: Hoskins, 5.
- Pycnoxylon*, Mo.: Cribbs, 4.
- Quebec*: Alcock, 1; Bowman, P. W., 1; Northrop, 10; Twenhofel, 31.
- Quercinium*, Idaho: Boeshore, 2.
- Redwood, Nev.: Walker, P., 1.
- Reefs: Fenton, 32; Gill, J. P., 1; Goldring, 17; Howe, M. A., 2, 4, 6; Johnson, J. H., 27, 28, 32, 33; Plummer, 25; Schuchert, 43; Wieland, 6.
- Research on, Univ. Chicago: Noé, 17.
- Resins, fossil: Buddhue, 17; Dapples, 4.
- Rhododendron*, Calif.: Read, C. B., 1.
- Rocky Mtn. continental fms.: Peck, 15.
- San Bruno, Calif.: Potbury, 1.
- Santa Cruz Is., Calif.: Chaney, 3.
- Sapindus*, climate indicator: LaMotte, 4.
- Saskatchewan, Cret.: Berry, 50.
- Schilderia*, Ariz.: Daugherty, L. H., 1, 2.
- Seed ferns, decline: Krick, 2.
- Seed plants: Arnold, 35; Wieland, 6.
- Seedlike fructifications, Ill.: Krick, 1.
- Seeds, Paleozoic: Arnold, 31; Read, F. D., 3.
- Canadian. peat bogs: McAtee, 1.

Paleobotany—Continued.

- Selaginella*, Ill.: Darrah, 19.
- Selaginellites*, Greenland: Miner, E. L., 1.
- Selenium, Cret. plants, Wyo.: Beath, 2.
- Sequoia* forest, Tert.: Chaney, 6.
- Sequoiioxylon*, Colo.: Andrews, H. N., 1.
- Solidago, Colo.: Cockerell, 10.
- South Dakota, Fossil Cycad Nat. Monument: Anonymous, 109.
- Lance fm.: Berry, 44.
- Sphenopterid fructification, Mich.: Hough, J. L., 2.
- Sphondylophyton, Wyo.: Schultes, 1, 2.
- Sporangites, Dev.: Hough, J. L., 2.
- Spores in coal: Berry, E. Willard, 14; Darrah, 14; Schopf, 1, 3, 4, 6; Sprunk, G. C., 1.
- Spruce: Beck, 6, 10; Anonymous, 107.
- Stephanian equivalents in N. Am.: Darrah, 9.
- Sterculiaceae fruit, Colo.: Berry, 30.
- Strobilus*, Pa.: Arnold, 4.
- Supaia seeds, Grand Canyon: White, 21.
- Systematic revisions, Miocene, 1934-36: LaMotte, 10.
- Taeniopteris*, Pa.: Darrah, 7.
- Taxodium*, Pa.: Richards, 14.
- Tempskya*: Brown, R. W., 11; Read, 10, 14.
- Teredo borings, fossil wood: Lazell, 2; Wharton, J. R., 4.
- Tertiary cycads: Hollick, 8.
- Tertiary floras: Beck, G. F., 1; Chaney, 19; Dorf, 6; Hollick, 8, 9.
- Texas: Adams, J. E., 4; Ball, O. M., 2; Kirn, 1.
- Text book of: Darrah, 18.
- Thaumatopteris* zone, Greenland: Olshi, 1.
- Tilia, Oreg.: LaMotte, 5.
- Tingia, Tex.: Darrah, 18.
- Tomales fm., Calif.: Mason, H. L., 4.
- Torreya, N. C.: Boeshore, 1.
- Trapa?, Saskatchewan: Brown, R. W., 21.
- Tree ferns, Tex.: Atkinson, W. E., 1.
- Tree growth and past climates: Glock, 16.
- Tree roots, influence on soil morphology: Lutz, 3.
- Trichopitys, Colo.: Read, C. B., 5.
- Trigonocarpaceae, Ark.: Deevers, 1.
- Trigonocarpus*, Ohio: Berry, E. Willard, 8.
- Triletes: Bartlett, H. H., 2.
- Trochiliscaceae, Md.: Peck, 7.
- Trochiliscids, N. Am.: Hacquaert, 3.
- Trochiliscus*, Ohio: Hacquaert, 1.
- Trochodendroides*: Brown, 19.
- Upper Cret., Alaska: Hollick, 2.
- Utah: Flowers, 1; Pulver, 1.
- Walchia, Pa., New Bruns.: Darrah, 7.
- Walnuts: Berry, E. W., 14, 48.
- Washington: Beck, G. F., 3; LaMotte, 3; Martin, V. D., 1.
- West Virginia: Fieldner, 6; Haight, 1.

Paleobotany—Continued.

- Whittleseyinae: Halle, 2.
 Wilcox flora: Berry, E. W., 21.
 Willow, Ohio: Berry, E. Willard, 13.
 Wisconsin: Galloway, E. F., 1; Wilson, L. R., 4, 6, 7.
 Wood, fossil: Bailey, I. W., 1; Barksdale, J. D., 2; Beck, 8; Chapman, W., 1; Cribbs, 2; Dunbar, 20; Glanella, 12; Gortner, 1; Keller, 9; Lewis, I. F., 1; Minor, W. C., 2; Mitchell, R. L., 1; Rogers, 29; Russell, J. W., 1; Webber, I. E., 1; Wharton, J. R., 4; Wieland, 15, 18; Anonymous, 98.
 Wyoming: Berry, 35; Brown, R. W., 3; Dorf, 3, 4.
 Xylomites, N. J.: Chrysler, 3.
 Yellowstone Nat. Park: Andrews, H. N., 2; Chapman, W., 1.
 Zamites, Calif.: Wieland, 4.
 Zones, Tertiary: Elias, 8.
- Paleobiology, Juras. Mammalia: Simpson, 21.
- Paleoclimatology. See also Geologic history.
 Arizona: McKee, 11; Sharp, R. P., 6.
 Bermuda, Pleist.: Bryan, 23.
 California, Eocene, Oligocene: Stock, 67.
 Cenozoic, western N. Am.: Chaney, 36.
 Central plains: Van Royen, 2.
 Climate and early man, N. Am.: Antevs, 21.
 Climate and weather cycles: Gillette, 9.
 Climatic change and forest succession: Sears, 7.
 Climatic cycles: Antevs, 25; Bradley, 21; Giles, 3; Gillette, H. P., 1, 5, 6, 9; Schulman, 1.
 Coincidence, climatic and sea-level cycles: Gillette, 5.
 Controls of geol. climates: Giles, 5.
 Criteria for climatic conditions: Hubbard, G. D., 2.
 Eocene climate: Berry, 21; Bradley, W. H., 4.
 Fauna, Pacific Coast, evolution: Howell, A. B., 1.
 General: Gillette, H. P., 2; Lance, 35; Ruedemann, 49.
 Grand Canyon climates: McKee, 2.
 Great Basin: Axelrod, 6.
 Greenland: Teichert, 16.
 Green River epoch: Bradley, W. H., 2.
 Gulf salt deposits: Russell, R. J., 14.
 Humus stratigraphy, Okla.: Sears, 8.
 Hydrographic causes of changes: Parr, 1.
 Illinois, interglacial forests: Voss, 5.
 Indicators, ancient climates: Hubbard, 4.
 Inland Empire: Freeman, O. W., 2.
 Iowa, cycles and glacial recession: Smith, J. E., 13.
 Length, geologic period: Gillette, 4.
 Michigan: Veatch, J. O., 1.
 Microfossils, climate indicators: Wilson, L. R., 8.
 Minnesota, ancient dunes: Cooper, W. S., 9.

Paleoclimatology—Continued.

- North America, ice age: Antevs, 24.
 Pollen deposits: Sears, P. B., 2, 13.
 North polar region: Berry, 25.
 Ohio, fossil pollen: Sears, P. B., 2.
 Ordovician: Foreste, A. F., 3.
 Oregon, late Tert.: Hodge, E. T., 2.
 Paleozoic, pre-Paleozoic climates: Howell, 39.
 Peat deposits, indicators: Giles, 4; Dachnowski-Stokes, 1.
 Pectens, fossil, indicators: Davenport, 1.
 Pennsylvanian climates: Giles, 6.
 Pennsylvanian plants, implications: Noé, 3; White, C. D., 9.
 Pleistocene, Southwest U. S.: Antevs, 19, 28.
 Postglacial: Bryan, 18; Sears, P. B., 4.
 Sea level and climate changes: Gillette, 5; Wanless, 13.
 Texas, climatic zones criteria: Price, W. A., 13.
 Tree growth indices: Glock, 16.
 Southwest U. S.: Antevs, 19, 28.
 Utah: Hansen, G. H., 4; McKee, 11.
 Varved clay and solar radiation weather: Reeds, 2.
 Varves, duration of Eocene: Bradley, 4.
 Volcanic dust and climate: Humphreys, 1.
 Weather, prehistoric: Talman, 1.
- Paleoecology.
 Agnostian trilobites: Howell, 14.
 Algae, environment indicators: Fenton, 56, 58.
 Arizona: McKee, 11.
 Arthropoda: Raymond, 18.
 Black shales, N. Y.: Ruedemann, 27.
 Black shales, origin environment: Twenhofel, 35.
 Cedarville Tert. flora, Nev.-Calif.: LaMotte, 9.
 Cenozoic Mammalia: Schultz, C. B., 7.
 Conodonts: Branson, 21.
 Effect on hist. geology: Twenhofel, 22.
 Environment indicators, algae: Fenton, 56, 58.
 Fauna, Pliocene, Calif.: Adams, B., 1.
 Flora, Cenozoic, N. Am.: Chaney, 35; Clements, F. E., 1.
 Cretaceous, Tert.: Graham, R., 4.
 Foraminifera, Paleozoic: Cushman, 27.
 General: Fenton, 26.
 Great Plains, Cenozoic floras: Clements, F. E., 1.
 High Plains, Tert.: Elias, 22.
 Illinois, Volo bog: Artist, 1.
 Iron ores, sed.: Hayes, 5.
 Mammalia, Cenozoic: Schultz, C. B., 7.
 Marine biology: Fish, C. J., 1.
 Michigan, pollen showing forest succession: Potzger, 1.
 Mollusca, Pleist.: Baker, F. C., 16; Richards, 15.
 New Jersey, tidal lagoon, Barnegat Bay: Lucke, 4.
 Ohio, fossil pollen: Sears, P. B., 2.

Paleoecology—Continued.

- Paleozoic plants: Arnold, 22; Elias, 13.
 Pollen analysis: Cain, 1; Erdtman, 2;
 Potzger, 1; Sears, P. B., 2.
 Sedimentary environments: Anderson,
 G. E., 3.
 Spongiae: DeLaubenfels, 1.
 Trilobita, habits: Scheville, 2.
 Utah: McKee, 11.
 Vertebrata: Case, 21.
 Viewpoints and objects: Fenton, 37.
 Washington bog: Hansen, H. P., 6.
 Worms: Croneis, 21.

Paleogeographic maps.

- Alberta: Hume, 28; McLearn, 13; Russell, 41.
 Antillean region: Schuchert, 31.
 Arctic regions: Frebold, 1, 2.
 Arizona, Grand Canyon: Wheeler, R. B., 1.
 Belt ser.: Fenton, 54.
 California: Loel, 2; Reed, 25.
 Cloverly conglom., Mont., Wyo.: Lam-
 mers, 4.
 Colorado: Johnson, J. H., 2; Lovering, 3.
 Cuba, land-bridge to N. Am.: Corral y
 Alemán, 3.
 Face of the earth: Schuchert, 41.
 Florida: Cooke, C. W., 24.
 General: Schuchert, 19.
 Illinois, Chicago area: Bretz, 10.
 Kansas: Hiestand, 2.
 Land-sea connections, Cent. Am.-West
 Indies: Rutten, L. M. R., 5.
 Mexico: Kellum, 7, 10.
 Minnesota, Lake Agassiz: Sherman, 1.
 New England, Taconic rev.: Kay, G.
 M., 17.
 New Hampshire: Lougee, 9.
 New York: Kay, G. M., 19; Payne, T. G.,
 1.
 North America: Crickmay, C. H., 11;
 Grabau, 5; Nichols, H. W., 2;
 Schuchert, 8, 57; Vokes, 11.
 Ohio: Stout, 15.
 Oil fields and continental spreading:
 Wade, 1.
 Oklahoma oil fields: Hiestand, 2.
 Ontario: Kay, G. M., 19.
 Oregon: Chaney, 33; Weaver, 7.
 Ozarkian: Kobayashi, 1.
 Paleogeographic wall maps: Patton, L.
 T., 2.
 Paleogeology applied to oil geology:
 Levorsen, 11.
 Pennsylvania: Giles, 6; Itter, 1.
 Permian: Schuchert, 25; Willis, 10.
 Pre-Pennsylvanian: Levorsen, 2.
 Rocky Mts.: Bartram, 10; Heaton, 4.
 South Carolina, Coastal Plain: Cooke,
 C. W., 17.
 Texas: Barton, 10; Meyer, W. G., 1;
 Sellards, 27.
 Vaqueros time, Calif.: Loel, 2.
 Washington: Weaver, 7.
 Western N. Am.: Schuchert, 8.
 Wyoming: Branson, C. C., 18; Neely, 4.

Paleogeography. See also Geologic history;
Paleoclimatology; Paleogeographic
maps.

- Alberta, Cret.: McLearn, 13; Russell, 41.
 Ancestral Rocky Mts.: Ver Wiebe, 4.
 Antillean-Caribbean region: Richards,
 16; Schuchert, 31.
 California: Clark, B. L., 5; Edwards, E.
 C., 2; Herold, C. L., 4; Pressler, 2;
 Reed, R. D., 9, 13, 24; Wheeler,
 H. E., 9.
 Canadian Shield: Cooke, 17.
 Carboniferous: Levorsen, 2.
 Cenozoic-Cretaceous continental con-
 nections: Schuchert, 6.
 Central America: Rutten, L. M. R., 3, 5;
 Sonder, 1.
 Colorado, Benton time: Johnson, J.
 H., 5.
 Cretaceous: McLearn, 13; Schuchert, 6.
 Cretaceous-Cenozoic continental connec-
 tions: Schuchert, 6.
 Criteria: Shideler, 7.
 Devonian: Pohl, 1, 7.
 Exploration for oil fields: Howard, W.
 V., 8.
 Florida: Staub, 2.
 General: Graham, R., 3-a; Levorsen,
 5; Schuchert, 2.
 Greenland: Teichert, 14.
 Isthmian continental links: Willis, B.,
 10.
 Land bridge, Siberia-Alaska: Smith, P.
 S., 6.
 Land connections, possible, Caribbean:
 Richards, H. G., 16.
 Land-sea connections, Cent. Am.-West
 Indies: Rutten, L. M. R., 3, 5;
 Sonder, 1.
 Life, ancient, around Pacific: Williams,
 8.
 Mexico: Burkhardt, 1; Imlay, 12.
 Montana, Cambrian: Deiss, 8.
 Mohawkian seas: Keyes, 94.
 Nevada, Helicoprion significance:
 Wheeler, 9.
 New York, Portage: Sheldon, P. G., 1.
 North America: Crickmay, C. H., 11;
 Grabau, 5; Nichols, H. W., 2;
 Ruedemann, 48; Ruedemann and
 Balk, 52; Schuchert, 8, 57; Vokes,
 11.
 Ocean currents and glaciation: Luby, 1.
 Ohio, Cincinnati area: Shideler, 19.
 Oklahoma: Hiestand, 2; Miser, 5.
 Oscillatory movements, Appalachian
 geosyncline: Ruedemann, 5.
 Pacific Ocean: Setchell, 2.
 Paleogeographic wall maps: Patton, L.
 T., 2.
 Paleogeography for paleogeography: De-
 Ford, 6.
 Paleozoic: Ver Wiebe, 6.
 Pennsylvania: Krynlne, 10.
 Periodicity of ocean spreading:
 Schuchert, 19.
 Permian: King, 27; Schuchert, 32.

Paleogeography—Continued.

- Permian sequences, correl. Schuchert, 32.
- Pleistocene: Daly, 9.
- Rocky Mtn. region: Heaton, 3, 6.
- Schuchert's tectonic ideas: Strahov, 1.
- Sedimentary environments: Anderson, G. E., 3.
- Sioux: Schuchert, 8.
- Texas: Bowling, L., 1; Patton, L. T., 3; Sellards, 27.
- Upper Cretaceous: Sears, J. D., 1.
- Utah, Uinta basin: Stagner, W. L., 1.
- Vertebrata, Paleozoic, Mesozoic distrib.: Camp, 11.
- Wyoming, Camb.: Miller, B. M., 2.

Paleogeology.

- Applied to petroleum geology: Levorsen, 11.
- General: Levorsen, 5.
- United States, Carb.: Levorsen, 5.

Paleometeorology. See Paleoclimatology.

Paleontology. For areal see names of States.

See also the classes of animals and Invertebrates (general); Evolution; Paleobotany; Restorations.

- Acila, pelecypod, valid: Schenck, 16.
- Actinoceras, early stages: Flower, 4.
- Age of fossils: Roy, S. K., 1.
- Algae as rock builders: Johanson, J. H., 24.
- Allogenotype, new term: Howell, 23.
- Ancient life, Calif.: Camp, 10.
- Animal evolution: Reed, W. M., 2.
- Appalachian Plateau, Mississippi Valley: Butts, 12.
- Arctic, sub-Arctic faunas: Foerste, 5.
- Aristogenesis: Osborn, 32.
- Bibliographies for: McGuire, 1.
- Biotic sequence by volcanic ash: Keyes, 282.
- Burlington lms., distrib. significance: Keyes, 395.
- Canada, index to, 1917-26: Nicolas, 1.
- Cardiidae, nomenclatural units: Keen, 3.
- Catalogue of Foraminifera: Ellis, B. F., 6.
- Cenozoic marine invertebrates: Harris, G. D., 3.
- Chaetetes: Okulitch, 6.
- Chronology: Crickmay, C. H., 20.
- Classification, dual: Cronels, 31.
- Cleaning microscopic fossils: McNair, 6; Tolmachoff, 2.
- Collecting methods: Schuchert, 51.
- Collecting vertebrate fossils: Sternberg, G. F., 1.
- Colorado, type fossils in Univ. Mus.: Rodeck, 2.
- Conodont assemblages: Branson, 31.
- Conodonts for correl.: Branson, 32; Gunnell, F. H., 5-a.
- Connections, possible, N. Am.-Asia: Smith, P. S., 9; Anonymous, 26.
- Coprolites, ground sloth, N. Mex.: Eames, 1.

Paleontology—Continued.

- Coralline algae: Ruedemann, 6.
- Corals, nomenclature, type sp.: Wells, J. W., 9.
- Correlations by conodonts, Rocky Mts.: Branson, 32.
- Correlations by graptolites: Decker, 14.
- Correlations, N. Am.-Europe, by paleontology: Moore, 38.
- Crabs, fossil, biology: Stenzel, 11.
- Cretaceous, Gulf and W. interior: Stephenson, 22.
- Crinoidal remains as index fossils: Moore, 46.
- Crinoidea, evolution, extinction: Keyes, 465.
- Delimitation of species: Sardeson, 7.
- Dental symbols, revision: Riggs, 5.
- Dentition, earliest, mammalian: Simpson, 37.
- Description, methods: Phleger, 2.
- Description of new sp., methods: Schenck, 2.
- Development and evolution: Swinnerton, H. H., 1.
- Diatoms, pyritized: Schenck, H. G., 3.
- Didymograptus protobifidus in N. Am.: Decker, 16.
- Dinosaurs, trachodont: Lull, 14.
- Diplotype, new term: Knight, J. B., 11.
- Dipnoans, cranial roof: Romer, 17.
- Earth and Man: Huxley, 1.
- Earth and its life: Seers, 1.
- Ecologic interpretations, biostrat. nomenclature: Wheeler, H. E., 1.
- Evolutionary ser. vs. sp. range method: 5.
- Eryops, ilio-sacral attachment: Olson, E. C., 2.
- Eublastoidea, bibl. index: Greger, 4.
- Eurypterid influence, vertebrate history: Romer, 8.
- Evolution, phyletic, patterns: Simpson, 40.
- Principles by paleontology: Osborn, 24.
- Evolution and paleontology: Keith, Sir. A., 1.
- Evolutionary ser. vs. sp. range method: Elias, 18.
- Extinction and extermination: Tolmachoff, 1.
- Facies in strat. paleontology: Kindle, 22.
- Faunal migrations: Keyes, 460; Noé, 16.
- Faunas, migration, evolution, N. Am.: Noé, 16.
- Field study, vertebrate fossils: Clark, J., 4.
- Foraminifera, relationships, ecology: Cushman, 27.
- Fossil fragments, value: Rama Rao, L., 1; Smiser, 1.
- Fossilization: Paine, 1; Willard, 8.

Paleontology—Continued.

- Fossils: Kindle, 16; Lull, 4; Markham, H. C., 1.
 Early views on: Carpenter, 18.
 Field collecting and preparing: Allen, J. E., 3; Camp, 9; Simpson, 41.
 Fragmentary, classn.: Cronels, 35, 40.
 Handling, field and lab.: Allen, J. E., 3; Camp, 9; Simpson, 41.
 How collected: Simpson, 41.
 Plant and animal, time discrepancies: Sahni, 1.
 Serial sectioning apparatus: Zdansky, 1.
 Fossils in museums: Ruedemann, R., 2.
 Fragments of fossils, value: Rama Rao, L., 1; Smiser, 1.
 Fusulinid genera: Dunbar, C. O., 1.
 Fusulinids, classn.: Westheimer, 1.
 Future of paleontology: Cushman, 37.
 Genera, method of comparison: Phleger, 8.
 General: Bradley, J. H., Jr., 1; Fenton, 29; Gould, 8; Hawkins, H. L., 1; Lull, 4; Merriam, J. C., 1, 17; Reimann, 13; Anonymous, 167.
 Genotype in taxonomy: Grant, U. S., IV, 1.
 Greenland: Bierther, 1; Maync, 3.
 Green River fm. microfossils: Bradley, W. H., 8.
 Ground sloth coprolite, N. Mex.: Eames, 1.
 Handbook of: Goldring, 2, 6.
 Heliolites: Okulitch, 6.
 Homotaxial principles: Keyes, 340, 346, 365.
 Horizon of extinction, correl. aid: Thomas, 14.
 Illustrating fossils: Hanna, 15.
 Illustrations, paleont., preparation: Reeside, 8.
 Imbedding fossils in paraffine for cleaning: Cooper, G. A., 12.
 Index fossils, range, environment: Eaton, J. E., 8.
 Insects, fossil: Cockerell, 18.
 Geologic history: Carpenter, 4.
 Introduction to study of fossils: Shimer, 2.
 Invertebrate paleontology, devel. in America: Bassler, 12.
 Invertebrates: Bassler, 12; Cronels, 26; Raymond, 6; Twenhofel, 16; Zittel, 1.
 Keys in systematic paleontology: Simon, 1.
 Landscapes showing ancient life: Knight, C. R., 1.
 Lava tree casts and molds: Finch, R. H., 5.
 Leiobryconus, guide fossil: Chadwick, 21.
 Life, ancient, around Pacific: Williams, M. Y., 8.
 Life long ago: Fenton, C. L., 59.
 Literature of taxonomy: Fenton, M. A., 5.

Paleontology—Continued.

- Living micro-organisms in ancient rocks: Lipman, 1.
 Living past: Merriam, J. C., 3.
 Louisiana, Foraminifera: Howe, H. V., 4.
 Mammalian faunal relationships: Simpson, 34.
 Marking type specimens: Howell, B. F., 2.
 Methods in paleontology: Cronels, 36.
 Mexico, Tampico Embayment: Barker, 2.
 Microfossils, handling, sorting: Borger, 1; Franke, A., 1.
 Microscopic methods, Gulf Coast: Kornfeld, 4.
 Micropaleontology, Midcontinent: Radler, 1.
 Migrations, Cenozoic mammals: Colbert, 8.
 Molds, internal, uses: Cullison, 5.
 Mollusca, index method for comparison: Schenck, 28.
 Mollusca, nonmarine: Henderson, J., 10.
 Morphological study of fossils: Cooper, G. A., 8.
 Naming imperfect fossils: Cockerell, 6.
 Nomenclature, authority citations: Janssen, 1.
 Neoparatype: Plummer, H. J., 7.
 New Mexico, San Juan Basin: Gilmore, C. W., 2.
 New viewpoint: Kindle, 9.
 North America-Asia land bridge: Smith, P. S., 9; Anonymous, 26.
 Oceanographic side: Fenton, 19.
 Oklahoma, Foraminifera: Moreman, 1.
 Orthogenesis: Werner, 4.
 Paleobiology studies: Fenton, 15.
 Paleocology: Fenton, 26; Schultz, C. B., 7; Twenhofel, 22.
 Paleocology and Cenozoic mammals: Schultz, C. B., 7.
 Paleontologic researches: Merriam, J. C., 1.
 Paleontologic table: Cronels, 5.
 Paleontology and evolution: Keith, Sir. A., 1.
 Paleontology in sedimentation: Demorest, M. H., 1-a.
 Paleozoic corals: Okulitch, 6.
 Paleozoic faunal centers: Grabau, 1.
 Paleozoic, late, fusulinid correl.: Dunbar, 16.
 Paleozoic snail borings: Fenton, 22.
 Parallel radiation, geomyid rodents: Wood, A. E., 19.
 Pelecypoda, nomenclature, nomenclature, classn.: Schenck, 13, 34.
 Pelvis, fish to man: Gregory, 19.
 Pennsylvanian fossils showing color: Knight, J. B., 2.
 Photomicrography in oil industry: Snelgr, 2.
 Phyletic senescence: Fenton, C. L., 7.

Paleontology—Continued.

- Plesiosaurus type, classn.: White, T. E., 2.
- Pravognathus for Heterognathus: Stauffer, 15.
- Prehistoric life: Raymond, 20.
- Quantitative measurements: Simpson, 48.
- Recent paleont. lit.: Hanna, G. D., 6.
- Relative growth, vertebrate phylogeny: Phleger, 1, 2.
- Reports, Dept. Paleontology, Harvard Mus. Comp. Zoology: Jackson, R. T., 2; Raymond, P. E., 3; Romer, 11; Stetson, H. C., 1.
- Reptilia, study of: Gilmore, 24.
- Sample washer, microfossils: Driver, 1.
- Scientific illus.: Reeside, 8; Ridgway, J. L., 1.
- Selective stains: Henbest, L. G., 2.
- Serial sectioning, fossils: Simpson, 23.
- Skeleton devel.: Gregory, 25.
- Skull, teeth, devel.: Branson, C. C., 1-a.
- South Dakota Badlands fossils: Bump, J. D., 2.
- Species range, limitation: Matthew, 7.
- Spotting specimens for catalogue nos.: Warthin, 12.
- Stains, selective: Henbest, L. G., 2.
- Statistical methods applied to: Keen, 6.
- Studies, paleobiology: Fenton, 15.
- Subgenus as taxonomic category: Schenck, 31.
- Taxonomy procedure: Croneis, 29.
- Textbook: Berry, E. W., 3; Twenhofel, 16; Zittel, 1.
- Tophomoeotype: Howell, B. F., 3.
- Trituberculy: Gregory, 14.
- Type specimens, preservation: Stephenson, 8.
- University of Cincinnati Mus. cat.: Chappars, 2.
- Types in modern taxonomy: Simpson, 47.
- Types in Mus. Comp. Zoology: Scheville, 1.
- Types in Ohio State Univ. Mus.: Stewart, G. A., 3.
- Variation, misuse of term: Clark, H. L., 3.
- Vertebrate paleontologists: Osborn, 5.
- Vertebrate paleontology, lit. 1928-33: VanderHoof, 12.
- Vertebrate paleontology since 1858: Scott, W. B., 12.
- Vertebrates, evolution: Romer, 18.
- Paleozoic, Mesozoic, distribution: Camp, 11.
- Well cores, examination and report on: McGlamery, 5.
- West Indies, Dutch cat. of fossils: Rutten, L. M. R., 1.
- Xenohelix: Mansfield, W. C., 4.
- Cambrian.**
- Agraulos gibbus for A. convexus: Howell, 38.
- Alabama, Trilobita larval stages: Lallicker, 2.

Paleontology—Continued.

- Cambrian—Continued.**
- Alaska.
- Brachiopoda: Cooper, G. A., 21.
- Briscol fauna: Kobayashi, 2.
- Yukon-Tanana area: Mertie, 16.
- Alberta.
- Algae: Fenton, 51.
- Trilobite nests, burrows: Fenton, 47.
- Algae, environment indicators: Fenton, 56, 58.
- Appalachians, southern: Resser, 21.
- Brachiopoda, Ozarkian, Canadian: Ulrich, 29.
- British Columbia.
- Archaeonassa: Fenton, 49.
- Arthropoda: Raymond, 15.
- Fauna: Kobayashi, 4.
- Burgess shale: Hutchinson, 1; Ruedemann, R., 3; Walcott, C. D., 1.
- California.
- Faunal succession: Mason, J. F., 4.
- Marble Mts. fauna: Mason, J. F., 1.
- Mojave Desert: Crickmay, 17.
- Canada, NW., Trilobita: Kobayashi, 2.
- Colorado, graptolites: Bassett, 2.
- Conchostraca: Ulrich, 7.
- Cordilleran trough, Trilobita: Deiss, 10.
- Crustacea: Resser, 2.
- Edricasteroidea: Bassler, 24.
- Faunas, N. hemisphere: Howell, 26, 40.
- Foraminifera: Howell, B. F., 9.
- Girvanella, Great Basin: Hazzard, 6.
- Graptolites: Ruedemann, 19, 23.
- Great Basin faunal sequence: Mason, J. F., 3.
- Greenland: Oepik, A. A., 1.
- Faunas, eastern: Poulsen, 2.
- Foraminifera: Howell, 7.
- Idaho.
- Pend Oreille Lake fauna: Resser, 19.
- Ptarmigania fauna: Resser, 24.
- Spence sh. fauna: Resser, 23.
- Labrador.
- Cyathospongiae: Okulitch, 2.
- Foraminifera: Howell, 17.
- Trilobita: Resser, 16.
- Massachusetts, Paradoxides fauna: Howell, 24.
- Merostomata: Raasch, 6.
- Minnesota, Van Osier fauna: Stauffer, 23.
- Missouri.
- Bonnerterre dol. fauna: Lochman, 2, 6.
- Ozark region: Ulrich, 6.
- Trilobita: Lochman, 2.
- Montana.
- Acrotreta, homeomorphic: Bell, C., 1.
- Brachiopoda: Campbell, I., 7.
- Faunas: Howell, 25.
- Libby area: Gale, H. R., 3.
- Prototreta: Bell, W. C., 1.
- Trilobita: Campbell, I., 7; Deiss, 11; Kobayashi, 2.
- Nevada.
- Cyathospongia: Okulitch, 3.
- Ehmania fauna: Howell, 29-a.

Paleontology—Continued.

Cambrian—Continued.

Nevada—Continued.

- Faunal succession: Mason, J. F., 4.
 Goodsprings fauna: Mason, J. F., 2.
 Sheep Mtn. fauna: Mason, J. F., 2.
 Trilobita: Kobayashi, 2.

New Brunswick.

- Agnostians: Howell, B. F., 16.
 Paradoxides: Howell, B. F., 20.

Newfoundland.

- Alga: Howell, 42.
 Faunas: Howell, 35, 43; Lochman, 5;
 Resser, 15.

Trilobita: Resser, 15.

New Mexico, Gastropoda: Girty, 11.

New York.

- Algal barrier reef: Goldring, 17.
 Cryptozoon: Goldring, 15.
 Oldhamia: Ruedemann, R., 3.

Nomenclature.

- Cambrian fossils: Resser, 22.
 Trilobita: Resser, 12, 14, 17.

North America.

- Brachiopoda: Keyes, 376; Schuchert,
 56; Ulrich, 33.
 Faunal correl.: Howell, 34.
 General: Grabau, 5.
 Transition faunas: Howell, 41.
 Olenellidae (Mesonacidae), systematic
 position: Raw, 1.
 Paleozoic plankton: Ruedemann, 24.

Pennsylvania.

- Algae, calcareous: Fenton, 46.
 Camptostrota: Ruedemann, 18.
 Scolithus: Cloud, P. E., 1; Miller,
 B. L., 14.

Protaspides of trilobites: Raymond, 16.

Quebec.

- Gaspé fauna: Kindle, C. H., 5.
 Lévis area: Laverdière, 3.

Roemer's Paleozoic types, Tex., redescription: Bridge, 8.

St. Croixan faunas type area: Raasch, 5.

South Dakota, Crepicephalus horizon:

Meyerhoff, 8.

Spence sh. fauna, Utah, Idaho: Resser, 23.

Texas.

- Cap Mtn. fm. faunas: Lochman, 4.
 Gastropoda: Girty, 11.
 Roemer's Paleozoic types, redescription: Bridge, 8.

Trilobita.

- Centroleurinae, classn.: Howell, B.
 F., 8.
 Mississippi Valley, upper: Ulrich, E.
 O., 5.
 Montana: Deiss, 11.
 Nomenclature: Resser, 12, 14.

United States, faunal sequences: Howell, 38.

Utah.

- Crustacean, merostrome: Resser, 6.
 Ptarmigania fauna: Resser, 24.
 Spence sh. fauna: Resser, 23.

Paleontology—Continued.

Cambrian—Continued.

Vermont.

- Agnostian Trilobita: Howell, 16.
 Bovecornellum: Howell, 11.
 Centroleura fauna: Howell, 30.
 Faunas: Raymond, 17.
 Northwestern: Schuchert, 43.
 Ostracoda: Raymond, 19.
 Trilobita: Howell, B. F., 6; Raymond,
 19; Resser, 16.

Wisconsin.

- Aglaspis: Graham, W. A. P., 5.
 Baraboo area: Raasch, 4; Wanen-
 macher, 2.

Foraminifera: Ruedemann, 46.

Wyoming, Trilobita: Miller, B. M., 1.

Carboniferous.

- Actinoceroids: Foerste, 13.
 Alabama, foot prints: Aldrich, T. H., 1.
 Alaska: Kirk, 16; Mertie, 16; Moffitt, 11.
 Clistocrinus: Kirk, 16.
 Alberta: Allan, 37; Fritz, 6.
 Mesoblastus: Fritz, 6.
 Algae: Fenton, 57.
 Ammonite zones, Russia-Midcontinent
 correls.: Plummer, 20.
 Ammonites: Cronels, 34; Plummer, 20.
 Ammonoids: Cronels, 6; Elias, 20;
 Plummer, 21.

Anthracoceras, Okla.: Miller, 43.

Arizona.

- Burlington fauna: Keyes, 250.
 Chouteau fauna: Keyes, 499.
 Coconino ss.: McKee, 4.
 Conularia, Perm.: McKee, 8.
 Grand Canyon floras: White, C. D.,
 4, 21.
 Hermit sh. flora: White, C. D., 4.
 Kaibab lms.: McGee, 11; Wagner, O.
 E., Jr., 1.
 Paleozoic fms.: Stoyanow, 5.
 Paradise fm. fauna: Hernon, 3.
 Torowear fm.: McGee, 11.

Arkansas.

- Boone fauna: Girty, 1.
 Cephalopoda: Miller, 38.
 Conodonts: Cooper, C. L., 7.
 Crinoidea: Moore, 44, 48.
 Echinoids: Cronels, 32.
 Floras: White, 28, 29.
 Griffithides: Wheeler, 7.
 Invertebrates: Girty, G. H., 2.
 Jackfork ss. flora: White, 29.
 Ostracoda: Harlton, 3.
 Stanley sh. flora: White, 29.
 Stegocephalian: Lane, H. H., 1.
 Trigonocarpales: Deevers, 1.
 Worthenella: Girty, 9.

Bellerophon, Gurley's sp.: Weller, J. M., 4.

- Borden rocks, Ind.: Stockdale, 5.
 Brachiopoda: Girty, 2; Rowley, R. R., 1.
 British Columbia.

- Anthracolithic corals: Smith, S., 3.
 Bryozoa, Perm.: Fritz, 2.

Paleontology—Continued.

Carboniferous—Continued.

British Columbia—Continued.

- Cache Creek Perm.: Crockford, 1.
 Cephalopoda, Perm.: Miller, 24, 26.
 Corals, anthracolithic: Smith, S., 3.
 Neoschwagerina, Perm.: Dunbar, 6.
 Propinoceras, Perm.: Miller, A. K., 11.

Bryozoa: Bassler, 23; Fritz, 2.

Calathlops: Arnold, 29.

California.

Anthozoa: Webb, 12.

Trilobita: Wheeler, H. E., 6.

Cephalopoda: Miller, 38; Newell, 3.

Charophyta: Peck, 4.

Chester fossils, Ill., Ky.: Sutton, 5.

Chonetes brazosensis for C. fragilis:
 King, E. H., 6.

Colorado.

Algae and algal lms.: Johnson, J. H., 30, 32.

Coprolites: Johnson, J. H., 20.

Crustaceans: Johnson, J. H., 15.

Footprints: Toepelmann, 4.

McCoy fm.: Roth, 8.

Mosquito Range fms.: Johnson, J. H., 17.

Pottsville flora: Read, 8.

Staffella: Thompson, M. L., 2.

Trichopterys: Read, C. B., 5.

Conodonts: Branson, 38; Ellison, 2.

Corals: Grove, B. H., 3; Webb, 12.

Crinoidea: Keyes, 460, 465; Kirk, 19;
 Moore, 44, 45-a, 48.

Cryptoblastus, Mississippi Valley: Cline,
 L. M., 2.

Custer fauna, Tex., Okla.: Newell, 9.

Delocrinus: Burke, 1.

Drum lms., Kans., Mo.: Sayre, 1.

Endothyranella: Galloway, J. J., 3.

Environment, Penn. life: Moore, R. C., 5.

Eryops brain case: Dempster, 1.

Eupachyrinus: Kirk, 18.

Fauna, St. Louis fm., Mo.: Clark, E. L., 1.

Faunal strat., goniatite phylogeny:
 Bisat, 2.

Faunas, Penn., Mich.: Kelly, W. A., 8.

Fern garden, Mass., R. I.: Sanford, S.
 N. F., 2.

Fayetteville fauna: Cronels, 4.

Fish, Paleozoic: Aldinger, 4; Moy-
 Thomas, 1.

Flora, Am. Perm.: White, 27.

Floras, U. S. and Europe: Jongmans, 4.

Footprints, Ala.: Aldrich, 27.

Fusulina, classn.: Henbest, 9.

Fusulinidae, Tex.: Cronels, 34.

Gastropoda: Girty, 5; Knight, J. B., 12.

Girvanella, N. Mex.: Johnson, J. H., 30-a.

Glyptopleura: Coryell, 3.

Graphocrinus, Mo.: Keyes, 461.

Greenland.

Eastern: Frebold, 2.

Fish: Aldinger, 4, 6; Branson, C. C.,
 7; Nielsen, E., 1.

Paleontology—Continued.

Carboniferous—Continued.

Greenland—Continued.

Kap Stosch fm.: Frebold, 9.

Plants: Halle, T. G., 1.

Permian: Branson, C. C., 7; Frebold,
 1, 3, 4.

Sharks Perm.: Branson, C. C. 7.

Trall Is. fauna: Frebold, 13.

Vertebrate beds: Nielsen, E., 2.

Wollaston fauna: Frebold, 8.

Guatemala, Fusulina: Dunbar, 18.

Hellocoprion, Nev., Calif.: Wheeler, 10.

Holothuroidea: Cronels, 10.

Illinois.

Chaetetes: Heritsch, 1.

Coal ball floras: Fisher, M. C., 1;
 Graham, R., 2, 3; Hoskins, 3, 4;
 Krick, 1; Noé, 7, 9, 12; Reed, F. D.,
 2; Schopf, 10.

Coal measures flora: Hoskins, 3.

Codonothea: Darrah, 13.

Crossothea: Darrah, 13.

Cycadofilicinean roots: Hoskins, 4.

Dadoxylon: Miner, 5.

Dipnoans: Romer, 10.

Euphemus: Weller, 8.

Forest, Mazon Creek: Noé, 8.

Fructifications, seedlike: Krick, 1.

Fusulinidae: Dunbar, 17.

Insecta, Mazon Creek: Carpenter, 21.

Lepidocarpon sporangia: Reed, F.
 D., 1.

Lepidophyte strobilus: Arnold, 32.

Lesleya Lesquereux: Florin, 1.

Lycopod seeds: Schopf, 5.

Medullosa: Schopf, 7; Steidtmann,
 W. E., 2.

Megalopteris Dawson: Florin, 1.

Mesolobus mesolobus type: Weller,
 17.

Oligocarpa: Darrah, 15, 17.

Ostracoda: Coryell, 20; Cronels, 37,
 38, 39, 43, 45.

Pennsylvanian plants: Noé, 6, 12.

Psaronius: Hoskins, 6.

Ptychocarpus: Hoskins, 5.

Seedlike fructifications: Krick, 1.

Selaginella: Darrah, 19.

Sponge spicules: Weller, 10, 13.

Spores in coals: Schopf, 6.

State Mus. fossil plants: Janssen, 3.

Worm: Cronels, 33; Darrah, 9-a.

Yvania: Weller, J. M., 8.

Indiana.

Algae: Shrock, 13.

Coprolites: Shrock, 6.

Ditomopyge: Weller, 22.

Lebetocrinus: Kirk, 21.

Ostracoda: Geis, 1; Payne, K. A., 1.

Pennsylvanian: Culbertson, 1.

Platycrinus: Weller, 9.

Sponge spicules: Weller, 10.

Insecta: Carpenter, 20, 21, 22; Till-
 yard, 1.

Paleontology—Continued.

Carboniferous—Continued.

Invertebrates: Girty, 2.

Iowa.

Botryopteris fructifications: Darrab, 23.

Burlington lms.: Laudon, 12.

Cherokee nautiloids: Miller, A. K., 16.

Chouteau lms. fauna: Keyes, 262.

Coal-ball flora: Darrab, 23.

Crinoidea: Barbour, 12; Keyes, 216;

Laudon, 14; Thomas, A. O., 5.

Echinodermata: Beane, 1.

Fauna, Rockford: Keyes, 326.

Flora, Penn. flowering: Keyes, 501.

Fusulinids: Thompson, M. L., 1.

Gilmore City fm.: Laudon, 5.

Nautiloids, Cherokee: Miller, A. K., 16.

Starfishes: Keyes, 216.

Kansas.

Artinskia: Miller, A. K., 21.

Bryozoa: Elias, 16.

Charophyta: Peck, R. E., 3.

Cherokee nautiloids: Miller, A. K., 16.

Coal field: Williams, J. S., 12.

Coelacanthus: Hibbard, 2.

Conodonts: Ellison, S., 2; Gunnell, F. H., 18.

Cordaitan wood: Steidtmann, W. E., 1.

Ditomopyge: Weller, 22.

Drum lms.: Sayre, 1.

Enteleles: Bridwell, 1.

Flora, Penn.: Moore, 33.

Fossil "nests": Schoewe, 11.

Insecta, Perm.: Carpenter, F. M., 3; Tillyard, 1.

Invertebrata: Newell, 3.

Luta lms.: Boos, M. F., 1.

Mazonia: Elias, 17.

Megasecopterion: Carpenter, 9.

Ostracoda: Delo, 3; Kellett, 3.

Pennsylvanian: Newell, 2.

Permian Insecta: Carpenter, F. M., 3, 20; Tillyard, 1.

Stephanian flora: Elias, 14.

Triticites: Merchant, 1; Newell, 7.

Wedekindellina: Newell, 8.

Kentucky.

Archaeopitys: Scott, D. H., 2.

Corals: Kirk, 20.

Mississippian: Weller, 11.

Pennsylvanian: Culbertson, 1; Morse, W. C., 2.

Productella: Brill, 1.

Pteridosperms: Seward, 2.

Kinderhook ser., Iowa: Laudon, 1.

Lagenospermum, Pa., Va.: Arnold, 33.

Lake Valley lms.: Keyes, 410.

La Salle lms., Ill.: Griffin, 1.

Linguloids, Ohio, Pa.: Girty, 10.

Lithostrotionella: Hayasaka, 1.

Luta lms., Okla., Kans.: Boos, M. F., 1.

Paleontology—Continued.

Carboniferous—Continued.

Mexico.

Aistopoda: Müllerried, 32.

Ammonoids: Miller, 37.

Fusulinidae: Dunbar, 19.

Parafusulina: Dunbar, 11.

Scytinoptera: Carpenter, 19.

Michigan.

Antrim sh. flora: Clark, I. M., 1.

Coal basin flora: Arnold, 11.

Cordaitan wood: Arnold, 6.

Faunas, Penn.: Kelly, W. A., 1.

Flora, coal basin: Arnold, 11.

Lepidophyte cone: Arnold, C. A., 4.

Sphenopterid fructification: Arnold, 9.

Midcontinent region: Keyes, 322.

Mississippian Brachlopoda: Rowley, R. R., 1.

Missouri.

Allagecrinus: Peck, 5.

Ammonoids: Miller, 43.

Annularia, seed-bearing: Elias, 3.

Blastoidea: Peck, 13.

Burlington lms.: Laudon, 12.

Cauloxylon: Cribbs, 5.

Charophyta: Peck, R. E., 3.

Cherokee nautiloids: Miller, A. K., 16.

Conodonts: Branson, E. B., 19, 26;

Branson, E. R., 1; Ellison, 1; Gunnell, F. H., 2, 8.

Cordaites: Cribbs, 1, 3.

Crinoidea: Peck, 14.

Fish: Gunnell, F. H., 8.

Gastropoda: Knight, J. B., 5.

Goniatite: Bisat, 1.

Griffithides: Williams, J. S., 3.

Hannibal fm.: Branson, 34.

Listracanthus: Hibbard, 11.

Logs, petrified: Clark, E. L., 2.

Lower Missn.: Branson, 33, 35, 37.

Mesolobus mesolobus: Weller, 17.

Microcrinoids: Peck, 6.

Münsteroceras: Miller, A. K., 20.

Nautiloidea: Miller, A. K., 16, 41.

Northview fm.: Branson, 34.

Ostracoda: Morey, P. S., 2, 4.

Paleoniscid brain case: Eaton, T. H., 3.

Paleoniscid fish: Case, 23.

Pelecypoda: Williams, J. S., 2.

Pennsylvanian: Bailey, W. F., 4;

Knight, J. B., 5.

Pisces: Branson, 35.

Productus: Girty, 4.

Pycnoxylon: Cribbs, 4.

St. Louis outlier fauna: Kellett, 4;

Knight, J. B., 5.

Seed-bearing Annularia: Elias, 3.

Strophalosia: Hinchey, 1.

Wedekindellina: Newell, 8.

Wood, Missn.: Cribbs, 2.

Worthenella: Girty, 9.

Montana.

Conodonts: Knechtel, 7; Scott, H. W., 3.

Stomatopod: Scott, H. W., 13.

Paleontology—Continued.

Carboniferous—Continued.

Nebraska.

- Brachiopoda: Dunbar, 4.
- Cavellina: Lallicker, 3.
- Cephalopoda: Miller, A. K., 8.
- Ostracoda: Johnson, W. R., 1; Upson, M. E., 1.

New Brunswick.

- Fish: Sternberg, R. M., 1.
- Walchia: Darrah, 7.

Newfoundland, marine fauna: Johnson, H., 3.

New Mexico.

- Algae: Johnson, J. H., 38.
- Cephalopoda: Miller, A. K., 6.
- Fusulinidae: Needham, 6.
- Girvanella: Johnson, J. H., 30-a.
- Nubecularia: Johnson, J. H., 30-a.
- Reptilia: Romer, 22.
- Spirifer: Greger, 1.
- Vertebrata: Welles, 1.

New York-Pennsylvania.

- Archaeopteris: Arnold, 20.
- Embayment, sponges: Caster, 13.

North America.

- Ammonoidea: Miller, 45, 46.
- Bryozoa: Bassler, 29.
- Floras: Darrah, 11.
- Neuropteris ovata: Jongmans, 6.
- Parashumardites: Ruzhencev, 1.
- Pelecypoda: Newell, 10.
- Tetrapoda: Romer, 14.

Nova Scotia.

- Amphibia: Steen, 2.
- Corals: Lewis, H. P., 1.
- Horton-Windsor dist.: Bell, W. A., 1.
- Sydney coal field flora: Bell, W. A., 4.

Windsor area: Bell, W. A., 2.

Ohio.

- Alethopteris: Arnold, 16, 24.
- Allegheny fauna: Sturgeon, 1.
- Amphibia: Steen, 2.
- Angustidontus: Cooper, C. L., 9.
- Cephalopoda: Sturgeon, 2.
- Conemaugh fauna: Laird, W. M., 1.
- Cordaitan wood: Arnold, 5.
- Dipnoans: Romer, 10.
- Footprints: Mitchell, R. H., 2.
- Freeport coal flora: Berry, E. Willard, 12.
- Fusulinids: Thompson, M. L., 5.
- Solenochilus: Sturgeon, 3.
- Tetrapoda: Romer, A. S., 3.
- Trigonocarpus: Berry, E. Willard, 8.

Oklahoma.

- Allagecrinus: Kirk, 15.
- Amphicrinus: Laudon, 13.
- Angustidontus: Cooper, C. L., 9.
- Ankyropteris: Read, 11.
- Ardmore Basin: Tomlinson, C. W., 1.
- Asteriaform fossils: Jones, D. John, 1.
- Atoka fm. fauna: Galloway, J. J., 2.
- Callixylon: Arnold, 15.
- Cephalopoda: Miller, A. K., 13, 33; Smith, H. J., 1.

Paleontology—Continued.

Carboniferous—Continued.

Oklahoma—Continued.

- Conodonts: Cooper, C. L., 4, 11, 12; Harris, R. W., 6; Jones, D. J., 3.
- Crinoidea: Laudon, 18; Strimple, 1, 2, 3.
- Crustacea: Cooper, C. L., 5.
- Eurypteris: Decker, 17.
- Flora, Stanley sh., Jackfork ss.: White, 29.
- Foraminifera: Galloway, J. J., 2.
- Fusulinidae: Skinner, 1; Thompson, M. L., 4.
- Invertebrata: Newell, 3.
- Micropaleontology: Harlton, 7; Warthin, 2.
- Mississippian: Roth, 2.
- Ostracoda: Bradfield, 1; Coryell, 4; Harlton, 3; Harris, R. W., 5, 12; Roth, 1; Wilson, C. W., Jr., 1.
- Staffella: Thompson, M. L., 2.
- Synocrinus: Laudon, 11, 13.
- Ophiuroids, Ill., Ind.: Weller, J. M., 7.
- Ostracoda: Cooper, C. L., 13; Cronels, 42; Harris, R. W., 5; Kellett, 4.
- Paleocyclidae, corals: Bassler, 25.
- Paleozoic plankton: Ruedemann, 24.
- Pebbles in Trias. with Perm. fossils: McKee, 10.
- Pedicellariae, Tex., Ill., Mo.: Gels, 3.
- Pelecypoda: Newell, 11.
- Pennsylvania.
- Archaeopteris: Arnold, 20.
- Brachiopoda: Benson, F. M., 1.
- Branchiosaurus: Romer, 24.
- Coal floral: Darrah, 3, 4.
- Euproops: Willard, 27.
- Insecta: Carpenter, 10.
- Northwestern: Caster, 5.
- Ophiomusium: Berry, C. T., 14.
- Ostracoda: Holland, W. C., 1.
- Penn-York embayment, sponges: Caster, 12.
- Pocono flora: Jongmans, 7.
- Sponges: Caster, 12.
- Taeniopteris: Darrah, 7.
- Vertebrata: Moodie, 9.
- Pennsylvanian: Gilles, 6.
- Permian ammonoid fauna, Tex.: Smith, J. P., 2.
- Permian ammonoid zones: Miller, 44.
- Permian insects, Kans.: Carpenter, F. M., 3, 20; Tillyard, 1.
- Phosphoria fm.: Branson, C. C., 1.
- Plant beds, N. Y., Pa.: Arnold, 25.
- Productidae: Sutton, 14.
- Pseudorthoceratidae: Flower, 9.
- Pteridosperms, Ill., Mo., Pa.: Arnold, 28; Darrah, 12.
- Pterotocrinus: Sutton, 10.
- Schizoblastus, Iowa, Mo.: Cline, L. M., 2.
- Seeds in coal: Reed, F. D., 3.
- Seeds, Paleozoic: Arnold, 31.
- Setigerella, Mo., Ark.: Girty, 9.

Paleontology—Continued.

Carboniferous—Continued.

- South Dakota, Fusulinids: Thompson, M. L., 4.
 Sponges, N. Y., Pa.: Caster, 13.
 Spores, Ill. coal: Schopf, 4.
 Stephanien equivalents in N. Am.: Darrah, 9.
 Tennessee, coal spores: Berry, E. Willard, 14.
 Terebratula: Girty, 8.
 Tetracorals, Paleozoic: Sanford, W. G., 1.
 Tetrapoda: Burke, 5; Olson, 1.
 Texas.
 Ammonites: Elias, 21; Miller, A. K., 3, 41-a; Plummer, 22, 25-a; Schuchert, 47.
 Brachiopoda: Girty, 2, 7; King, R. H., 3.
 Brachydegma: Dunkle, 2.
 Bryozoa: Moore, R. C., 3, 11.
 Burrows and trails: Fenton, 53.
 Conocardium: Harris, Geo. D., 1.
 Conodonts: Stauffer, 4.
 Coral, rugose: Heritsch, 3.
 Cotylosaurs: Price, L. I., 2.
 Crinoida: Moore, 45-a.
 Dipnoans: Romer, 10.
 Eurylepidoides: Case, 17.
 Fauna, Malone Mts.: Albritton, 5.
 Fern: Adams, J. E., 4.
 Fish spine: Moore, R. C., 6.
 Foraminifera: Cushman, J. A., 11; Plummer, H. J., 2.
 Fusulinidae: Dunbar, C. O., 3, 15; Henbest, 10; Schuchert, 47; Thomas, N. L., 4; White, M. P., 2.
 Gastropoda: Nelson, L. A., 1.
 Glass Mts.: King, R. E., 3.
 Guadalupan fauna: Keyes, 405.
 Invertebrates: Williams, J. S., 11.
 Laidosaurus: Olson, E. C., 3.
 Lysorophus: Olson, E. C., 5.
 Lyttonia: Huang, 1.
 Malonophyllum: Okulitch, 7.
 Megalichthys: Romer, 19.
 Olivellites: Fenton, 48.
 Ostracoda: Coryell, 5, 6, 7, 9; Delo, 1; Harlton, 1; Miller, A. K., 3.
 Parafusulina: Dunbar, 11.
 Permian ammonoid zones cf. Russia: Miller, 39.
 Platycrinid columnals: Moore, 47.
 Reefs: Plummer, 25.
 Reptilia: Mathews, 14; Romer, 22, 25.
 Seymouria: White, T. E., 1.
 Spermatodus: Westoll, 3.
 Spongiae: King, R. H., 1, 4.
 Tingia: Darrah, 18.
 Transposed-hinge pelecypod: Newell, 12.
 Trimerorhachis: Case, 16.
 Vertebrates: Romer, 13.
 Waagenophyllum: Heritsch, 12.
 White Horse ss. fauna: Newell, 13.

Paleontology—Continued.

Carboniferous—Continued.

- Trilobita: Weller, 26, 27.
 United States fusulinids: James, B. L., 1.
 Utah.
 Blastoids: Peck, R. E., 2.
 Brachiopoda: Gunnell, F. H., 6.
 Kalbab fm.: McGee, 11.
 Toroweap fm.: McGee, 11.
 Virginia.
 Arachnid: Ewing, H. E., 1.
 Flora, Missn.: Brown, W. R., 1.
 Pocono flora: Jongmans, 7.
 Protocanites: Miller, A. K., 23.
 Walchia: Darrah, 7.
 West Virginia.
 Coal, Alma bed: Fieldner, 6.
 Flora, cf. Europe: Jongmans, 5.
 Greenbrier Co.: Price, P. H., 17.
 Greene fm. flora: Haught, 1.
 Neuropteris: Williams, L., 1.
 Ogleby Park: Tilton, 6.
 Ostracoda: Coryell, 18; Holland, W. C., 1.
 Point Lick, Kanawha Co.: Fieldner, 5.
 Randolph Co.: Reger, 3; Tilton, 8.
 Whittleseyinae genera: Halle, 2.
 Wyoming.
 Brachiopoda: Thomas, H. D., 9.
 Cephalopoda: Miller, A. K., 17, 30.
 Conodonts: Branson, C. C., 3.
 Foraminifera: Branson, C. C., 17.
 Fusulinids: Thompson, M. L., 4.
 Minnelusa fm.: Brady, F. H., 1.
 Ostracoda: Morey, P. S., 3.
 Permian sharks: Branson, C. C., 7.
 Phosphoria fm.: Branson, C. C., 6.
 Punctospirifer: Thomas, H. D., 7.
 Sacajawea fm.: Branson, C. C., 14.
 Sharks, Perm.: Branson, C. C., 7.
 Uinta Co.: Veatch, A. C., 1.
 Yukon, La Berge area: Lees, E. J., 1.
 Zeacrinus, Ill., Ky.: Sutton, 15.
Oretaceous.
 Acla: Schenck, 27.
 Alabama.
 Diploschiza: Stephenson, 9, 11.
 Foraminifera: Sandidge, 1, 2, 3, 4.
 Index fossils: McGlamery, 2.
 Mososaur: Anonymous, 73.
 Reptilia: Renger, 1, 2, 3.
 Turtle, giant: Anonymous, 73.
 Alaska.
 Floras: Hollick, 2.
 Yukon-Tanana area: Mertie, 16.
 Alberta.
 Alberta sh. fossil zones: McLearn, 21.
 Allison flora: Berry, E. W., 6.
 Ammonites: Warren, P. S., 5.
 Ammonoidea: Buckman, 1.
 Blairmore flora: Berry, E. W., 4, 5.
 Centrosaurus: Sternberg, C. M., 19.
 Champsosaurus: Parks, 9.
 Coals, Microscopic features: Jones, I. W., 10.

Paleontology—Continued.

Cretaceous—Continued.

Alberta—Continued.

- Dinosaurs : Parks, W. A., 2, 6, 10;
 Sternberg, C. M., 7, 16.
 Dunvegan fm. : Warren, P. S., 3.
 Edmontonia : Russell, L. S., 40.
 Eodelphis : Simpson, G. G., 9.
 Fauna, Milk River beds : Russell, L. S., 28.
 Foraminifera : Wickenden, 5.
 Gastrolites : McLearn, 14.
 Gastropoda : Russell, L. S., 3.
 General : McLearn, 9; Sternberg, B. M., 2.
 Hadrosaurs : Sternberg, C. M., 16.
 Invertebrata : McLearn, 2.
 Kootenay flora : Berry, E. W., 4.
 Lambeosaurus : Russell, 35.
 Lea Park sh. fauna : Warren, P. S., 14.
 Lizard : Gilmore, 10.
 Mollusca : Dyer, 2; Russell, L. S., 7, 11, 12, 35.
 Monoclonius : Sternberg, C. M., 19.
 Neogastrolites : McLearn, 14.
 Ornithomimus : Sternberg, C. M., 13.
 Peace River area : McLearn, 6.
 Pelecypoda : McLearn, 15.
 Smoky River fm. : Warren, P. S., 3.
 Styracosaurus : Brown, B., 15.
 Troödon : Russell, L. S., 16.
 Turtles : Parks, 6.

Arizona.

- Bisbee faunas : Stoyanow, 6.
 Fossiliferous zones : Stoyanow, 7.
 Gastropoda : Brady, 16.
 Plesiosaur : O'Connell, 1.
 Southeastern : Stoyanow, 8.

Arkansas.

- Foraminifera : Alexander, 16; Cushman, 17.
 Ostracoda : Alexander, 16; Israelsky, 2.

- Saratoga chalk : Thomas, N. L., 5.
 Southwestern : Dane, 1.

Atopochara, Tex., Okla. : Peck, 12.

- Aturia, west N. Am. : Schenck, 5.
 Bairdoppilata, Missn., N. J. : Coryell, 12.
 Barroisiceras : Reeside, 11.
 Benton fauna, Colo., Kans. : Johnson, J. H., 8.

Bonaire, West Indies : Pijpers, 6.

British Columbia.

- Coloradoan fauna : Warren, P. S., 9.
 Harrison Lake area : Crickmay, C. H., 7.

California.

- Carmelo ser. fossil markings : Herold, C. L., 1.
 Diatoms : Hanna, 29.
 Dinosaur : Hesse, 11.
 Foraminifera : Cushman, 6; Martin, L. T., 3.
 General : Anderson, F. M., 14.
 Kentrodiscus : Deflandre, 4.

Paleontology—Continued.

Cretaceous—Continued.

California—Continued.

- Mollusca : Popenoe, 4; Wiedey, 4.
 Paleocene fauna : White, R. T., 2.
 Pelecypoda : Popenoe, 3.
 Plesiosaur : Welles, 2.
 Ptiloteuthis : Rehn, 1.
 Redding quad. : Popenoe, 5.
 Reptilia : Stock, 79.
 Siphogenerian : Parker, R. W., 1.
 Canada.
 Arachnids in amber : Carpenter, 16.
 Dinosaur tracks : Sternberg, 12.
 Insects in amber : Carpenter, 16.
 Mammalia : Russell, L. S., 32.
 Unionidae : Russell, L. S., 19.
 Cephalopoda, west U. S. : Schenck, 5;
 Scott, G., 8.
 Cercidiphyllum : Brown, R. W., 24.
 Ceratopsia : Lull, 9.
 Charophyta, Rocky Mts. : Peck, 10, 15.
 Chesapeake & Delaware Canal area, Del.,
 Md. : Carter, C. W., 1.

Colorado.

- Denver quad. : Johnson, J. H., 10.
 Dinosaur : Brown, B., 16.
 Hemiptera : Oman, 1.
 Plants, Morrison : Berry, 40.
 Resins and waxes in coals : Dapples, 4.
 Vermillion Creek area : Reeside, 6.
 Corals, U. S. : Wells, J. W., 8.
 Crustacea, Atlantic, Gulf Coastal Plains :
 Rathbun, 10.

Cuba.

- Caprinids : Thiadens, 2.
 Central, fauna : Sánchez Roig, 3.
 Echinoids : Lambert, J., 2; Sánchez
 Roig, 2; Weisbord, 1.
 Foraminifera : Palmer, D. B. K., 4;
 Rutten, M. G., 3; Thiadens, 4;
 Voorwijk, 1.
 Ft. Worth fm. fauna, Okla.-Tex. : Con-
 stant, 1.
 Gallowayina : Palmer, D. B. K., 8.
 Lanieria : Jeannet, 2.
 Monopleurid : Thiadens, 2.
 Nerinea : Knipscheer, 1.
 Orbitoides : Gravell, 1.
 Radiolaria : Palmer, D. B. K., 3.
 Rudistae : Boissevain, 1; Palmer, R.
 H., 2; Rutten, M. G., 5; Thiadens,
 1; Vermunt, 5.

Curacao, rudistids : MacGillavry, 1.

Dictyoconus and Orbitolina : Davies, L. M., 1.

Dinosaurs, distrib. : Gries, J. P., 3.

Epitonilidae, west N. Am. : Durham, 2.

Exogyra cancellata zone : Stephenson, 7.

Flagesia, Pacific coast : Anderson, F. M., 5.

Flora, nomenclature : Graham, R., 4.

Florida.

Albula : Cockerell, 12.

Deep wells : Cole, 15.

Paleontology—Continued.

Cretaceous—Continued.

Foraminifera: Cushman, 1; Hanzawa, 1; Tappan, 1; Vaughan, 24.

Fossils, plant, animal, time discrepancies: Sahni, 1.

Fox Hills flora: Dorf, 10.

Gabb's lamellibranch types: Stewart, R., 1.

Georges Bank fossils: Stephenson, 13.

Foraminifera: Cushman, 28.

Plethopora: Bassler, 22.

Ginkgo: Seward, 5.

Globotruncana, distrib.: Thalmann, 13.

Greenland.

Coals, microfossils: Arnold, 7; Miner, E. L., 4.

East: Bøgvad, 2; Frebold, 11; Rosenkrantz, 4.

Gleicheniopsis: Miner, E. L., 2; Tutin, 1.

Invertebrata: Frebold, 6.

Koldewey, Is.: Frebold, 12.

Microfossils in coal: Arnold, 7.

Paleobotany, coal: Miner, E. L., 4.

Plants, western: Seward, 4.

Selaginellites: Miner, E. L., 1.

Traill Is. fauna: Frebold, 13.

Guatemala.

Rudistae: MacGillivray, 2.

Upper Cretaceous: Stephenson, L. W., 2.

Gümbelina, related genera: Cushman, 1.

Gulf, W. interior areas: Stephenson, L. W., 22.

Honduras, Eomontipora: Gregory, J. W., 4.

Idaho, Tempskya: Read, 10.

Jamaica.

Blue Mts.: Trechmann, 1.

Corals: Wells, J. W., 5, 8.

Kansas.

Cephalopoda: Elias, 6; Morrow, 2.

Foraminifera: Morrow, 1.

Hierosaurus: Mehl, 9.

Insect: Carpenter, 14.

Laccopteris: Miner, E. L., 3.

Portheus: Thorpe, 5.

Kentucky: Roberts, 13.

Louisiana.

Caldwell Parish: Huner, 1.

Winn Parish: Huner, 1.

Mammalia: Simpson, G. G., 1, 30.

Manitoba.

Amber: Walker, 17.

Trinacromerum: Russell, 30.

Maryland.

Anomoedus: Berry, C. T., 13.

Conifers: Brown, R. W., 9.

Massachusetts, Cape Cod: Woodworth, 2.

Medicine Bow floral: Dorf, 10.

Mexico.

Ammonites: Imlay, 8.

Aurora fm.: Jones, T. S., 1.

Barrettia: Müllerried, 33.

Biradiolites: Müllerried, 31.

Paleontology—Continued.

Cretaceous—Continued.

Mexico—Continued.

Cardium: Müllerried, 18.

Cephalopoda: Renz, 1.

Echinodermata: Lambert, J., 4.

Echinoids: Müllerried, 22; Lambert, J., 5.

Foraminifera: Barker, 4, 6; Galloway, J. J., 4.

Indidura fm.: Jones, T. S., 1.

Invertebrata: Imlay, 6.

Laguna de Mayran: Imlay, 7.

Mezquital Valley fauna: Müllerried, 34.

Molusca: Anderson, F. M., 9.

Pelecypoda, gigantic: Müllerried, 20.

Plagioptychus: Müllerried, 14.

Rudistids: Palmer, R. H., 1.

San Carlos Mts.: Kellum, 13.

Tehuacan area: Müllerried, 16.

Microfauna, Ft. Worth fm., Tex.-Okla.: Constant, W. L., 1.

Micropaleontology, Niobrara fm.: Loetterle, 1.

Midway fauna relations: Gardner, J. A., 2.

Minnesota, flora: Berry, 63.

Mississippi, Diploschiza: Stephenson, 11.

Montana.

Coals, paleobotanic study: Miner, E. L., 4.

Colgate flora: Brown, R. W., 23.

Crazy Mtn. field fauna: Simpson, 38.

Dinosaurs: Brown, B., 7; Gilmore, 4, 18, 25.

Elasmosaurus: Riggs, 6.

Fort Union fauna: Simpson, 38.

Mammalia, Paleocene: Simpson, 27.

Meniscoëssus: Simpson, 31.

Mollusca: Coryell, 10; Russell, L. S., 21.

Paleocene Mammalia: Simpson, 27.

Shelf fungus: Wieland, 17.

Teleorhinus: Mook, 5, 8.

Turtle: Case, 24.

Mortonicerus Meek, genotype: Stanton, 5.

Multituberculata, skull structure: Simpson, 45.

Nebraska.

Trachodon: Barbour, 10.

Xenocephalus: Campbell, C. B., 1.

Nevada.

Invertebrata: MacNeill, 8.

Plants: MacNeill, 8.

New Jersey.

Ancylocentrum: Chaffee, 3.

Breviarca for Trigonarca: Stephenson, 10.

Bryozoa: Canu, 1.

Cliona: Fenton, 24.

Crocodile: Mook, 3.

Cycadeoideae: Chrysler, 2, 3.

Microfauna: Jennings, P. H., 1.

Xanthias: Rathbun, 11.

Xylomites: Chrysler, 3.

Paleontology—Continued.

Cretaceous—Continued.

New Mexico.

Ceratopsia: Wiman, 1.

Crocodile: Wiman, 3.

Parasaurolophus: Wiman, 2.

Reptilia: Gilmore, C. W., 14.

Turtles: Wiman, 4.

New York, pallinurid: Rathbun, 6.

North America.

Fossil snakes: Gilmore, 23.

Nonionidae: Cushman, 38.

North Carolina, Torreya: Boeshore, 1.

North Dakota.

Conifers: Brown, R. W., 9.

Polyporites: Brown, R. W., 9.

Northwest Territories, ammonites: Warren, 16.

Oklahoma.

Foraminifera: Vanderpool, 4.

Fort Worth fm. microfauna: Constant, 1.

Ostracoda: Vanderpool, 4.

Opossums, recent and fossil: Simpson, 29.

Orbitocyclina Vaughan synonym for Lepidorbitoides Silvestri: Rutten, 16.

Oregon.

Forests: Sanborn, 3.

Rudistids: Luper, R. L., 1.

Ostreidae, Gulf area: Stephenson, 12.

Pelecypoda, Pacific slope not Arcidae: Reinhart, 4.

Range of sp., west interior: Hansen, G. H., 1.

Recent lit., west Am.: Adkins, 5.

Rocky Mts., Mollusca: Henderson, J., 8.

Saskatchewan.

Bearpaw fm.: Warren, P. S., 13.

Floras: Berry, 50.

Hesperorhynchia: Warren, P. S., 17.

Lea Park sh. fauna: Warren, P. S., 14.

Turtles: Russell, L. S., 22.

South Carolina, Invertebrata: Prouty, 6.

South Dakota.

Callanassa: Rathbun, 4.

Dinosaurs and tracks: Anderson, S. M., 1; Bump, 6.

Flora, lower Lance: Berry, 44.

Foraminifera: Anderson, H. W., 1.

Microfauna, Sully mbr. Pierre: Seagrath, 6.

Microfossils, Upper Cret.: Applin, 1.

Pinoxylon: Read, C. B., 4.

Tempskya: Brown, R. W., 11; Read, C. B., 14.

Tennessee.

Foraminifera: Berry, E. Willard, 1; Cushman, 15.

Turtle: Whitlatch, 6.

Texas.

Ammobaculoides: Plummer, H. J., 6.

Ammonites: Adkins, 1, 6; Albritton, 4.

Paleontology—Continued.

Cretaceous—Continued.

Texas—Continued.

Calcsponge: Wells, J. W., 8.

Coastal Plain, W. of Brazos River: Deussen, 1.

Corals, Trinity: Wells, J. W., 2.

Cribratina: Sample, 1.

Cytheridea: Alexander, C. I., 8.

Cytheropteron: Alexander, C. I., 9.

Dicotyledonous leaves: Ball, O. M., 3.

Diploschiza: Stephenson, L. W., 9.

Echinoids: Adkins, 3; Smiser, 2, 4.

Exogyra: Stephenson, L. W., 1.

Fauna, Malone Mts.: Albritton, 5, 8.

Fish: Stovall, 2.

Floras: Ball, D. M., 4; Dorf, 11.

Footprints: Houston, S. H., Jr., 1.

Foraminifera: Albritton, 1, 3; Alexander, C. I., 6; Cushman, 21; Plummer, H. J., 4, 5, 9; Sample, 1.

Gaudryinella: Plummer, H. J., 3.

Hindeastraea: Hoffmeister, 1.

Linter: Stephenson, L. W., 20.

Oil field index fossils: Quesenberry, 1.

Ophiuroid: Alexander, C. I., 2.

Orbitolina: Lynch, S. A., 1.

Orbitulina: Silvestri, 1.

Ostracoda: Alexander, C. I., 1, 10, 13, 14.

Ostrea: Stephenson, L. W., 1.

Pteranodon: Gilmore, 15.

Rudistids: Adkins, 2; Stephenson, L. W., 21.

Trinity corals: Wells, J. W., 2.

Xiphactinus: Price, L. L., 1.

Trinidad.

Coral: Thomas, H. D., 2.

Foraminifera: Cushman, 18; Vaughan, 38.

Hamulus: Rutsch, 6.

Laevinerinea: Dietrich, 2.

Northern Range fauna: Trechmann, 7.

Sabina: Bouwman, 1.

Sphenodiscus: Rutsch, R. E., 6.

Sponglae: Thomas, H. D., 2.

Trochodendroides: Brown, 19.

Utah.

Dinosaurs: Gilmore, 20, 22.

Fish: Tanner, V. M., 1.

Tempskya: Read, 10.

Valvulinidae: Cushman, 32.

Venericardia: Cushman, 29; Rutsch, 3.

Verneulinidae: Cushman, 29.

Virginia, silicified wood: Lewis, I. F., 1.

Virgulinidae: Cushman, 29.

Virgulininae: Cushman, 33.

Washington, Florule: LaMotte, 12.

West Indies, Foraminifera: Palmer, D. B. K., 8.

Wyoming.

Aspen sh. flora: Brown, R. W., 3, 4.

Charophyta: Peck, 9.

Colorado group: Sidwell, 1.

Corson Ranch flora: Dorf, 7.

Paleontology—Continued.

Cretaceous—Continued.

Wyoming—Continued.

- Dinosaur: Gilmore, 6.
 Floras: Brown, R. W., 3, 4; Dorf, 7.
 Knowltonella: Berry, 41.
 Liquidambar: Brown, R. W., 4.
 Mammalia: Simpson, G. G., 4.
 Mollusca: Reeside, 9.
 Myopterygius: Nace, 3.
 Selenium in vegetation: Beath, 2.
 Tempskya: Read, 10.
 Triceratops: Schlaikjer, 3.
 Uinta Co.: Veatch, 1.

Devonian.

- Alaska, Yukon-Tanana area: Mertie, 16.
 Alberta.
 Fauna, Kiln sh.: Burgess, C. H., 1.
 Fish: Warren, 15.
 Timanites: Miller, A. K., 29.
 Ammonoidea: Cronels, 30; Miller, A. K., 22.
 Arizona.
 Bisbee fauna: Keyes, 503.
 Paleozoic fms.: Stoyanow, 5.
 Aulopora: Fenton, M. A., 8, 9, 10.
 Beauvais ss., Mo.: Cronels, 8.
 Bryozoa: Fenton, M. A., 8, 9, 10; McNair, 4.
 Calathiops: Arnold, 29.
 California: Stauffer, C. R., 2.
 Callixylon branching: Berry, E. Willard, 17.
 Canada, Euhanerops: Stensjö, 5.
 Catalogue, card, fossils, N. Am.: Fritz, 4; Howell, 10; Miller, A. K., 22; Ruedemann, 50, 51; Warthin, 9.
 Catskill magnafacies: Caster, 7.
 Cephalopoda, N. Am.: Kindle, 39.
 Charophyta, N. Am.: Peck, R. E., 4.
 Colorado, fish: Bryant, 9.
 Conodonts: Branson, E. B., 17, 20.
 Corals: Fenton, M. A., 8, 9, 10.
 Edrioasteroidea: Bassler, 24.
 Fish, Paleozoic: Moy-Thomas, 1.
 Floras: Arnold, 34; Hoeg, 3.
 Greenland.
 Arthrodira: Stensjö, 3.
 Canning Land: Säve-Söderbergh, 6.
 Depot Is.: Säve-Söderbergh, 6.
 Diploterax: Säve-Söderbergh, 3.
 East: Heintz, 1, 3; Kulling, 2; Säve-Söderbergh, 1, 4, 5; Stensjö, 1, 3.
 Fish: Heintz, 1, 3; Stensjö, 4, 6.
 Gauss Pen.: Säve-Söderbergh, 4.
 Placodermi: Stensjö, 3.
 Phyllolepidia: Stensjö, 3.
 Passage Hills: Säve-Söderbergh, 4.
 Reptilia: Säve-Söderbergh, 5.
 Stegocephalians: Säve-Söderbergh, 2, 5.
 Tetrapoda: Westoll, T. S., 2.
 Vertebrata: Stensjö, 1.
 Helderberg group, Pa., Va., W. Va.: Swartz, F. M., 1, 2.

Paleontology—Continued.

Devonian—Continued.

Illinois.

- Calhoun Co. fauna: Cooper, 26.
 Trilobite: Roy, 6.

Indiana.

- Conodonts: Huddle, 3.
 Corals, tabulate: Werner, 2.
 Corynecrinus: Kirk, 13.
 Crinoid stems on fossil wood: Wickwire, 1.
 New Albany sh., top: Huddle, 2.

Iowa.

- Ammonoids: Miller, A. K., 21, 31.
 Athyris: Fenton, 36.
 Atrypa: Fenton, C. L., 6, 41.
 Aulocaulis: Fenton, M. A., 10.
 Boring sponges: Fenton, C. L., 23.
 Brachiopoda: Stainbrook, 4.
 Corals: Fenton, M. A., 10.
 Crinoidea: Laudon, 8.
 Echinoderms: Stainbrook, 3.
 Foraminifera: Miller, A. K., 12; Thomas, A. O., 4.
 Pentameridae: Stainbrook, 5.
 Phacopinae: Delo, 8.

Kentucky.

- Auloporoids: Okulitch, 9.
 Calamopteryae: Read, 8.
 Corals: Werner, 1, 2.
 Dilechnia: Read, 8.
 Flora: Read, 9.
 General: Savage, T. E., 2, 6.
 Lindströmia, nomenclature; Willoughby, 1.
 Linguloids, Ohio, Pa.: Girty, 10.
 Maine, Rhodocrinus: Goldring, 8.
 Marcellus, Pa.: Willard, 17.

Michigan.

- Arthrodira: Case, E. C., 4.
 Aulopora: Fenton, M. A., 8.
 Atrypa: Fenton, C. L., 5.
 Brachiopoda: Ehlers, 3.
 Bryozoa: Duncan, H. M., 2; McNair, 2.
 Corals, rugose: Sloss, 2.
 Cylindrophylum: Ehlers, 2.
 Dundee lms.: Bassett, 1.
 Fenestellidae: Deiss, 2.
 Gypidula: Imlay, 1.
 Ostracoda: Van Pelt, 1.
 Silesocodonta: Eller, 15.
 Traverse group: Warthin, 5.
 Trepostomata: Duncan, H. M., 1, 2.
 Midwest fossils: Cooper, 24.
 Minnesota, conodonts: Stauffer, 24.

Missouri.

- Atrypae: Greger, 11.
 Conodonts: Branson, E. B., 7.
 Corals: Ball, 19.
 Grassy Creek sh.: Branson, E. B., 18.
 Gruenwaldtia: Greger, 10.
 Megistocrinus zone: Keyes, 479.
 Throopella: Greger, 3.
 Trochiliscaceae: Peck, 7.

Paleontology—Continued.

Devonian—Continued.

Montana.

- Ammonites: Schindewolf, 2.
- Pterygotus: Ruedemann, 28.

Nanicella for Endothyra gallowayi: Henbest, 6.

Nevada.

- Corals, rugose: Stumm, 2, 3.
- Eureka dist.: Merriam, C. W., 13.
- Hypothyridina: Merriam, C. W., 10.
- Tetracorals: Stumm, 1.

New Brunswick, Phlyctaenaspis: Hussakof, 3.

New Hampshire.

- Brachiopoda: Billings, 11.
- Littleton area: Billings, 8.

New Mexico, fauna Sacramento Mts.: Stainbrook, 2.

New York.

- Annelid jaws: Eller, 3, 5.
- Aulocaulis: Fenton, M. A., 9, 10.
- Aulopora: Fenton, M. A., 9, 10.
- Belinurus: Eller, 12.
- Blastoids: Reimann, 8.
- Calamopitys: Thomas, D. E., 1.
- Cephalopoda: Fowler, 1, 2, 6.
- Chemung fm.: Curry, H. D., 1.
- Cistiphyllum: Fenton, C. L., 61.
- Cladoxylon: Read, 7.
- Coccosteus: Bryant, 2.
- Corals: Fenton, C. L., 42; Fenton, M. A., 9, 10.
- Crinoids: Goldring, 9, 12, 13, 14, 18.
- Dipleura: Cooper, 17.
- Echinocaris: Eller, 7, 11.
- Erie Co.: Reimann, 5.
- Eurypterids: Kjellesvig, 2.
- Faunal differentiation: Chadwick, 22.
- Fish: Bryant, 1, 6; Reimann, 14; Wells, J. W., 11.
- Gilboa Petrified Forest: Goldring, 3, 10.
- Gilboaphyton: Arnold, 26.
- Heliophyllum: Fenton, C. L., 66; Wells, J. W., 10.
- Ildraites: Eller, 9.
- John Boyd Thacher Park: Goldring, 7.
- Nautiloidea: Flower, 5.
- Ostracoda: Swartz, F. M., 9-a.
- Otarion: Wheeler, H. E., 5.
- Pelecypoda: Caster, 10, 11.
- Plants: Arnold, 14.
- Pseudohydnoceras: Reimann, 7.
- Psilophytales: Read, 12.
- Pterygotus: Ruedemann, 28.
- Southwestern: Caster, 1.
- Sponges: Caster, 10, 11.
- Terataspis: Reimann, 10.
- Tully fm.: Cooper, 18.

North America.

- Ammonoidea: Miller, A. K., 22, 40.
- Ammonoid migration routes: Schuchert, 53.
- Bryozoa, cyclostomatous: Bassler, 29.
- Eurypterida, cat.: Ruedemann, 51.

Paleontology—Continued.

Devonian—Continued.

North America—Continued.

- Fenestrellinidae, cat.: Fritz, 4.
- Graptolithina, cat.: Ruedemann, 50.
- Ostracoda, cat.: Warthin, 9.
- Pelecypoda: Newell, 10.
- Reefs: Lecompte, 1.
- Phacopid Trilobita: Delo, 11, 12.
- Trilobita: Delo, 11, 12.
- Xiphosura, cat.: Ruedemann, 51.

Northwest Territories, crinoids: Goldring, 16.

Ohio.

- Callixylon: Berry, E. Willard, 9.
- Cladoselache: Woodward, A. S., 4.
- Corals: Schuchert, 50; Stewart, G. A., 11.
- Gymnotrachelus: Dunkle, 3.
- Olentangy sh. fauna: Stauffer, 19, 20.
- Ostracoda: Stewart, G. A., 9.
- Pelecypod: Stewart, G. A., 5.
- Polychaeta: Stauffer, 22.
- Rhinocaris: Stewart, G. A., 6.
- Silica sh.: Stewart, G. A., 2.

Oklahoma.

- Foraminifera: Ireland, 7.
- Ostrocooda: Coryell, 11; Roth, 5.
- Phacopiniae: Delo, 8.

Olentangy sh. fauna: Stauffer, 19, 20.

Ontario.

- Amplexopora: Fritz, 1.
- Aparcites: Fritz, 11.
- Bryozoa: McNair, 1.
- Cephalopoda: Foerste, 1.
- Crinoids: Goldring, 9.
- Fossil zones: Fritz, 9.
- Homalophyllum: Stewart, 8.
- Olentangy sh. fauna: Stauffer, 19, 20.
- Ostracoda: Coryell, 14; Turner, M. C., 1.
- Polychaeta: Stauffer, 22.
- Wood: Russell, J. W., 1.

Ostracoda types: Warthin, 9.

Paleocyclidae, corals: Bassler, 25.

Paleozoic plankton: Ruedemann, 24.

Pennsylvania.

- Aorocrinus: Goldring, 15-a.
- Archaeopteris: Arnold, 17.
- Cephalopoda: Flower, 1; Miller, 34.
- Chemung tracks and trails: Willard, 28.
- Coral reef: Willard, 38.
- Euproops: Eller, 13.
- Eurypterids: Ehlers, 4.
- General: Willard, 12, 59.
- Hypothyridina: Willard, 29.
- Lepidostrobus: Arnold, 15.
- Northwestern: Caster, 1, 5.
- Onondaga faunas: Willard, 41, 52.
- Oriskany group: Cleaves, A. B., 8.
- Ostracoda: Swartz, F. M., 4, 9, 9-a.
- Paramphibius tracks: Caster, 9.
- Plant beds: Arnold, 25.
- Pocono strobilus: Arnold, 10.
- Protolumulus: Eller, 14.
- Red-beds with plants: Butler, H. D., 3.

Paleontology—Continued.

Devonian—Continued.

Pennsylvania—Continued.

- Sauripterus: Gregory, 18.
 Schizodiscus: Cleaves, 2.
 Spirifer: Willard, 39.
 Sponges, siliceous: Caster, 12.
 Sporadoceras: Miller, 27.
 Stytonurus: Willard, 19.
 Tentaculites: Vokes, 9.
 Tully lms. fauna: Willard, 47.
 Phacopid Trilobita, revision: Delo, 7.
 Proposed catalogue Dev. fossils: Kindle, 11, 15.

Pseudorthoceratidae: Flower, 9.

Quebec.

- Bothriolepis: Sohn, 1.
 Bryozoa: Fritz, 8.
 Cephalaspis: Robertson, G. M., 1, 3.
 Dipnoan skull roof: Romer, 16.
 Fish: Graham-Smith, 2; Russell, 42.
 Gaspé fauna: Kindle, 38.
 Helderberg fauna: Clark, T. H., 9.
 Plants, Scaumenac Bay: Arnold, 19.
 Psilophyton: Lang, W. H., 1.
 Scaumenella: Graham-Smith, 1.
 Restorations, Niagara area fossils: Reimann, 11.
 Stromatoperoidea: Croneis, 27; Parks, 11, 12.
 Tennessee, Ostracoda: Wilson, C. W., Jr., 8.
 Tetracorals, Paleozoic: Sanford, W. G., 1.
 Texas, Radiolaria: Aberdeen, 1.
 Trilobita, Lichadian, revision: Phleger, 4.
 Trilobita, phacopid: Delo, 10.
 Trochiliscus, Ky., Ohio: Hacquaert, 1.
 Utah, fish: Branson, E. B., 12; Tanner, V. M., 1.
 Vertebrata, early, environment: Romer, 12.
 Virginia, Protrolepidodendron: Berry, 39.
 West Virginia.
 Chert, Pocahontas Co.: Price, A., 1.
 Greenbrier Co.: Price, P. H., 17.
 Randolph Co.: Tilton, 8.
 Tygart Valley: Tilton, 3.
 Wisconsin, Pelecypoda: Pohl, 3.
 Wyoming.
 Beartooth Butte: fossils: Bryant, 7;
 Dorf, 5; Ruedemann, 31.
 Eurypterids: Ruedemann, 21, 31.
 Fish: Bryant, W. L., 3, 4, 7.
 Flora: Dorf, 3, 4.
 Parallelopora: Johnson, J. H., 31.
 Sphondyliophyton: Schultes, 1, 2.

Jurassic.

Alberta.

- Ammonoites: McLearn, 12.
 Foraminifera: Wickenden, 10.
 Pelecypoda: Warren, P. S., 7.
 Archidae, classn.: Reinhart, 2.

Paleontology—Continued.

Jurassic—Continued.

Arizona.

- Dinosaur: Camp, 6.
 Segisaurus: Camp, 8.
 Brachiopoda: Crickmay, C. H., 23.
 British Columbia.
 Ashcroft: Crickmay, C. H., 8.
 Cephalopoda: McLearn, 1.
 Fernie: Warren, P. S., 5.
 General: McLearn, 6.
 Harrison Lake area: Crickmay, C. H., 7.
 Queen Charlotte Is.: McLearn, 1.
 California.
 Ammonites: Crickmay, C. H., 12.
 Hyatt's unfigured types: Crickmay, C. H., 19.
 Mt. Jura: Crickmay, C. H., 19.
 Charophyta, Rocky Mts.: Peck, 10, 15.
 Colorado.
 Denver quad.: Johnson, J. H., 10.
 Dinosaur tracks: MacClary, 2.
 Hallopus: Schuchert, 55.
 Nanosaurus: Schuchert, 55.
 Cuba.
 General: Sánchez Roig, 4.
 Ichthyosaurus: Torre, R. de la, 2.
 Dinosaurs, distrib.: Gries, 3.
 Ginkgo: Seward, 5.
 Greenland.
 Caturus: Aldinger, 1.
 Caytonia: Harris, T. M., 3.
 Decapods: Van Straelen, 1.
 East: Harris, T. M., 2, 4; Rosenkrantz, 6.
 Floras: Harris, T. M., 2, 4.
 Invertebrates: Spath, 2, 4.
 Plesiosaur: Huene, F. von., 1.
 Scoresby Sound floras: Harris, T. M., 2, 4.
 Traill Is. fauna: Frebold, 13.
 Upper Jurassic: Frebold, 10.
 Mammalia: Simpson, 21, 30.
 Mexico.
 Ammonites: Imlay, 11.
 San Carlos Mts.: Kellum, 13.
 Sonora: Jaworski, 1.
 Tehuacan area: Müllerried, 16.
 Montana, Foraminifera: Sandidge, 6.
 Multituberculata, skull: Simpson, 45.
 New Mexico.
 Fish: Koerner, 1.
 Insect larva: Cockerell, 7.
 North America, Pelecypoda: Newell, 10.
 Oklahoma, dinosaurs: Stovall, 17.
 Oregon, rudistids: Lophur, R. L., 1.
 Ostracoda, Rocky Mts.: Peck, 15.
 Paleobiology, mammals: Simpson, 21.
 Saskatchewan, Foraminifera: Wickenden, 10.
 South Dakota.
 Cupressinoxylon: Lutz, 1.
 Dinosauria: Bump, 6.

Paleontology—Continued.

Jurassic—Continued.

South Dakota—Continued.

Ostracoda: Harper, M. E., 1; Roth, 12.

Texas.

Ammonites: Albritton, 4.

Fauna, Malone Mts.: Albritton, 1, 5, 8.

Foraminifera: Albritton, 1.

Trinidad, ammonites: Hutchison, 2; Spath, 5.

Utah.

Algae: Johnson, J. H., 18.

Apatosaurus: Gilmore, 16.

Wyoming.

Ancyclocladites: Miller, A. K., 1.

Araeodon: Simpson, 44.

Charophyta: Peck, 8, 9.

Dinosaur expedition: Brown, B., 11.

Foraminifera: Peck, 11.

General: Crickmay, 26.

Invertebrates: Branson, C. C., 11.

Uinta Co.: Veatch, 1.

Ordovician.

Actinoceroids: Foerste, 13.

Alabama: Poor, 2.

Alaska, Yukon-Tanana area: Mertie, 16.

Alberta.

Cephalopoda: Ulrich, 24.

Jasper Park: Kindle, C. H., 1.

Algae: Fenton, 56, 57.

Anthozoa, evolution: Okulitch, 15.

Arctic, sub-Arctic faunas: Foerste, 5.

Arizona, Paleozoic fms.: Stoyanow, 5.

Arkansas, graptolites: Decker, 11.

Baffin Is.: Wilson, A. E., 1.

Baffinland fossils: Wilson, A. E., 2.

Batostoma: Sardeson, 36.

Bighorn fm.: Miller, A. K., 2.

Brachiopoda: Sardeson, 1; Ulrich, 29.

British Columbia, graptolites: Ruedemann, 9.

Bryozoa: Sardeson, 35, 42.

Calapoccia revision: Cox, I. H., 5.

California.

Auluroid: Phleger, 3.

Fauna, Inyo Mts.: Phleger, 1.

Canada.

Arctic faunas: Teichert, 12.

Chimacograptus: Cox, I. H., 2.

Corals, Black River: Okulitch, 11.

Trilobita: Kobayashi, 2.

Cephalopoda: Foerste, 18; Ulrich, 24.

Chazy corals: Okulitch, 5.

Cincinnatian fauna: Shideler, 17.

Colorado.

Astraspis: Bryant, 8.

Conodonts: Kirk, S. R., 1.

Eriptychius: Bryant, 8.

General: Branson, E. B., 16.

Conodonts: Branson, E. B., 17; Furnish, 3.

Corals, Chazy: Okulitch, 5.

Crinoidea: Keyes, 465.

Edrioasteroidea: Bassler, 24.

Paleontology—Continued.

Ordovician—Continued.

Endoceroid: Flower, 5-b.

Fenestella: Sardeson, 36.

Fish, Paleozoic: Moy-Thomas, 1.

Fistulipora: Sardeson, 35.

Fletcheria: Okulitch, 10.

Fulton fauna: Shideler, 16.

Greenland.

Cephalopoda: Teichert, 5; Troedsson, 1, 2.

East, faunas: Oepik, A. A., 1; Poulsen, 4; Teichert, 11.

Illinois.

Fernvale fm. fauna: Greger, 9.

Leporditia: Scott, H. W., 1.

Indiana, Kentland area: Shrock, 12.

Iowa.

Cephalopoda: Foerste, 25.

Conodonts: Stauffer, 14.

Decorah fm.: Kay, G. M., 3, 12.

Ostracoda: Kay, G. M., 12; Spivey, R. C., 1.

Schuchertoceras: Miller, A. K., 9.

Jordan ss. fauna: Sardeson, 14.

Kansas, conodonts: Stauffer, 5.

Kentucky: McFarlan, 9.

Kimmiswick, lms., Ill., Mo.: Bradley, J. H., Jr., 2.

Labrador fossils: Little, 1; Roy, S. K., 5.

Lichenocrinus: Faber, 1; Fenton, M. A., 2.

Manitoba, Cephalopoda: Foerste, 7.

Maquoketa, sh.: Ladd, H. S., 1.

Minnesota.

Annelida: Stauffer, 7.

Batostoma: Sardeson, 33.

Cephalopoda: Sardeson, 6.

Conodonts: Stauffer, 11, 14.

Crinoidea: Sardeson, 44.

Cyrtodonta: Sardeson, 47.

Dekayella: Sardeson, 28.

Eridotrypa: Sardeson, 34.

Gonioceras: Sardeson, 21.

Hallopora: Sardeson, 29.

Homotrypa: Sardeson, 34.

Monotrypa: Sardeson, 34.

Monticulipora: Sardeson, 25.

Prasopora: Sardeson, 24.

Shakopee dolomite fauna: Stauffer, 17, 18.

Vanuxemia: Sardeson, 46.

Missouri.

Brachiopoda: Greger, 6.

Cephalopoda: Ulrich, 24.

Conodonts: Branson, E. B., 16, 17.

Dutchtown fauna: Cullison, 4.

Ozark region: Ulrich, 6.

Nevada.

Algae: Merriam, C. W., 12.

Mitospira: Kirk, 7.

New Hampshire, Littleton area: Billings, 8.

Paleontology—Continued.

Ordovician—Continued.

New York.

- Conchopeltis: Knight, J. B., 13.
 Eurypterids: Ruedemann, 22; Sharpe, C. F. S., 1.
 Graptolites: Flower, 10.
 Holoepa: Knight, J. B., 7.
 John Boyd Thacher Park: Goldring, 7.
 Radiolaria: Ruedemann, 40.
 Trenton Falls: Delo, 4.

North America.

- Brachiopoda: Schuchert, 56; Ulrich, 33.

General: Grabau, 5.

Trilobita, phacopid: Delo, 11, 12.

Northwest Territories.

- Bryozoa: Oakley, 2.
 Chaetetes: Oakley, 1.

Ohio.

- Cincinnati area: Chappars, 3.
 Cincinnati fossils: Bucher, 21.
 Gastropod, shell-boring: Bucher, 18.
 Pterygodus: Caster, 11-a.

Oklahoma.

- Ampyx: Decker, C. E., 5.
 Conodonts: Jones, D. John, 2.
 Foraminifera: Moreman, 1.
 Graptolites: Decker, 9.
 Isotelus: Laudon, 15, 17.
 Microfauna: Harris, R. W., 1, 2.
 Simpson group fauna: Harris, R. W., 1.
 Sylvan sh. fauna: Decker, 11.
 Viola lms.: Decker, 7; Ruedemann, 27.

Onchaspis: Secrist, 5.

Ontario.

- Beekmantown: Wilson, A. E., 5.
 Black River: Wilson, A. E., 5.
 Cobourg: Sproule, 1.
 Cornwall area: Wilson, 3.
 Lichenaria: Okulitch, 17.
 Manitoulin Is.: Caley, 1.
 Ostracoda: Kay, G. M., 12.
 Zitteloceras: Fritz, 1.

Ostracoda: Kay, G. M., 20-a; Peck, 10, 15.

Phacopid trilobites, revision: Delo, 7.

Paleozoic plankton: Ruedemann, 24.

Pennsylvania.

- Homalonotus: Whitcomb, 1.
 Martinsburg fauna: Secrist, 4.
 Salonia: Cooper, G. A., 14.
 Taeniaster: Bradford, 46.

Quebec.

- Beatricea: Foerste, 27.
 Brachiopoda: Cooper, G. A., 23;
 Twenhofel, 31, 32.
 Cephalopoda: Foerste, 27, 30.
 Chicoutimi area: Laverdière, 2.
 Fauna, Black River group: Okulitch, 3.
 Graptolites: Laverdière, 5; Ruedemann, 29, 31, 39.
 Lévis area: Laverdière, 3.
 Percé: Foerste, 28.

Paleontology—Continued.

Ordovician—Continued.

Quebec—Continued.

- Timiskaming outlier: Wilson, A. E., 8.
 Trilobita: Cooper, 23; Cox, 4.
 Roemer's Paleozoic types, Tex., redescription: Bridge, 8.
 South Dakota.
 Cephalopoda: Miller, 35.
 Deadwood fm. fauna: Furnish, 2.
 Stictoporella to Arthropora: Sardeson, 38.
 Stromatotrypa to Pachydictya: Sardeson, 37.

Telephides: Ulrich, E. O., 4.
 Tennessee.

- Central Basin, Paleozoic: Bassler, 19.
 Cephalopoda: Ulrich, E. O., 24.
 Graptolites: Ruedemann, 39.
 Oligorhynchus: Cooper, G. A., 16.
 Opercula, Knox dol.: Oder, 2.
 Paleozoic, Central Basin: Bassler, 19.
 Tetracorals, Paleozoic: Sanford, W. G., 1.

Tetradium, revision: Okulitch, 1.

Trilobita, Lichadian, revision: Phleger, 4.

Utah, graptolites: Clark, T. H., 3.

Vermont.

- Cephalopoda: Ulrich, 24.
 Graptolites: Gordon, C. E., 1.
 Northwestern: Schuchert, 43.
 Ostracoda: Raymond, 19.
 Trilobita: Raymond, 19.
 Zitelletta: Howell, 38-a.
 Vertebrates, early, environment: Romer, 12.

Virginia, Hemicystites: Cullison, 6.

Wisconsin.

- Baraboo area: Wannenmacher, 2.
 Graptolites: Decker, 21.
 Green Bay-Lake Winnebago area: Jones, J. A., 1.
 Sponges: Howell, 21.
 Starfish: Jones, J. A., 2.
 Zitteloceras: McKelvey, 1.
 Wyoming, Cephalopoda: Foerste, 21;
 Miller, A. K., 6.

Pre-Cambrian.

- Algae: Fenton, 21, 32, 56, 57, 58.
 Ancient life: Keyes, 248, 253.

Arizona.

- Fucoids, Grand Canyon: McKee, 3.
 Jellyfish, Grand Canyon: Carnegie Inst. Wash., 1, 2; Hinds, 27, 31;
 Van Gundy, 2.
 Belt ser.: Fenton, 21, 32, 54.
 Bioherms, algal reefs: Fenton, 21, 32, 54; Rutherford, R. L., 2.
 Jellyfish, Grand Canyon: Carnegie Inst. Wash., 1, 2; Hinds, 27, 31; Van Gundy, 2.

Montana.

- Algae, Kootenai Falls: Erdmann, 4.
 Bioherms, algal reefs: Fenton, 32.

Paleontology—Continued.

Pre-Cambrian—Continued.

- Northwest U. S. : Keyes, 363, 376.
 Northwest Territories, algae: Rutherford, R. L., 2.
 Quebec: Wilson, M. E., 3.
 Taconic Olenellus fauna: Keyes, 268.
 Washington, archeocyathids: Bennett, W. A. G., 1.

Quaternary.

- Acila: Schenck, 27.
 Alaska.
 Flora: Chaney, 26.
 General: Frick, 3.
 Mammalia: Hill, E. W., 1.
 Yukon-Tanana area: Mertie, 16.
 Antilocaprids: Stirton, 20, 21.
 Arcidae, classn.: Reinhart, 2.
 Arizona.
 Antilocaprine: Roosevelt, 1.
 Edentates: Schenk, 6.
 Egg filled with colemanite: Ward, T. W., 4.
 Mollusca: Reagan, 1.
 Mylodon: Brady, 5.
 Shells, fresh-water: Colton, H. S., 1.
 Tetrameryx: Colbert, 9.
 Atlantic Coastal Plain, S., fauna: Richards, 14.
 Bahamas, Mollusca: Pillsbury, 3.
 Barbados, coral rock: Trechmann, 5.
 Bonaire, West Indies: Pijpers, 6.
 Calcified wood: Brand, L. S., 2.
 California.
 Anabernicula: Ross, R. C., 1.
 Aves: Compton, 2, 3; Howard, H., 10, 15; Miller, Alden H., 1; Millere, L. H., 3, 4, 7, 10, 18, 21.
 Avifauna with human remains: Howard, H., 15.
 Baldwin Hills fauna: Willett, 2.
 Bird tracks, Death Valley: Curry, H. D., 2.
 Bison antiquus: Stock, 65.
 Branta: Miller, L. H., 2.
 Bulimina: Cushman, 1.
 Capromeryx, McKittick: Furlong, 1.
 Caracara, Rancho La Brea: Howard, 13.
 Carpinteria asphalt: Chaney, 15; Grant, 7; Miller, L. H., 10.
 Chendytes: Miller, L. H., 16.
 Ciconia: Miller, L. H., 22.
 Closed-cone pines: Mason, H. L., 3.
 Cosomys: Hinton, 1; Wilson, R. W., 1.
 Deadman's Is.: Crickmay, C. H., 5.
 Dentalium: Greger, 5.
 Eagles, Rancho La Brea: Howard, H., 5.
 Ectopistes, Rancho La Brea: Howard, H., 13.
 Elephants: Stock, 48, 54.
 Eomellivora: Stock, 21.
 Falcons, McKittick: Miller, L. H., 4.
 Fauna, lateral change, Ventura: Bailey, T. L., 4.

Paleontology—Continued.

Quaternary—Continued.

California—Continued.

- Felidae, Rancho La Brea: Merriam, J. C., 7.
 Floras: Chaney, 3, 15; Mason, H. L., 4; Potbury, 1.
 Foraminifera: Kleinpell, 1; Natland, 1.
 Helminthoglypta: Cockerell, 22.
 Horse skull, Rancho La Brea: Antonius, 1.
 Lithothamninae: Howe, M. A., 6.
 McKittick fauna: Furlong, 1; Miller, L. H., 3, 4, 7, 18; Schultz, J. R., 4; Stock, 74, 80.
 Mammal tracks, Death Valley: Curry, H. D., 2.
 Mammalia: Burroughs, H., 1; Curry, H. D., 2; Schultz, J. R., 4; Stirtion, 19, 25; Stock, 4, 7, 66, 72; Wilson, R. W., 3.
 Megalonyx: Lyon, G. M., 1.
 Mollusca: Grant, 7; Oldroyd, 1; Willett, 3.
 Monadenia: Hanna, 25.
 Moris, Playa del Ray: Howard, H., 11.
 Mycteria, Rancho La Brea: Howard, H., 9.
 Northrotherium: Moodie, 11.
 Otus, Samwel Cave: Miller, L. H., 15.
 Parapavo: Howard, H., 12.
 Passarine birds: Miller, Alden, H., 2, 5.
 Peromyscus: Wilson, R. W., 11.
 Pinto Basin site: Campbell, E. W. C., 1.
 Pleistocene: Grant, U. S., IV, 3.
 Rancho La Brea: Antonius, 1; Compton, 3, 7; Engels, 3; Howard, H., 5, 9, 10, 13, 14, 15; Merriam, J. C., 7; Miller, A. H., 1, 2; Moodie, 11; Stock, 4, 7, 66, 72.
 Reef-forming serpulid: Howell, 28.
 Road runner: Larson, 1.
 Saber-tooth tiger: Moodie, 12.
 San Bruno flora: Potbury, 1.
 San Pedro Hills fossils: Woodring, 15.
 Santa Cruz Is. flora: Chaney, 3.
 Serbelodon: Osborn, 30.
 Serpulid, reef-forming: Howell, 28.
 Shells, Pleist.: Cockerell, 23.
 Shrews, Rancho La Brea: Compton, 7.
 Smilodon: Moodie, 11.
 Tlams Pt.: Clark, A., 1.
 Tomales fm. flora: Mason, H. L., 4.
 Toxostoma redivivum: Engels, 3.
 Wolf jaw: Stock, 72.
 Canada.
 Arctic, post-Pleist. fossils: Nichols, D. A., 3.
 Mollusca: Mozley, 2.
 Shells, marine: Richards, 11.
 Unionidae: Russell, L. S., 19.
 Casteroides: Cahn, 2.
 Clinocardium, Pelecypoda: Keen, 1.

Paleontology—Continued.

Quaternary—Continued.

- Colorado, Helisoma : Henderson, J., 12.
 Connecticut.
 Littorina : Knight, J. B., 9.
 Marl deposits : Cooper, G. A., 1.
 Cuba.
 Aves : Wetmore, 6.
 Foraminifera : Thalmann, 5.
 Ground sloths : Matthew, 11.
 Guantanomo Bay area : Vaughan, 21.
 Mecoliotia : Clench, 2.
 District of Columbia plants : Berry, 38.
 Fauna, Pacific Coast, evolution : Howell, A. B., 1.
 Fernando group, Calif. : Waterfall, 1.
 Florida.
 Avifauna : Wetmore, 15.
 Bat : Allen, G. M., 2.
 Diatoms in peat : Hanna, 26.
 Edentates : Holmes, W. W., 1.
 Fauna, marine Pleist : Richards, 21.
 Flagler Beach : Connery, 1.
 Foraminifera : Cole, W. S., 6.
 Mammalia : Gut, 2; Simpson, G. G., 6, 8, 10.
 Marine Pleist. : Richards, 18, 19, 21.
 Mollusca : Mansfield, W. C., 22.
 Parelephas : Osborn, 15.
 Terrapene : Barbour, T., 3.
 Trachemys : Gilmore, 3.
 Folsom culture, Lindenmeier site : Bryan, 45.
 Fossils in deep-sea cores : Henbest, 12.
 Georgia, mammoths, mastodonts : Mitchell, L., 3.
 Glacial, postglacial veg. : Sears, 9.
 Greenland, Mytilus : Noe-Nygaard, 2.
 Gulf Coastal Plain fauna : Richards, 21.
 Gulls, Pleist., distrib. : Miller, L. H., 1.
 Hair, ground sloth : Hausman, 1.
 Hawaii.
 Mollusca : Ostergaard, 2.
 Oysters, Pleist. : Ostergaard, 1.
 Idaho.
 Erethizon : Wilson, R. W., 10.
 Mammals : Schultz, J. R., 3.
 Rodent fauna : Wilson, R. W., 4.
 Sloths : Gazin, 14.
 Illinois.
 Aves : Smith, C. R., 1.
 Cervalces : Galbreath, 2.
 Bog fauna : Riggs, E. S., 3.
 Flora, interglacial and postglacial : Fuller, G. D., 2.
 Forests, Pleist. : Voss, 1.
 Lake Chicago, Glenwood stage : Ball, 9.
 Mammoth, Pleist. : Baker, F. C., 13.
 Mastodon : Smith, C. R., 1.
 Mollusca : Baker, F. C., 1, 3, 9, 15.
 Pleistocene forests : Voss, 1.
 Polygyra : Baker, F. C., 12, 17.
 Pomatiopsis : Baker, F. C., 8.
 Trumpeter swan : Wetmore, 34.
 Vertebrata : Galbreath, 1; Smith, C. R., 3.

Paleontology—Continued.

Quaternary—Continued.

- Indiana.
 Bacon's Swamp, pollen analysis : Otto, J. H., 1.
 Bogs, pollen analysis : Houdek, 1, 3; Howell, J. W., 1; Otto, J. H., 1; Richards, R. R., 1.
 Flora, postglacial : Potzger, 3.
 Cervalces : Gazin, 23.
 Kokomo bog, pollen analysis : Howell, J. W., 1.
 Lake sediments, pollen : Houdek, 3.
 Mammalia : Lyon, M. W., Jr., 1, 3.
 Peat bogs, pollen analysis : Houdek, 1.
 Pollen analysis in bogs : Houdek, 1, 3; Howell, J. W., 1; Otto, J. H., 1; Richards, R. R., 1.
 Postglacial flora : Potzger, 3.
 Symbos : Lyon, M. W., 4.
 Iowa.
 Mastodon tusk : Cable, 3, 4.
 Ruminants, Pleist. : Hay, 1.
 Kansas.
 Cynomys : Hibbard, 7.
 Elephant graveyard : Schaffner, D. C., 3.
 McPherson Co. : Nininger, 7.
 Pitomys : Hibbard, 6.
 Vertebrata : Harnly, 1; Hibbard, 8.
 Kentucky, Pleist. : Cooper, C. L., 2.
 Lagomorphs, Calif., Oreg. : Wilson, R. W., 14.
 Louisiana.
 Caldwell Parish : Huner, 1.
 Corals : Wells, J. W., 4.
 Flora, Pleist. : Brown, C. A., 1.
 Florida Parishes : Fisk, 4.
 Mollusca : Richards, 19, 20.
 Mosses : Steere, 1.
 Winn Parish : Huner, 1.
 Maine, Yarmouth fauna : Whitcomb, 10.
 Mammalia, Columbia Basin : Beck, 11.
 Mammalia, Pleist., N. Am.-Eurasia : Colbert, 4.
 Maryland.
 Cumberland Cave fauna : Gazin, 6; Gidley, 8.
 Cypress swamp, Talbot : Berry, C. T., 4.
 Mammalia, Cumberland Cave : Gidley, 8.
 Taurotragus : Gazin, 6.
 Tursteps : Blake, S. F., 1.
 Massachusetts.
 Cape Cod area : Woodworth, J. B., 4.
 Flora, glacial sediments : Sayles, 9.
 Mastodons : Frick, 4.
 Mexico.
 Fauna, Magdalena Bay : Grant, 11; Jordan, 1.
 Fossil bed, Mexico City : Díaz Lozano, 3.
 Mollusca : Hertlein, 8; Palmer, R. H., 4.
 San Quintin Bay : Manger, 1.

Paleontology—Continued.

Quaternary—Continued.

- Michigan, Elephas : Case, 15.
 Minnesota.
 Biotic community, late Pleist. : Cooper, W. S., 4.
 Flora, Pleist. : Rosendahl, 1.
 Man, Pleist. : Jenks, A. E., 4.
 Mosses : Williams, R. S., 1.
 Mississippi, musk ox : Hay, 7.
 Missouri.
 Mollusca : Greger, 2.
 Picea : Hansen, E. B., 1.
 Mollusca, Pleist., Recent : Shimek, 3.
 Montana, Mollusca : Russell, L. S., 21.
 Nebraska.
 Beaver, giant : Barbour, 9.
 Camel, giant : Barbour, 24, 36.
 Casteroides : Wood, A. E., 16.
 Fauna, Pleist. : Anonymous, 93.
 Gigantocamelus : Barbour, 36.
 Gyraulus : Baker, F. C., 18.
 Hastings area : Cook, 10.
 Mammalia : Barbour, 9, 13, 14, 18, 23, 24, 25, 33, 34, 35; Cook, 4; Schultz, C. B., 2; Wood, A. E., 16.
 Mastodon : Barbour, 18, 23.
 Musk oxen : Barbour, 14.
 Ovibovine : Barbour, 25.
 Rhinoceroses : Cook, 4.
 Nevada.
 Clark Co. : Simpson, 26.
 Egg, Pleist. : Wetmore, 46.
 Elephant : Stock, 12.
 Gypsum Cave : Harrington, M. R., 2.
 Oreamnos : Stock, 59.
 Smith Creek Cave : Howard, H., 8; Stock, 59.
 Spizaetus : Howard, H., 8.
 Newfoundland, Pleist. fauna : Richards, 17.
 New Jersey.
 Flora, Pensauken fm. : Berry, 51.
 Hydrocorallines : Richards, 6.
 Marine fossils : Richards, 5.
 Pensauken fm. flora : Berry, 51.
 New Mexico.
 Antelopes : Stock, 8, 14.
 Birds from cave deposits : Howard, H., 6; Wetmore, 19.
 Burnet Cave fauna : Schultz, C. B., 3.
 Clovis area : Antevs, 17; Clarke, W. T., Jr., 1; Howard, E. B., 4; Lohman, K. E., 4; Stock, 55.
 Clovis fauna : Howard, E. B., 4.
 Clovis lake clays : Antevs, 17.
 Cryptoglaux : Howard, H., 3.
 Diatoms, Clovis lake beds : Lohman, K. E., 4.
 Guadalupe Mts. : Burnet, 1.
 Man, near Folsom : Figgins, 6.
 Mollusca : Clarke, W. T., Jr., 1.
 Pyelorhampus : Miller, Alden H., 4.
 Road runner : Howard, H., 2.
 New York.
 Diatoms : Lohman, K. E., 6.
 Foraminifera : Shupack, 1.

Paleontology—Continued.

Quaternary—Continued.

- New York—Continued.
 Fraxinus : West, G. F., 1.
 Mollusca : Richards, H. G., 1.
 North America.
 Flora, W., Cenozoic : Chaney, 35.
 Horned ruminants : Frick, 5.
 Mammalia, Pleist. : Hall, E. R., 8.
 Pleistocene : Hay, 1-a.
 Rodents : Wilson, R. W., 15.
 Snakes : Gilmore, 23.
 North Carolina.
 Diatoms : Henbest, 11.
 Foraminifera : Henbest, 11.
 Mollusca : Henbest, 11.
 Ohio, Pleist. willow : Berry, E. Willard, 13.
 Oklahoma.
 Elephant wallow : Price, L. L., 2.
 Elephas : Stovall, 4.
 Euceratherium : Stovall, 14.
 Peccary : Johnston, C. S., 1.
 Symbolos : Stovall, 11.
 Tapirus : Stovall, 4.
 Ursus : Stovall, 6.
 Ontario.
 Mollusca : Baker, F. C., 7.
 Valvata : La Roche, 1.
 Oregon.
 Elephants : Avery, O. P., 2.
 Forests : Sanborn, 3.
 Mammalia : Elftman, 1; Packard, 8.
 Paleogeology and Cenozoic mammals : Schultz, C. B., 7.
 Parelephas, Fla. : Osborn, 15.
 Pennsylvania.
 Mastodon : Price, P. H., 4.
 Mollusca : Brooks, S. T., 1.
 Taxodum : Richards, 4.
 Plant life S. of ice front, glacial epoch : Hollick, 5.
 Pleistocene.
 Fauna : Hay, 5.
 Life : Walker, B., 1.
 Mammalia : Hay, 3; Scott, W. B., 1.
 Proboscidea, descent : Osborn, 36.
 Puerto Rico.
 Chiroptera : Anthony, 1.
 Edentata : Anthony, 2.
 Insecta : Anthony, 1.
 Rodentia : Anthony, 2.
 Quebec, Mingan Is. : Twenhofel, 31.
 Rodents, Calif., Oreg. : Wilson, R. W., 14.
 Saskatchewan.
 Gyraulus : Baker, F. C., 11.
 Mollusca : Mozley, 1; Russell, L. S., 20.
 South Carolina.
 Horry clay fauna : Cooke, C. W., 20.
 Mollusca, Intracoastal Waterway : Mansfield, W. C., 16.
 Pamlico fm. fauna : Cooke, C. W., 20.
 Texas.
 Artifacts with extinct mammals : Sellards, 41.

Paleontology—Continued.

Quaternary—Continued.

Texas—Continued.

- Birds: Compton, 1.
- Daemohelix: Wood, H. E., 7.
- Elephants: Shuler, 5.
- Equus: Johnston, C. S., 6.
- Mammalia: Howard, C. A., 2.
- Marine Pleist.: Richards, 22.
- Mollusca: Clarke, W. T., Jr., 3.
- Osteoborus: Stirton, 9.
- Rio Grande area: Trowbridge, A. C., 1.
- Vertebrata, Gulf Coast: Sellards, 40.
- Williams Cave fauna: Ayer, 1.

Utah.

- Diatomaceous marl: Hasler, J. W., 1.
- Elephas: Hansen, G. H., 2.
- Mollusca: Berry, E. G., 1.
- Musk oxen: Stokes, 1.
- Stagnicola: Chamberlain, R. V., 1.

Vermont, plants: Hollick, 6.

Vertebrata, Pleist., N. Am.: Romer, 7.

Vertebrates with human artifacts: Hay, 6.

Virginia.

- Dismal Swamp peat and pollen: Cocke, 2.

Mammalia: Clark, A. H., 2.

Westmoreland Co.: Berry, E. W., 6.

Virgulininae: Cushman, 33.

Washington.

- Camels: Beck, 9.
- Paphia: Frizzell, 1.
- Schizothaerus: Henderson, J., 4.

West Indies.

- Amblyrhiza, St. Martin: Schreuder, 1.
- Reef corals: Gerth, 1.

Wisconsin.

- Apostle Is., Nipissing floral: Wilson, L. R., 2.
- Mosses: Cheney, L. S., 1, 2.
- Postglacial vegetation: Wilson, L. R., 7.

Woods, glacial, preglacial, Nebr., Minn.: Gortner, 1.

Yukon, Bison: Williams, M. Y., 13.

Silurian.

- Actinoceroids: Foerste, 13.
- Arctic, subarctic faunas: Foerste, 5; Teichert, 12.

Arkansas, Proparia: Thomas, N. L., 2.

Baffin Is.: Wilson, A. E., 1.

Baffinland fossils: Wilson, A. E., 2.

Brachiopoda: Ball, J. R., 3; Ulrich, 27.

Canada, Arctic faunas: Teichert, 12.

Cephalopoda: Foerste, 12.

Crinoidea, evolution, extinction: Keyes, 465.

Fish, Paleozoic: Moy-Thomas, 1.

Greenland: Oepik, A. A., 1; Poulsen, 3.

Illinois.

Ceraticaris: Roy, 8, 10.

Conularia: Roy, 9.

Harrisoceras: Flower, 7.

Niagaran nodules fauna: Grubbs, 1.

Sea balls: Cronels, 46.

Worm and assoc. fauna: Roy, S. K., 4.

Paleontology—Continued.

Silurian—Continued.

Indiana.

- Northern: Cumings, 3.
- Ostracoda: Coryell, 13.
- Waldron sh. micro-organisms: Berry, E. Willard, 4.

Iowa.

- Alexandrian ser.: Scobey, 1.
- Cephalopoda: Foerste, 19.

Kentucky.

- General: Foerste, 14.
- Xylodes: Smith, S., 1.

Lichadacea, Mus. Comp. Zoology Harvard: Phleger, 7.

Lichadian Trilobita, revision: Phleger, 4.

Minnesota, Niagaran bioherms: Shrock, 18.

Missouri.

- Bainbridge lms.: Ball, J. R., 1.
- Brachiopoda: Ball, J. R., 3.
- Brassfield lms.: Ball, J. R., 1.
- Camarotoechia: Ball, J. R., 8.
- General: Branson, E. B., 16.
- Southeastern: Ball, J. R., 2, 3.

Multisolenia, Desmidopora resemblance: Fritz, 7.

Newfoundland fossils: Shrock, 15.

New Hampshire, Littleton area: Billings, 8.

New York.

- Bertie fm.: Monahan, J. W., 1.
- John Boyd Thacher Pk.: Goldring, 7.
- Koninkocidaris: Sanford, 9.
- Scolecodonts: Johnson, Helgi, 4.

Niagaran corals, Hudson Bay area: Lee, D., 1.

North America.

- Bryozoa, cyclostomatous: Bassler, 29.
- Reefs: Lecompte, 1.
- Trilobita, phacopid: Delo, 11, 12.

Northwest Territories, graptolites: Ruedemann, 44.

Ohio.

- Cincinnati area: Chappars, 3.
- Cephalopoda: Foerste, 19.
- Crinoidea: Foerste, 29.

Oklahoma.

- Crustaceans: Ruedemann, 33.
- Foraminifera: Ireland, 7; Moreman, 1.
- Graptolites: Decker, 10.
- Pneumatocysts on Monograptus (Lino-graptus): Decker, 18.

Ontario.

- Cephalopoda: Foerste, 19, 29.
- Eramosa fm.: Shaw, E. W., 2.
- Guelph fm.: Shaw, E. W., 2.
- Multisolenia: Fritz, 5, 10.

Paleocyclusidae, corals: Bassler, 25.

Paleozoic plankton: Ruedemann, 24.

Phacopid Trilobita, revision: Delo, 7.

Pennsylvania.

- Dalmanella: Barnsley, 1.
- Dimerocrinus: Witmer, 1.
- Flora, terrestrial: Willard, 48.
- General: Willard, 59.
- Ostracoda: Swartz, F. M., 5.

Paleontology—Continued.

Silurian—Continued.

Quebec.

- Baie des Chaleurs: Parks, 5.
- Brachiopoda: Northrop, 9.
- Cephalopoda: Foerste, 26.
- Eurypterus: Kindle, 21.
- Syndetocrinus: Kirk, 12.
- Stromatoporoida: Parks, 11.
- Tennessee sponges: Howell, 31.
- Tetracorals, Paleozoic: Sanford, W. G., 1.
- Trilobita, revisions: Delo, 7; Phleger, 4.
- Vertebrata, early, environment: Romer, 12.
- West Virginia, Greenbrier Co.: Price, P. H., 17.
- Wisconsin.
- Bioherms: Shrock, 14.
- Dicranopeltis: Mason, C. Y., 1.

Tertiary.

- Acila: Schenck, 27.
- Aelurodon, status: VanderHoof, 14.
- Age of mammals: Simpson, 39.
- Alabama.
- Alga, Eocene: Howe, M. A., 3.
- Bairdia: Howe, H. V., 11.
- Cephalopoda: Miller, A. K., 10.
- Choctaw Bluff fauna: McGlamery, 3.
- Cytheridae: Stephenson, M. B., 5.
- Discocyclina: Vaughan, 31.
- Foraminifera: Cushman, 1, 35; Hadley, W. H., Jr., 2; McGlamery, 4.
- Hantkenina: Howe, H. V., 9; Thalmann, 4.
- Holothurians: McGlamery, 4.
- Index fossils: McGlamery, 2.
- Invertebrates, Eocene: Aldrich, T. H., 2.
- Midway fauna: McGlamery, 4.
- Mollusca: Gardner, 15.
- Nanfalia microfauna: Harris, 11.
- Nontionella: Garrett, J. B., Jr., 1.
- Porpittella: Clark, H. L., 4.
- Venericardia: Chavan, 2.
- Zeugmatolepas: Withers, T. H., 1.

Alaska.

- Cycads: Howe, M. A., 3.
- Floras: Hollick, 9.
- Pisces: Schlaikjer, 8.
- Poul fm.: Clark, B. L., 15.
- Yakataga fm.: Clark, B. L., 15.
- Yukon-Tanana dist.: Mertie, 16.

Alberta.

- Gastropoda: Russell, L. S., 3.
- Mammalia: Russell, L. S., 15.
- Vertebrata: Russell, L. S., 1.
- Algal lms., High Plains: Elias, 3-a.
- Antilocaprids: Stirton, 20, 21.
- Ants of N. Am.: Carpenter, F. M., 2.
- Archaeoceti: Thorpe, 11.
- Arcidae, classn.: Reinhart, 2.

Arizona.

- Bat: Stirton, 4.
- Diploids: Stirton, 15.
- Fossiliferous zones: Stoyanow, 7.
- Navajo country: Reagan, 5.

Paleontology—Continued.

Tertiary—Continued.

Arkansas.

- Basilosaurus: Palmer, K. E. H. V., 5.
- Artiodactyla, N. Am.: Scott, W. B., 11.
- Atlantic Coast Pectinidae: Tucker, H. I., 7.
- Aturia, W. N. Am.: Schenck, 5.
- Badlands, color records: Germann, J. C., 1.
- Bairdopplata, Miss., N. J.: Coryell, 12.
- Barbados.
- Diatomaceae: Robinson, J. H., 24.
- Corals, Eocene: Wells, J. W., 5.
- Beavers: Stirton, 13.
- Beidellite replacing shells: Ross, C. S., 31.
- Bermuda, land shells: Kutchka, 1.
- Bonaire, Dutch West Indies.
- Decapoda: Van Straelen, 2.
- General: Pijpers, 6.
- Brachiopoda, N. Am.: Hatal, 1.
- Brain casts, Mammalia: Tilney, 1.
- British Columbia.
- Flora, Vancouver Is.: LaMotte, 6.
- Trogosus: Russell, L. S., 27.
- Bryozoa: Bassler, 23.
- California.
- Algae: Clark, L. M., 1.
- Algal lms.: Gill, J. P., 1.
- Amyonodonts: Stock, 26, 77.
- Arcidae: Reinhart, 5.
- Arctothere: Stock, 61.
- Artiodactyla: Stock, 46.
- Astrocladus: Richards, G. L., Jr., 1.
- Aturoidea: Miller, A. K., 19.
- Auk: Miller, L. H., 14.
- Aves: Curry, H. D., 2; Howard, H., 1, 4, 7; Miller, Alden H., 6, 7; Miller, L. H., 6, 8, 9, 13, 14, 17; Wetmore, 42.
- Barstow beds fauna: Hall, E. R., 3.
- Bolivina: Adams, B. C., 2.
- Borophagus: VanderHoof, 1.
- Bulimina: Cushman, 1.
- Buliminella: Cushman, 1.
- Campanille: Hanna, G. D., 36.
- Capay fm. fauna: Merriam, C. W., 10.
- Carnivora, Sespe Oligocene: Stock, 28.
- Cedrus: Barghoorn, 1.
- Cephalopoda: Vokes, 7.
- Cernictis: Hall, E. R., 7.
- Cetothere: Kellogg, A. R., 8.
- Chelonia (?): Gilmore, C. W., 19.
- Closed-cone pines: Mason, H. L., 3.
- Columbus parvus: Wetmore, 42.
- Coral: Faustino, 1.
- Cormorants: Howard, H., 4; Miller, L. H., 6.
- Corylus: Mason, H. L., 5.
- Crab: Rathbun, 7.
- Creodontia: Stock, 35.
- Cuyama Pliocene: VanderHoof, 15.
- Diatomaceae: Hanna, G. D., 1, 19, 20; Hendy, 1; Lohman, K. E., 5.
- Discocyclina: Schenck, 1, 11.
- Dolphin: Wilson, L. E., 2.

Paleontology—Continued.

Tertiary—Continued.

California—Continued.

- Dragon fly: Cockerell, 2.
 Dyseohyus: Stock, 69.
 Eden beds flora: Axelrod, 1.
 Echinoidea: Grant, 14; Woodring, 19.
 Elwood field: Smith, W. M., 1.
 Eocene: Murdoch, 1.
 Eohaplomys: Stock, 40.
 Epitonium fallaciosum type: Woodring, 9.
 Eporeodon: Stock, 36.
 Eumysops: Wilson, R. W., 8.
 Faunas, Pliocene: Adams, B., 1; Johnson, F. L., 1.
 Fernando group: Pressler, 2.
 Fish: David, L. R., 1, 2; Hesse, 16.
 Floras: Axelrod, 2, 3, 5; Condit, C. 2; Dorf, 1; LaMotte, 13.
 Foraminifera: Barbat, 1, 3, 4; Berthiaume, 2; Bush, J. B., 1; Church, 5; Cushman, 1, 8, 14, 16, 30, 36, 37; Deslandre, 3; Hobson, 2; Natland, 2; Stewart, R. E., 1, 3; Woodring, 5.
 Foraminifera as index fossils: Adams, B. C., 1-a.
 Fresh-water Mollusca: Pilsbry, 8.
 Gastropoda: Vokes, 8.
 Geese: Miller, Alden H., 6; Miller, L. H., 8.
 Goose footprints: Miller, Alden H., 6.
 Gryphaeoid oyster: Hertlein, 4.
 Hallotis: Hertlein, 10; Vokes, 4; Woodring, 7, 13.
 Hawk: Miller, L. H., 9.
 Helicina: Hanna, 33.
 Heteromyid rodents: Wood, A. E., 15.
 Horse teeth: Bode, 1, 5; Stock, 44, 70.
 Horses: Bode, 1, 4, 5, 6; Stock, 44.
 Hyaeodontidae: Stock, 24.
 Hyaeognathus: Stock, 20.
 Hyopsodontidae: Stock, 34.
 Insectivora, Sespe: Stock, 42.
 Kettleman Hills fossils: Pilsbry, 7.
 Kreyenhagen sh. fauna: Church, 5; Hanna, 19.
 Lagomorphs: Hall, E. R., 3; Wilson, R. W., 20.
 Lamellibranchiata, Eocene: Clark, 18.
 La Porte flora: Potbury, 2.
 Land shells, Sespe: Hanna, 30.
 Lepidocyclus: Tallaferro, 6.
 Leptoreodon: Stock, 52.
 Lithothamnidae: Howe, M. A., 6.
 Los Angeles dist.: Soper, E. K., 2.
 Los Sauces Creek area: Snedden, 1.
 Mammalia: Curry, H. D., 2; Henshaw, 1; Kellogg, A. R., 5; Maxson, 1; Merriam, J. C., 9; Stirton, 25, 26; Stock, 16, 17, 49; Wilson, L. E., 1; Wood, A. E., 18.
 Mammalian tracks: Curry, H. D., 2.

Paleontology—Continued.

Tertiary—Continued.

California—Continued.

- Marginula: Hanna, 34.
 Marine continental records: Eaton, 10.
 Markley fm. fauna: Clark, 27.
 Martinezcancer: Van Straelen, 4.
 Merychippus zone fauna: Bode, 6.
 Metarhinus (?): Stock, 64.
 Miacid, Simi Valley: Stock, 25.
 Microsopsinae: Stock, 34.
 Mimmomys: Hesse, 2.
 Mint Canyon fauna: Maxson, 1; Stirton, 10.
 Miocene: Kleinpell, 8.
 Mixodectid: Stock, 71.
 Mojave Desert flora: Axelrod, 3, 5.
 Mollusca: Hanna, 35; Pilsbry, 8; Vokes, 12; Wiedey, 3, 4; Woodring, 19.
 Moris: Compton, 6.
 Neptunea: Grant, 6.
 Neroly fm. age by plants: Condit, C., 1.
 Oreodonts: Stock, 5.
 Osteoborus: Richey, 1.
 Oysters: Hertlein, 4, 7.
 Paleocene fauna: White, R. T., 2.
 Palos Verdes Hills: Woodring, 17.
 Pecten: Hertlein, 1, 7.
 Peratherium: Stock, 50.
 Perissodactyla: Stock, 27, 51.
 Phalacrocorax: Howard, H., 1.
 Pinnotherids: Rathbun, 9.
 Plants in auriferous gravels: Chaney, 14; Mitchell, R. L., 1.
 Plesippus: Schultz, J. R., 2.
 Pliocene: Grant, U. S., IV, 3; Woodring, 6.
 Pliocene faunas: Grant, U. S., IV, 3; Richey, 2.
 Pliocene floras: Dorf, 1.
 Pliohippus: VanderHoof, 2.
 Pliolunda: Miller, 20.
 Pliomastodon: Matthew, 8.
 Point Loma Pleist.: Webb, 5.
 Porpoise: Kellogg, 6.
 Poway conglom. fauna: Dusenbury, 1.
 Primates: Stock, 29, 31, 33, 71.
 Protitanops: Stock, 60.
 Protohippus: Stock, 44.
 Radiolarian earths: Clark, 29.
 Rodents: Hall, E. R., 3; Wilson, R. W., 5, 19, 20.
 Salinas Valley: Dorn, 1.
 San Miguel Is.: Bremner, 2.
 San Pablo flora: Axelrod, 2.
 Santa Cruz Is.: Bremner, 1.
 Santa Ynez Range: Woodring, 10.
 Silicoflagellates: Hanna, G. D., 13, 19.
 Simi Valley: Woodring, 6.
 Simimeryx: Stock, 37.
 Storks: Miller, L. H., 13.
 Strix brea: Howard, H., 7.
 Syngnathus: Hesse, 15.

Paleontology—Continued.

Tertiary—Continued.

California—Continued.

- Tarsiid primates: Stock, 71.
 Tarsoids: Stock, 78.
 Teeth, horse: Bode, 1, 5; Stock, 44, 70.
 Teleodus: Stock, 45.
 Temblor fm. fauna: Kellogg, 5; Wetmore, 13.
 Termite pellets in opalized wood: Rogers, 29.
 Titanotheres: Stock, 73.
 Turbinolia: Quayle, 3.
 Type, Epitonium fallaciosum: Woodring, 9.
 Typhis: Keen, 8.
 Vaqueros fm.: Loel, 2.
 Velates: Vokes, 3.
 Ventura Basin: Jahns, 4.
 Ventura Co.: Cushman, 16; Gazin, 1; Stewart, R. E., 1.
 Vertebrates: Russell, P. G., 3; Schultz, J. R., 5.
 Viverravus (Plesiomiads): Stock, 41.
 Vole: Hesse, 2.
 Vulture: Miller, L. H., 9.
 Wheatland fm.: Clark, 28.
 Wood, fossil: Chaney, 14; Mitchell, R. L., 1; Webber, I. E., 1.
 California, Oreg., Eocene faunas: Merriam, C. W., 7.
 Canada.
 Foraminifera: Wickenden, 6.
 Mammalia: Russell, L. S., 32.
 Caribbean area, turrils: Harris, G. D., 4.
 Carriacou, West Indies: Trechmann, 8.
 Cassididae-Ficidae relationships: Gardner, 10.
 Castle Hayne-Trent marl fossils: Kelum, 2.
 Cedarville flora, Nev.-Calif.: LaMotte, 9.
 Cenozoic floras, Pacific Basin: Chaney, 23.
 Cephalopoda Aturia, west N. Am.: Schenck, 5.
 Cercidiphyllum: Brown, R. W., 24.
 Charophyta, Rocky Mts. area: Peck, 10, 15.
 Civets: Gregory, 31.
 Claiborne, coastal domes: Weinzierl, L. L., 1.
 Clinocardium: Keen, 1.
 Colorado.
 Algae: Johnson, J. H., 26.
 Algal lms.: Johnson, J. H., 26.
 Berberis: Cockerell, 16.
 Cephaleia: Cockerell, 11.
 Chrydopidae: Carpenter, 12.
 Crocodillians: Schmidt, K. P., 1.
 Cynodesmus: Wilson, J. A., 1.
 Diatryma, supposed bird: Wetmore, 14.
 Dinocerata: Patterson, 11.
 Diptera: James, M. T., 1, 2.
 Ephedra: Wodehouse, 2.
 Erinacids: Patterson, 10.

Paleontology—Continued.

Tertiary—Continued.

Colorado—Continued.

- Floras: Brown, R. W., 1, 5; Hollick, 1; MacGinitie, 5.
 Florissant beds flora: MacGinitie, 5.
 Foxtail pine: Cockerell, 13.
 Gastropoda: Russell, 39.
 Goldenrod: Cockerell, 10.
 Grasses: Elias, 10.
 Green River flora: Brown, R. W., 1, 5.
 Green River shs. pollen: Wodehouse, 1.
 Ischyromys: Friant, 1.
 Holcorpa: Carpenter, 7.
 Lygaedidae: Usinger, 1.
 Miocene lake fossils: Caplan, 1.
 Moth: Forbes, W. T. M., 2.
 Nemestrinidae: Bequaert, 1.
 Pantodonta: Patterson, 11.
 Peratherium: Gazin, 13.
 Plesiadapis: Simpson, 28.
 Rails: Wetmore, 16.
 Rhinoceros: Barbour, 26; Cook, 4.
 Figgins, 5; Wood, H. E., 2d, 5.
 Sequoioxylon: Andrews, H. N., 1.
 Soricid: Patterson, 10.
 Syrphus (?): James, M. T., 1.
 Tiffany fauna: Simpson, 28.
 Titanoides: Patterson, B., 5, 6.
 Water bug: Hungerford, 1.
 Composition, Tert. faunas: Ellisor, 6.
 Coral reefs, Ala.-Ga.: McGlamery, 1.
 Correlations by faunas: Wissler, 1.
 Crustacea, Atlantic, Gulf Coastal Plains: Rathbun, 10.
 Cypress, Costa Rica: Ingram, W. M., 2.
 Cuba.
 Bulimina: Bermúdez y Hernández, 6;
 Parker, F. L., 1.
 Buliminella: Parker, F. L., 1.
 Cepolis: Clench, 1.
 Clypeaster: Lambert, J., 3.
 Corals: Wells, J. W., 7.
 Echinodermata: Lambert, J., 1.
 Echinoids: Lambert, J., 2; Sánchez Roig, 1, 2; Weisbord, 1, 3.
 Eocene fauna, Habana: Bermúdez y Hernández, 3.
 Floras: Berry, 47, 62.
 Foraminifera: Bermúdez y Hernández, 1, 4, 5, 7; Cushman, 1; Ellis, B. F., 9; Hadley, W. H., Jr., 1; Hanzawa, 1; Palmer, D. B. K., 4, 5, 6, 7, 9; Ruten, M. G., 3; Thladens, 4.
 General: Sánchez Roig, 4.
 Guantanamo Bay area: Vaughan, 21, 22.
 Gümbelina: Palmer, D. B. K., 2.
 Hantkenina: Bermúdez y Hernández, 2.
 Leptidocyclus: Vaughan, 25.
 Manati: Duelo, 1.
 Mollusca: Aguayo, 1; Richards, 9.
 Radiolaria: Palmer, D. B. K., 3.
 Rudists: MacGillivray, 4.
 Seabrookia: Bermúdez y Hernández, 8.

Paleontology—Continued.

Tertiary—Continued.

Curaçao, West Indies.

Foraminifera: Koch, R., 1, 2.

Serree de Cuba lms.: Rutten, M. G., 1.

Cytheridea shell structure: Stephenson, M. B., 2.

Cytheropteron, Ala.-La.-Tex.: Martin, J. L., 1.

Desmostylus, sirenian: VanderHoof, 11.

Dictyonus: Davies, L. M., 1; Vaughan, 15.

Dogs, origin: Colbert, 11.

Dominican Republic.

Cupraeidae: Ingram, W. M., 3.

Spondyli: Palmer, K. E. V. H., 4.

East Indian-equatorial Am. faunas, Eocene: Berry, E. Willard, 3.

Faunas: Croneis, 28; Dunbar, 13.

Fernando group, Calif.: Waterfall, 1.

Ficidae-Cassididae, relationships: Gardner, 10.

Fish, Mex.-W. Indies-Trinidad: Leriche, 2.

Floras, eastern N. Am.: Berry, 57.

Nomenclature: Graham, 4.

Western N. Am., correl.: Axelrod, 4.

Florida.

Acline fossils: Tucker, H. I., 4.

Aphelops: Colbert, 1.

Attalea: Berry, E. W., 27.

Aves: Wetmore, 15.

Bees, mining, larval chambers: Brown, R. W., 7.

Caloosahatchie: Tucker, H. I., 3.

Choctawhatchee fm.: Cushman, 7; Mansfield, W. C., 3, 8.

Crassatellites (Hybolophus?): Mansfield, W. C., 13.

Cypraea: Ingram, W. M., 2.

Cytheridea: Stephenson, M. B., 4.

Deep wells: Cole, W. S., 15.

Faunas, Oligocene: Mansfield, W. C., 21, 23.

Fish, teleost: Gregory, W. K., 6.

Foraminifera: Cole, W. S., 5, 6, 8; Cushman, 7, 22.

Gastropoda: Mansfield, W. C., 11.

Inyassa: Tucker, H. I., 2.

Laganum dalli variations: Cole, W. S., 7.

Land mammals: Simpson, 11, 20.

Larval chambers, mining bees: Brown, R. W., 7.

Mammalia: Simpson, 11, 20.

Mollusca: Gardner, 9, 11; Mansfield, W. C., 5, 19, 20, 22; Smith, M., 2; Tucker, H. I., 5, 6.

Orbitoids: Cole, W. S., 9.

Ostracoda: Howe, 17; Stephenson, M. B., 4.

Ovoviviparous reproduction, Turritellidae: Sutton, 12.

Pecten: Mansfield, W. C., 10.

Sirenia: Simpson, 18.

Southern, Pliocene: Mansfield, W. C., 7.

Paleontology—Continued.

Tertiary—Continued.

Florida—Continued.

Teleost fish: Gregory, W. K., 6.

Tortoise: Wark, 1.

Turritellidae: Sutton, 12.

Vulsella: MacNeil, F. S., 2.

Foraminifera.

Georges Bank: Cushman, 28.

Haiti: Hanzawa, 1.

Jamaica: Hanzawa, 1.

Orbitoid: Vaughan, 24.

Tennessee: Hanzawa, 1.

Texas: Hanzawa, 1.

Trinidad: Hanzawa, 1.

United States, SE.: Cushman, 26.

Fossils, plant-animal, time discrepancies: Sahni, 1.

Gabb's lamellibranch types: Stewart, R., 1.

Geomyid rodents, west U. S.: Wood, A. E., 14.

Georges Bank, Foraminifera: Cushman, 28.

Georgia, Ostrea: Howe, 27.

Ginko: Seward, 5.

Glossary, mammal-bearing fms.: Simpson, 22.

Glyptostrobus in America: Brown, R. W., 12.

Great Basin: Axelrod, 6.

Greenland: Ravn, 1; Høeg, 1; Mathiesen, 1, 2.

Green River flora: Berry, 23; Cockerell, 17.

Green River-Florissant floras, relation: Cockerell, 17.

Green River fm. microfossils: Bradley, W. H., 8.

Gulf Coast.

Annelida: Gardner, 16.

Archaeoceti: Kellogg, 9.

Cytheridea: Stephenson, M. B., 3.

Foraminifera: Garrett, J. B., Jr., 3.

Gastropoda: Gardner, 16.

Marginulina: Garrett, J. B., Jr., 2.

Ostracoda: Stephenson, M. B., 3.

Venericardia planicosta group: Gardner, 14.

Heteromyid rodents, west N. Am.: Wood, A. E., 7.

High Plains floras: Chaney, 27.

Hipparion, Pliocene indicator: Stirton, 22.

Honduras, Mammalia: Olson, 4.

Idaho.

Aves: Wetmore, 28.

Blarina, sbrew: Gazin, 5.

Ceratomeryx: Gazin, 15.

Erethizon: Wilson, R. W., 10.

Felids: Gazin, 7.

Fish: Scheid, 2.

Floras: Ashlee, 1; Berry, E. W., 32, 43; Brooks, B. P. W., 2; Brown, R. W., 8; Dorf, 6; Gillette, N. J., 2; Olson, B. H., 2; Smith, H. V., 1, 2, 4.

Fruits: Brown, R. W., 8.

Paleontology—Continued.

Tertiary—Continued.

Idaho—Continued.

- Hares: Gazin, 9.
- Hog Creek flora: Smith, H. V., 1, 2, 4.
- Horses: Gazin, 18.
- Idaho fm.: Kirkham, 9.
- Mustelids: Gazin, 11, 21.
- Payette fm.: Kirkham, 9.
- Peccary: Gazin, 22.
- Plesippus: Gidley, 5.
- Pseudomys: Gilmore, 12.
- Quercinlum: Boeshore, 2.
- Seeds: Brown, R. W., 8.
- Sloths: Gazin, 14.
- Snake River Valley: Rice, H. E., 1.
- Sucker Creek flora: Smith, H. V., 2.
- Turtle: Gilmore, 12.

Idaho-Oregon, Sucker Creek flora: Smith, H. V., 2.

Insecta, Kans.-Utah-Colo.: Carpenter, 22.

Invertebrates, Cenozoic marine: Harris, G. D., 3.

Isoetales, Wyo.-Mont.: Brown, 22.

Jackson Eocene fossils: Conrad, 1.

Jamaica.

Blue Mts.: Trechmann, 1.

Corals: Wells, J. W., 5, 8.

Foraminifera: Cushman, 13; Hanzawa, 1; Vaughan, 7.

Machioneal beds: Trechmann, 2.

Spongiae: Palmer, K. E. V. H., 4.

Strombus: Rutsch, 1.

Kansas.

Aves: Wetmore, 38.

Cranes: Wetmore, 10.

Diatomaceae: Hanna, 24.

Fauna, Pliocene: Hibbard, 5, 9, 12.

Felidae: Hibbard, C. W., 3.

Grasses: Elias, 10.

Gnathabelodon: Barbour, 16.

Grebe: Wetmore, 38.

Grus, cranes: Wetmore, 10.

Kansasimys: Wood, 13.

Mammalia: Hibbard, 10, 13.

Martinogale: Dunkle, 1.

Mollusca: Baker, F. C., 18.

Scaphiopus: Taylor, E. H., 1.

Sunfish: Hibbard, 4.

Urodele: Adams, L. A., 1; 2.

Kentucky: Roberts, 14.

Louisiana.

Bilubulogenerina: Howe, 12.

Caldwell Parish: Shreveport G. Soc., 2.

Catahoula Parish: Shreveport G. Soc., 2.

Claiborne foraminiferal zonation: Israelsky, 6.

Crustaceans, decapod: Stenzel, 7.

Cythereis: Gooch, 1.

Decapod crustaceans: Stenzel, 7.

Fauna, Oligocene: Lukas, 1.

Foraminifera: Gravell, 2; Israelsky, 6; Howe, H. V., 4, 34; Kornfeld, 5.

Paleontology—Continued.

Tertiary—Continued.

Louisiana—Continued.

Helicolepidina: Vaughan, 30.

Jackson fm. microfauna: Wharton, J. B., Jr., 1.

Lepidocyclus: Gravell, 4.

Mammalia: Simpson, 17.

Marine Pleist. shell stratum: Bridges, 1.

Microfossils: Stephenson, M. B., 1.

Ostracoda: Howe, 10, 16, 25.

Potamides zone microfossils: Stephenson, M. B., 1.

Mammalia.

Asian correl., Miocene-Pliocene: Tellhard de Chardin, 1.

Columbia Basin: Beck, 11; Simpson, 30.

Continental: Simpson, 32; Stirton, 16.

Correlations, holarctic: Stirton, 22.

Evolution: Simpson, 30.

Local, continental relationships: Simpson, 34.

Miocene, Asian correl. Tellhard de Chardin, 1.

Paleocene, census: Simpson, 32.

Pliocene: Stirton, 16; Tellhard de Chardin, 1.

Pliocene, Asian correl.: Tellhard de Chardin, 1.

Mammoth, Idaho-Utah: Blackwelder, 46.

Maryland.

Archaeomonas: Defandre, 2.

Aves: Wetmore, 1, 5.

Bonasa: Wetmore, 5.

Calvert Cliffs Mammalia: Kellogg, 7.

Clam in barnacle shell: Buck, J. B., 1.

Crassatellites: Mansfield, W. C., 18.

Delphinodon: Barwick, 2.

Diatomaceae: Defandre, 2.

Felichthys: Lynn, 3.

Fish, albulid: Myers, G. S., 1.

Kummelia: Stephenson, 17.

Mammalia, Calvert Cliffs: Kellogg, 7.

Ophiura: Berry, C. T., 3, 11.

Pearl: Berry, C. T., 7.

Pinus: Berry, E. W., 54.

Siphonocetus: Barwick, 1.

Sula: Wetmore, 43.

Tomarctus: Berry, C. T., 10.

Turtles: Collins, R. E. L., 4.

Vertebrata: Gidley, 9.

Walnut: Berry, 48.

Whale: Helm, 1.

Xenohelix: Dryden, 6.

Massachusetts.

Cape Cod: Woodworth, 2.

Gay Head: Sanford, S. N. F., 1.

Mastodons, trilophodont-tetralodont: Frick, 4.

Merycoidodontidae: Thorpe, 7, 8, 9, 10.

Metacodon: Clark, J., 5.

Mexico.

Aturias: Miller, 36.

Paleontology—Continued.

Tertiary—Continued.

Mexico—Continued.

- Badger: Drescher, A. B., 1.
 Batrachians, Pliocene: Taylor, E. H., 2.
 Brachiopod: Cole, W. S., 2.
 Caecum growth stages: Collins, R. L., 5.
 Crustacea, decapod: Rathbun, 3.
 Diatomite: Hertlein, 6.
 Discocyclus: Vaughan, T. W., 1.
 Echinoidea: Israelsky, 3; Jackson, R. T., 3.
 Elephant: Müllerried, 17.
 Foraminifera: Barker, 1, 3; Cole, W. S., 3; Nuttall, 1, 2; Thalmann, 11.
 Gastropoda: Gardner, J. A., 7.
 Hantkenina: Thalmann, 2.
 Lepidocyclus: Thalmann, 6.
 Miogypsina: Nuttall, 3; Thalmann, 1.
 Notolagus: Wilson, R. W., 17.
 Psammodulus: Collins, R. E. L., 3.
 San Carlos Mts.: Kellum, 13.
 Triplalepidina: Vaughan, 38.
 Mexico and Antigua, Operculina, Operculinoides: Vaughan, 28.
 Mexico and Texas microfossils: Harris, 9.
 Microfossils, Tex.-Mex.: Harris, 9.
 Midway fauna relations: Gardner, J. A., 2.
 Miocene Foraminifera, Coastal Plain: Cushman, 23.
 Mississippi.
 Amphiphiura: Berry, C. T., 10.
 Bitubulogenerina: Howe, H. V., 12.
 Bolivinella: Howe, H. V., 1.
 Brissopsis: Grant, 13.
 Cephalopoda: Miller, A. K., 10.
 Clarke Co.: Shreveport G. Soc., 3.
 Combretum: Berry, E. W., 42.
 Crustacea, decapod: Stenzel, 7.
 Eogorgia: Hickson, 1.
 Eucythere: Howe, 20.
 Foraminifera: Ellis, A. D., 1; Gravell, 2, 6; Hadley, 2; Howe, H. V., 2.
 Jackson Eocene: Fisk, 8; Monsour, 1.
 Mollusca: Stephenson, 26; Gardner, 15.
 Nautiloidea: Miller, A. K., 10.
 Ostracoda: Frost, V. L., 1.
 Ostrea: Howe, 27.
 Vicksburg group at Vicksburg: Morrish, 1.
 Wayne Co.: Shreveport G. Soc., 3.
 Missouri, Mammalia: Burrill, 2.
 Mollusca.
 Alabama: Gardner, 15.
 Eocene: Gardner, 15; Palmer, K. E. H. V., 3; Stephenson, 26.
 Mississippi: Gardner, 15; Stephenson, 26.
 Nomenclature: Palmer, K. E. H. V., 3.
 Panama Bay: Plisbry, 4.
 Pteropod, American: Collins, R. E. L., 2.

Paleontology—Continued.

Tertiary—Continued.

Mollusca—Continued.

- Utah: Chamberlain, R. V., 2.
 Venericardia planicostata group: Rutsch, 3.
 Montana.
 Amphicyon: McGrew, 8.
 Ardynomys: Burke, 9.
 Bear Creek fauna: Dorf, 14.
 Coals, paleobotanic exam.: Miner, 4.
 Crazy Mts. faunas: Simpson, 38.
 Desmatolagus: Burke, 9.
 Diceratherium: Wood, H. E., 6.
 Fort Union flora: Dorf, 14.
 Heteromyid rodent: Wood, A. E., 4.
 Horatiomys: Wood, A. E., 6.
 Lizards: Gilmore, 22.
 Mammalia: Matthew, 16; Simpson, G. G., 5, 27, 35, 38.
 Meliosoma: Berry, 64.
 Paleocene mammals: Simpson, G. G., 5, 27, 35, 38.
 Protostrix: Wetmore, 39.
 Pseudocylindrodon: Burke, J. J., 6; 11.
 Multituberculata: Simpson, 45.
 Nebraska.
 Antelopes: Furlong, 7.
 Ardynomys: Burke, 9.
 Artiodactyls: Barbour, 28; Cook, 14.
 Aves: Compton, 4; Wetmore, 7, 12, 18, 22, 23, 29, 35.
 Bassaricus: Hibbard, 1.
 Bathornis: Wetmore, 23.
 Burge fauna: McGrew, 5.
 Buteo: Wetmore, 7.
 Camels: Brown, B., 1.
 Craterogale: Gazin, 19.
 Cynarctoides: McGrew, 7.
 Cynarctus: McGrew, 4.
 Cynodesmus: McGrew, 2.
 Cyrtonyx: Wetmore, 29.
 Desmatolagus: Burke, 9.
 Diplolophus: Barbour, 37.
 Dogs: Loomis, 10.
 Entelodont: Loomis, 5.
 Equids: Lewis, G. E., 1.
 Faunas, Miocene, Pliocene: McGrew, 6.
 Feldt Ranch Fauna: Hesse, 6.
 General: Meade, G. E., 1.
 Grasses: Elias, 10.
 Hawks: Wetmore, 7, 35.
 Heliscomys: Wood, A. E., 20.
 Mammalia: Barbour, 35; Colbert, E. H., 2; Davis, P. B., 1; McGrew, 3; Matthew, 1, 14; Stirton, 12.
 Marsupials: McGrew, 3.
 Mastodon: Hesse, 5.
 Mesocyon: Barbour, 18.
 Mollusk: Cook, 13.
 Nanodelphys: McGrew, 10.
 Oreodonts: Barbour, 20.
 Palaeolagus: Dice, 3.
 Porcyonidae: McGrew, 7.
 Prosthennops: Colbert, 3.

Paleontology—Continued.

Tertiary—Continued.

Nebraska—Continued.

- Scotts bluff Nat. Monument: Effinger, 1.
- Stenomyliins, gazelle-camels: Burke, 12.
- Titanotherium: Barbour, 15.
- Torynobelodon: Barbour, 11.
- Vertebrata: Cook, 11; Hesse, 6.
- Woodpecker: Wetmore, 18.

Nevada.

- Artiodactyla: Stirton, 2.
- Bat: Hall, E. R., 4.
- Camel: Cockerell, 14.
- Cupidinus: Chaffee, 1.
- Decapoda: Van Straelen, 3.
- Goose: Burt, W. H., 1.
- Hedgehog: Matthew, 2.
- Lagomorphs: Hall, E. R., 2.
- Merycodonts: Furlong, 6.
- Mystipterus: Hall, E. R., 4.
- Otter: Furlong, 3.
- Plomastodon: Stock, 57.
- Pseudaelurus: Stock, 38.
- Rodents: Hall, E. R., 2; Wilson, R. W., 12.

New Jersey.

- Aturoidea: Miller, A. K., 19.
- Aves: Wetmore, 11.
- Balanus: Pilsbry, 2.
- Bryozoa: Canu, 1.
- Kummelia: Stephenson, 17.
- Mammalia: Wood, H. E., 2d, 18.
- Microfauna, Monmouth, Rancocas groups: Jennings, P. H., 1.
- Mollusca: Pilsbry, 6.
- Myliobatis: Chaffee, 2.

New Mexico.

- Insect borings, fossil wood: Brues, 2.
- Mammalia: Simpson, 33.
- Paleocene faunas: Matthew, 17.
- Turkey: Needham, 5.
- Vertebrata: Needham, 5.

Noetinae: MacNeil, 7.

North America.

- Anadara pelecypods: Schenck, 32.
- Brachiopoda: Hatal, 1; Nomura, 1.
- Camel-like ruminants: Scott, W. B., 9.
- Epitonidae: Durham, 2.
- Foraminifera: Cushman, 1.
- Hipparion faunas: Maxson, 13.
- Horned ruminants: Frick, 5.
- Nonionidae: Cushman, 38.
- Plants, Cenozoic: Chaney, 35.
- Pelecypods, Anadara: Schenck, 32.
- Snakes: Gilmore, 23.
- Turritellidae, Coastal Plain: Bowles, E. O., 1.

North Carolina.

- Aturia: Stenzel, 8.
- Coastal Plain: McCampbell, 1.
- Comatulids: Gislén, 1.
- Cypraea: Ingram, W. M., 1.
- Diatoms: Henbest, 11.
- Encrassatella: McNeil, 4.
- Fauna, Elizabeth City: Henbest, 11.

Paleontology—Continued.

Tertiary—Continued.

North Carolina—Continued.

- Foraminifera: Henbest, 11.
- Mollusca: Henbest, 11; Mansfield, W. C., 13.
- Nonionidae: Kjellesvig, 2.
- Pecten (Chlamys): Mansfield, W. C., 17.
- Whales: Prouty, 10.

Oklahoma.

- Basslerina: Moore, R. C., 4.
- Fish, Pliocene: Stovall, 16.
- Mammalia: Stovall, 7.
- Ostracoda: Moore, R. C., 4.
- Planterus: Stovall, 19.
- Prairie-dog: Wood, A. E., 5.
- Vertebrata: Hesse, 13, 14.

Opossums, recent, fossil: Simpson, 29.

Oregon.

- Auklet: Miller, Alden H., 3.
- Blue Mts. flora: Oliver, 1.
- Briaster: Clark, H. L., 5, 6.
- Carnivora: Stock, 6.
- Cedrela: Arnold, 23.
- Celtis: Berry, 31.
- Cetothere: Packard, 5.
- Comstock flora: Sanborn, E. I., 2.
- Cophocetus: Packard, 6.
- Crooked River Basin: Anonymous, 106.
- Cycads: Chaney, 31.
- Deschutes flora: Chaney, 34.
- Diatoms: Lohman, K. E., 3.
- Dipoides: Wilson, R. W., 7.
- Forests: Sanborn, E. I., 3.
- Franklin Butte floral: Sanborn, E. I., 5.
- Fruits, seeds, leaves: Brown, R. W., 8.
- Goshen flora: Chaney, 16.
- Legumes, Oligocene: Brown, R. W., 16.
- Mahonia: Arnold, 21.
- Mammalia: Gazin, 4; Scharf, 1.
- Marine Oligocene: Packard, 7.
- Mollusca: Henderson, J., 9; Turner, F. E., 5.
- Mustelid: Hall, E. R., 6.
- Pseudotsuga: Arnold, 18.
- Raninidae: Rathbun, 8.
- Rodents: Wood, A. E., 8.
- Seeds, fruits, leaves: Brown, R. W., 8.
- Sphnophalos: Furlong, 2.
- Sucker Creek flora: Smith, H. V., 3.
- Tilia: LaMotte, 5.
- Trout Creek flora: Arnold, 27; MacGinitie, 1.
- Ostrea, Georgia: Howe, 27.
- Pacific Coast Peccaries: Colbert, 6.
- Paleoecology and Cenozoic mammals: Schultz, C. B., 7.
- Palms, fossil: Noé, 14.

Panama.

- Aturia: Miller, 42.
- Cativa: Coryell, 16.
- Crabs: Rathbun, 13.
- Cypraeidae: Ingram, W. M., 3.
- Foraminifera: Coryell, 15.

Paleontology—Continued.

Tertiary—Continued.

Panama—Continued.

- Lepidocyclus: David, E., 1.
 Mollusca: L., 1.
 Pectinidae: Davenport, 1; Mansfield, W. C., 12; Rowland, 1; Tucker, H. I., 1, 8.
 Pelecypods, Pacific slope not Arcidae: Reinhart, 4.
 Prohoscidia: Osborn, 36, 38.
 Puerto Rico, corals: Coryell, 1.
 Raphidiodea, revision: Carpenter, 15.
 Rocky Mts. fms., Charophyta: Peck, 10, 15.

Ostracoda: Peck, 10, 15.

- Rodents, cretoid: Wood, A. E., 10.
 St. Kitts, Brimstone Hill: Trechmann, 8.

- Sapindus oregonianus, climatic indications: La Motte, 4.

Saskatchewan.

- Hemipsalodon: Russell, L. S., 38.
 Mammalia: Russell, L. S., 18.
 Merychippus: Russell, L. S., 17.
 Mollusca: Russell, L. S., 14.
 Titanotheres: Russell, L. S., 39-a.
 Trapa?: Brown, 21.
 Turtles: Russell, L. S., 22.
 Vertebrata: Russell, L. S., 25.
 South Carolina, Mollusca: Mansfield, W. C., 16.

South Dakota.

- Allognathosuchus: Patterson, B., 1.
 Apatemyidae: Jepsen, 7.
 Aves: Miller, A. H., 8, 9.
 Bathornis: Wetmore, 41.
 Buteo: Wetmore, 30.
 Camels: Gregory, J. T., 3.
 Carnivora: Loomis, 4.
 Cats, sabre-tooth: Jepsen, 6.
 Chadron fm. fauna: Clark, J., 3.
 Coprolites: Stovall, 8.
 Dogs: Loomis, 10.
 Entelodont: Loomis, 5.
 Fauna, Chadron fm.: Clark, J., 3.
 Lance florule: Berry, 44.
 Mammalia: Richardson, G. H., 1; Scott, W. B., 3.
 Merycoidodonts: Phleger, 10.
 Meshippus: Schlaikjer, 1.
 Metamynodon: Wood, H. E., 2d, 13.
 Nannotragulus: Loomis, 7.
 Oreodonts: Loomis, 8.
 Rodentia: Wood, A. E., 17.
 Schaubeumys: Wood, A. E., 6.
 Sinclairella: Jepsen, 7.
 Styliemys: Case, 22.
 Vertebrata: Gregory, J. T., 2-a.
 Vultures: Compton, 5.

Tennessee.

- Cave fossils: Cahn, 4.
 Flora, Pleist.: Berry, 49.
 Foraminifera: Cushman, 1.
 Helsteria: Berry, 59.

Paleontology—Continued.

Tertiary—Continued.

Texas.

- Artifacts and extinct mammals: Sellards, 41.
 Aturia: Stenzel, 8.
 Aves: Compton, 1.
 Basslerina: Moore, R. C., 4.
 Borophagus: VanderHoof, 10.
 Bismachelys: Johnston, C. S., 5.
 Callippus: Johnston, C. S., 7.
 Canidae: VanderHoof, 13.
 Canis: Johnston, C. S., 9.
 Carnivora: Stirton, 27.
 Ceratobullina: Plummer, H. J., 10.
 Claiborne: Cole, W. S., 1.
 Claiborne foraminiferal zones: Israel-sky, 6.
 Coastal Plain, W. of Brazos River: Deussen, 1.
 Coleites: Plummer, H. J., 8.
 Corals: Vaughan, 27; Wells, J. W., 7.
 Crustacea, decapod: Stenzel, 5, 7.
 Decapod Crustacea: Stenzel, 5, 7.
 Eocene floras: Ball, O. M., 2, 5; Kirn, 2.
 Epistominoides: Plummer, H. J., 8.
 Equidae: Matthew, 9.
 Foraminifera: Cushman, 9; Ellis, 3; Garrett, J. B., Jr., 4; Gravell, 2, 3; Israelsky, 6.
 Hemphill Co.: Reed, L. C., 2.
 Index fossils, oil fields: Harris, 10; Quesenberry, 1.
 Jackson group foraminiferal zones: Ellis, 3.
 Lepidocyclus: Gravell, 4.
 Machaerodus: Burt, W. H., 2.
 Midway group: Gardner, 8.
 Mollusca: MacNeil, 3; Marshall, W. B., 1.
 Mustelids: Gazin, 21.
 Mylodon: Johnston, C. S., 4.
 Nannipus: Johnston, C. S., 8.
 Osteoborus: Johnston, C. S., 10, 11.
 Ostracoda: Alexander, 11; Moore, R. C., 4; Sutton, 16.
 Ostrea: Harris, 8.
 Paleobotany, Eocene: Ball, O. M., 2.
 Parapavo: Miller, L. H., 19.
 Pediomeryx: Stirton, 17.
 Plant locs., Bexar Co.: Parks, H. B., 1.
 Plihippus: Stirton, 23.
 Rio Grande area: Trowbridge, 6.
 Synthetoceras: Stirton, 6.
 Teleoceras: Johnston, C. S., 3.
 Textularia: Davis, F. E., 1.
 Tracks, Pliocene: Johnston, C. S., 2.
 Tree ferns: Atkinson, W. E., 1.
 Turricula: Stenzel, 16.
 Vertebrata: Hesse, 16-a; Sellards, 40; Wood, H. E., 2d, 12.
 Wilcox, cent. Tex.: Claypool, 1.
 Titanotheres: Pavlova, 1.

Paleontology—Continued.

Tertiary—Continued.

Trinidad.

- Aclia : Schenck, 21.
 Cypraea : Schilder, 1.
 Echinoids : Jeannet, 1.
 Foraminifera : Cushman, 1; Geyn, van de, 1; Vaughan, 38.
 Forest clay flora : Berry, 55, 56.
 Helicolepidina : Barker, 1.
 Heteropods : Rutsch, 3.
 Lepidocyclina : David, E., 1.
 Mollusca : Vokes, 10.
 Nautiloids : Miller, 32.
 Ophioderma : Berry, C. T., 5.
 Pteropods : Rutsch, 3.
 Rudistids : Hodson, 1; Rutsch, 2.
 Soldado Rock : Kugler, 4; Rutsch, 5.
 Suggrunda : Hoffmeister, W. S., 1.
 Terebratulalina : Rutsch, 5.

Trochodendroides : Brown, 19.

Tropical America, faunal evolution : Rutsch, 4.

United States.

- Floras, western : Brown, R. W., 14, 17.
 Loxoconcha, southern : Murray, 3.
 Mollusca, Claiborne : Palmer, K. E. V. H., 2.
 Pectinidae : Tucker-Rowland, 1.
 Pseudocrocodi, western : Denison, R. H., 1.

Utah.

- Agriochoerids (Diplobunops) : Peterson, 6.
 Anostelrid : Clark, J., 2.
 Aptaelurus : Scott, W. B., 6, 8.
 Creodont : Scott, W. B., 7.
 Eonessa : Wetmore, 45.
 Fish : Tanner, V. M., 1.
 Mammalia : Burke, 8; Gazin, 24, 25, 26; Peterson, 8.
 Mesonychids : Peterson, 5.
 Miacis : Clark, J., 7.
 Mytonolagus : Burke, 4.
 Rodents : Burke, 3, 7.
 Sciuravus : Burke, 10.
 Stagnicola : Chamberlain, R. V., 1.
 Teleodus : Peterson, 4.
 Titanotheres : Peterson, 9.
 Turtle : Clark, J., 1.
 Vertebrata : Peterson, 7.

Valentine : Johnson, F. W., 1.

Valvulinidae : Cushman, 29, 32.

Venericardia planicostata : Chavan, 1.

Verneuilinidae : Cushman, 29.

Virginia.

- Amyda : Lynn, 1.
 Ficus : Berry, E. W., 53.
 Peritresius : Berry, C. T., 6.
 Phylodus : Gildersleeve, 6.
 Pinus : Berry, E. W., 46.
 Prunus : Berry, E. W., 54.
 Snake : Lynn, 2.
 Syllomus : Berry, C. T., 10.
 York-James Peninsula : Roberts, 10.

Paleontology—Continued.

Tertiary—Continued.

Virginia—Continued.

Walnut : Berry, E. W., 48.

Virgulininae : Cushman, 29, 33.

Washington.

- Astoria fm. : Etherington, 2.
 Blakely fauna, type : Tegland, 4.
 Camels : Beck, G. F., 9.
 Chehallis Valley wood : Anonymous, 98.
 Douglas Canyon flora : Hoffman, A. D., 2.
 Floras : Beck, G. F., 1, 4, 6, 7, 14; Berry, E. W., 28, 60; Brown, R. W., 8; Hoffman, A. D., 2.
 Foraminifera : Beck, R. S., 1; Frizzell, 4.
 Fruits : Brown, R. W., 8.
 Galeodea : Tegland, 3.
 Gastropoda : Hanna, 35.
 Ginkgo : Beck, G. F., 4, 7.
 Grand Coulee flora : Berry, E. W., 28, 60.

- Gries Ranch fauna : Effinger, 7.
 Insecta, Latah fm. : Carpenter, 6.
 Leaves, fruit, seed : Brown, R. W., 8.
 Operculina : Durham, 1.
 Orbitoids : Berthiaume, 3.
 Priscacara : Hesse, 12.
 Rodentia : Thorpe, 15.
 Seeds, fruit, leaves : Brown, R. W., 8.
 Spruce, Miocene : Beck, G. F., 6, 10.
 Type Blakeley fauna : Tegland, 4.

West Indies.

Chlamydoselachus, Trinity Is. : Lerliche, 1.

Foraminifera : Palmer, D. B. K., 8.

West Virginia, Mammalia : Brooks, A. B., 1.

Wilcox flora : Berry, E. W., 21.

Wyoming.

- Absaroka volcanics dated by fossils : Jepsen, 10.
 Apternodus : Schlaikjer, 3, 4.
 Aves : Wetmore, 12, 14, 27.
 Bees, mining, larval chambers : Brown, R. W., 7.
 Big Horn Basin Vertebrata : Jepsen, 1.
 Brachyhyops : Colbert, 5, 10.
 Cats, sabre-tooth : Jepsen, 6.
 Crocodilus : Mook, 7.
 Diatryma : Troxell, 7-a.
 Eagle : Wetmore, 27.
 Ectoganus : Gazin, 17.
 Edentata : Simpson, 15.
 Fish : Bates, E. N., 1; Hesse, 17; Thorpe, 16.
 Flora : Berry, E. W., 35; Dorf, 12.
 Florentiamyinae : Wood, A. E., 12.
 Gentiliacamelus : Loomis, 11.
 Goshen Hole area : Schlaikjer, 3, 6.
 Heptodon : Seton, 1.
 Lagomorphs : Walker, M. V., 2.
 Lambdotherium : Bonillas, 1.

Paleontology—Continued.

Tertiary—Continued.

Wyoming—Continued.

- Larval chambers, mining bees: Brown, R. W., 7.
 Lizards: Gilmore, 22; Walker, M. V., 4.
 Mammalia: Denison, R. H., 1; Simpson, 46; Schlaikjer, 3.
 Meniscotherium: Thorpe, 4.
 Metacheiromys: Simpson, 15.
 Microfossils, Eocene coal: Wilson, L. R., 10.
 Miotapirus: Schlaikjer, 6.
 Mollusca: Russell, L. S., 9, 34.
 Oreodonts: Schlaikjer, 5.
 Palaeolagus: Dice, L. R., 2.
 Paleocene, Polecat Bench: Jepsen, 9.
 Parahippus: Schlaikjer, 7.
 Protostrix: Wetmore, 44.
 Rails: Wetmore, 16.
 Rodentia: Wilson, R. W., 16, 18.
 Sabre-tooth cats: Jepsen, 6.
 Tapir: Schlaikjer, 6.
 Tubulodon: Jepsen, 5.
 Uintah Co.: Veatch, A. C., 1.
 Vertebrata: Jepsen, 1, 2; Schlaikjer, 3.

Yellowstone Nat. Park, insect borings, fossil wood: Brues, 2.

Triassic.

- Alaska, Yukon-Tanana area: Mertie, 16.
 Alberta, fish: Warren, 15.
 Ammonoids: Smith, J. P., 3.
 Amphibia, Rocky Mts. area: Branson, E. B., 2.
 Arcidae: Reinhart, 2.
 Arizona.
 Crocodile, ancestral: Brown, B., 5, 10.
 Dinosaurs: Gilmore, 20.
 Flora, Petrified Forest: Daugherty, 3.
 Insecta, Petrified Forest: Walker, M. V., 5.
 Moenkopi ss.: Brady, 9.
 Pebbles, Perm.: McKee, 10.
 Placerias: Camp, 12.
 Protosuchus: Brown, B., 10.
 Reptilia: Mehl, 1.
 Schilderia: Daugherty, L. H., 1.
 Stegocephalia: Brown, B., 6.
 Theropod: Brady, 10, 12.
 Wood: Le Duchat d'Aubigny, 1.

British Columbia.

- Ammonoidea: McLearn, 26, 27.
 Mollusca: McLearn, 22.
 Peace River fauna: McLearn, 7, 22, 23, 25, 28.
 Pelecypoda: McLearn, 28.
 Schooler Creek fm.: McLearn, 18.
 Charophyta, Rocky Mtn. area: Peck, 10.
 Connecticut.
 North Branford, Trias. field: Thorpe, 1.
 Seminotus: Thorpe, 6.
 Dinosaurs, distrib. Gries, 3.

Paleontology—Continued.

Tertiary—Continued.

Faunas, marine invertebrate, succession: Muller, 11.

Ginkgo: Seward, 5.

Greenland.

- Eotriassic: Spath, 1.
 Fish: Nielsen, E., 3; Stensl , 2.
 Floras: Harris, T. M., 2, 4.
 Invertebrata: Spath, 5.
 Reptilia: S ve-Soderbergh, 5.
 Stegocephalians: S ve-Soderbergh, 5.
 Vertebrate beds: Nielsen, E., 2.
 Mammalia, evolution: Simpson, 30.
 Multituberculata skull: Simpson, 45.
 Nevada.

Coral reefs: Muller, 10.

Wood, silicified, in dolomite: Barksdale, J. D., 2.

New Mexico.

- Machaeroprotopus: Stovall, 18.
 Reptilia: Mehl, 1.
 New York, Staten Is.: Hollick, 7.
 North Carolina, Durham Basin fauna: Murray, G. E., Jr., 1.
 Oregon, Tritropidoceras: Schenk, 4.
 Pennsylvania.

Conifer: Wherry, 4.

Dinosaur tracks: Hickok, 3; Willard, 23.

Fish: Bryant, 5.

Phytosaurs: Camp, 3.

Texas.

- Angistorhinus: Stovall, 9.
 Buettneria: Case, 10.
 Dinosaurs: Case, 10.
 Phytosaurs: Case, 9, 14.
 Stegocephalians: Case, 8.

Utah.

- Cephalopoda: Mathews, A. A. L., 1.
 Fish: Tanner, V. M., 1.
 Pterophyllum: Berry, 26.
 Seminotus cf. Gigas: Hesse, 8.

Wyoming.

- Charophyta: Peck, R. E., 3.
 Corosaurus: Case, 20.
 Reptilia: Huene, F. von, 3.
 Yukon, Laberge area: Lees, E. J., 1.

Paleopathology.

- Aenocyon, Calif.: Moodie, 11, 12.
 Archidiskodon, Tex.: Moodie, 11.
 Carnivora, Calif.: Moodie, 11.
 Hyracodon, White River beds: Moodie, 11.
 Indian, Calif.: Moodie, 11.
 Nothrotherium, Calif.: Moodie, 11.
 Piro Indians, N. Mex.: Moodie, 12.
 Pre-Pueblo Indians, N. Mex.: Moodie, 11.
 Sabre-tooth tiger, Calif.: Moodie, 12.
 Smilodon, Calif.: Moodie, 11, 12.
 Stephanosaurus, Alberta: Moodie, 11.

Paleozoic.

Undifferentiated.

Alaska, Mt. McKinley Nat. Park: Capps, 6.

Paleozoic—Continued.

Undifferentiated—Continued.

- Appalachian uplift, east fms.: Woodward, 9.
 British Columbia.
 Cassiar dist.: Hanson, 13.
 Fraser River-Harrison Lake area: Horwood, 4.
 Lilloet dist.: Cockfield, 14.
 Similkameen dist.: Cockfield, 14.
 Canada, north bank St. Lawrence: Faessler, 21.
 Canadian Rockies: Kelly, W. A., 9.
 Chaetetes: Okulitch, 6.
 Classification by pulsation theory: Grabau, 3, 4.
 Columbia River Basin, Wash.-Oregon: Landes, H., 1.
 Correlations America-Europe: Noé, 13; Waterschoot van der Gracht, 14.
 Correlation by graptolites: Decker, 14.
 Cross sec., Ark.-La.: Lloyd, A. M., 3.
 Deformation, earth's crust: Moore, 30.
 Dipnoans, cranial roof: Romer, 17.
 Eryops, illo-sacral attachment: Olson, 2.
 Florida: Campbell, R. B., 2; Cooke, C. W., 24.
 Foraminifera, relationships, ecology: Cushman, 27.
 Formations, pulsation theory: Grabau, 3, 4; Schuchert, 49.
 Fusulinidae, correl. by: Dunbar, 16.
 Gastropoda, names: Knight, J. B., 14.
 Geologic fms.: Alcock, 7; Grabau, 3, 4; Shimer, 3; Schuchert, 49.
 Heliolites: Okulitch, 6.
 Late Paleozoic, Fusulinidae correl.: Dunbar, 16.
 Lower Paleozoic, correl.: Ulrich, 18.
 Geologic fms. N. Am.: Alcock, 7; Grabau, 3, 4; Shimer, 3; Schuchert, 49; Ulrich, 18.
 Maryland, Port Deposit grandiorite: Hershey, H. G., 1.
 Minnesota: Thiel, 16.
 New Brunswick: Shaw, E. W., 1.
 New Hampshire garnet: Conant, 2.
 New York.
 Dutchess Co.: Barth, 14.
 Plankton and radiolarian ooze: Ruedemann, 42.
 Oklahoma, pre-Miss.: Edson, 5.
 Ontario: Rickaby, 6; Wilson, A. E., 5.
 Oregon, Crook Co.: Kelly, James, 1.
 Ozarks, Mo.-Ark.: Kans., G. Soc., 1.
 Orogeny in N. Am.: Waterschoot van der Gracht, 14.
 Paleozoic, Europe-N. Am.: Noé, 13; Waterschoot van der Gracht, 14.
 Planktonic faunas: Ruedemann, 16.
 Pegmatites: Landes, 20.
 Sandstone porosities, Ark.: Branner, 17.
 Sedimentation cycles: Wanless, 13.
 Virginia: Bevan, 18, 37; Cooper, B. N., 3.
 Washington: Culver, 6.

Paleozoic—Continued.

Undifferentiated—Continued.

- Yukon, Carmacks dist.: Bostock, 6.
 Palladium, Wyo.: Coulter, C. C., 2.
 Palmarole, Tascherau map areas, Quebec: Lang, A. H., 3.
 Panama, including Canal Zone.
 Madden dam: Reeves, F., 2.
Economic geology.
 Diatremes and ore-bearing pipes: Emmons, W. H., 13.
 Gold reefs, Remance mine: Ignatieff, 1.
Historical geology.
 Bona Is.: Wolff, F. L. von, 2.
 Chiriquí area: Sapper, 7.
 General: Sapper, 5.
 Los Santos Prov.: MacDonald, D. F., 1.
 Otoque Is.: Wolff, F. L. von, 2.
 Tranquilla sh.: Coryell, 15.

Mineralogy.

- Agates: Freehan, 1.
 Diatremes and ore-bearing pipes: Emmons, W. H., 13.
 Gold reefs: Ignatieff, 1.

Paleontology.

- Aclia: Schenck, 27.
 Aturia: Miller, 42.
 Crabs, Tert.: Rathbun, 13.
 Cypræidae: Ingram, W. M., 3.
 Foraminifera: Coryell, 15.
 Lepidocyclus: David, 1; Vaughan, 20, 25.
 Mollusca, Miocene, recent: Li, 1; Pillsbury, 4.
 Noetinae: MacNeill, 7.
 Pectinidae: Tucker, 8.
 Uvigerina: Cushman, 1.

Petrology.

- Bona Is.: Wolff, F. L., von, 2.
 Otoque Is.: Wolff, F. L., von, 2.

Physical geology.

- Earthquake, 11/30/35: Bodle, 2.
 Earthquakes, trigger forces: Kirkpatrick, 2.
 Los Santos Prov.: MacDonald, D. F., 1.
 Seismic records: Kirkpatrick, 1.
 Volcanoes, Pleist.: Sapper, 6.

Physiographic geology.

- Los Santos Prov.: MacDonald, D. F., 1.
 Panamint silver dist., Calif.: Murphy, F. M., 2.

- Paradox fm., Utah-Colo.: Baker, A. A., 4.

Paragenesis.

- Alabama, Hog Mtn. area: Wisser, 5.

Arizona.

- Bagdad mine area: Butler, 20.
 Bisbee dist.: Trischka, 4.
 Cerbat Mts.: Hernon, 1.
 Copper ores, United Verde Extension mine: Schwartz, 25.
 Jerome dist.: Reber, 1.
 Mammoth mining camp: Peterson, N. P., 1, 2.
 Manganese oxides, Tombstone: Rasor, 2.

Paragenesis—Continued.

Arizona—Continued.

- Ore deposits: Butler, 18.
- Pyritic copper deposits: Kania, 4.
- Ray dist.: Anonymous, 179.
- Tombstone area: Butler, 21; Rasor, 2.
- Bornite-chalcocite microtexture: Schwartz, 28.

British Columbia.

- Copper, pyritic: Kania, 4.
- Gold ores: Warren, H. V., 9.
- Highland Valley: Stevenson, J. S., 4.
- Privateer mine: MacDonnel, 1.
- Pyrrhotite-ruby silver deposit: Warren, H. V., 10.
- Skeena River dist.: Kerr, F. A., 22.
- Yale dist.: Horwood, 3, 8.
- Zeballos area: Stevenson, J. S., 5.

California.

- Crestmore: Daly, J. W., 1; Kelley, 6.
- Darwin silver-lead dist.: Kelley, 8, 10.
- Gold, hypothermal: Schroter, 2.
- Hübnerite: Gianella, 14.
- Mineralization, Crestmore: Kelley, 6.
- Nevada City vein filling: Johnston, W. D., 14.

Colorado.

- Boulder Co. ores: Lovering, 31.
- Calumet iron mine: Behre, 21.
- Colusite: Nelson, R., 1.
- Cripple Creek area: Loughlin, 12.
- Leadville: Chapman, E. P., 3.
- Magnolia dist.: Wilkerson, 4, 5.
- Mosquito Range, London fault zone: Butler, R. D., 2.
- Mt. Antero dist.: Switzer, 4.
- Ouray dist.: Moehlan, 6.
- Sugar Loaf dist.: Sandberg, 3.
- Tungsten ores, Boulder Co.: Loomis, F. B., Jr., 1.
- Ward dist.: Wahlstrom, 4.

- Copper sulfides, Cananea, Mexico: Kelley, 3.

- Formation of ore deposits: Bastin, 19.

- Georgia, Battle Branch gold mine: Park, 7.

- Greenland: Legraye, 1; Wager, 3.

- Hawaii, crystal cavities in lava: Dunham, 1, 3.

- Idaho, Atlanta dist.: Anderson, 23.

- Inclusions, dislocated, in veins: Douglas, C. B. E., 1.

- Late gold, implications: Mawdsley, 8; Ordman, 1.

- Lead and zinc deposits, Miss. Valley: Bastin, 15.

- Maine, Newry pegmatite: Fraser, H. J., 2.

- Manitoba, Flin Flon mine: Brownell, G. M., 2.

- Massachusetts, Blue Mtn. minerals: Richmond, W. E., Jr., 3.

Mexico.

- Aranjuez area: González, J., 1.
- Copper sulfides, Cananea dist.: Kelley, 3.

Paragenesis—Continued.

Mexico—Continued.

- La Esmeralda mine: Ramos, R. R., 2; Schmitter, 1.

- San Carlos Mts.: Bastin, 13.

- Michigan, native copper deposits: Klein, 1.

- Mineral associations, cooling intrus.: Schneiderhöhn, 1.

- Minnesota, amygdular minerals: Sandberg, 5.

Missouri.

- Dickite: Grohskopf, J. J., 2.

- Fluorite: Grohskopf, J. J., 2.

- Lead deposits: Tarr, 21.

Montana.

- Block P mine, Hughesville: Spiroff, 3.

- Butte dist.: Dickey, F. H., 2; Hart, L. H., 2.

- Ruby Gulch gold dist.: Dyson, 3.

Nevada.

- Bonanza King mine area: Campbell, D. F., 1.

- Humboldt Range: Cameron, E. N., 2.

- Searchlight dist.: Callaghan, 13.

- Tungsten, Silver Dyke: Kerr, P. F., 17.

- Newfoundland, Bay of Exploits: Heyl, 1.
- New Hampshire pegmatites: Shaub, 8; Switzer, 2.

New Mexico.

- Bayard area: Lasky, 12.

- Dofia Ana Co.: Dunham, 3.

- Lordsburg dist.: Lasky, 10.

- Organ Mts.: Dunham, 3.

- Pewabic mine: Schmidt, 10.

- Virginia mining dist.: Lasky, 13.

- New York, supergene minerals, Balmat: Brown, J. S., 4.

Northwest Territories.

- Eldora mine: Ryan, J. P., 1.

- Outpost Is., Great Slave Lake: Hawley, 13.

- Silver-pitchblende deposits: Furnival, 5.

Nova Scotia.

- Gold quartz veins: Harrison, R. B., 1.

- Gold zonal mineralization: Newhouse, 15.

- Veins in lavas: Hornor, 1.

Ontario.

- Anhydrite, hypogene: Langford, 3.

- Central Patricia gold mine: Cormie, 1; Reid, J. A., 4.

- Crow River area: Thomson, James E., 15.

- Gold deposits: Cormie, 1; Mather, W. B., 1; Reid, J. A., 4; Spearman, 3; Thomson, James E., 7.

- Howey gold mine, Red Lake: Mather, W. B., 1.

- Hypogene anhydrite: Langford, 3.

- Killarney contact zone: Quirke, 18-a.

- Manitou Lake-Lake of the Woods dist. gold: Thomson, James E., 7.

- Pre-Cambrian gold areas: Spearman, 3.

Paragenesis—Continued.

Ontario—Continued.

Riebeckite: Froberg, 4.

Sudbury irruptive: Phemister, 1.

Ore deposits, succession of minerals: Lindgren, 15.

Oregon, Cornucopia gold quartz veins: Goodspeed, 17.

Pennsylvania.

Corundum in dike: Tomlinson, W. H., 3.

Glen Riddle minerals: Meier, 2.

Phenacite: Pough, 5.

Pyrrhotite: Blanchard, 15; Schwartz, 19; Spence, 15.

Quebec.

Cadillac area: Gunning, 15.

Canadian Malartic gold mine: Derry, 11.

Eustis mine: Stevenson, J. S., 2.

McWatters mine gold belt: Hawley, 10.

Montauban mineralized zone: Osborne, 30.

Pre-Cambrian gold area: Spearman, 3.

Replacement shells around batholiths: Freeman, B. C., 5.

South Dakota, iron sulphides: Schwartz, 22.

Keystone area: Apsourl, 1.

Tennessee, barite, Sweetwater: Laurence, 3.

Texas.

Geothite: Galbraith, 2.

Hematite: Galbraith, 2.

Thorium-uranium ratios and lead origin: Keevil, 3.

Tri-State zinc and lead ores: Ridge, 1.

Utah, lead and silver ores, Park City: Bryan, G. G., 1.

Virginia, barite deposits: Edmundson, 2.

Wisconsin, Lead-zinc ores: Behre, 23, 25, 27.

Wyoming, Sunlight mining area: Parsons, W. H., 1.

Zinc-lead deposits, Ark.: McKnight, 2.

Zinc-lead area, Mississippi Valley: Bastin, 15.

Parahilgardite, La.: Hurlbut, 7.

Parasepiolite, Utah: Eardley, 11.

Park devel., geology in: Rothrock, H. E., 1.

Pawhuska lms.: Keyes, 69.

Pearls, fossil, Calif.: Russell, P. G., 1.

Peat.

Alaska, lower Yukon: Eardley, 8.

Canada: Auer, 1, 2.

Carolina Bays: Buell, 1.

Chemical composition: Wakeman, 1.

Climatic indicator: Gilles, 4.

Correlation by: Dachnowski-Stokes, 1.

Diatomaceous deposits: Conger, 4.

Dismal Swamp, Va.: Cocke, 2.

Erie Basin, growth rate: Sears, 6.

Formation: Powers, W. E., 1.

Greenland: Backlund, 2.

Peat—Continued.

Minnesota, pre-Kansas bog: Nielsen, E. L., 1.

Newfoundland, Bay St. George: Hayes, 8.

Pacific Coast States and water resources: Dachnowski-Stokes, 3.

Paleoclimatological studies: Bryan, 18.

Pre-Kansas Minn. peat bog: Nielsen, E. L., 1.

United States: Dachnowski-Stokes, 2.

Virginia, Dismal Swamp: Cocke, 2.

Washington, pollen analysis: Hansen, H. P., 4.

Pebbles.

Arizona, Trias. with Perm. fossils: McKee, 10.

Beach, abrasion and transp.: Landon, Bonalre, West Indies: Pijpers, 1.

California, San Gabriel Canyon: Krumbain, 27.

Dreikanter, Wyo.-Mont.: Delo, 2.

Feldspar in ss.: Williams, H. R., 1.

Glacial: Brigham, E. M., 1; Engeln, von, 2.

Jarvis Is. beach, wear: Wentworth, 11.

Louisiana, Chandeleur Is.: Dohm, 1.

Measurements of axes: Krumbain, 26.

Pacific Northwest, silica deposits: Hodge, 24.

Pleistocene, varved glacial: Brigham, E. M., 1.

Rounded in geyser tube: Nichols, R. L., 1.

Silica deposits, Pacific N. W.: Hodge, 24.

Solution-faceted lms.: Bryan, 5.

Sphericity values: Pettijohn, 10.

Transportation by ice: King, E., 3.

Wear, Jarvis Is. beach: Wentworth, 11.

Wind-faceted: Schoewe, 10.

Wisconsin, Little Sister Bay: Krumbain, 16.

Pedestal rocks: Petty, 3.

Pediments.

Arizona, Ajo area: Gilluly, 15, 18.

Colorado, Front Range: Worcester, P. G., 3.

Dissection: Koschmann, 2.

Formalton of: Bryan, 20, 29.

New Mexico.

Granite Gap: Bryan, 30.

Magdalena dist.: Loughlin, 4-a.

Rio Puerco: Bryan, 31.

Utah.

Henry Mts.: Hunt, 8.

Wasatch fault: Schneider, 6.

Peel method in paleobotany: Darrah, 10.

Pegmatites.

Age and distrib.: Landes, 20.

Arizona, Grand Canyon: Campbell, I., 6.

Beryllium ores: Brinton, 1.

California.

Andalusite in: MacDonald, G. A., 2; Murdoch, 4.

General: Webb, 14.

Lithium: Donnelly, 4.

Classification: Landes, 16.

Pegmatites—Continued.

- Colorado.
 General: Landes, 21.
 Mt. Antero: Montgomery, A., 4;
 Switzer, 3, 4.
 Connecticut, Collins Hill: Jenks, W. F., 2.
 General: Hess, F. L., 8.
 Granitic, desilication: Vlassov, 1.
 Greenland, southern: Wegmann, 6.
 Hypogene deposits, west U. S.: Hess,
 F. L., 7.
 Idaho: Anderson, A. L., 11; Campbell,
 C. D., 4.
 Main: Fisher, L. W., 6; Hess, F. L., 13;
 Morrill, 1.
 Massachusetts: Hess, F. L., 13; Hitch-
 in, 1.
 Mexico, Baja Calif.: Flores, 8.
 Minerals included: Martin, D. M., 7.
 Missouri: Tolman, 11.
 Montana: Pecora, 1.
 Nevada: Kerr, P. F., 11.
 Newfoundland: Jewell, 2.
 New Hampshire: Switzer, 2.
 New Mexico: Dunham, 3; Just, 3.
 New York: Alling, 11.
 North Carolina: Hess, F. L., 9; Murray,
 G. E., Jr., 4; Vitz, 1.
 Ontario: Lindner, 1.
 Ore deposits, west U. S.: Schaller, 15.
 Origin: Landes, 16; Pegau, 3.
 Pennsylvania: Fraser, 9, 15; Meier, 4.
 Quebec: Faessler, 13; Spence, 14.
 South Dakota: Apsour, 1; Hess, F. L.,
 14; Runner, J. J., 6; S. Dak. Plann.
 Bd., 2; Stobbe, 1; Tullis, 5, 6, 7.
 Succession of minerals and temperatures
 of fm.: Lindgren, 15.
 Virginia: Glass, 4; Pegau, 2.
 Pegmatites and hydrothermal veins: Landes,
 23.
- Pelecypoda. See also Mollusca.
 Acila: Schenck, 13, 16, 27.
 Alabama: Jones, 21.
 Alaska: Moffitt, 11.
 Alberta.
 Bearpaw fm.: Williams, M. Y., 3.
 Clearwater fm.: McLearn, 15.
 Fernie fm.: Warren, P. S., 7.
 Lea Park sh.: Warren, P. S., 14.
 Milk River Cret.: Russell, L. S., 28.
 Anadara, Oligocene, N. Am.: Schenck,
 32.
 Arcidae: Reinhart, 1, 2, 3, 5; Schenck,
 32.
 Arctic Canada, Ord., Sil.: Teichert, 12.
 Arizona.
 Cretaceous: Stoyanow, 6.
 Jurassic: Stoyanow, 6.
 Kaibab fm.: McKee, 11.
 Toroweap fm.: McKee, 11.
 Barbados, coral rock: Trechmann, 10.
 Barretia, Guatemala: MacGillivray, 3.
 Mexico: Müllerried, 33.
 Bearpaw, fm., Alberta, Saskatchewan:
 Warren, P. S., 13; Williams, M. Y., 3.
 Bradiolites, Mexico: Müllerried, 31.

Pelecypoda—Continued.

- Breviarca, N. J.: Stephenson, 10.
 British Columbia.
 Cache Creek fauna: Crockford, 1.
 Jurassic: Crickmay, C. H., 8.
 Peace River area: McLearn, 23, 28.
 Permian: Crockford, 1.
 Triassic: McLearn, 7.
 California.
 Baldwin Hills fauna: Willett, 2.
 Capay Eocene fauna: Merriam, C. W.,
 10.
 Cretaceous: Anderson, F. M., 14;
 popenoe, 3, 4.
 Eocene faunas: Clark, 18, 27; Dusen-
 bury, 1; Merriam, C. W., 10; Rein-
 hart, 4; Vokes, 12.
 Miocene: Wiedey, 3.
 Pliocene: Adams, B., 1.
 Point Lomas Pleist.: Webb, 5.
 Poway Eocene fauna: Dusenbury, 1.
 San Pedro Hills fauna: Woodring, 15.
 Santa Ana Mts. fauna: Popenoe, 4.
 Calyptogena, Calif.: Crickmay, C. H., 3.
 Canada, Arctic: Teichert, 12.
 Caprinid, Cuba: Thiadens, 2.
 Cardid revision: Keen, 2.
 Cardiidae: Keen, 2, 3, 7.
 Cardita, statistics: Quayle, 4.
 Cardium, Mex.: Müllerried, 18.
 Carriacou, West Indies: Trechmann, 8.
 Chiapsella, Mexico: Müllerried, 8.
 Choctawhatchee, fm., Fla.: Mansfield,
 W. C., 8.
 Clam in barnacle shell: Buck, J. B., 1.
 Clinocardium, n. gen.: Keen, 1.
 Conocardium, strat. use: Branson, C.
 C., 19.
 Conocardium, Tex.: Harris, Geo. D., 1.
 Corallochama: Müllerried, 11.
 Crassatella, N. J.: Richards, 8.
 Crassatellites: Mansfield, W. C., 14, 18.
 Cretaceous.
 California: Anderson, F. M., 14;
 Popenoe, 3, 4.
 Gulf, west interior: Stephenson, 22.
 Mexico: Müllerried, 20.
 Oregon: Anderson, F. M., 14.
 Pacific slope, not Arcidae: Rein-
 hart, 4.
 Cuba, caprinids, monopleurid: Thiadens,
 2.
 Cyphoxis, Rafinesque: Pillsbury, 1.
 Cyrtodonta, Minn.: Sardeson, 47.
 Devonian, Ill.: Cooper, 26.
 Devonian, Wis.: Pohl, 3.
 Diploschiza, Ala., Miss., Tex.: Stephe-
 nson, 9, 11.
 Discordant valves: Newell, 11.
 Eucrassatella, N. C.: MacNeill, F. S., 4.
 Evolution: Schenck, 24.
 Exogyra: Reeside, 4; Stephenson, L. W.,
 1.
 Faunas.
 Ancient shore-line, Hawaii: Stearns,
 22.

Pelecypoda—Continued.

Faunas—Continued.

- Baldwin Hills, Calif.: Willett, 2.
 Capay Eocene, Calif.: Merriam, C. W., 10.
 Cretaceous, Calif., Oreg.: Anderson, F. M., 14.
 Gulf, west interior: Stephenson, 22.
 Devonian, Ill.: Cooper, 26.
 Dutchtown Ord., Mo.: Cullison, 4.
 Edwards lms., Tex.: Grubbs, 2.
 Eocene, Calif.: Clark, 18, 27; Vokes, 12.
 Greenland, Ord.: Poulsen, 4; Teichert, 12.
 Gries Ranch, Wash.: Effinger, 7.
 Gulf, west interior: Stephenson, 22.
 Illinois, Dev.: Cooper, 26.
 Interior, west, and Gulf: Stephenson, 22.
 Jackson Eocene: Conrad, 1.
 Kansas coal field: Williams, J. S., 12.
 Lower Missn., Mo.: Branson, 33, 37.
 Malone Mts., Tex.: Albritton, 8.
 Northview-Hannibal fms., Mo.: Branson, 34.
 Olentangy sh., Ohio: Stauffer, 20.
 Ordovician, Canada, Greenland: Poulsen, 4; Teichert, 12.
 Pleistocene, Newfoundland: Richards, 17.
 Pliocene, Calif.: Adams, B., 1.
 Portersville mbr., Conemaugh fm., Ohio: Laird, W. M., 1.
 Poway Eocene, Calif.: Dusenbury, 1.
 Silurian, Canada, Greenland: Teichert, 12.
 Suwannee lms., Fla.: Mansfield, W. C., 20.
 Tampa lms., Fla.: Mansfield, W. C., 20.
 Tertiary: Cronels, 28.
 Triassic, British Columbia: McLearn, 7.
 Wheatland fm., Calif.: Clark, 28.
- Florida.
 Choctawhatchee fm.: Mansfield, W. C., 8.
 Marine Pleist.: Richards, 18, 21.
 Suwannee lms.: Mansfield, W. C., 20.
 Tampa lms.: Mansfield, W. C., 20.
- Gabb's Cret., Tert. types: Stewart, R., 1.
 Georges Bank, Blanquereau, Nova Scotia: Stephenson, 13.
 Glycymeris, classn.: Schenck, 18.
- Greenland.
 Cretaceous: Bøgvad, 2.
 Ordovician: Poulsen, 4.
 Permian: Frebold, 1.
- Guatemala.
 Barretia: MacGillivray, 3.
 Upper Cret.: Stephenson, L. W., 2.
- Hawaii.
 Ancient shore-line faunas: Stearns, 22.
 General: Dall, 1.
- Hinge, inverted, Venericardia: Gardner, J. A., 4.

Pelecypoda—Continued.

- Hinge structure, transposed: Popenoe, 1.
 Hippurites, Mex.: Müllerried, 2, 3, 4, 9.
 Illinois.
 Chicago region: Bretz, 10.
 Sea balls, Ill.: Cronels, 46.
 Indiana, Kentland Ord. area: Schrock, 11, 12.
 Inoceramus, Greenland: Frebold, 11.
 Inverted hinge, Venericardia: Gardner, J. A., 4.
 Jackson Eocene fauna: Conrad, 1.
 Key, Puget Sound genera: Miller, R. C., 1.
 Western N. Am.: Keen, 10.
 Kummelia, N. J., Md.: Stephenson, 17.
 Lampsilus (?), Nebr.: Cook, 13.
 Lea Park sh. fauna, Alberta, Saskatchewan: Warren, P. S., 14.
 Leda, Ala.: Gardner, J. A., 1.
 Ligament structure: MacNeil, 5.
 Linter, Tex.: Stephenson, 20.
 Lophonychia, Ohio: Stewart, G. A., 5.
 Louisiana.
 Caldwell Parish: Shreveport G. Soc., 2.
 Catahoula Parish: Shreveport G. Soc., 2.
 Florida parishes: Fisk, 4; Huner, 1.
 Freshwater Pleist. Mollusca: Richards, 19.
 Maryland, Crassatellites: Mansfield, W. C., 18.
- Mexico.
 Aurora fm.: Jones, T. S., 1.
 Indidura fm.: Jones, T. S., 1.
 Invertebrates, Cret.: Imlay, 6.
 Laguna de Mayran Cret.: Imlay, 7.
 Lower Calif.: Anderson, F. M., 9.
 Magdalena Bay fauna: Jordan, 1.
 Mezquital Valley: Blásquez L., 1; Müllerried, 28.
 San Carlos Mts.: Kellum, 13; Moore, 45.
 Tamaulipas: Imlay, 3; Kellum, 13; Moore, 45; Müllerried, 7.
- Mississippi, freshwater Pleist.: Richards, 19.
- Missouri.
 Dutchtown Ord. fauna: Cullison, 4.
 Lower Missn. fauna: Branson, 33, 37.
 Louisiana lms.: Williams, J. S., 2.
- Mollusca, west N. Am.: Hertlein, 2.
 Monopleurids, Cuba: Thiadens, 2.
 Myalina, Paleozoic: Newell, 13.
 Mytilus loell: Grant, U. S. IV. 2.
 Naladites, Paleozoic: Newell, 13.
 Nevada, Hawthorne quad.: Muller, 14.
 Tonopah quad.: Muller, 14.
- New names, west. Am. Mollusca: Hertlein, 2.
- Newfoundland, Pleist.: Richards, 17.
- New York, Dev.: Caster, 10, 11.
 Ordovician: Sproule, 1.
 Silurian: Ruedemann, R., 1.
- Noetinae, Tert.: MacNeil, 7.
- Nomenclature, revised: Schenck, 34.

Pelecypoda—Continued.

- North America, late Paleozoic: Newell, 10.
 Western, key to: Keen, 10.
 Nuculid, class., revision: Schenck, 13; 25.
 Ohio, Cincinnati area: Bucher, 21; Chappars, 3.
 Olenangy sh. fauna: Staufer, 20.
 Oklahoma, Quinton-Scipio coal field: Williams, J. S., 9.
 Verden ss. fauna: Bass, 15.
 Ontario.
 Cobocok Ord.: Okulitch, 18.
 Cobourg Ord. fauna: Sproule, 1.
 Eramosa fm.: Shaw, E. W., 2.
 Guelph fm.: Shaw, E. W., 2.
 Manitoulin Is. Ord.: Caley, 1.
 Oregon.
 Burrows, teredo, in fossil wood: Wharton, J. R., 1.
 Cretaceous: Anderson, F. M., 14; Lupper, R. L., 1.
 Eocene: Turner, F. E., 5.
 Jurassic: Lupper, R. L., 1.
 Lane County: Smith, W. D., 11.
 Rudistids: Lupper, R. L., 1; Packard, 3.
 Tereido burrows in fossil wood: Wharton, J. R., 1.
 Orthoceras: Teichert, 9.
 Ostracoda, Rocky Mtn. fms.: Peck, 10, 15.
 Ostrea.
 California: Vokes, 2.
 Hawaii: Ostergaard, 1.
 Idriaensis Gabb: Vokes, 2.
 Texas: Harris, 8; Stephenson, L. W., 1.
 Ostreidae, Gulf area: Stephenson, L. W., 12.
 Oysters, Calif.: Hertlein, 4; Tieje, 2.
 Pachydonts, Am., European: Müllerried, 13.
 Paphia, Wash.: Frizzell, 1.
 Pearl, Md.: Berry, C. T., 7.
 Pectens: Hertlein, 1; Mansfield, W. C., 10, 17; Tucker, H. I., 1.
 Climate indicators: Davenport, 1.
 Pectinacea, Paleozoic: Newell, 5, 6; Schuchert, 52.
 Pectinidae: Hertlein, 3, 9; Rowland, H. I., 1; Tucker, H. I., 8; Tucker-Rowland, 1.
 Pennsylvania.
 Devonian: Caster, 10, 11.
 Lehigh Valley: Miller, B. L., 13.
 Oriskany group: Cleaves, 8.
 Ostracoda, Dev.: Swartz, F. M., 9-a.
 Tully lms. fauna: Willard, 47, 49, 56, 59.
 Pitaria: Tegland, 1.
 Plagioptychus, Mex.: Müllerried, 14.
 Pleistocene shells, Calif.: Cockerell, 23.
 Protothaca, Miocene: Frizzell, 5.
 Pseudonotus: Muller, 8.
 Pteria, Greenland: Frebold, 11.

Pelecypoda—Continued.

- Quebec.
 Black River group: Okulitch, 3.
 Gaspé: Northrop, 10.
 Ste. Anne River: Laverdière, 6.
 Rudistae, Cuba: Boissevain, 1; Palmer, R. H., 2.
 Guatemala: MacGillavry, 2.
 Rudistids.
 Cuba: Rutten, M. G., 5; Thladens, 1; Vermunt, 5.
 Mexico: Palmer, R. H., 1.
 Oregon: Lupper, R. L., 1; Packard, 3.
 Texas: Adkins, 2; Stephenson, 21.
 Trinidad: Hodson, 1.
 Saskatchewan, Lea Park sh. fauna: Warren, P. S., 14.
 Schizothaerus, Wash.: Henderson, J., 4.
 Shell structure: Schenck, 14.
 Spirifer, Dev., Pa.: Willard, 39.
 Spondyli, Jamaica: Palmer, K. E. V. H., 4.
 Dominican Republic: Palmer, K. E. V. H., 4.
 Syntrophinella: Ulrich, 19.
 Texas.
 Austin Chalk: Stephenson, L. W., 1.
 Carboniferous: Williams, J. S., 11.
 Claiborne: Cole, W. S., 1.
 Edwards fm. fauna: Grubbs, 2.
 Malone Mts.: Albritton, 5, 8.
 Permian, transposed hinge: Newell, 12.
 Pleistocene, marine: Richards, 22.
 Transposed hinge: Newell, 12.
 Triassic marine, succession: Muller, 11.
 Trigonidae: Crickmay, C. H., 15.
 Trinacria, systematic position: MacNeil, 6.
 Trinidad, Miocene: Vokes, 10.
 Rudistid, Oligocene: Hodson, 1.
 Unionidae, Canada: Russell, L. S., 19.
 United States, W. Mollusca: Hanna, 35.
 Utah, Kaibab, fm.: McKee, 11.
 Pliocene: Chamberlain, R. V., 2.
 Toroweap fm.: McKee, 11.
 Vanuxemia, Minn.: Sardeson, 46.
 Veneracea: Frizzell, 6, 9.
 Venericardia, Gulf prov.: Chavan, 1, 2; Gardner, J. A., 4, 14.
 Veneridae phylogeny: Frizzell, 8.
 Vermont, Champlain sea fauna: Howell, 29.
 Virginia.
 Powell Valley: Bates, R. L., 4.
 Westmoreland Co.: Berry, 61.
 Yorktown: McGavock, 3.
 Vulsella, Fla.: MacNeil, F. S., 2.
 West Virginia: Price, P. H., 17.
 Wyoming, Juras.: Crickmay, 26; Neely, 4.
 Sacajawea fm.: Branson, C. C., 14.
 Sundance fm.: Neely, 4.
 Yukon, Laberge area: Bostock, 11.
 Pelecypoda of Pacific slope, Cret., Tert., not
 Arctidae: Reinhart, 4.
 Pelican Narrows, Saskatchewan: Satterly, 1.

Pelmatozoan root-forms: Ehrenberg, K., 1.

Peneplains.

Allegheny Plateau: Fridley, 5.

Appalachian area: Ashley, 3, 21, 34; Bryan, 19; Cole, 12; Fridley, 2; Ver Steeg, 3, 7, 9, 13; Wright, F. J., 4, 7.

Appalachian Plateaus: Cole, 12; Fridley, 5.

California, Alameda Canyon: DeBéthune, 5.

Catoctin belt: Ver Steeg, 32.

Colorado.

Front Range: Atwood, W. W., 6; Van Tuyl, 4-a, 11.

High Plains: Van Tuyl, 2; Glock, 10.

Medicine Bow Range: Atwood, W. W., Jr., 5.

Park Range: Atwood, W. W., Jr., 5.

San Juan Range: Atwood, W. W., 6.

Composite peneplain: Campbell, M. R., 9.

Desert cliff recession: Glock, 15.

Erosion surfaces.

Idaho: Kirkham, 7; Ross, C. P., 6.

Multiple: Bates, R. E., 3; Rich, 31.

Windgaps: Ver Steeg, 18.

Fall zone peneplain: Sharp, H. S., 2.

General: Gabriel, V. G., 2; Keyes, 287,

303, 316, 372; Rich, 22; Smith,

W. D., 3; Ver Steeg, 1, 24.

Greenland, Franz Joseph Fjord: Odell, 3.

Harrisburg, older Appalachians: Wright, F. J., 5.

Idaho, N.: Anderson, A. L., 2.

Inland phases: Van Tuyl, 13.

Iowa, driftless area: Keyes, 302.

Kentucky: Cole, W. S., 11; Jillson, 12.

Maryland: Campbell, M. R., 11; Stose, 2.

Mature lands: Johnson, 42.

Montana, Beartooth Mts.: Hughes, R. V., 3; Sharp, 11.

New England: Tarr, R. S., 1.

New Hampshire: White, G. W., 12.

New Mexico, Jemez Mts.: Church, F. S., 1.

New York: Cannon, R. S., 1; Fridley, 1.

Ohio: Cole, W. S., 10, 11; Desjardines, 1-a; Ver Steeg, 6.

Oregon, Neocene: Buwalda, 5.

Pennsylvania.

Appalachian area: Anonymous, 186.

Bellefonte quad.: Butts, 10.

Chambersburg (Harrisburg): Campbell, M. R., 11.

General: Meyerhoff, 7; Stose, 2.

Harrisburg (Chambersburg): Campbell, M. R., 11.

Kittatinny (Schooley): Ver Steeg, 14.

Philadelphia area: Watson, E. D., 6.

Schooley (Kittatinny): Ver Steeg, 14.

South-cent.: Hickok, 4.

State College area: Detrick, 2.

Tyrone quad.: Butts, 13.

Planes of lateral corrosion: Johnson, D. W., 9.

Rocky Mts.: Worcester, P. G., 1.

Solution in peneplanation: Ward, F., 2.

Stages, developmental: Keyes, 283.

Peneplains—Continued.

Theoretic basis: Keyes, 362.

Vermont: Jacobs, 4; Pond, A. M., 1.

West Virginia: Cole, 11; Fridley, 7; Lucke, 12.

Wind gaps, water gaps: Ver Steeg, 2, 22.

Wisconsin.

Cuesta vs. peneplain: Martin, L., 4.

Driftless area: Bates, R. E., 2; Martin, L., 4.

Kickapoo area: Bates, R. E., 4.

Wyoming.

Medicine Bow Range: Atwood, W. W., Jr., 5.

Park Range: Atwood, W. W., Jr., 5.

Wind River Mts.: Baker, C. L., 26.

Peneplain or peneplane: Johnson, D. W., 34.

Peneplanation: Ver Steeg, 24; Worcester, P. G., 1.

Pennsylvania.

Applied geology: Stone, 13.

Bacteria in anthracite (?): Turner, H. G., 3.

Field Conf.: Whitcomb, 8.

Geological Survey ann. rept.: Ashley, 4.

Guidebook, Pa. Geologists Conf., 1938: Bevan, 34.

Syllabus of geology: Ashley, 5.

Areas described.

Adams Co.: Stose, G. W., 8.

Coatesville-West Chester quad.: Bascom, 3.

Delaware Water Gap area: Willard, 50.

Fairfield quad.: Stose, G. W., 1.

Freeport quad.: Hughes, H. H., 1.

Gettysburg quad.: Stose, G. W., 1.

Greene Co.: Stone, 8.

Hillards quad. oil and gas fields: Sherrill, 5.

Lancaster quad.: Jonas, 2.

Lehigh Valley: Miller, B. L., 13.

McCallis Ferry-Quarryville dist.: Knopf, E. F. B., 3.

Middletown quad.: Stose, 12.

New Castle quad.: DeWolf, 1.

New Kensington quad.: Richardson, G. B., 2.

Northampton Co.: Miller, B. L., 15.

Pittsburgh quad.: Johnson, M. E., 1.

Quakertown-Doylestown dist.: Bascom, 1.

Reading area: Willard, 58.

Schuylkill Valley: Willard, 57.

Somerset quad.: Richardson, G. B., 3.

Southeastern Pa.: Hall, G. M., 5.

Tyrone quad.: Butts, 13.

Windber quad.: Richardson, G. B., 3.

York Co.: Stose, 21.

Economic geology.

Anthracite: Ashley, 31; Austin, A. C., 1; LeVan, 1; Thomas, J. P., 1; Turner, H. G., 1, 2.

Appalachian oil and gas fields: Ashley, 28.

Bellefonte quad.: Butts, 10.

Pennsylvania—Continued.

Economic geology—Continued.

- Bentonite: Bonine, 1, 2; Rosenkrans, 2; Whitcomb, 7.
 Bituminous coal fields: Sisler, 6.
 Bradford oil field: Cathart, 11; Fettke, 3, 9, 10, 11; Newby, 1; Waldo, 4.
 Building stones: Stone, 11; Anonymous, 150.
 Butler quad.: Richardson, G. B., 4.
 Clay: Leighton, H., 2, 3, 5.
 Coal: Ashley, 32; Linton, 1; Robinson, J. F. 2; Sisler, 1; Stadnichenko, 4; Thiessen, 3.
 Correlation, oil and gas sands: Sisler, 2.
 Deep sand, oil and gas: Cathart, 10; Fettke, 4, 5, 6, 7.
 Devonian sh., Oriskany sand drilling: Bennett, J., 1.
 Early iron works: Billinger, 1.
 Farmington gas field: Sanders, T. P., 2.
 Feldspar: Stone, R. W., 5.
 Fire clays: Leighton, H., 2.
 Friedensville zinc mines: Blank, E. W. 1.
 General: Ashley, 5.
 Glass sand: Krynine, 11.
 Gravel: Pennsylvania G. S., 1.
 Hebron gas field: Reeves, J. R., 2.
 Henry Shaler Williams camp area: Rogers, R. D., Jr., 1.
 Hilliards quad. oil and gas fields: Sherrill, 5.
 Honeybrook quad.: Bascom, 6.
 Iron: Billinger, 1; Callahan, 1; Hichok, 2, 5; Smith, L. L., 1; Staples, J. M., 1; Yaklich, 1.
 Lehigh Valley: Miller, B. L., 13.
 Limestones: Miller, B. L., 4.
 Magnetite: Callahan, 1; Smith, L. L., 1.
 Map, oil and gas fields: Sisler, 7.
 Metamorphism, Kittanning coal beds: Stadnichenko, 4.
 Mineral res.: Ashley, 14; Berkey, 12; Pennsylvania G. S., 1; Anonymous, 140.
 Mineral zoning, Trias.: Newhouse, 8.
 Mining for oil: Torrey, P. D., 2.
 Monongahela coals, microstructure: Thiessen, 3.
 Natural gas.
 Cameron Co.: Cathart, 7.
 Correlations: Sisler, 2.
 Deep-sand poss.: Fettke, 4, 5, 6.
 Elk Co.: Cathart, 7.
 Farmington field: Sanders, T. P., 2.
 Fayette Co.: Gibbs, 1.
 Gas and oil fields: Sherrill, 5; Simmons, A. C., 1.
 General: Lucke, 1; Torrey, 6, 8.
 Hebron gas field, Potter Co.: Reeves, J. R., 2.
 Horizons, gas and oil: Claus, 1.
 McKean Co.: Cathart, 8.
 Northern Pa.: Cathart, 5.
 Northwest Pa.: Fettke, 4, 5, 6.

Pennsylvania—Continued.

Economic geology—Continued.

Natural gas—Continued.

- Oriskany gas fields: Cathart, 2, 7, 8, 9; Fettke, 12; Garrett, S. G., 1; Hamilton, S. H., 2.
 Possibility of deep production: Fettke, 4, 5, 6, 7.
 Potter Co.: Cathart, 2, 3; Reeves, J. R., 2.
 Sands, gas: Anonymous, 175.
 Scenery Hill field: Robinson, J. F., 1.
 Somerset Co.: Gibbs, 1.
 Tideout quad.: Cathart, 12.
 Tioga region: Ashley, 8, 10; Cathart, 1, 4; Gaddess, 1; Robinson, J. F., 3, 4.
 Western Pa.: Sisler, 7, 8.
 Natural gas and oil fields: Cathart, 12; Claus, 1; Sherrill, 5; Simmons, A. C., 1; Sisler, 2, 7, 8; Anonymous, 175.
 Nonmetallic mineral resources: Stone, 7.
 Northampton Co.: Miller, B. L., 15, 18.
 Oil and gas fields: Fettke, 4, 5, 6, 7; Gibbs, 1; Sisler, 1, 8.
 Correlation of sands: Sisler, 1.
 Well records: Montgomery, J. G., Jr., 1.
 Oriskany sands: Fettke, 12; Hamilton, S. H., 2; Ruggles, 1.
 Petroleum: Anonymous, 158.
 Correlations: Sisler, 2.
 Deep sand poss.: Fettke, 4, 5, 6, 7.
 Fayette Co.: Gibbs, 1.
 Horizons, oil and gas: Claus, 1.
 Industry, history: Lawrence, A. A., 1.
 Mining for oil: Dickey, P. A., 1; Torrey, P. D., 2.
 Northern Pa.: Cathart, 5.
 Northwest Pa.: Fettke, 4, 5, 6.
 Oriskany sands: Ruggles, 1.
 Pittsburgh area: Leighton, H., 6; Linton, 1.
 Porosity, oil sands: Barb, 1; Honess, 3.
 Possibilities, oil mining: Dickey, P. A., 1; Torrey, P. D., 2.
 Oil and gas: Gibbs, 1.
 Recovery by water-flooding pressure: Clapp, F. G., 5.
 Sands, oil: Anonymous, 175.
 Somerset Co.: Gibbs, 1.
 Tideout oil field: Cathart, 12.
 Western Pa.: Sisler, 7, 8.
 Petroleum and nat. gas: Simmons, A. C., 1; Torrey, P. D., 6.
 Pittsburgh area: Leighton, H., 6.
 Pittsburgh coal bed: Eavenson, 3.
 Potter Co.: Cathart, 2, 3; Reeves, J. R., 2.
 Recovery of oil by water pressure: Clapp, F. G., 5.
 Rock salt: Stone, 12.
 Sand: Pennsylvania G. S., 1.
 Shale: Leighton, H., 3.
 Slate: Behre, 9.

Pennsylvania—Continued.

Economic geology—Continued.

- Somerset quad.: Richardson, G. B., 3.
 Tyrone quad.: Butts, 13.
 Western Pa., oil and gas: Sisler, 7, 8.
 Windber quad.: Richardson, G. B., 3.
 Wyoming-Lackawanna area: Itter, 1.
 York Co.: Stose, 21.
 Zinc: Blank, E. W., 2.

Historical geology.

- Age of drift sheets: Ashley, 27.
 Anthracite area: Darton, 11; Thomas, J. P., 1.
 Correlations: Turner, H. G., 2.
 Reserves and geology: Ashley, 31.
 Appalachian area: Jonas, 9; Anonymous, 186.
 Atlantic Coastal Plain: Jonas, 4.
 Avondale-Doe Run area: Bailey, E. B., 1.
 Baltimore & Ohio routes: Grimsley, 1.
 Basic rocks, E. highlands: Fraser, 11.
 Bellefonte quad.: Butts, 10.
 Bentonite areas: Bonine, 2; Rosenkrans, 2; Whitcomb, 7.
 Blue Ridge: Stose, 13.
 Bradford field: Fettke, 9, 10, 11.
 Bradfordian ser., discontinued: Caster, 6.
 Brallier sh.: Butts, 9.
 Brookville quad.: Graeber, 1.
 Brunswick fm. (Newark): McLaughlin, D. B., 2.
 Butler quad.: Richardson, G. B., 4.
 Cambrian, restricted, S. Appalachians: Resser, 21.
 Cameron Co.: Cathcart, 6.
 Carlisle-Lowville lms., hiatus: Butts, 8.
 Catskill sedimentation: Willard, 20.
 Chemung fm.: Butts, 9; Willard, 18, 24.
 Clinton Co. Ord.: Whitcomb, 3.
 Coal fields: Ashley, 32; Linton, 1.
 Correlations.
 Cambro-Ordovician lms. by insoluble residues: Hills, J. M., 1.
 Oil and gas sands: Sisler, 2.
 Crystalline schists, Pa.-Md.: Jonas, 12.
 Cycles, Penn.: Ashley, 6.
 Dauphin-Sunbury area: Willard, 56.
 Deep-sand oil and gas fields: Fettke, 4.
 Delaware Valley below water gap: Ward, F., 5.
 Delaware Water Gap area: Willard, 2, 50.
 Devonian: Burroughs, 4; Caster, 8; Fettke, 2, 8; Laird, W. M., 2; Willard, 26, 36, 40, 41, 44, 59, 62.
 Devonian-Miss. relations: Caster, 8; Laird, W. M., 2.
 Eastern region: Miller, B. L. 7.
 Elk Co.: Cathcart, 7.
 Fayette Co.: Moyer, 1.
 General: Ashley, 5; Willard, 30; Anonymous, 95, 172.
 Geologic map: Stose, 7.
 Glenarm ser.: Mackin, 4; Miller, B. L., 8.

Pennsylvania—Continued.

Historical geology—Continued.

- Ground water: Leggette, 9; Lohman, S. W., 4, 10.
 Hamilton correl.: Willard, 45.
 Hamilton group: Reeves, J. R., 3; Willard, 21, 31, 35, 45.
 Hardyston fm.: Miller, B. L., 16.
 Harrisburg axis: Willard, 61.
 Heavy minerals, age indicators: Dryden, 13.
 Hebron gas field: Reeves, J. R., 2.
 Helderberg group: Swartz, F. M., 1, 10.
 Henry Shaler Williams camp area: Rogers, R. D., Jr., 1.
 Highway geol., Philadelphia-Pittsburgh: Willard, 55.
 Hillards quad. oil and gas fields: Sherrill, 5.
 Honeybrook quad.: Bascom, 6.
 Honeybrook uplift, structure: Stose, 17.
 Igneous rocks, pre-Camb.: Bascom, 5.
 Jacksonburg fm.: Miller, B. L., 2, 4.
 Keyser lms.: Swartz, F. M., 10.
 Kittatinny Mts.: Foose, 1; Willard, 53.
 Lehigh-Northampton area: Behre, 9.
 Lehigh Valley: Miller, B. L., 13.
 Little Mtn.: Foose, 1.
 Lowville-Carlisle lms., hiatus: Butts, 8.
 McKean Co.: Cathcart, 7.
 McKenzie shale: Swartz, F. M., 8.
 Marcellus, Stroudsburg: Willard, 17.
 Martic overthrust: Mackin, 4; Miller, B. L., 8.
 Martinsburg fm.: Miller, B. L., 17.
 Martinsburg lms.: Miller, R. L., 1; Stose, 18.
 Martinsburg sh.: Gorman, J. P., 1.
 Mauch Chunk fm.: Stone, 18.
 Medina ss.: Chadwick, 12; Stose, 3.
 Minisink Valley: Happ, 3.
 Mississippian-Dev. relations: Caster, 8; Laird, W. M., 2.
 Monongahela ser.: Ashley, 1.
 Natural gas fields: Lucke, 1; Torrey, 8.
 Newark ser.: McLaughlin, D. B., 1.
 New Bloomfield quad.: Cleaves, 1.
 Northampton Co.: Miller, B. L., 15, 18.
 Northern Pa.: Cathcart, 5; Torrey, 5.
 Northwestern Pa.: Caster, 3, 5; Fettke, 6.
 Oil and gas fields: Sisler, 8.
 Correlations: Sisler, 2.
 Horizons: Claus, 1.
 Onondaga fm.: Willard, 41.
 Ordovician: Stose, 5; Whitcomb, 3; Willard, 51, 54, 60.
 Correlations: Willard, 51.
 Ordovician-Sil. relations: Stose, 5; Willard, 60.
 Oriskany group: Cathcart, 9; Cleaves, 4, 6, 8; Fettke, 1; Swartz, C. K., 6; Willard, 10.
 Oriskany, supposed, is Mid. Dev.: Swartz, C. K., 6.
 Paleogeography, glacial clay: Krynine, 10.

Pennsylvania—Continued.

Historical geology—Continued.

- Paleozoic: Fraser, 15; Willard, 49.
 Panther Valley: LeVan, 1.
 Pegmatites, Camb.: Fraser, 9.
 Pennsylvanian cycles: Ashley, 6.
 Pennsylvanian sec., Somerset Co.: Stone, 20.
 Penn-York embayment: Caster, 16.
 Pensauken fm.: Strock, 1.
 Petroleum and gas horizons: Claus, 1.
 Philadelphia area: Ehrenfeld, 2; Watson, E. D., 6.
 Phoenixville quad.: Bascom, 6.
 Piedmont prov.: Jonas, 4.
 Pittsburgh area: Leighton, H., 6; Linton, 1.
 Pleistocene, Philadelphia area: Ehrenfeld, 2.
 Pocono: Ashley, 20; Chadwick, 24; Wagner, N. S., 1; White, C. D., 20.
 Portage group: Willard, 34.
 Possibility, deep oil and gas: Fettke, 7.
 Potter Co.: Cathcart, 2, 3.
 Pre-Camb.: Fraser, 15.
 Reading Hills area: Fraser, 12; Stose, 15, 22; Willard, 58.
 Reading overthrust: Stose, 15.
 Sands, petroleum and gas: Anonymous, 175.
 Schuylkill Valley: Willard, 57.
 Selinsgrove Junction sec.: Willard, 16.
 Silurian: Fettke, 2, 8; Swartz, C. K., 3; Swartz, F. M., 6, 7, 8; Willard, 60.
 Silurian-Ord. relations: Willard, 60.
 Smicksburg quad.: Shaffner, 2.
 Southern Appalachian area: Butts, 4.
 Southern Pa.: Stose, 11.
 Southwestern Pa.: Piper, 7; Robinson, J. F., 2.
 Spitzenberg conglom.: Whitcomb, 4.
 State College area: Detrick, 2.
 Summary: Detrick, 1.
 Taconic disturbance: Willard, 3.
 Tidioute quad. oil and gas fields: Cathcart, 12.
 Tioga region: Ashley, 8; Cathcart, 4; Willard, 11.
 Triassic alluvial fan: McLaughlin, D. B., 3.
 Triassic ser.: McLaughlin, D. B., 2.
 Tully fm.: Cooper, 25.
 Tully lms. and fauna: Willard, 22, 47.
 Tunnels, South Penn turnpike: Cleaves, 5.
 Tyrone quad.: Butts, 13.
 Volcanics, S. Appalachians: Jonas, 10.
 Western Pa.: Fettke, 14.
 Wyoming-Lackawanna area: Itter, 1.
 York Co.: Stose, 21.
 Zellenople quad.: Richardson, G. B., 4.

Mineralogy.

- Albite trends, Piedmont: Ingerson, 4.
 Aragonite, caves: Faux, 1.
 Barium: Meier, 3.
 Bellefonte quad.: Butts, 10.

Pennsylvania—Continued.

Mineralogy—Continued.

- Bentonite: Bonine, 2.
 Carnotite: Myers, R. E., 1.
 Clarion Co. meteorite (?): Stone, 14.
 Copper: Butler, R. D., 3.
 Corundum: Tomlinson, W. D., 2, 3.
 Cornwall mine minerals: Ulke, 8.
 Dickite: Honess, 4.
 Feldspar: Meier, 3.
 Fluorite: Whitlock, 4.
 Garnets: Stose, 20.
 Halite: Miller, B. L., 9.
 Halotrichite: Shrader, 1.
 Hardyston quartzite: Fraser, 14.
 Harmotome: Meier, 1, 2.
 Heavy minerals, age indicators: Dryden, 13.
 Iron: Staples, J. M., 1.
 Iron works, early: Billinger, 1.
 Jasper: Fraser, 10; Myers, P. B., 1.
 Mapleton glass sand: Krynine, 11.
 Meteorites: Smithsonian Inst., 2; Stone, 8, 15; Anonymous, 99.
 Millerite: Hawkins, 5; Northup, 2, 4.
 Minerals, Serpentine Range: Gehman, 1.
 Montmorillonite: Tomlinson, W. H., 1.
 Muscovite-plagioclase-symplectite: Ber-
 man, J., 1.
 Northampton Co.: Miller, B. L., 15.
 Pegmatites: Fraser, D. M., 9; Meier, 4.
 Prehnite: Fraser, D. M., 13.
 Pyromorphite: Lewis, T. J., 1.
 Rock crystal: Zodac, 22.
 Rock desert varnish: Miller, B. L., 12.
 Sericitization: Fraser, D. M., 7.
 Spessartite: Strock, 2.
 Sphalerite: Butler, R. D., 1.
 Thorianite: Wells, R. C., 6.
 West Pittston area: Northup, 1.
 York Co.: Stose, 21.
 Zinc: Fraser, D. M., 6.

Paleontology.

- Algae, calcareous: Fenton, 46.
 Aorocrinus: Goldring, 15-a.
 Appalachians, Olenellus zone: Resser, 20.
 Archaeopteris: Arnold, 17, 20, 35.
 Armstrongia cf. Titusvillia: Caster, 13.
 Bothriolepis slab: Chadwick, 10.
 Brachiopoda: Benson, F. M., 1.
 Branchiosaurus: Romer, 24.
 Bryozoa: McNair, 4.
 Cambrian, restricted, S. Appalachians: Resser, 21.
 Camptostroma: Ruëdemann, 18.
 Cephalopoda: Flower, 1; Miller, 34.
 Chemung tracks and trails: Willard, 28.
 Coal floras: Darrab, 3, 4.
 Conifer: Wherry, 4.
 Coral reef: Willard, 38.
 Dalmatella: Barnsley, 1.
 Dauphin-Sunbury area: Willard, 56.
 Delocrinus: Burke, 1.
 Devonian: Willard, 59.
 Devonian faunas: Willard, 12.

Pennsylvania—Continued.

Paleontology—Continued.

- Devonian-Missn. fms. with plants: Arnold, 25.
 Devono-Carboniferous, N. W. Pa.: Caster, 1.
 Dimerocrinus: Witmer, 1.
 Dinosaur tracks: Hickok, 3; Willard, 23; Anonymous, 142.
 Euproops: Eller, 13; Willard, 27.
 Eurypterus: Ehlers, 4.
 Faunas, ancient: Anonymous, 173.
 Marcellus: Willard, 17.
 Martinsburg: Secrist, 4.
 Olenellus zone, Appalachians: Resser, 20.
 Onondaga paint-ore: Willard, 52.
 Tully lms.: Willard, 37.
 Fish: Bryant, 5.
 Floras, Catskill delta: Arnold, 34.
 Devonian red-beds: Butler, R. D., 3.
 Pittsburgh area: Darrah, 1.
 Pocono: Arnold, 8, 10; Jongmans, 7.
 Silurian terrestrial: Willard, 48.
 Fossil collecting: Seaman, 8.
 General: Willard, 42.
 Helderberg group: Swartz, F. M., 10.
 Homalonotus: Whitcomb, 1.
 Hypothyridina: Willard, 29.
 Insecta: Carpenter, 10.
 Keyser lms.: Swartz, F. M., 10.
 Lagenospermum: Arnold, 33.
 Lehigh Valley: Miller, B. L., 13.
 Lepidesthes: Cooper, G. A., 6.
 Lepidostrobis: Arnold, 13.
 Linguloids: Girty, 10.
 Localities for fossils: Willard, 13.
 Marcellus fauna: Willard, 17.
 Mastodons: Price, P. H., 4; Robinson, C. W., 1; Will, 1.
 Mississippian plant beds: Arnold, 25.
 Mollusca: Brooks, S. T., 1.
 Neuropteris: Jongmans, 6.
 Northwest Pa.: Caster, 5.
 Olenellus zone faunas, Appalachians: Resser, 20.
 Ophiomusium: Berry, C. T., 14.
 Oriskany group: Cleaves, 8.
 Ostracoda: Holland, W. C., 1; Swartz, F. M., 4, 5, 9.
 Paleozoic, S.-cent. Pa.:—Willard, 49.
 Paramphibius' tracks: Caster, 9; Anonymous, 69.
 Pelecypoda: Caster, 10, 11.
 Pittsburgh area: Darrah, 1; Leighton, H., 6.
 Protolhmulus: Eller, 14.
 Pseudorthoceratidae: Flower, 9.
 Pteridosperms, Card.: Darrah, 12.
 Salonia: Cooper, G. A., 14.
 Sauripterus: Gregory, 16.
 Schizodiscus: Cleaves, 2.
 Schuylkill Valley: Willard, 57.
 Scolithus: Cloud, P. E., 1; Miller, B. L., 14.
 Siliceous sponges: Caster, 12.

Pennsylvania—Continued.

Paleontology—Continued.

- Spirifer: Willard, 39.
 Sporadoceras: Miller, A. K., 27.
 Strobilus: Arnold, 10.
 Stylonurus: Willard, 19.
 Taenialaster: Bradford, 46.
 Taeniopteris: Darrah, 7.
 Taxodium: Richards, 4.
 Tentaculites: Vokes, 9.
 Tetrapoda: Burke, 5.
 Tully lms. and fauna: Willard, 37, 47.
 Tyrone quad.: Butts, 13.
 Walchia: Darrah, 7.

Petrology.

- Albite trends, Piedmont: Ingerson, 4.
 Basic rocks, E. highlands: Fraser, 11.
 Bradford sand: Fettke, 3; Waldo, 4.
 Coal: Fieldner, 9, 10.
 Correlation, insoluble residues, Camb.-Ord. lms.: Hills, J. M., 1.
 Corundum: Tomlinson, W. H., 2.
 Dauphin-Sunbury area: Willard, 56.
 Devonian: Willard, 59.
 Gabbro alteration: Watson, E. D., 7.
 Glass sand: Krynine, 11.
 Gneiss-hornblende alteration: Postel, 2.
 Hardyston quartzite: Fraser, 14.
 Harmotome: Meier, 1, 2.
 Heavy minerals, age indicators: Dryden, 13.
 Helderberg group: Swartz, F. M., 10.
 Jacksonburg fm.: Miller, R. L., 4.
 Jacksonburg lms.: Miller, R. L., 2.
 Jasper replacing Hardyston quartzite: Fraser, 10.
 Keyser lms.: Swartz, F. M., 10.
 Mica peridotite dike: Honess, 1.
 Northampton Co.: Miller, B. L., 15.
 Oriskany group: Cleaves, 8.
 Oriskany ss.: Stow, 3, 11.
 Paleozoic: Fraser, 15.
 Pegmatites: Fraser, 9.
 Polyolith, Pa. State College: Bonine, 3.
 Pre-Cambrian: Fraser, 15.
 Prehnite: Fraser, 13.
 Reading Hills area: Fraser, 12; Willard, 58.
 Ringing, trap rocks: Anonymous, 126.
 Rock desert varnish: Miller, B. L., 12.
 Sericitization, Highlands: Fraser, D. M., 7.
 Serpentine: Prouty, 1.
 Shales, clays with coals: Grim, 5.
 Zinc: Fraser, D. M., 6.

Physical geology.

- Appalachian area: Anonymous, 186.
 Appalachian-Piedmont deformation: Campbell, M. R., 1.
 Anthracite Basin: Darton, 11.
 Avondale-Doe Run area: Bailey, E. B., 1.
 Beaverton earthquake 7/15/38: Anonymous, 183.
 Bradford oil field: Fettke, 9, 11.
 Brookville quad.: Graeber, 1.

Pennsylvania—Continued.

Physical geology—Continued.

- Caves: Gorman, J. M., 1; Miller, B. L., 11; Stone, R. W., 2, 3, 10, 12.
 Clay dikes Redstone coal: Price P. H., 5.
 Clover Creek earthquake 7/15/38: Landsberg, 12.
 Dauphin-Sunbury area: Willard, 56.
 Delaware Water Gap area: Willard, 50.
 Devonian: Willard, 59.
 Drainage changes: Anonymous, 143.
 Durham Hills shearing: Fraser, D. M., 8.
 Earthquakes and seismology: Landsberg, 9, 12.
 Eastern region: Miller, B. L., 7.
 Farmington gas field: Sanders, T. P., 2.
 Faulting, Conemaugh fm.: Ross, R. B., 1.
 Garnets in conglomerates: Stose, 20.
 Gneiss, hornblende, alteration: Postal, 2.
 Granite intrusions, Phila.: Watson, 8.
 Harrisburg axis: Willard, 61.
 Helderberg group: Swartz, F. M., 10.
 Henry Shaler Williams camp area: Rogers, R. D., Jr., 1.
 Highway geology, Philadelphia-Pittsburgh: Willard, 55.
 Honeybrook quad.: Bascom, 6.
 Honeybrook uplift: Stose, 17.
 Igneous assimilation, Macungie: Fraser, D. M., 5.
 Iron deposit, Cornwall: Yaklich, 1.
 Keyser lms.: Swartz, F. M., 10.
 Kittatinny Mt.: Foote, 1.
 Lehigh Valley: Miller, B. L., 13.
 Lehigh Valley magnetic survey: Ewing, 8.
 Little Mt.: Foote, 1.
 Metamorphic belt, cent. Appalachians: Jonas, 1.
 Mountains, origin: Ashley, 35.
 New Bloomfield quad.: Cleaves, 1.
 Northampton Co.: Miller, B. L., 15.
 Ordovician-Silurian relations: Willard, 60.
 Orogeny: Anonymous, 119, 143.
 Phoenixville quad.: Bascom, 6.
 Paleozoic: Fraser, D. M., 12.
 Pre-Cambrian: Fraser, D. M., 15.
 Reading Hills area: Fraser, D. M., 8, 12; Stose, 22; Willard, 58.
 Schuylkill Valley: Willard, 57.
 Shearing, Durham, Reading Hills: Fraser, D. M., 8.
 Smicksburg quad.: Shaffner, 2.
 Solution in peneplanation: Ward, F., 2.
 State College area: Detrick, 2.
 Ticklish Rock: Anonymous, 198.
 Wyoming-Lackawanna area: Itter, 1.
 York County: Stose, 21.

Physiographic geology.

- Age of drift sheets: Ashley, 27.
 Appalachian drainage: Johnson, D. W., 12.
 Appalachian Mts. sculpture: Ashley, 21.
 Appalachian peneplains: Ashley, 3; Ver Steeg, 3.
 Appalachian plateaus, erosion surfaces: Cole, 12; Ver Steeg, 13.

Pennsylvania—Continued.

Physiographic geology—Continued.

- Appalachian region: Johnson, D. W., 8.
 Asymmetric drainage, SW. Pa.: Stone, R. W., 1.
 Bellefonte quad.: Butts, 10.
 Brookville quad.: Graeber, 1.
 Catoclin belt: Ver Steeg, 32.
 Chambersburg (Harrisburg) peneplain: Campbell, M. R., 11.
 Correlation, erosion surfaces: Ver Steeg, 31.
 Huron-Erie Basins: Leverett, 24.
 Dauphin-Sunbury area: Willard, 56.
 Delaware Valley below Gap: Ward, F., 5.
 Devonian: Willard, 59.
 Devonian ice: Willard, 32.
 Eastern Pa.: Miller, B. L., 7.
 Elk Hills glaciation: Filmer, 2.
 Erosion surfaces, S-cent.: Hickok, 4.
 Fayette Co.: Moyer, 1.
 Floods, March 1936: Anonymous, 83.
 General: Ashley, 9; Anonymous, 92.
 Glacial deposits outside Wisconsin moraine: Leverett, 16.
 Glacial Lake Cowanesque: Willard, 15.
 Glacial potholes, NE.: Davis, R. N., 1.
 Glaciation: Filmer, 2; Anonymous, 156.
 Ground water: Leggette, 9; Lohman, S. W., 4.
 Harrisburg (Chambersburg) peneplain: Campbell, M. R., 11.
 Highway geology, Philadelphia-Pittsburgh: Willard, 55.
 Hillards quad. oil and gas fields: Sherrill, 5.
 Illinoian till, Delaware Valley: Leverett, 5.
 Kittatinny Mt. gaps: Willard, 53.
 Kittatinny (Schooley) peneplain map: Ver Steeg, 14.
 Lehigh Valley: Miller, B. L., 13.
 Map, Schooley (Kittatinny) peneplain: Ver Steeg, 14.
 Meanders, Raystown Br., Juniata River: Stone, 16.
 Minisink Valley: Happ, 3.
 Northampton Co.: Miller, B. L., 15, 18.
 Ohio River evolution: Fowke, 2.
 Poleogeography, glacial clay: Krynine, 10.
 Peneplains: Ashley, 3; Stose, G. W., 2; Ver Steeg, 3, 14.
 Philadelphia area: Watson, E. H., 6.
 Pittsburgh area: Leighton, H., 6.
 Potter Co. drainage: Anonymous, 103.
 Pymatuning glacial lake: Anonymous, 170.
 Reading area: Willard, 58.
 Scenery: Ashley, 13.
 Schooley (Kittatinny) peneplain: Ver Steeg, 14.
 Schuylkill Valley: Willard, 57.
 Smicksburg quad.: Shaffner, 2.
 Soil erosion survey: Patrick, A. L., 1.
 Southwest Pa.: Piper, 7.
 Stream channels, buried: Shaffner, 1.

Pennsylvania—Continued.

Physiographic geology—Continued.

Susquehanna River Valley.

Drainage changes: Anonymous, 171.

North Branch: Burroughs, 3.

Terraces: Mackin, 2, 6-a.

Triassic alluvial fan: McLaughlin, D. B., 3.

Tyrone quad.: Butts, 13.

Water gaps and wind gaps: Meyerhoff, 7; Ver Steeg, 4.

Wind gaps and water gaps: Meyerhoff, 7; Ver Steeg, 4.

Wisconsin ice tongue, Delaware Valley: Ward, F., 1, 4.

Wyoming-Lackawanna area: Itter, 1.

York Co.: Stose, 21.

Underground water.

Bellefonte quad.: Butts, 10.

Bolling Springs: Stone, 22.

Fluctuation, water table: Lohman, S. W., 1, 4, 5, 6, 7, 10.

Ground water: Leggette 9; Lohman, S. W., 1, 4, 5, 6, 7, 10; Miller, B. L., 19; Anonymous, 140.

Honeybrook quad.: Bascom, 6.

Northampton Cp.: Miller, B. L., 15.

Oil-field waters: Barb, 2.

Phoenixville quad.: Bascom, 6.

Rivers, underground: Anonymous, 178.

Shafer Run Cave: Gorman, J. M., 1.

Southeastern Pa.: Hall, G. M., 2, 5; Piper, 7.

Springs flowing over 1,000 gals. a minute: Anonymous, 112.

Tyrone quad.: Butts, 13; Lohman, 11.

Pennsylvanian. See Carboniferous.

Pennsylvanian overlap in U. S.: Weller, 15.

Pennsylvanian-Permian boundary: Romer, 13.

Pennsylvanian series, emended: Keyes, 377.

Pentremites. See Blastoidea.

Percentage method, stratigraphic dating: Keen, 9.

Peridotites.

California: Lewis, W. S., 2.

Igneous rocks: Johannsen, 2; Knopf, 14.

Intrusion temperature: Sosman, 1.

Magma, primary: Hess, H. H., 11, 13.

New York, Ithaca dikes: Fillmer, 1.

Periodicities, seismic: Blake, 7.

Perknites, ig. rocks: Johannsen, 2.

Permeability, unconsolidated rocks: Tickell, 4.

Permeability measurements without cores: Ryder, 1.

Permeable channels, nonclastic rocks: Fraser, H. J., 7.

Permian. See Carboniferous.

Permian formations: Dott, 11.

Permian red-bed vertebrates, Tex.: King, 22.

Permian, world problem: Keyes, 272.

Perspective block diags.: Secrist, 3.

Perthites.

General: Alling, 5.

Ontario: Goldich, 4.

Plutonic: Alling, 10.

Petrifaction: Wieland, G. R., 20.

Petrified forests.

Arizona: Geithmann, 1; Hollick, 3.

General: Wieland, G. R., 1.

Silicification: Randolph, 7.

Petrofabrics.

Analysis, application: Fairbairn, 4, 6; Ingerson, 6.

Archean "ripple mark" is drag fold: Maxson, 14.

Arizona, Uncle Sam porphyry: Ingerson, 7.

Autoliths: Pabst, 6.

California, Val Verde tonalite: Ingerson, 7; Osborn, E. F., 1.

Cleavage of granites: Bell, L. V., 13; Osborne, 25.

Diagrams, interpretation: Winchell, H., 1.

Preparation: Hafl, 3.

Dolomites, Trias.: Knopf, A., 13.

Elongation in deformed rocks: Fairbairn, 8.

Fabric criteria for ripple marks: Ingerson, 8.

Fabrics, inclusions and intrusions: Ingerson, 7.

Flow cleavage in folded beds: Swanson, 6.

Graphic granite: Wahlstrom, E. E., 6.

Greenland, crystallines: Sahlstein, 2.

Limestones, Trias.: Knopf, A., 13.

Maryland, Cecil Co. volcanic complex: Marshall, J., 1.

Crystalline rocks: Cloos, 14.

Gneiss domes near Baltimore: Broedel, 1.

Metamorphosed gabbro complex: Cohen, 1.

Port Deposit complex: Ingerson, 7.

Port Deposit granodiorite: Hershey, H. G., 1.

New Hampshire fossiliferous schist: Billings, 14.

Lebanon granite: Kaiser, E. P., 2.

Pebbles, orientation, sed. deposits: Krumbein, 25.

Quartz orientation.

Deformed rocks: Griggs, 9.

Tectonites: Fairbairn, 14.

Quebec.

Enantimorphous quartz: Fairbairn, 10.

Mineral orientation, Shawinigan Falls: Osborn, 24.

Structural petrology: Knopf, E. F. B., 8, 9; Lovering, 29.

Virginia, Moccasin of Lowville fm.: Rowland, R. A., 1.

Xenoliths and intrusive rock fabrics: Ingerson, 7.

Petrofabrics and orogenesis: Sander, 1.

Petroleum. See also Bituminous rocks and sands; Oil shales.

Accumulation.

Buried hills: Ferguson, J. L., 1.

General: Nevada Baldenebro, 1.

Granite Ridge pools, Okla.-Kans.: Rich, 3.

Igneous rocks: Sellards, 35.

Limestone: Howard, H. V., 3.

Relation to structure: Wrather, 5.

Sedimentary rocks: Bignel, 5.

Shore lines, lenticular sands: Rich, 26.

Stratigraphic vs. structural: Levorsen, 7.

Time determination: Herold, S. C., 4.

Aerial discovery: Maple, 1.

Aerial photog.-mapping for: Atkinson, J. C., 2.

Aerial photos. of structures: Bowen, R. A., 1.

Aerial photography for geol. geophys. exploration: Logan, J., 3; Olson, L. V., 1; Rice, 2.

Alabama: Eby, 6; Semmes, 1.

Alaska: Smith, P. S., 3, 10; Stadnichenko, 1.

Alberta.

Aldersyde area: Owen, R. M. S., 1.

Athabasca sands: Ball, M. W., 1.

Battleview anticline: Hume, 25.

Bituminous sands, poss.: Ellis, 7.

Brazeau area: Sanderson, 4.

Central: Allan, 11.

Del Bonita area: Russell, 34-a.

Duvernay-Brosseau structure: Heiland, 19.

East-central prospects: Hume, 28.

Fallentimber area: MacKay, 12.

Foremost-Skiff area: Howells, 1.

General: Calder, 1, 2; Craig, 1; Hume, 18; Madgwick, 1.

McMurray oil sands: Sproule, 4.

Milk River area: Russell, 31.

Oil City area: Craig, 2.

Pekisko Hills area: Hume, 26.

Possibilities and prospects: Hume, 33; Moore, P. D., 3.

Ribstone-Blackfoot anticline: Hume, 2.

Source rocks distrib.: Hume, 21.

Southern: Williams, M. Y., 2.

Southern plains poss.: Russell, 36.

Taber dist.: Russell, 34-b.

Turner Valley gas and oil fields: Campbell, W. P., 3; Elliot, G. R., 1; Hume, 1, 22, 26-a, 27, 29, 31, 32;

Link, 11; Rowe, R. C., 2; Spratt, 2; Anonymous, 138.

Waterton Lakes-Flathead Valley area: Hume, 19.

Anticlinal theory in Canada: Harkness, 3.

Appalachian fields: Ashley, 28.

Devonian sh., Oriskany sand: Bonnett, J., 1.

Petroleum—Continued.

Appalachian area, oil-field waters: Torrey, 7.

Areal photography applied to petroleum geol.: Maxemin, 1.

Arizona.

Apache dome: Roe, H., 1.

General: Butler, G. M., 2.

Klene area: Mackay, 2.

Possibilities of oil: Holm, 1.

Arkansas.

Atlanta field: Schmidt, K. A., 1.

Buckner pool: Link, W. K., 1.

Coastal Plain: Weeks, W. B., 2.

Developments, 1936-37: Bingham, D. H., 1.

Garland City pool: McFarland, L. R., 1.

General: Branner, 1; Shearer, 3, 5.

Gulf Coastal Plain: Moody, 4; Spooner, 4.

Hempstead Co., shoreline poss.: Easton, 4.

Irma oil field: Teas, 1.

Magnolia pool: Trager, 1.

Paleozoic area, oil and gas poss.: Croneis, 2.

Schuler pool: Weeks, W. B., 1, 3.

Smackover field: Freeman, L. I., 1; Haury, 1.

Snow Hill field: Easton, 5; Weeks, W. B., 4.

Southern: Weeks, W. B., 2.

Stamps field: Morgan, C. L., 1.

Stephens oil field: Spooner, 1.

Village pool: Link, W. K., 2.

Wells to Oct. 1936: Branner, 15.

Ark-La-Tex field: Easton, 8.

Arkansas-Louisiana, 1935: Spooner, 5, 6.

Arkansas-Tennessee poss.: Jenny, 12.

Asphalt, nat., relation to oil deposits: Woodruff, E. G., 2.

Asphalts and allied substances: Abraham, 1.

Atlantic Coastal Plain poss.: Postlev, 4.

Bacterial genesis, hydrocarbon from fatty acids: Thayer, L. A., 1.

Barataria Bay, La., sedimentation: Krumbein, 22.

Barred basins and sources of oil: Woolnough, 3.

Bartlesville, Burbank sands, Okla.-Kans.: Bass, 7; Leatherock, 1; U. S. G. S., 12, 13.

Bibliography: Britton, H., 1; Hardwicke, 1; Hoyt, M. E., 2; Postley, 3; Roy, C. J., 3; Trask, 23.

Biogenesis of: Thayer, L. A., 2.

Black shale, environments of origin: Twenhofel, 35.

Bottom-hole pressures: Millikan, 1; Wright, H. F., 1.

Bradford field, N. Y., Pa.: Cathcart, 11; Fetteke, 9, 11.

British Columbia: Hume, 18.

Buoyancy law of pooling: Keyes, 126.

Petroleum—Continued.

Burbank, Bartlesville sands, Okla.-Kans.:
Bass, 7; Leatherock, 1; U. S. G. S.,
12, 13.

California.

Additions to reserves, 1938: Hoots, 9.
Buena Vista Hills oil field: Howard,
P. J., 1.

Casmalia oil field: Porter, W. W., II, 3.
Coalinga field: Galloway, J., 1; Henny,
4.

Diatoms as source: Phleger, 9.

Edison oil field: Carter, F. B., 1;
Noble, E. B., 1.

Elk Hills oil field: Pemberton, 1;
Woodring, 12.

El Segundo oil field: Porter, L. E., 1;
Reese, 1.

Elwood oil field: Dolman, 1; Smith,
W. M., 1.

Fruitvale oil field: Preston, H. M., 1.

General: D'Arcy, 4; Edwards, M. G.,
2; Lindgren, 18; McCollough, 2;
Porter, 8; Richardson, G. B., 5;
Wilhelm, V. H., 1.

Geophysical prosp.: Dick, J. A., 1;
Anonymous, 77.

Hopper Canyon dist.: Crandall, R. R.,
1.

Huntington Beach oil field: Gale, H.
S., 4.

Kettleman Hills oil fields: Beal, 1;
Bramlette, 3; Dodd, 1, 2; Gester, 2;
Goudkoff, 1, 2; McCollough, 1;
Musser, 1.

Lompoc oil field: Dolman, 2.

Long Beach oil field: Crown, 1; Rob-
erts, D. C., 1.

Los Angeles Basin: Carlson, A. J., 1;
Waggoner, 1.

McKittrick oil field: English, W. A.,
1; Taff, 1.

Metamorphic rocks, oil in: Brown, A.
B., 1.

Montebello field: Stockman, 4.

Mountain View field: Gow, 1; Miller,
R. H., 1.

Mount Poso oil field: Diepenbrock, 1.

Newhall field: Walling, 1.

North Belridge field: Preston, 2;
Williams, R. N., Jr., 1.

Oil-field waters: Jensen, 1.

Oil conversion, Santa Fe Springs field:
Trask, 26.

Physical properties: Taff, 2.

Playa del Rey oil field: Barton, C. L.,
1; Corey, 2; Hoots, 4.

Recent discoveries, present supply:
Hoots, 7.

Reflection seismograph work: Pratley,
1.

Reserves: Eaton, J. E., 7; Hoots, 8.

Round Mt. field: Diepenbrock, 2.

Sacramento Valley source beds: Trask,
20.

San Diego Co.: Hertlein, 11.

528578°—43—23

Petroleum—Continued.

California—Continued.

San Emigdio-Sunset area: Henny, 5.
San Joaquin Valley: Beebe, 1, 2; Cun-
ningham, G. M., 2; Eckis, 3; Hoots,
2; Mills, 1.

Santa Barbara Mesa field: Chase, 1.

Santa Fe Springs oil field: Hendrick-
son, A. B., 1; Trask, 26.

Santa Maria Valley fields: Canfield,
1; Collom, 1; Porter, 5; Sheldon,
D., 1.

Santa Monica Mts.: Hoots, 3; Soper,
4.

Seal Beach oil field: Barnes, R. M., 1.
Source beds, Sacramento Valley:

Trask, 20.

Southern Calif.: Livingston, A., Jr.,
1; Reed, R. D., 10.

Ten Section field: Wyatt, 1.

Tremblor Range: Henny, 6.

Venice field: Corey, 2.

Ventura Ave. field: Hertel, 1.

Wasco field: Vallat, 1.

Whittier fault oil fields: Norris, B. B.,
1.

Wilmington oil field: Bartosh, 1, 2, 3;
Nash, 1; Winterburn, 1.

Canada.

Analyses: Rosewarne, 2.

Eastern: Hume, 14; Wait, 1.

General: Bell, W. A., 1-a; Hume, 30,
34; Kelly, 17; Redfield, A. H., 1.

Western: Goodman, 4; Hunter, C. M.,
1; Irwin, 4.

Capillary phenomena in reservoirs: Plum-
mer, 27.

Carbon-ratio theory: Bell, A. H., 15;
Thom, 11.

Carbon ratios: Labee, 10.

Carbon ratios, Rocky Mts. area: Dob-
bin, 5.

Carboniferous, Upper, Kans.-Okla.: Kans.
G. Soc., 10.

Carrier beds and oil accumulation: How-
ard, W. V., 2; Rich, 5.

Choice, geophys. methods: De Golyer, 3.

Classification, fields by rock pressure:
Kossyguin, 1.

Classification tables: Van Amringe, 3.

Clays, with oil-bearing strata: Taylor,
E. M., 1.

Coastal Plain oil fields: Bignel, 1.

Colorado.

Bent Co.: Waldschmidt, 4.

Bibliography: Johnson, J. H., 29.

Eastern: Kans. G. Soc., 11; Mohr, 2;
Van Tuyl, 17.

Eocene oil sh., Grand Valley: Savage,
H. K., 1.

Florence field: De Ford, 1.

Gas possibilities: Van Tuyl, 6.

General: Brainard, 2; Shoenfelt, 2.

Geosyncline: Harris, G. W., 1.

Greasewood field: Aurand, 1; Javing-
ton, 2; Osborne, 1.

Petroleum—Continued.

Colorado—Continued.

- Hostetter no. 1 well: Lerke, 1.
 Hughes Estate oil field: Ingram, T. R., 1.
 Kiowa Co. field: Waldschmidt, 4.
 McCallum anticlines: Miller, J. C., 1.
 Northwestern: Heaton, 1.
 Oil in crystalline rocks: Van Tuyl, 4.
 Oil poss.: Van Tuyl, 5, 6.
 Powder Wash field: Nightingale, 4.
 Prowers Co. oil wells: Van Tine, 1.
 Wilson Creek dome: Hunt, E. H., 1.
 Compaction, effect on structure: Athy, 3.
 Compaction and oil migration: Athy, 2.
 Composition and origin: Brooks, B. T., 4.
 Connate water, oil and gas fields: Bignel, 7; Dunlap, 1; Gardner, J. H., 5; Ginter, 5; Pyle, 1, 2; Schilthuis, 1.
 Conodonts and petroleum: Gunnell, F. H., 7.
 Conversion into petroleum, fatty, waxy matter: Seyer, 1.
 Core analysis and interpretation: Hornkol, 1; Pyle, 3.
 Core orientation and bed dip: Johnson, C. H., 3; Roberts, D. C., 2.
 Core testing, radioactive: Lansberg, 10.
 Cores, side-wall samples: Leonardon, 5.
 Correlation.
 Crude oils: Barton, 50.
 Fluorescent: Melhase, 10.
 Geology and geophysics: Haseman, 2.
 Gulf Coast, electrical logs: Deussen, 4.
 Illinois Basin field: Workman, 9.
 Method of seismographing for oil: Pirson, 8.
 Criteria for oil provinces: Lauer, 2.
 Crude oil metamorphisms: Ginter, 4.
 Crude oils, relationship, Cherokee sh.: Bass, 14.
 Cuba.
 Carco area: Ortega y Ros, 1.
 Cretaceous poss.: Dickerson, 3.
 Foraminifera as index fossils: Bermúdez y Hernández, 10.
 Habana Province: Williams, E. R., 1.
 Igneous rocks: Lewis, J. W., 2.
 Deep drilling for oil: Eby, 11; Freeman, B. C., 8; Heald, 5.
 Degree of reduction, source beds: Trask, 24.
 Determination of percentage in cores: Hillis, 3.
 Determination of saturation, oil sands: Hillis, 3.
 Development in America, history: Fanning, 1; Goodrich, 2; Lawrence, A. A., 1; Levorsen, 9; Stout, 16; White, 25.
 Dip-shooting calculations: Pirson, 7.
 Discovery of oil fields: Deussen, 12; Eaton, J. E., 2; Goodrich, 1.
 Rates in finding oil: Campbell, F. F., 1; Pratt, W. E., 2.

Petroleum—Continued.

- Domes: Balk, 9.
 Domes found by geophysics: Eby, J. B., 1.
 Drill cuttings, microscopic study: Lukert, 1.
 Drill-hole explorer: Leonardon, 6.
 Drilling, deep, and geophysics: Eby, 11.
 Economic aspects: Pogue, 1.
 Time data: Hiestand, 4.
 Early discoveries: Goodrich, 1.
 Earth movements and accumulation: Cronels, 7.
 Earth temperatures in oil fields: Heald, 2.
 Eastern interior coal basin: Bell, A. H., 11.
 Economic aspects of drilling: Pogue, 1.
 Edge-water encroachment in oil fields: Versluys, 1.
 Effect of geophys. factors on oil and coal: White, 24.
 Effects of metamorphism on source rocks: Stadnichenko, 2.
 Electrical explor. for: Jakosky, 6, 9; Jenny, 1; Lagerheim, 1; Peters, L. J., 1; Sundberg, 2; Swartz, J. H., 7; Anonymous, 163.
 Electrical logging of wells: Gillingham, W. J., 1, 2; Sawdon, 1.
 Electrical mapping of structures: Jakosky, 6.
 Eocene oil fields, Tex.-La.: Anonymous, 147.
 Eocene series, Tex.-La., poss.: Thomas, P., 1.
 Estimates by core data, oil fields: Komarov, 1.
 Evaluation by index of refraction: Hedberg, 3.
 Evolution: Barton, 28; White, 24.
 Geophysical factors: White, 24.
 Gulf Coast crude oils: Barton, 46.
 Exchange of time for temperature in oil generation: White, C. D., 8.
 Experimental studies, origin: Stadnichenko, 4.
 Exploration for.
 Early: Goodrich, 1, 3.
 Electrical: Jakosky, 6, 9; Jenny, 1; Lagerheim, 1; Peters, L. J., 1; Sundberg, 2; Swartz, J. H., 7; Anonymous, 163.
 Electromagnetic: Jenny, 1.
 Future in U. S.: DeGolyer, 11.
 General: Bernetteche, 1; DeGolyer, 11; Goodrich, 1, 3; Heiland, 16; Howard, W. V., 8, 10; Jakosky, 6, 9; Jenny, 1; Karcher, 4; Kelly, S. F., 11; Lagerheim, 1; Peters, L. J., 1; Sundberg, 2; Swartz, J. H., 7; Anonymous, 163.
 Physics and geology: Karcher, 4.
 Exploring down: Kelly, S. F., 11.
 Exploring with explosives: Heiland, 16.

Petroleum—Continued.

Fault, active, Calif. oil field : Sanders, T. P., 4.

Florida.

Exploration for: Thomas, P., 2.

Possibilities: Blanchard, W. G., 1; Hill, E. A., 1; Jenny, 4.

Flow of fluids.

Homogenous, thro porous media: Fettke, 13; Hotchkiss, H. G., 1; Krumbein, 20; Muskat, 4.

Mixture, oil-gas, unconsolidated sands: Reid, L. S., 1.

Through sands: Plummer, 18.

Fluid phenomena, porous strata: Boät-right, 1.

Fluorescence of oil sands, correl.: Melhase, 10.

Foraminifera as guide fossils: Ellis, B. F., 4; Nuttall, 5.

Forest City Basin cf. Illinois Basin: Hotchkiss, H. G., 1.

Formation of oil deposits: Barton, 18.

Formation time: Van Tuyl, 14.

Formations, chemical composition effects in wells: Love, W. W., 1.

Frontiers, petroleum geology: Levorsen, 12.

Fuels, minerals: Bengston, 1.

Reserves, U. S.: Garfias, 1.

Fundamental research: Anonymous, 37.

Future explor., U. S.: DeGolyer, 11.

Gas-fluids, flow thro media: Muskat, 4.

Gas surveying prosp. method: Sokolov, 1.

General: Arnold, R., 1; Bateman, 7; Butler, 12; Clapp, F. G., 6; Egloff, 1; Fisher, D. J., 9, 10; Hager, D., 2; Melhase, 15; Thom. W. J., Jr., 1; Ver Wiebe, 12; Woolnough, 1.

Generation, oil, by shearing: Hawley, J. E., 1; Rand, W. P., 1.

Genesis: Jeffery, W. H., 1; Van Tuhl, 9, 16; Waterschoot van der Gracht, 2.

Geochemical prosp. methods: Pirson, 10.

Geodes containing oil: Anonymous, 181.

Geo-electric prosp. methods: Gish, O. H., 2.

Geographic distrib.: Flores, A. V., 1; Muñoz Lumbier, 5.

Geologic distillation: Russell, W. L., 1.

Geologic research on: Barton, 43.

Geologic structure, role in accumulation: Clapp, F. G., 2.

Geologic structures: Villarreal, 1.

Geological limitations to oil law: Porter, 7.

Geological prosp., U. S.: Shumilin, 1.

Geologist, future in petroleum industry: Fuqua, 3.

Geologist and well-spacing: Porter, 9.

Geology.

General: Emmons, W. H., 2; Hager, D., 2; Lahee, 9; White, C. D., 18.

Oil and gas fields: Avery, C. D., 1.

Role in oil explor.: Herold, S. C., 1.

Geomagnetic explor.: Stearn, 12.

Petroleum—Continued.

Geophysical data, interpretation: Blau, 3.

Geophysical prospecting.

Alabama: Tucker, M., 2.

Continuous profiling method: Pirson, 6.

Data interpretation: Blau, 3.

Early history: DeGolyer, 8.

Florida: Tucker, M., 2.

General: Barton, 5, 8, 49; Bignell, 4;

Blackburn, M. S., 1; Blau, 3; De-

Golyer, 6, 8, 10; Eby, 7, 9, 12, 13;

Eve, 5; Gabriel, 4; Gilchrist, 3;

Karcher, 3, 5; Kelly, 20; King, R.

H., 5; Ladner, 1; McFayden, 1;

Rosaire, 4, 6, 11; Shumilin, 1;

Stubbe, 1; Weaver, P., 1; Zwerger, 1.

Gulf Coast: DeGolyer, 10; Rosaire, 6, 7.

Illinois Basin: Triplett, 1.

Limestone-area: Gilchrist, 3.

Mississippi: Tucker, M., 2.

Reflection: McCollum, B., 2.

Sonograph: Sawdon, 2.

Structures: Sawdon, 2.

United States: Shumilin, 1.

Geophysics: Eby, 7.

Geophysics and geology: Kannestine, 1.

Georgia, Coastal Plain: Munyan, 3.

Geo-sonograph explor.: Kieber, 8.

Geosynclines and oil occurrence: Villatoro, 1.

Geothermal gradient, U. S.: Van Orstrand, 10.

Glossary of tech. terms: González, C. S., 1.

Gravitational methods: Barton, 48; Mott-Smith, L. M., 1.

Gravity of oils, Appalachian prov.: Re-ger, 7.

Gravity survey, Gulf States: Baker, W. L., 1; Rosaire, 8, 9.

Ground gas survey: Pirson, 9.

Ground-water in oil fields: Lahee, 14, 19.

Guadeloupe, poss.: Barrabé, 5.

Gulf border salt deposits: Brown, L. S., 4.

Gulf Coast.

Crude oil, nat. history: Barton, 27.

Deep oil reserve: Mills, 10.

Exploration: Rosaire, 5.

General: Brace, 5, 6; Vanderpool, 2.

Geophysical prosp.: Charrin, 1; Mills, 4, 11; Zwerger, 2.

Geosyncline, La.-Tex.: Barton, 25; Howe, 29.

Gravity survey: Baker, W. L., 1; Rosaire, 8, 9.

Heaving shale, Tex.-La.: Halbouty, 10.

Louisiana: Barton, 25; Deussen, 9;

Logan, J., 4, 5; Rosaire, 8, 9; Todd, D. J., 2.

Oil fields: Barton, 36; Barton and Sawtelle, 1; Eifer, 1; Fisher, 13;

Kornfeld, Joseph A., 2; Logan, J., 4; Williams, N., 2.

Oil reserves: Deussen, 7; Williams, N., 4.

Petroleum—Continued.

Gulf Coast—Continued.

- Oil variation with depth and age:
 Barton, 29.
 Salt deposits, origin: Russell, R. J., 14.
 Salt domes: Ritz, 1.
 Seismic explor.: Rosaire, 8, 9.
 Stratigraphic variations: Rosaire, 13.
 Structural features: Clark, R. P., 2.
 Tertiary: Russell, R. J., 22.
 Texas: Barton, 25; Dussen, 9; Hal-
 bouty, 10; Logan, J., 4, 5; Rosaire,
 8, 9; Todd, J. D., 2.
 Heavy minerals and oil: Tyler, 6.
 Historical devel., oil industry: Croneis,
 20.
 History of explor.: DeGolyer, 12; Pratt,
 W. E., 3.
 Hydrocarbons, concentration in earth:
 McDermott, 5.
 Extraterrestrial and oil genesis: Van
 Tuyl, 12.
 Hydrogenation and origin: Pratt, W.
 E., 1.
 Illinois.
 Centralia field: Bell, A. H., 29; Koch,
 H. L., 1; Moulton, G. F., 1.
 Clay County: Weller, 24.
 Deep wells, oil and gas poss.: Bell, A.
 H., 25.
 Developments, 1928: Moulton, G. F., 1.
 Dupo field: Bell, A. H., 1.
 Eastern Interior Basin: Sanders, T.
 P., 3.
 General: Bell, A. H., 7, 12, 14, 16, 18,
 20, 21, 22, 23, 26, 27; Howard, W.
 V., 12.
 Geophysical prosp.: Cohee, 3.
 Greene Co.: Collingwood, 4.
 Herrin coal bed poss.: Cady, G. H.,
 7, 8.
 Illinois Basin: Howard, H. V., 6; Lee,
 L. K., 1; Weller, 24, 28.
 Jersey Co.: Collingwood, 4.
 Kaskaskia River Valley: Ekblaw, 11.
 Loudon pool: Sloan, 1.
 McClosky sand: Bell, A. H., 9.
 Madison Co.: Collingwood, 4.
 Map, oil and gas, 1937: Bell, A. H., 19.
 Marion Co.: Weller, 24.
 Martinsville oil field: Moulton, G. F.,
 1.
 Oil fields: Howard, W. V., 12.
 Possibilities: Bell, A. H., 28; Eas-
 ley, 1.
 Salem field: Arnold, H. H., Jr., 1.
 Sandoval field: Spitznagle, 1.
 Southeastern oil field: Bell, A. H., 8.
 Illinois-Indiana-Kentucky Basin field:
 Anonymous, 193.
 Illinois-Missouri sec.: Kans. G. Soc., 12.
 Illinois Basin.
 Correlation with Michigan Basin:
 Weller, 28.
 Development: Hares, 6.
 Eastern: Wasson, T., 3, 4.

Petroleum—Continued.

Illinois Basin—Continued.

- General: Bell, A. H., 17; Howard, W.
 V., 6, 7; Lee, L. K., 1, 2; Leighton,
 27; Moulton, G. F., 4; Weller, 25,
 28.
 Structure: Cohee, 5.
 Illinois-Michigan Basins, correl.: Wel-
 ler, 28.
 Index fossils, Ark-La-Tex field: Cala-
 han, 1.
 Indiana.
 Bristow field: Esarey, 5.
 Francisco field: Moulton, G. F., 1.
 General: Esarey, 3; Logan, W. N., 5.
 Oil-shale, source: Anonymous, 148.
 Pennsylvanian structures: Malott, 8.
 Siosi field: Logan, W. N., 3, 10.
 Southwestern oil fields: Logan, W. N.,
 6.
 Tri-County field: Esarey, 1; Wanen-
 macher, 1.
 Industry in U. S.: Soyster, 1.
 Iowa.
 Deep wells, oil and gas poss.: Lees, 8.
 Recent explor.: Hager, 4.
 Jamin effect, oil production: Wright,
 R., 1.
 Kansas.
 Arkansas River oil fields: Wilhelm, C.,
 J., 1.
 Bartlesville oil sands: Bass, 4, 10;
 Tarr, R. S., 2.
 Barton Arch oil field: Woodruff, E.
 G., 1.
 Burbank oil sands: Bass, 10; Welrick,
 1.
 Central uplift: Koester, 2; Kornfeld,
 James A., 1.
 Coffeyville oil field: Foster, W. H., 1.
 Cowley Co.: Bass, 1.
 Cunningham field: Rutledge, 1, 2.
 El Dorado field: Reeves, J. R., 1.
 Fairport field: Altan, T. H., 1.
 Finney Co.: Kans. G. Soc., 11.
 Forest City Basin field: Dalrymple, 1;
 McClellan, 3; Osborn, W. G., 2.
 General: Bloesch, 6; Folger, 5; Hall,
 R. H., 2; Koester, 1; Landes, 24;
 Lee, M., 1; Moss, 4; Ver Wiebe, 16,
 20.
 Gove Co.: Landes, 28.
 Greenwich pool: Bunte, 1.
 Logan Co.: Landes, 28.
 Madison field: Cheyney, 1.
 Map, oil and gas fields: Landes, 10.
 Mississippi Lime: Hiestand, 3.
 Mississippian, thickness, relations to
 oil and gas: Lee, W., 3.
 Nemaha Mts. Granite Ridge fields:
 Thomas, C. R., 1, 2.
 Northeastern: Ockerman, 3.
 Oil pools distribution: Rich, 10.
 Oil and gas fields map: Landes, 28.
 Ploog pool: Bunte, 2.
 Pre-Cambrian: Landes, 30.

Petroleum—Continued.

Kansas—Continued.

Rainbow Bend field : Snow, D. R., 1.
 Regional inv. of oil fields : Hiestand, 2.
 Rush Co. : Landes, 26.
 Scott Co. : Kans. G. Soc., 11.
 Shoestring sands : Bass, 4, 9; Garlough, 2; Lucke, 8; Patton, J. F., 1; Read, W. F., 3; Tarr, R. S., 2.
 Smith Co. : Landes, 31.
 Southeastern coal field : Pierce, 9.
 Syracuse dome : Bloesch, 5.
 Trego Co. : Landes, 28.
 Valley Center oil field : Hall, R. H., 1.
 Virgil field : Beekly, 1.
 Voshell field : Hiestand, 1.
 Western : Bass, 13; Thomas, C. R., 3; Ver Wiebe, 22, 25.

Kentucky.

Allen Co. : Lee, 4.
 Big Sinking Pool : Jones, D. Jonathan, 2.
 Cannelton quad. : Mayfield, 4.
 Corniferous oil, origin : Thomas, R. N., 1.
 Cumberland Co. oil and gas map : Ky. G. S., 9.
 Deep well records : Meacham, 2.
 Eastern : Fiske, 1.
 Elliott Co. oil and gas map : Ky. G. S., 1.
 Fordsville quad. : Mayfield, 4.
 General : Hunter, C. D., 2; St. Clair, S., 1.
 Hancock Co. : Chisholm, D. B., 1.
 Hart Co., pools and map : Ky. G. S., 8; Russell, W. L., 10.
 Irvine pool : McFarlan, 20.
 Island Creek oil pool : Jillson, 11.
 Jefferson Co. oil and gas map : Ky. G. S., 10.
 Legrande oil pool : Jillson, 17.
 Livermore pool : Wesley, 1.
 McClosky areas : Jones, D. J., 5.
 McClosky oil horizon : Freeman, L. B., 1.
 Maps, oil and gas fields : Ky. G. S., 1, 8, 9, 10, 11.
 Northern : Russell, W. L., 10.
 Oil and gas fields, maps : Ky. G. S., 1, 8, 9, 10, 11.
 Oil and gas poss. : Hager, D., 1.
 Origin : Russell, W. L., 14.
 Owen Co. oil and gas map : Ky. G. S., 11.
 Owensboro field : Carman, 5.
 Pre-Devonian deformation : Jones, D. J., 4.
 Pre-Pennsylvanian solution, oil accumulation : Strachan, C. G., 1.
 Rock asphalt : Marks, 1.
 Western : Jillson, 18; Russell, W. L., 7; Wesley, 2, 3.
 Lima-Indiana field : Carman, 5.
 Limestone reservoir rocks.
 Canada : Adams, J. E., 5.

Petroleum—Continued.

Limestone reservoir rocks—Continued.

General : Howard, W. V., 1; Murray, A. N., 2.
 Mexico : Muir, J. M., 1.
 United States, west : Adams, J. E., 5.
 Lithological inv. oil areas : Khmelevskaya, 1.
 Louisiana.
 Acadia Parish : Bornhauser, 1; Halbouty, 3.
 Ascension Parish : Howe, 30, 31.
 Belle Isle salt dome : Barton, 22.
 Bellevue field : Crider, 3; Teas, 2.
 Bossier Parish : Teas, 2.
 Caddo field : Fletcher, C. D., 1.
 Caddo Parish : Crider, 1; Fletcher, C. D., 1; Shearer, H. K., 2; Spooner, 1.
 Calcasieu Parish : Bauernschmidt, 2.
 Caldwell Parish : Huner, 1.
 Cameron Parish : Bauernschmidt, 8; Howe, 13.
 Cap rock origin : Janssen, 2; Taylor, R. E., 3.
 Cartersville-Sarepta field : Thomas, G. D., 1.
 Catahoula Parish : Chawner, 3.
 Cheneyville field : Buchanan, 3.
 Concordia Parish : Chawner, 3.
 Converse oil field : Easton, 1.
 Cores, deep Rodessa well : Israelsky, 7.
 Cotton Valley field : Holston, 1; Hutson, 1; Moody, 5, 8; Ross, J. S., 1, 2; Tucker, M., 1.
 Darrow salt dome : Cook, C. E., 1.
 Dixie pool : Shearer, H. K., 2.
 Eola field : Jenny, 14.
 General : Bingham, D. H., 1; Craft, 2; Howe, 21; Shaw, J. A., 1; Shearer, 4, 5.
 Glen Rose fm. : Easton, 7.
 Grant Parish : Fisk, 2.
 Gulf Coast : Brace, 5; Deussen, 2; Eby, J. B., 2; Flude, 1; Judson, 3, 4; Sawtelle, 1; Woodruff, 4.
 Hackberry salt dome : Bauernschmidt, 3.
 Homer field : Spooner, 1.
 Iberville Parish : Howe, 30, 31.
 Jennings salt dome : Halbouty, 3.
 Lafayette Parish : Howe, H. V., 7.
 Lafourche Parish : Buchanan, 1, 2.
 La Rose (Valentine) dome : Buchanan, 1, 2.
 La Salle Parish : Fisk, 2.
 Lisbon field : Grage, 1.
 Map of oil fields : Postley, 5.
 Northeastern : Easton, 3.
 Northern : Crider, 2; Easton, 2.
 Pine Island field : Crider, 1, 4.
 Plaquemines Parish : Howe, 26.
 Producing horizons : Howe, 19.
 Rodessa oil field : Mills, 3, 6.
 Rodessa well cores : Israelsky, 7.
 Sabine Parish : Easton, 1.
 St. Bernard Parish : Howe, 26.

Petroleum—Continued.

Louisiana—Continued.

- St. Martin Parish: Howe, H. V., 7.
 Salt domes: Barton, 32; Bauernschmidt, 3; Buchanan, 1, 2; Halbouty, 3; Howe, 13, 26; Janssen, 2; Judson, 3, 4; Sawtelle, 1; Taylor, R. E., 3; Anonymous, 10.
 Salt, overhanging, on domes: Judson, 3, 4.
 Seismic explor.: Taylor, J., 1.
 Shongaloo pool: Eaves, 1; Thomas, G. D., 1.
 Shreveport field: Grimm, 1; Mix, 1; Moody, C. L., 5.
 South Elton field: Blondeau, 1.
 Starks field: Kornfeld, 5.
 Sugar Creek field: Clark, C. C., 1.
 Sulfur dome: Bauernschmidt, 2.
 Tepetate oil field: Bornhauser, 1.
 Urania field: Schneider, G. W., 1.
 Valentine (La Rose) dome: Buchanan, 1, 2.
 Wilcox sand: Fisk, 9.
 Winn Parish: Huner, 1.
 Zwolle, field: Kamb, 1.
 Louisiana-Arkansas oil fields: Lloyd, A. M., 2; Shreveport G. Soc., 4.
 Louisiana and Texas Gulf Coast.
 General: Deussen, 2.
 Marsh and water areas prosp.: Flude, 1.
 Oil-producing horizons: Deussen, 9.
 Overhanging salt on domes: Judson, 3, 4.
 Salt domes: Sawtelle, 1.
 Salt on domes, overhanging: Judson, 3, 4.
 Lowlands, S.-cent. and Ouachita provs.: Ruedemann, P., 3.
 Magnetic anomalies in oil fields: Van Weelden, 1.
 Magnetic prosp. for oil: Gabriel, 5.
 Magnetic surveys, failure to show commercial structures: Jenny, 7.
 Magnetometers in geophys. prosp.: Schmidt, K. H., 1.
 Manitoba: Hume, 18.
 Map, oil and gas fields, U. S.: U. S. G. S., 3.
 Mapping oil fields: Sanders, T. P., 1.
 Magnetometric methods: Barret, 1.
 Sundberg method: Zuschlag, 1.
 Maps in oil industry: Lahee, 16.
 Mechanical analyses for correl. oil and gas sands: Gardescu, 1.
 Mechanics of oil and gas sand correls.: Sisler, 5.
 Metamorphism, organic sediments, derived oils: White, 26.
 Methods for finding: Bignel, 3; Helland, 23.
 Mexico.
 Aragón: Vivar, 1.

Petroleum—Continued.

Mexico—Continued.

- General: Alvarez, 1; Brunet, 1; Cumming, 1; Díaz Lozano, 4; Ordóñez, 2; Ortega, 1.
 Guadalupe Hidalgo: Vivar, 1.
 Guerrero: Parades, 1.
 Limestone reservoir racks: Muir, 4.
 North-central: Kellum, 14.
 Northeastern oil fields: Kane, 2, 3; Staub, 3; Tatam, J. L., 2.
 Oaxaca: Parades, 1.
 Oil with igneous rocks: DeGolyer, 5.
 Poza Rica dist.: Villatoro, 2.
 Productive zones: Díaz Lozano, 5.
 Puebla: Parades, 1.
 Sinaloa: Hisazumi, 2.
 Tamaulipas: Müllerried, 1.
 Tampico Embayment oil fields: Barker, 2; Kellum, 11; Keyes, 354; Müllerried, 15; Muir, 3, 5; Nuttall, 4.
 Tampico-Tuxpan oil field: Muir, 5.
 Tuxpan-Misantla area: Hisazumi, 1.
 Veracruz: Müllerried, 1; Villatoro, 2.
 Michigan.
 Allegan Co.: Newcombe, 14; Riggs, C. H., 2.
 Arenac Co.: Pringle, 1.
 Central Mississippian sands: Hard, E. W., 2.
 Central oil fields: Zavoico, 5.
 Clare Co. field: Newcombe, 13.
 Crystal oil field: Eddy, G. E., 1.
 General: Newcombe, 7; Osgood, W., 1.
 Geologic occurrence: Hake, 6.
 Hart oil field: Riggs, C. H., 1.
 Michigan Basin: Newcombe, 8, 12; Newman, E. A., 2.
 Muskegon oil field: Newcombe, 5.
 Ogemaw Co. field: Newman, E. A., 1.
 Oil and gas fields: Newcombe, 7.
 Possibilities: Kirkham, 15.
 Saginaw field: Carlson, C. G., 1.
 West Branch oil field: Newman, E. A., 1.
 Michigan Basin: Newcombe, 8, 12; Newman, E. A., 2.
 Correlation with Illinois Basin: Weller, 28.
 Micromagnetic explorations: Jenny, 10, 11.
 Micro-organisms and generation: Hammar, H. E., 1.
 Microscopic methods, Gulf Coast: Kornfeld, 4.
 United States: Reed, R. D., 8.
 Mid-Continent oil region.
 Oil fields: Bass, 8; McCoy, 3; Anonymous, 18.
 Relation, pools to unconformities: Levorsen, 6.
 Shoestring fields: Bass, 8.

Petroleum—Continued.

Mid-Continent oil region—Continued.

Structure and accumulation: Kornfeld, J. A., 1; Tomlinson, C. W., 2; Waterschoot van der Gracht, van, 4.

Migration and accumulation: Barton, 27; Bloesch, 3; Cheney, 10; Clark, B. L., 22; Clark, F. R., 2; Lahee, 11, 12; McCoy, 2; Millikan, 2; Rich, 2.

Mining for oil: Rich, 24.

Minnesota.

Big Stone Co.: Thiel, 13.
Southern, poss.: Thiel, 14.
Traverse Co.: Thiel, 13.

Mississippi.

General: Toler, 1, 2.
Jackson field: Toler, 3.
Possibilities: Morse, H. M., 2.
Yazoo Co. field: Easton, 10.

Mississippi Valley structure: Easton, 9.
Missouri.

Andrew Co.: Greene, F. C., 7.
Buchanan Co.: Greene, F. C., 7.
Clinton Co.: Greene, F. C., 7.
Developments: Greene, F. C., 5, 8, Wells, E. H., 3.

Forest City Basin: Anonymous, 187.
Geophysical prosp.: Farnham, F. C., 1.
Northwestern: McQueen, 10.
Savannah area: Greene, F. C., 4.
Western pools: Greene, F. C., 2.

Montana.

Baker-Glendive anticline: DeWolf, 4.
Big Horn Co.: Thom, 14.
Crow Indian Reservation: Thom, 14.
Cut Bank oil field: Perry, 12; Stewart, H. A., 1.
Elk Basin field: Bartram, 1.
General: Dobbin, 10; Perry, 17, 18; Rowe, J. P., 1.
Kevin-Sunburst field: Howell, W. F., 1.
Oil-producing ss. and lms.: Bartram, 5.

Sweetgrass arch: Romine, 1.

Mother rock and migration: Bloesch, 1.
Naphthene, methane oils, origin: Hauscheck, 1.

Natural gas in oil: Buell, 1.

Nebraska.

Developments, 1936: Lee, M., 1.
Geophysical prosp.: Wilson, J. H., 2.
Nehawka oil well: Condra, 18.
Panhandle: Cook, 15.
Possibilities: Cook, 15; Kimball, K. K., 1.

New Brunswick, Stony Creek field: Hume, 15.

New Mexico.

Artesia field: Davis, M. J., 1.
Developments 1936: Bybee, 3, 4.
Eunice field: Anderson, C. C., 1.
General: Winchester, 3.
Hobbs field: DeFord, 2; Winchester, 2; Zavolco, 6.

Petroleum—Continued.

New Mexico—Continued.

Monument field: Anderson, W. D., 1.
Permian: Bentz, 2.
Shiprock dist.: Nowels, 1.

New York.

Allegany St. Park: Brewer, C. Jr., 1.
Bradford field: Newby, 1.
General: Hartnagel, 1; Newland, 7, 19.
Oriskany ss. poss.: Bradley, 19; Hamilton, S. H., 2.

North America.

Caribbean region: Waters, 13.
Cordilleran region: Waters, 13.
General: Powers, S., 5.
Natural asphalts: Woodruff, E. G., 3.
Oil fields: Bentz, 1.

North Dakota, geophys. prosp.: Wilson, C. W., Jr., 11.

Northwest Territories: Hume, 18.

Occurrence: Lahee, 13.

Igneous rocks: Powers, S., 9.
Metamorphic rocks: Powers, S., 9.
North America: Powers, S., 5.
Relation to reservoirs: Wilson, W. B., 5.

Ohio.

Eastern: Cottingham, 1; Lockett, 1.
Jefferson Co.: Lamborn, 1.
Oriskany sand: Lockett, 2.
Source material: Stout, 12.
Southwestern: Harper, J. L., 1.

Oil accumulation: Clapp, F. G., 3; Dake, C. L., 5; Lockwood, 1.

Oil and gas accumulation theory: Howell, J. V., 3.

Distilled from recent sediments: Trask, 4.

Well records: Montgomery, J. G., Jr., 1.

Oil-field structures: Cloud, W. F., 5.

Oil-field waters: Washburne, 4.

Oil fields of U. S.: Ver Wiebe, 3.

Oil finding, prog.: Deussen, 3.

Oil gravities, Rocky Mts. States: Bartram, 6.

Oil preservation during crosion: Dorsey, 1; Irwin, 3.

Oil-producing ss. and lms.: Bartram, 5.

Oil production and petroleum eng.: Scott, W. W., 1.

Oil prosp. resistivity methods: Swartz, J. H., 6.

Oil sands.

Correlation: Russell, R. D., 12.
Current resistivities: Jakosky, 8.
Gulf Coast: Halbouty, 4.
Physical analysis: Nutting, 3.

Oil seepages, Belt ser., Internat. Boundary: Link, 10.

Oil shale: Norris, C., 1; Savage, H. K., 1.
United States: Schreiter, 1.

Oil traps: Monnett, 1.

Oil wells, econ. spacing: Cheney, 8.

Oklahoma.

Arbuckle lms., Wichita Mts.: Decker, 23.

Petroleum—Continued.

Oklahoma—Continued.

- Ardmore dist.: Tomlinson, 9.
 Bartlesville sand: Bass, 10.
 Bristow dist.: Carlson, C. G., 2.
 Burbank field: Sands, 1.
 Burbank sand: Bass, 10; Weirich, 1.
 Cement pool: Swindell, 2.
 Choctaw fault area: Vanderpool, 5.
 Comanche field: Swigart, 1.
 Cotton Co.: Cloud, W. F., 3.
 Crescent pool: Wilson, W. B., 4.
 Crinerville field: Powers, S., 1.
 Cromwell field: Langworthy, 1; Rison, 1.
 Cushing field: Wardwell, 1; Weirich, 1.
 Davenport field: Brandenthaler, 2.
 Deaner field: Kirwan, 1.
 Deep Marlow well: Paschal, 1.
 Delaware Extension pool: Lewis, J. O., 1.
 Depew area: Martin, H. M., 1.
 Dora pool: Ingham, 1.
 Edmond field: Jones, L. W., 1.
 Pitts pool: Dott, 7; Hyatt, 1; Teis, 1.
 Garber field: Gish, W. G., 1.
 General: Bush, F. A., 3; Richardson, G. B., 6; Rorschach, 1; Shea, 1; Williams, H. L., 1.
 Glenn pool: Wilson, W. B., 1.
 Greater Seminole dist.: Levorsen, 1.
 Hewitt field: Burton, G. E., 1.
 Hobart field: Tarr, R. S., 3.
 Hughes Co.: Boyle, J. P., 2.
 Jefferson Co.: Bunn, 1.
 Jesse pool: Boyd, W. B., 1.
 Kay Co.: Clark, S. K., 1.
 Keokuk pool: Rau, 1.
 Kiowa Co.: Sawyer, 1.
 Lincoln Co.: Radler, 2.
 Love Co.: Bullard, 1.
 Lucien field: Whiteside, 2; Zavoico, 2.
 Marshall Co.: Bullard, 1.
 Migration of oil: Brauchli, 3; Whiteside, 2.
 Morrison field: Carpenter, E., 1.
 Muskogee Co.: Wilson, C. W., Jr., 6.
 Muskogee-Porum dist.: Borden, 2; Wilson, C. W., Jr., 13.
 Naval Reserve field: Vanderpool, 6.
 Oil and gas fields: Wrather, 1.
 Okfuskee Co.: Boyle, J. P., 1.
 Oklahoma City field: Brauchli, 1, 3; Charles, 2; Clifford, O. C., 1; Hill, H. B., 3; Knowlton, D. R., 1; McGee, 1; Riggs, R. J., 1, 2; Turk, 1; Zavoico, 1, 3.
 Okmulgee Co.: Westby, 3.
 Olympt pool: Tillotson, 2.
 Osage Co.: Bass, 5, 6, 12; Kirk, C. T., 2; Stephenson, C. D., 1; U. S. G. S., 14, 15; Vanderpool, 6.
 Petroliferous provs. and sedimentation: Lauer, 3.
 Pottawatomie Co.: Weirich, 3.
 Pre-Marmaton oil horizons: Whiteside, 8.

Petroleum—Continued.

Oklahoma—Continued.

- Proctor well: Mills, 12.
 Regional oil-field inv.: Hestand, 2.
 Seminole field: Brandenthaler, 1; Levorsen, 1; Swarts, 1.
 Shales, base-replacement: Case, L. S., 2.
 Slick field: Schwarzenbeck, 1.
 South Burbank pool: Markham, E. C., 1.
 Tatums pool: Grimes, 1.
 Tulsa Co.: Cloud, W. F., 4.
 Turkey Mt. lime pools: Ruedemann, P., 1.
 Washita Co.: Sawyer, 1.
 West Edmond pool: Wallace, P. A., 1.
 Western: Hawkins, G. D., 1.
 Wilcox sand: Knowlton, D. R., 1.
 Wichita Mts. field: Millison, 2.
 Wichita uplift: Becker, C. M., 1.
 Zinc-lead mining field: Fowler, 3.
 Oklahoma-Kansas source beds: Trask, 35.
 Oklahoma-Kansas zinc-lead dist.: Fowler, 3.
 Ontario.
 Eastern fields: Harkness, 6.
 General: Harkness, 2.
 Guelph fm. fields: Harkness, 5.
 Manitoulin, adjacent islands: Williams, M. Y., 14.
 Medina fm. fields: Harkness, 5.
 Oil and gas fields: Harkness, 1.
 Organic content of rocks: Russell, W. L., 13.
 Organic matter, recent sediments: Trask, 18, 19, 21, 22.
 Origin.
 Chemical, geochemical aspects: Brooks, B. T., 3.
 Environment of source sediments: Haseman, 1.
 Experimental studies: Stadnichenko, 3.
 General: Barton, 28; Berl, 1, 2, 3; Brooks, B. T., 1, 2; Buell, 1; Flores, L. E., 1; Harkness, 2; Haseman, 1; Heald, 3; Henderson, J., 11; Hoots, 4; Hughes, R. V., 1; Hume, 18; Lind, 1, 2; Macfarlane, 1, 2; Ries, H., 2; Seyer, 1; Snider, 1; Van Tuyl, 7, 8.
 Gulf Coast: Krejci-Graf, 1.
 Hackford's theory: Ginter, 2.
 Inferences on: Trask, 33.
 Inorganic environment: Carlson, A. J., 4.
 Migration and accumulation: Rich, 13.
 Occurrence: Brauchli, 4.
 Porous lms. and ss.: Utterback, D. D., 1.
 Taylor's theory: Case, L. C., 1.
 Origin and accumulation: Clark, F. R., 3, 4.
 Origin and distrib.: Ver Wiebe, 23.
 Origin and evolution: Snider, 2.

Petroleum—Continued.

- Oriskany sand Appalachian area : Myers, T. H., 1.
 Crude oils : Hamilton, S. H., 3.
 Geophysical prosp. : Randall, 1.
 Symposium : Appalachian G. Soc., 1.
 Ostracoda, Chester index : Cooper, C. L., 13.
 Ouachita Paleozoics, Mid-continent : Miser, 9.
 Paleogeology and petroleum : Levorsen, 5, 11.
 Gulf Coast, importance : Mills, 8.
 Paleozoic fields : Wade, 1.
 Paradox Pennsylvanian Basin, Colo.-Utah : Prommel, 1.
 Pennsylvania.
 Bradford field : Fettke, 3, 10; Newby, 1; Waldo, 4.
 Butler quad. : Richardson, G. B., 4.
 Deep sand wells and poss. : Cathcart, 10; Fettke, 4, 5, 6, 7.
 Freeport quad. : Hughes, H. H., 1.
 General : Torrey, P. D., 6.
 Greene Co. : Stone, 8.
 Hillards, quad. : Sherrill, 5.
 Map, western oil and gas fields : Sisler, 7.
 Mining for oil : Dickey, P. A., 1; Torrey, P. D., 2.
 New Castle quad. : DeWolf, 1.
 New Kensington quad. : Richardson, G. B., 2.
 Northwestern Pa. : Fettke, 4, 5, 6, 7.
 Oil and gas sands : Anonymous, 175.
 Oriskany sand : Fettke, 12; Ruggles, 1.
 Pittsburgh area : Johnson, M. E., 1; Leighton, H., 6; Linton, 1.
 Porosity of oil sands : Honess, 3.
 Porosity-permeability of oil sands : Barb, 1.
 Producing horizons : Claus, 1.
 Potter Co. : Cathcart, 3.
 Tidioute quad. : Cathcart, 12.
 Tioga Co. : Cathcart, 4.
 Western oil and gas fields : Sisler, 7, 8.
 Map : Sisler, 7.
 Pennsylvania and New York Oriskany : Fettke, 12.
 Permeability of rocks, measurements : Hassler, G. L., 1; Ryder, 1; Tickell, 4; Wyckoff, R. D., 1.
 Permian basin, Tex.-N. Mex. : Williams, N., 5.
 Permo-Carboniferous orogeny, sou. U. S. : Waterschoot van der Gracht, 4, 6.
 Petroleum, depth in earth's crust : Jones, R. A., 5.
 Petroleum geologist and oil and gas law : Wilson, G. A., 1.
 Petroleum geology, new trends : Levorsen, 13.
 Physical properties, variation : Barton, 36.
 Physiography sedimentation and oil geology : Rich, 17-a.
 Pool development : Lahee, 6.

Petroleum—Continued.

- Pool structure : Bignel, 8.
 Porosity, oil sands : Tallafiero, D. B., Jr., 1.
 Porosity, permeability of rocks : Covarrubias, 1; Nevin, 7; Tickell, 3, 5.
 Porosity and saturation studies : Barnes, K. B., 1.
 Potentialities, Gulf Coast, Tex.-La. : Barton, 11.
 Practical geology : Porter, 6.
 Presence in sediments : Trask, 6.
 Pressure in oil fields : Clark, W. A., 1.
 Problems, petroleum geology : Wrather, 2.
 Production, cent. Kansas uplift : Koster, 3.
 Production practice : Stephens, 4; Wrather, 6.
 Productivity determination, oil fms. : Martin, M., 1.
 Profile mapping, elec. : Jakosky, 10.
 Quantity and sources : Macfarlane, 1.
 Quebec.
 Eastern Gaspé : Jones, I. W., 12.
 General : Parks, W. A., 1.
 Mount Alexander area : Jones, I. W., 14.
 St. John River area : McGerrigle, 9.
 York River area : Jones, I. W., 13.
 Radioactivity : Goodman, C., 1.
 Recovery by water-flooding pressures : Clapp, F. G., 5.
 Recovery of oil in ss. : Cloud, W. F., 2.
 Reserves : DeGolyer, 13; Deussen, 12; Miser, 18; Pew, 1.
 Methods of estimation : Huntington, 1.
 United States : Heroy, 1; Thomas, J. E., 2.
 Reservoirs : Plummer, 24.
 Classification : Wilson, W. B., 2, 3.
 Conditions, oil and gas pools : Lahee, 7.
 Limestone, S. Perm. basin : Bybee, 5.
 Physical, chem. properties of rocks : Nutting, 6.
 Residues, insoluble, as guides : Burpee, 2.
 Resistivity advances, oil prosp. : Heiland, 11.
 Rocky Mts. area : Brainerd, 6; Davies, H. F., 1; Hunt, E. H., 2; Kirby, J. M., 2; Uren, 2.
 Underground waters : Coffin, 2.
 Rodessa field, Ark.-La.-Tex. : Clark, C. C., 2; Ivy, 1.
 Sabine uplift : Easton, 6.
 St. Peter ss., poss. : Jillson, 40.
 Salt domes.
 Effect on oil accumulation : Barton, 13.
 Gulf Coast : Brown, R. V., 1.
 Problem of : Van Tuyl, 1.
 Prospecting : Peters, J. W., 1.
 Salt-water, table, accumulation by : Gardner, J. H., 4.

Petroleum—Continued.

- Sampling, coring, in oil search: Cloud, W. F., 1.
 Sand bodies, location: Rich, 29.
 Sand grains, character: Ries, 7.
 Sands, compressibility: Botset, 1.
 Oil flow and water content: Van Wingen, 1.
 Permeability measurements: Clough, 1.
 Physical tests: Fancher, 1.
 Sandstone dikes as oil conduits: Jenkins, 3.
 Saskatchewan.
 Avonlea-Blackfoot area: Wickenden, 13-a.
 Battleford area: Hume, 24.
 Central: Edmunds, 2.
 Eagle Hills anticline: Hume, 26.
 General: Hume, 18.
 Hudson Bay Junction area: McLearn, 17.
 Saturation percentages, oil sands: Gabriel, 6.
 Science in oil findings: Gould, 10.
 Schlumberger elec. logging: Mathieu, 1.
 Search for: Heroy, 2.
 Sediments, organic content: Trask, 18, 21, 22, 33.
 Segregation, oil and gas: Versluys, 2.
 Seismic prosp.: Adler, 3; Belluigi, 2; English, W. A., 3, 4; Gabriel, 3, 8; Ittner, 1; McKinney, 1; Marr, 2; Mitera, 1; Norman, 1; Welch, 1.
 Seismograph prosp.: English, W. A., 3, 4; Ittner, 1; McKinney, 1.
 Shoestring oil sands: Dalrymple, 2; Patton, J. F., 1.
 Shore lines, location of oil and gas: Jones, R. A., 3.
 Shortage: Snider, 5.
 Soil analysis explor.: Hoffman, 6; McDermott, 6; Stormont, 1; Tucker, M., 3.
 Source beds: Bayley, 3; Snider, 3; Trask, 2, 11, 17, 18, 19, 21, 22, 25, 30, 32, 36, 37, 38, 40.
 South Dakota.
 Geophysical prosp.: Wilson, J. H., 2.
 Missouri Valley: Gries, J. P., 1.
 Sparta-Wilcox Trend field, Tex-La.: Barret, 5; Todd, J. D., 4; Williams, N., 6.
 Spectroscopic core inv.: Means, 1.
 Spontaneous rock expansion: Bain, 20-b.
 Stratigraphic prosp.: Rosaire, 12.
 Stratigraphic vs. structural prosp.: Rosaire, 14.
 Stratigraphical considerations: Moore, 42.
 Stratigraphy vs. structure: Heaton, 4.
 Structural or anticlinal theory: Tucker, R. C., 3.
 Structure of oil fields: Howard, W. V., 9, 10, 11.
 Gulf Coast: Jenny, 8.
 Typical American: Powers, S., 3.

Petroleum—Continued.

- Subsurface contouring: Lauer, 1.
 Geology: Adams, J. E., 10.
 Sampling: Katz, 1.
 Structure, Rocky Mts., anticlines: Bartram, 2.
 Water, Okla. and Kansas: Case, L. C., 3.
 West Texas Permian Basin: Berger, W. R., 1.
 Sulfate reduction, oil-well waters: Bastin, 1; Ginter, 1.
 Taylor's theory of origin: Gale, H. S., 1.
 Tectonic classn., oil fields: Ver Wiebe, 1.
 Tectonics and oil accumulation: Broggi, 2.
 Temperature gradients in oil wells: Van Orstrand, 7.
 Temperature measurements: Deussen, 10.
 Temperature vs. time in origin: Trask, 7.
 Tennessee.
 Clay Co.: Born, 11.
 General: Bailey, W. F., 1; Born, 7; Pond, W. F., 3; St. Clair, S., 1.
 St. Peter sand: Born, 9.
 Structure in oil fields: Lusk, 1.
 Tinsley's Bottom field: Roberts J. K., 1.
 Tertiary faunas: Crouse, 28; Dunbar, 13.
 Tertiary fields: Wade, 1.
 Texas.
 Amelia field: Hamner, 1.
 Anahuac field: Halbouty, 6; Leyendecker, 1.
 Archer Co.: Thompson, W. C., 1.
 Austin Co.: Burford, 1.
 Barbers Hill salt dome: Halbouty, 11; Judson, 2; Murphy, P. C., 2.
 Benavides field: Bowles, R. C., 1.
 Ben Bolt field: Davidson, J. P., 1.
 Big Lake oil field: Hennen, 1; Sel-lards, 14.
 Boggy Creek salt dome: Storm, L. W., 1.
 Bottom-hole pressure, East Tex. oil field: Foran, 1.
 Brenham salt dome: Burford, S. O., 1.
 Bryson oil field: Bowen, J. P., 1.
 Buckeye field: Brucks, 3.
 Canyon beds: Adams, H. H., 1.
 Cedar Point field: Wilson, J. M., 2.
 Cenozoic zones: Dalton, 1.
 Central, serpentines: Plummer, 16.
 Chapel Hill pool: Lahee, 18.
 Claiborne poss.: Owens, 2.
 Clay Creek salt dome: Ferguson, W. B., 1; Heath, 2.
 Cleveland field, Wilcox Eocene: Hanna, M. A., 12.
 Coastal Plain fields in ig. rocks: Sellards, 25.
 Cole field: Short, R. T., 1.

Petroleum—Continued.

Texas—Continued.

Conroe field: Michaux, 1; Schütte, 1; Smith, Eugene R., 1; Williams, L. H., 1; Williams, N., 1; Zavoico, 4.
 Corpus Christi field: Price, W. A., 4.
 Darst Creek field: Jones, R. A., 6; McCallum, 1.
 Driscoll pool: Sheldon, I. R., 1.
 Duval Co.: Sayre, 6; Sheldon, I. R., 1.
 East Texas field: Dally 1; Gugelmeier, 1; Levorsen, 3; McFarland, P. W., 2; Minor, 1; Quesenbery, 1; Ralston, 1; Ruiz, 1; Trask, 31; Wendlandt, 4, 5; Whitehead, 1; Zavoico, 7.
 Eastern Tex.: Dallas Petroleum Geologists, 1; Dally, 2; Hudnall, 1; Logan, J., 1; Moos, A., von, 1.
 Ector Co.: Young, A., 1.
 Esperson salt dome: Barton, 9; Goldston, W. L., Jr., 1, 2.
 Fairbanks field: Harvey, C. J. C., 1.
 Flour Bluff field fauna: Harris, 10.
 Fox field: Getzendaner, A. E., 1.
 Friendswood field: Bell, O. G., 1.
 Galveston Bay explor.: Singleton, 2.
 Galveston Co. explor.: Singleton, 1.
 General: Barton, 40; Bingham, D. H., 1; Bybee, 4; Dawson, 1; Deussen, 6; Kidd, 1, 2; Mauchini, 1; Plummer, 15-a.
 Geophysical prosp. in Gulf: Williams, N., 3.
 Goldsmith field: Young, A., 2.
 Government Wells field: Cooper, H. H., 1; Trenchard, 1.
 Greta field: Getzendaner, A. E., 1; Stamey, 1.
 Guadalupe Co.: Row, 1.
 Gulf Coast: Brace, 5; Deussen, 2; Eby, J. B., 2; Halbouty, 9; Hayes, E. P., 1; Meyer, W. G., 1; Renick, 5; Woodruff, 4.
 Heaving shale: Frost, J. M., III, 1, 2.
 Salt dome area: Mills, 2.
 Hardin dome: Brace, 3; Teas, 7.
 Hastings field: Halbouty, 7.
 Hendrick field: Ackers, 1.
 High Island dome: Halbouty, 2, 4.
 Hilbig field: Blackburn, 1; Smiser, 3.
 Hobbs area: Swindell, 1.
 Hoffman field: Whitaker, 1.
 Hoskins, Mound salt dome: Barton, 33; Marx, 1.
 Jackson group, Gulf Coast: Renick, 5.
 K. M. A. field: Dally, 3.
 La Blanca structure: Speed, 1.
 Laredo dist.: Cooper, H. H., 2; McFarland, P. W., 1.
 Larremore area: Weeks, A. W., 1.
 Leon Co.: Stenzel, 17.
 Louisiana-Texas Gulf Coast: Mills, 5; Weinzierl, J. F., 3.

Petroleum—Continued.

Texas—Continued.

Luling field: Brucks, 1; Hill, H. B., 1; Jones, R. A., 6.
 McCampbell field: Tucker, R., 1.
 McFaddin Beach dome: Tatum, E. P., 1.
 McFaddin field: Getzendaner, A. E., 1.
 Magnolia City field: Hammond, 1.
 Map, oil and gas: Oil and Gas Jour., 1.
 Means field: Denham, 1.
 Mercedes field: Price, W. A., 12.
 Mesozoic zones: Dalton, 1.
 Mexia-Talco fault zone: Smith, E. R., 2.
 Mexia-Tehuacana fault zones: Lahee, 1.
 Mirando dist.: Brace, 1.
 Murala field: Schmotzer, 1.
 Navarro Crossing field: Wilson, E. B., 1.
 Nigger Creek field: Pepperberg, 1.
 Nocono field: Billings, M. H., 1.
 North-central Tex.: Imholtz, 1; Weeks, A. J., 4.
 North Cowden field: Giesey, 1.
 Northeastern: Decker, C. L., 2; Judson, 1.
 North Texas field: Fuqua, 2.
 Oil and gas fields: Wrathier, 1.
 Oil and gas in Texas since 1543: Plummer, 28; Warner, C. A., 1.
 Oil reservoirs: Plummer, 15.
 Oil-shale deposits: Plummer, 26.
 Orange field: Beckelhymer, 1; Deussen, 8.
 Ordovician, Sand Hills: Cordry, 2.
 Palo Pinto Co.: Plummer, 17.
 Panhandle fields: Rogatz, 1, 2; Weeks, A. J., 4.
 Pearsall field: Champion, 1.
 Pecos Co.: Hennen, 2.
 Petrolia field: Kendrick, 1.
 Pettus dist.: Brace, 1.
 Placedo field: Hedley, J. D., 1; Owen, K. D., 1.
 Plymouth field: Corning, 1.
 Producing sands above Jackson: Clayton, 2.
 Prospecting, Gulf of Mexico: Mills, 7.
 Raccoon Bend field: Teas, 5.
 Reagan Co.: Sellards, 4.
 Refugio field: Getzendaner, A. E., 1; Martyn, 1.
 Rio Grande region: Trowbridge, 11.
 Rock crossing field: Stille, 1.
 Rodessa field: Ivy, 1; Mills, 3, 6.
 Sabine uplift: Logan, J., 3.
 Salt dome area: Clapp, F. G., 4; Anonymous, 11.
 Salt Flat field: Hedstrom, 1; Hill, H. B., 1; Jones, R. A., 6; McCollum, L. F., 1.
 Sam Fordyce field: Earl, 1.
 Sarnosa field: Jones, R. A., 8.
 Satsuma field: Harvey, C. J. C., 1.

Petroleum—Continued.

Texas—Continued.

- Saxet field: Getzenderan, A. E., 1; Poole, 1; Price, W. A., 2; Anonymous, 105.
- Segno field, Wilcox Eocene: Hanna, M. A., 12.
- Smith-Ellis field: Storm, W., 1.
- Somerset field: Jones, R. A., 9.
- Source beds, East Texas Basin: Trask, 27.
- South, oil, and gas: Clayton, 1; Cooper, H. H., 3; Halbouty, 8; Mosson, 1; Nowlan, 1; Pinkley, 1; Post, E. S., 1.
- South, Jackson and older: Cooper, H. H., 2.
- South Vicksburg and younger: Clayton, 1.
- Southwest: Anonymous, 11.
- Spindletop field: Barton, 31; Eby, J. B., 8.
- Stephens Co.: Esgen, 1.
- Sugarland field: McCarter, 1.
- Sulphur Bluff field: Herold, 7; Thompson, E. G., 1.
- Talco fault zone: Hager, D. S., 1; Smith, E. R., 2.
- Talco field: Hager, D. S., 1; Mills, 9; Olcott, 1; Smith, E. R., 2; Wendlandt, 3.
- Tebuacana fault zones: Lahee, 1.
- Tomball field: Eby, 5.
- Van oil field: Barton, 41; Heath, 3; Liddle, 1, 3.
- Variation, migration, Spindletop field: Barton, 21.
- Vicksburg reserves: Post, E. S., 2.
- West Texas: Bentz, 2; Bybee, 3; Gregory, P. P., 1; Kroenline, 1.
- Westbrook field: Edwards, E. C., 1.
- West Columbia field: Carlton, 1.
- Wheat oil pool: Adams, J. E., 7.
- White Point field: Price, W. A., 3; Anonymous, 104.
- Wilbarger Co.: Fuqua, 1.
- Wilcox Eocene: Hanna, M. A., 12.
- Yates field: Adams, J. E., 2; Gester, 1; Hennen, 2.
- Yoast field: Collingwood, 3.
- Texas-Louisiana Gulf Coast: Brace 7; Clapp, F. G., 4; Deussen, 2; Judson, S. A., 4.
- Salt dome area: Clapp, F. G., 4.
- Salt, overhanging on domes: Judson, S. A., 4.
- Texas-Louisiana, Rodessa field: Ivy, 1.
- Sparta-Wilcox Trend: Todd, J. D., 3.
- Texas-New Mexico: Bybee, 6; Carpenter, C. B., 1; DeFord, 4.
- Time of fm.: Van Tuyl, 15.
- Torsion balance oil explor.: Gabriel, 7.
- Transformation in nature: Barton, 29.
- Transient, soil analysis discovery methods: Steinmann, 1.

Petroleum—Continued.

Trinidad.

- Asphalt lake: Corry, 2; Van der Weg, 1.
- General: Lehner, 1.
- Lizard Springs anticline: Skelton, 1.
- Oil fields: Illing, 1.
- Palo Seco field: Halse, 1.
- Possibilities, prospects: Kugler, 2; Sawdon, 3.
- Underground storage conditions: Prutzman, 1.
- United States.
- Fuels, mineral, reserves: Garfias, 1.
- Future exploration: DeGolyer, 11.
- General: Haynes, W. P., 1; U. S. Nat. Res. Com., 1; Ver Wiebe, 19, 21; White, C. D., 18; Wunstorf, 1.
- Oil-field development: Miser, 19.
- Utah.
- Great Salt Lake Basin: Eardley, 6.
- Moab dist.: Baker, A. A., 3.
- Oil from gastropods: Schneider, 7.
- Origin of, near Thistle: Schneider, 4.
- Possibilities: Bignel, 2.
- Reserve no. 7, Wash. Co.: Dobbin, 15.
- St. George dist.: Dobbin, 17.
- San Juan field: Gregory, H. E., 4; Miser, 14.
- Virginia, Wise Co.: McGill, 13.
- Volcanism, sed., oil source: Kugler, 3.
- Volume relations in open-space replacements: Anderson, G. E., 2.
- Washington, poss.: Glover, 1, 5; Treasher, 6; Weaver, 10.
- Rattlesnake field: Culver, 11.
- Whatcom Co.: Glover, 1.
- Water encroachment: Snow, D. R., 2.
- Water in pore space, oil reservoirs: Lewis, J. A., 1.
- Well cores, lab. orientation: Lynton, 2, 3.
- West Virginia.
- Anticlinal theory devel.: Price, P. H., 16.
- Cabin Creek field: Wasson, T., 1.
- Copley pool: Reger, 1.
- Corniferous sands: Martens, 9.
- Deeper horizons: Lafferty, 1.
- General: Billingsley, J. E., 1; Price, P. H., 8-a.
- Greenbrier Co.: Price, P. H., 17.
- Kanawha Co.: Billingsley, J. E., 4.
- Liverpool pool: Heck, E. T., 1.
- Monongahela Valley: U. S. Comm., 1.
- Oriskany group: Lafferty, 2, 3; Martens, 9; Price, P. H., 12; Reger, 10; Stephenson, E. E., 1.
- Southern synclinal fields: Davis, R. E., 1.
- Wildcat drilling: Lahee, 17, 20, 21.
- Gulf Coast: Lahee, 15.
- Kansas: Koester, 4.
- World situation: Hume, 26-a.
- Wyoming.
- Big Medicine Bow field: Shoenfelt, 1.

Petroleum—Continued.

Wyoming—Continued.

- Carbon Co.: Dobbin, 1.
- Elk Basin field: Bartram, 1.
- Frannie field: Lupton, 1.
- Garland anticline: Dobbin, 13.
- General: Krampert, 1, 2; Marzel, 1, 2.
- Grass Creek dome: Harrison, T. S., 1.
- Lance Creek field: Brainerd, 5; Emery, W. B., 1.
- Lost Soldier dist.: Irwin, J. S., 1.
- Map, oil and gas fields: Richardson, G. B., 1.
- Medicine Bow field: McCanne, 1.
- Oil-bearing ss. and lms.: Bartram, 5.
- Osage field: Dobbin, 14.
- Rock Creek field: Dobbin, 2.
- Rock River field: Emery, W. B., 2.
- Rocky Mts. fields: Coffin, 3.
- Salt Creek field: Beck, E., 1.
- Sundance fm.: Neely, 4; Nichols, H. D., 1.
- Teapot Dome field: Clapp, F. G., 1; Lewis, J. O., 2; Thom, 7.
- Uinta Co.: Veatch, A. C. C., 1.
- X-ray crystal analysis and petroleum geol.: Reynolds, D. H., 1.

Petroleum source beds: Bayley, 3; Trask, 27, 30.

Petrolia oil field, Tex.: Kendrick, 1.

Petroliferous provs. and sedimentation: Lauer, 3.

Petrology (general). For areal see names of States; See also Igneous and volcanic rocks; Sedimentary rocks, Technique.

Abstracts and reviews: Johannsen, 1.

Accessory minerals, granite batholiths: Wright, 14.

Igneous and metam. rocks: Reed, J. C., 2, 9.

Adirondacks, metamorphism vs. flowage: Buddington, 13.

Albite-fayalite system: Bowen, 15.

Amphiboles from melts at normal pressure: Grigoriev, 1.

Amphibolites, ig. and sed.: Runner, J. J., 2.

Analyses, rocks and minerals: Wells, R. C., 11.

Analysis, petrofabric: Ingerson, 6.

Anhydrite, Perm., Tex.: Adams, J. E., 3.

Anorthosite, origin: Faessler, 15.

Anauxites: Gruner, 30.

Authigenic feldspar in ss.: Goldich, 1.

Autoliths, mineral orientation: Pabst, 6.

Average chem. composition, rock types: Johannsen, 3.

Basalt crystallization: Barth, 13; Fenner, 1.

Beach sand composition: Hamaker, 1.

Beach sands, Lake Mich.: Pettijohn, 2.

Bornite-chalcocite microtextures: Schwartz, 23.

Petrology—Continued.

Calculation of rock norms: Barth, 3.

Caliche, origin, road uses: Runner, D. G., 9.

Cap-rock petrography: Brown, L. S., 3.

Carbonation vs. silicification: Holden, 8.

Chemical analysis of rocks: Washington, 2.

Chemical characteristics, rock types: Mathews, E. B., 4.

Chemical composition and groundmass, siliceous lavas: Powers, H. A., 1.

Cherts, origin, occurrence, uses: Runner, D. G., 8; Talliaferro, 10; Tarr, 22.

Classification of rocks.

Artificial: Hoover, W. F., 3.

Igneous rock series: Peacock, 1.

Metamorphic rocks: Van Tuyl, 19.

Sedimentary: Van Tuyl, 19.

Clay minerals: Grim, 3.

Clays.

Ceramic: Grim, 8; Kallender, 1.

Deep-sea, hot springs, weathered rocks: Merwin, 4.

Europe and U. S.: Grim, 12.

Origin and composition: Runner, 11.

Cleavage of granites: Bell, J. F., 1; Osborne, 25.

Cliffs, glaciated, disintegration: Balk, 16.

Coals: Thiessen, 7.

Coccolithophores and chalk: Frizzel, 2.

Contamination, acid magmas: Nockolds, 1.

Continental shelf sediments: Alexander, A. E., 3.

Correlation, quartz-deformation: Fairbairn, 13.

Cotectic, etc., use of: Vogt, J. H. L., 2.

Creep of rocks: Griggs, 10.

Criteria, marine, non-marine sediments: Crowley, A. J., 2.

Crystallization, basalts: Barth, 13; Fenner, 1.

Densities of rocks, chem. analyses: Daly, 13.

Differential flow, silicate rocks: Quirke, 9.

Dolomites, Trias.: Knopf, 13.

Drill cuttings, micr. exam.: Lukert, 1.

Dunite intrusion and olivine: Bowen, 13.

Duration, pegmatite crystallization: Lane, A. C., 3.

Eclipse plate for petrog. microscope: Lang, W. T. B., 8.

Elasticity, rocks, massive minerals: Birch, 5.

Electric counter, thin sec. analysis: Hurlbut, 9.

Elongation in deformed rocks: Fairbairn, 8.

Eutectic, use of term: Fenner, 2; Vogt, J. H. L., 2.

Feldspars: Parmelee, 1; Tester, 11.

Fluorescence: Quinn, A. W., 2; Smith, E. S. C., 7.

Fossilization of bone: Paine, 1.

Petrology—Continued.

- Fragmental rocks, exam.: Russell, R. D., 14.
 Galena in Camb. lms.: Howell, 33; Lochman, 3.
 General: Adams, L. H., 3; Frondel, 1, 5.
 Genesis of ores and petrography: Cullis, 1.
 Genetic classn. of rocks: Chadwick, 2.
 Geological terms for highway eng.: Runner, 12.
 Georges Bank bedrock: Stetson, 8.
 Glacial deposits, weathered zone: Allen, V. T., 3.
 Glauconite: Galliher, 14.
 Grains, clastic, size limit: Wentworth, 22.
 Granites: Seaman, 7; Vogt, J. H. L., 2.
 Gravity accumulation, olivine in basalt: Fuller, R. E., 2.
 Gypsum-anhydrite salt-dome cap rock: Goldman, M. I., 2.
 Hydrothermal alteration, ig. rocks: Schwartz, 27.
 Ice as a rock: Blackwelder, 18.
 Igneous rocks.
 Analyses: Mathews, E. B., 9.
 Classification: Shand, 1.
 Descriptive petrography: Johannsen, 2.
 Field classn.: Parker, 6.
 Gabbros: Knopf, 14.
 General: Alling, 8; Dake, 14; Daly, 7; Johannsen, 2.
 Hydrothermal alteration: Schwartz, 27.
 Interpretation: Pettijohn, 13.
 Relations: Hodge, 19.
 Syenites: Knopf, 14.
 Variation diag.: Larsen, 21.
 Iron ores of U. S.: Cooke, S. R. B., 3.
 Koalinities: Gruner, 30.
 Lava, acidic: Fuller, 13.
 Leucite-diopside system: Bowen, 6.
 Leucoxene: Tyler, 5.
 Limestones: Knopf, 13; Runner, 10.
 Louisiana, salt-dome cap rock: Hanna, M. A., 8.
 Magma and its products: Knopf, 17.
 Magma and ore deposits: Osborne, 27.
 Manganese-poor grünerites, cumingtonites: Sundius, 1.
 Marble: Bain, 14.
 Melting granite, basalt, in lab.: Greig, J. W., 1.
 Metamorphic rocks, analyses: Mathews, E. B., 9.
 Mineral facies: Turner, F. J., 1.
 Metamorphic terminology: Erwin, 6.
 Metamorphism, siliceous lms. and dol.: Bowen, 22.
 Meteorite impact alters rock: Buddhue, 26.
 Mica, argillaceous sediments: Grim, 10.
 Microscopic distinction, quartz-oligoclase-andesine: Dodge, T. A., 2.

Petrology—Continued.

- Migmatites: Trefethen, J. M., 4.
 Mineral facies, metam. rocks: Turner, F. J., 1.
 Minerals, high-pressure behaviour: Bridgman, 4.
 Petrographic classn.: Clements, 8.
 Molding sands, durability: Casberg, 1.
 Mountain-building theory: Griggs, 11.
 Mylonization: Knopf, E. F. B., 4.
 Nepheline-albite-silica in fayalite: Bowen, 19.
 Nodular granite, Ontario, N. Y.: Brögger, 1.
 Observation, induction, exper.: Bowen, 18.
 Oil-sand correl.: Russell, R. D., 12.
 Oil sands, Gulf Coast: Halbouty, 5.
 Oolitic lms.: Germann, F. G. E., 2.
 Open spaces in pegmatites: Landes, 12.
 Optical mineralogy: Winchell, A. N., 1.
 Ore minerals, microchem. determination: Fraser, H. G., 5.
 Organic content of rocks: Russell, W. L., 13.
 Orientation, minerals in rocks: Pabst, 2, 4.
 Pacific lavas: Barth, 5.
 Paragenesis of pyrrhotite: Blanchard, 5.
 Pebble axes, measurements: Krumbein, 26.
 Pebbles, orientation in sed. deposits: Krumbein, 25.
 Pegmatites.
 Classification: Landes, 16.
 Desilication, granitic: Vlassov, 1.
 Granitic, desilication: Vlassov, 1.
 Minerals included: Seaman, 7.
 Origin: Landes, 16; Pegau, 2.
 Perthites, plutonic: Alling, 10.
 Petrofabric diagrs., preparation: Haff, 3.
 Petrofabrics and orogenesis: Sander, 1.
 Petrographic methods: Milton, 1.
 Soil laboratories: Fry, 1.
 Petrographic microscope: Emmons, R. C., 2.
 Petrography of igneous rocks: Johannsen, 2.
 Petrotectonics: Knopf, E. F. B., 5.
 Phenoclast: Erwin, 2; Whitcomb, 6.
 Photography of petrographic thin sec.: Crook, W. J., 1.
 Photomicrography in oil industry: Snelgr, 2.
 Phyllonitization: Knopf, E. F. B., 4.
 Physical properties, typical rocks: Griffith, 3.
 Piperine, immersion medium: Martens, 5.
 Pisolites, polyhedral: Shrock, 4.
 Plateau basalts, source: Bowen, N. L., 1.
 Porosity of rocks: Covarrubias, 1.
 Potash-rich rocks, origin: Terzaghi, R. A. D., 3.
 Primary banding, norite, gabbro: Hess, H. H., 15.

Petrology—Continued.

- Pseudomorphs after spinel: Osborne, 28.
 Pyroclastic rocks: Wentworth, 18.
 Pyroxene group: Winchell, 10.
 Pyroxenes from basalt: Barth, 4.
 Pyrrhotite, paragenesis: Schwartz, 19.
 Quantitative mineralogical classn., eruptive rocks: Johannsen, 4.
 Quartz, clastic, orientation: Wayland, 2.
 Quartz-cristobalite temperature of conversion: Cole, S. S., 1.
 Quartz orientation, deformed rocks: Griggs, 9.
 Quartz orientation in tectonites: Fairbairn, 14.
 Quartz particles: Wadell, 8.
 Quartz sand, rounded, off New England: Stetson, 7.
 Quartz, smoky: Mohler, 2.
 Quartz, spectrographic exam.: Bruce, 13.
 Quartz, vein, fm. temperature: Meen, 5.
 Quartz wedge substitute, polarizing microscope: West, C. D., 2.
 Radium in rocks: Piggott, 1.
 Rare elements, concentration: Zies, 6.
 Retrogressive metamorphism, phyllonitization: Knopf, E. F. B., 4.
 Rigidity of rocks, effect of pressure: Birch, 4.
 Rock crystal, inclusions: Zodac, 18.
 Rock, definition: Ransome, 6.
 Rock quality determination: Runner, 15.
 Rock sampling for chem. analysis: Grout, 8.
 Rock suites, Pacific, Atlantic Basins: Washington, 1.
 Rock weathering study: Goldich, 2.
 Rocks, classn.: Anonymous, 111.
 Rocks, identification by reflected light: Wright, F. E., 4.
 Rosinwal method, rock determination: Larsen, 14.
 Rosinwal petrog. analysis, geogr. mapping: Trefethen, J. M., 2.
 Salt-dome cap rock: Goldman, M. I., 2; Hanna, M. A., 8.
 Salt-dome ceramic deposits: Steinmayer, 3.
 Salt-dome terminology: Taylor, R. E., 2.
 Sand, formation: Lane, E. W., 2.
 Mechanical analysis: Emery, K. O., 1.
 Sands, Mississippi River and tributaries: Russell, R. D., 9, 10, 13.
 Schists, origin: Gilluly, 8.
 Sedimentary petrography: Krumbein, 15; Milner, H. B., 1; Thiel, 15; Tyler, S. A., 7.
 Manual: Trask, 41.
 Sedimentary rocks: Anonymous, 111.
 Sediments, marine, off Mid-Atlantic coast: Cohee, 1.
 Continental shelf: Shepard, 22.
 Sediments, mineral analysis: Mehmel, 1.
 X-ray analysis: Mehmel, 1.
 Serpentine, structure: Gruner, 32.
 Shale, origin, road uses: Runner, D. G., 7.

Petrology—Continued.

- Shape determination large sed. rock fragments: Wadell, 5.
 Shapes of rock particles: Wentworth, 20.
 Silicates, constitution, classn.: Berman, 8.
 Slate, X-ray analysis: Anderson, H. V., 1.
 Solubility affected by pressure: Gibson, R. E., 2.
 Solubility, water in granite magma: Goranson, R. W., 2.
 Spectrographic analysis, apparatus: Ussery, 1.
 Sphericity, roundness, rock particles: Wadell, 3.
 Spillite and average metabasalt: Fairbairn, 3.
 Staining for rock analysis: Keith, M. L., 1.
 Stilpnomelane, composition, structure: Gruner, 31.
 Streaks, deep-zone gneisses: Quirk, 8.
 Structural petrology: Fairbairn, 9, 12; Griggs, 7; Knopf, E. F. B., 8, 9; Lovering, 29.
 System Cu-Fe-S: Merwin, 2.
 System MgO-FeO-SiO₂: Bowen, 10.
 Tables, rock and mineral determination: Ellis, R. W., 1.
 Tektites, origin theory: Buddhue, 12.
 Terminology of sediments, fine-grained: Twenhofel, 25.
 Medium-grained: Allen, 16.
 Texas, salt-dome cap rock: Hanna, M. A., 8.
 Tourmaline: Kollida, 1; Randolph, 14; Warner, T. W., Jr., 1.
 Virginia, Potomac River sediments: Hoffman, J., 1.
 Volcanic domes: Williams, H., 5.
 Volcanic rocks, minerals: Melhase, 19.
 Volume, shape, position, rock fragments, in gravel: Wadell, 9.
 West Virginia, Potomac River sediments: Hoffman, J., 1.
 Xenoliths and intrus. rock fabrics: Ingerson, 7.
 Zebra rock: Trainer, 2.
 Zeolites, Winchell, 13.
- Petrotectonics.
 British Columbia, Shuswap terrane: Gilluly, 9.
 Ontario, Claire River syncline: Fairbairn, 5.
 Quebec, Shawinigan Falls area: Osborne, 24.
- Phenacite, morphology, paragenesis: Pough, 1.
 Phenocryst: Erwin, 2; Whitcomb, 6.
 Phoronida, Scolithus: Fenton, M. A., 6.
 Phosphate.
 Alberta: Telfer, 1.
 Arizona: Hurlbut, 4.
 British Columbia, Telfer, 1.
 Canada: Dadson, 1; Spence, 1.

Phosphate—Continued.

- Cayman Island: Matley, 1.
 Field, test: Oakes, 1.
 Florida: Roundy, 2.
 General: Jacob, K. D., 1; Johnson, B. L., 9; Mansfield, G. R., 9.
 Idaho: Campbell, C. D., 4.
 Industrial minerals and rocks: A. I. M. E., 2.
 Mexico: Dovalina, 1.
 Montana: Pardee, 9; Sabinen, 3.
 Oklahoma: Oakes, 2.
 Phosphoria fm.: Branson, C. C., 5; Mansfield, G. R., 23.
 Rocky Mts. field: Mansfield, G. R., 10.
 South Carolina: Watkins, J. Henry, 1.
 Stratigraphic markers, deposits of: Oakes, 3.
 Tennessee: Cayeux, 1; Smith, R. W., 3; Whitlatch, 11.
 Tennessee Valley area: Spain, 6.
 United States: Mansfield, G. R., 1.
 Utah: Williams, J. Stewart, 2.
 Western States: Mansfield, G. R., 14.
 Phosphorescent minerals: Zodac, 11.
 Phosphoria fm.: Branson, C. C., 1, 5; Mansfield, G. R., 23.
 Photogrammetry, applied: Anderson, R. O., 1.
 Photographing walls of boreholes: Kelly, 21.
 Photography, minerals, nat. color: Shaub, 12.
 Phylectic evolution patterns: Simpson, 40.
 Phyllonization: Knopf, E. F. B., 4.
 Physical chemistry in stratigraphy: Mansfield, G. R., 23.
 Physical geology (general). For areal see names of States.
 Ablation of high snow fields: Matthes, 21, 23.
 Abrasion work, river ice and glaciers: Wentworth, 15.
 Abyssal assimilation: Grout, 5.
 Adirondack rocks, metamorphism vs. flowage: Buddington, 13.
 Algal reefs and oolites: Bradley, W. H., 3, 5.
 Alluvial islands: Rubey, 7.
 Alteration of wall rocks: Butler, 7.
 Amygdaloids, cavity fillings: Morris, F. K., 1.
 Amygdules, pseudo-amygdules: Morris, F. K., 2.
 Anomalies, vertical intensity: Somers, 2.
 Anorthosite, intrus. power: Miller, W. J., 8.
 Anosma or squeeze-ups: Colton, 4.
 Antillean-Caribbean area: Schuchert, 31.
 Appalachia: Nelson, 6.
 Appalachian geology: Bevan, 38.
 Appalachian geomorphic history: Woodward, 14.
 Appalachian geosyncline: Morris, 4.

Physical geology—Continued.

- Appalachian Piedmont deformation: Campbell, M. R., 1.
 Appalachian structure: Price, P. H., 2; Seidl, 1.
 Appalachians, N., folding: Sherrill, 2.
 Arroyo running in desert: Brown, W. H., 1.
 Assiniboine sed. cycle: Keyes, 311.
 Asthenolith theory: Willis, 16.
 Atlantic Coast level changes: Townsend, C. W., 1.
 Atlantic Coastal Plain: Groeber, 1; Miller, R. L., 10; Stephenson, 24.
 Atlantic and Caribbean: Groeber, 1.
 Atlantic and Gulf Coastal Plain: Stephenson, 24.
 Auto-traction hypothesis: De Lury, J. S., 3, 4.
 Bacterial genesis, hydrocarbon from fatty acids: Thayer, L. A., 1.
 Baer's law, significance: Russell, R. J., 4.
 Banding in fissure veins: Fraser, D. M., 4; Shaub, 2.
 Barrier beach development: Melton, 24.
 Basaltic, ellipsoids: Fuller, 6.
 Basaltic lava flows: Jones, A. E., 8.
 Basalts, extrusive, columnar: Conard, 2.
 Basin Range problem: Keyes, 256; Longwell, 30.
 Basin Range structure: Gianella, 4; Keyes, 19.
 Basin Ranges: Keyes, 140.
 Batholithic intrusions: Brock, R. W., 1.
 Batholiths: Dresser, 3; De Lury, 4.
 Bathygenetic, orogenetic movements: Gillson, 4.
 Beach cusps: Evans, 13.
 Beach erosion studies: Brown, E. I., 1.
 Beach-pebble abrasion, transportation: Landon, 1.
 Beach sands, Atlantic coast: MacCarthy, 3.
 Beach sands, rounding: MacCarthy, 5.
 Bedding plane movements: Behre, 13.
 Black shale, N. Y.: Hard, E. W., 1.
 Breccia, coneiform, from faulting: White, C. H., 1.
 By-passing, discontinuous sedimentation: Eaton, J. E., 1.
 Calcium carbonate precipitation, Great Bahama Bank: Black, 5.
 Caldera fm.: Williams, H., 13.
 Calvert tilting, Coastal Plain: Dryden, 1.
 Canyons, major, Rocky Mtn. area: Atwood, W. W., Jr., 12.
 Carbon minerals and volcanism: Buddhue, 26.
 Carbonation vs. silication: Holden, 8.
 Cave pearls, origin: Davidson, S. C., 1.
 Caverns, formation: Mallott, 9; Swinerton, A. C., 4.

Physical geology—Continued.

Caverns—Continued.

Ice caves, sink holes, nat. bridges:
Henderson, J., 7.

Solution in lms.: Henderson, J., 6.

Cavernous rock surface of desert:
Blackwelder, 9.

Channel-contraction, effect on stream-
bed: Straub, 4.

Chert and flint, concretions, cone-in-
cone: Tarr, 6.

Clay galls, origin: Burt, F. A., 3.

Cleavage, parajointing: Donnay, 1.

Cleavage, schistose, Appalachians:
Fourmarier, 7.

Cliff fold: Mathews, 12.

Coal as recorder of metamorphism:
Campbell, M. R., 7.

Columnar structure in lms.: Roy, S.
K., 3.

Compaction of sediments: Trask, 9.

Concretions: Tarr, 5.

Cone-in-cone: Boos, C. M., 1; Schaub,
11; Tarr, 6.

Continental drifting: Longfellow, 1;
Russell, B., 1; Shand, 3; Taylor,
9; Waterschoot van der Gracht, 1.

Continents, form, drift, rhythm: Watts,
1, 2.

Convection and form: Hills, G. F.
S., 1.

Fragmentation: Barrell, 1.

Stratigraphic evidence on tectonics:
Moore, 35.

Cordilleras, American: Arkell, 1; Stille,
5.

Correlation, late glacial, Conn. Valley-
Great Lakes: Lougee, 4-a.

Creep of rocks: Griggs, 10.

Cretaceous geosyncline and Laramide
orogeny: Parker, 7.

Criteria, inclusions, plutonic rocks:
Grout, 20.

Crustal movements: Teichert, 1.

Crustal shortening: Johnson, V., 1.

Cryptovolcanic structure, Mid-continent.
Bucher, 15.

Cycles, orogeny and erosion: Baulig, 4.

Data of geodynamics: Hixon, 2.

Deep-focus earthquakes: Lynch, 8; Mc-
Murry, 1; Slichter, 4; Stech-
schulte, 6.

Deflation in deserts: Blackwelder, 10.

Deflection of streams by earth's rotation:
Glock, 11.

Deformation and temperature: Nutting,
1.

Deformation of earth's crust: Bucher,
8, 19; Moore, 30; Nutting, 1.

Deposition, sediments in lakes by gla-
cial streams: Engeln, von, 3.

Desert varnish, origin: Laudermilk, 2.
Desiccation features, humid climates:
Krynine, 2.

Development, drainage systems: Glock,
8.

Physical geology—Continued.

Diachistic dikes and ore deposits: Spurr,
1.

Diastrophism, intrusion: De Lury, 16.

Differential compaction: Foley, L., 1;
Nevin, 1, 4; Spieker, 1.

Differential flow, silicate rocks: Quirke,
9.

Dikes, dilation, replacement: Goodspeed
19.

Dip of beds, determination: Johnson,
C. H., 3.

Dolomite formed in Ohio cave: Lord, R.
C., 1.

Domes, fracture system: Balk, 9.

Drowned forests, New England, Nova
Scotia: Lyon, C. J., 1.

Earth cracks, Miss.: Monroe, 2.

Earth deformation: Hubbert, 12.

Earth distortion: De Lury, 11.

Earth interior: Daly, 12.

Earth strength: Leith, A., 2.

Earth structure theory: Hodgson, 7.

Earthquakes: Gianella, 10.

Deep-focus: Davison, C., 3; Guten-
berg, 21; Leith, A., 2; Slichter, 6.

Distribution: Davison, C., 3.

Dynamic causes: Brunner, 6.

Epicenters, location: Taber, 12.

Geological significance: Leith, A., 2.

Pacific Coast, 1769-1928: Townley, 1.

Prediction: De Montauk, 1.

Strength of earth: Leith, A., 2.

Earthquakes, volcanoes, volcanism:
Heck, 37; Sánchez, 11.

Elastic properties of rocks: Goranson, 4.

Elevation, depression, crustal, causes:
De Lury, 18.

En échelon fault belts: Clark, F. R., 1.

Energy sources, crustal movements:
Heim, 2.

Eolian sands, rounding: MacCarthy, 9.

Evaporation, high altitudes, latitudes:
Church, J. E., 1.

Exfoliation of rocks: Farmin, 3; Griggs,
5.

Face of the earth: Schuchert, 41.

Faults.

Bedding-plane, economic importance:
Behre, 22.

Belts, an échelon: Clark, F. R., 1.

Effect on veins: Eby, J. H., 2.

General: Bloesch, 4.

Geosynclinal boundary: Ver Wiebe,
14.

Movements, mechanics: Hulin, 8, 9.

Origin: Reid, 8.

Rate of movement, Great Basin:
Blackwelder, 41.

Trough sedimentation: Clark, B. L., 7.

Fault and vein intersections: Murphy,
P. R., 1.

Feather joints: Cloos, E., 5.

Festoon cross lamination: Knight, S.
H., 3.

First rains: Hadding, 1.

Physical geology—Continued.

- Flaws and tear faults: Gill, 5.
 Flood erosion: Jacobs, 1.
 Flotation of mts.: Lawson, 10.
 Flow cleavage, folded beds: Swanson, 6.
 Flow in solids: De Lury, 9.
 Flow lines, planes, plastic masses: Fraser, D. M., 3.
 Flow units, basalt: Nichols, R. L., 4.
 Folding, minor, and deformation: Lowe, W. F., 1.
 Small-scale, adjustments: Straley, 6.
 Folding and faulting in ss.: Terra, de, 1.
 Folding and faulting of strata: Reid, H. F., 1.
 Folds, minor, and deformation: Lowe, W. F., 1.
 Parallel, measurements: Mertie, 4-a.
 Folds produced by slumping: Pierce, 1.
 Force, to move particles on stream bed: Rubey, 13.
 Forces in earth's crust: Gutenberg, 34.
 Forest fires, geol. importance: Crickmay, C. H., 4.
 Formation, ore deposits: Bastin, 19.
 Formative processes, concretions: Burt, 7.
 Frost heaving: Taber, 4, 5, 6.
 Fundian fault vs. glaciers: Shepard, F. P., 2.
 Gases in rocks: Birch, R. E., 1; Shepherd, E. S., 1.
 General: Daly, 16, 20; Fitzhugh, 1; Mather, 15; Richards, H. F., 1; Smith, W. D., 3.
 Geologic periods, diastrophic circuits: Keyes, 435.
 Geologic structures: Cloos, 11; Willis, B., 1.
 Geomorphology: Lobeck, 5.
 Gulf Coast salt structures: Ritz, 1.
 Mountainous deserts: Davis, 28.
 Geosynclines, Gulf Coast, Appalachians: Price, W. A., 16.
 Geosynclines and geobasins, origin: Rich, 28.
 Geyser theory, Bunsen's: Sherzer, 1.
 Giant current ripples, fluvial gravel: Thiel, 4.
 Gondwana land bridges: Schuchert, 25.
 Graben faulting: Rich, 27.
 Granitic rocks, origin: Collins, 10.
 Granodioritic blocks from metamorphism: Goodspeed, 13.
 Gravel channels, buried, location: Crampton, 1.
 Gravity observations and basement structures: Thom, 15.
 Great Basin structure: Eaton, J. E., 4.
 Great Lakes Basin: Shepard, 41.
 Grooving of rocks by sand-laden currents: Blackwelder, 26.
 Ground water in determining geol. structure: Soper, E. K., 1.

Physical geology—Continued.

- Hoarfrost and glacial growth: Ahlman, 1.
 Hydrothermal alteration, ig. rocks: Schwartz, 27.
 Ice, agent of weathering: Grawe, 3.
 Ice as a rock: Blackwelder, 18.
 Ice caves: Harrington, E. R., 1; Smith, J. E., 5.
 Ice James, sub-Arctic rivers: Wentworth, 17.
 Igneous intrusions, mechanics of: Schwartz, 27.
 Igneous metamorphism of coal beds: McFarlane, 1.
 Igneous rocks, Mississippi Valley: Tolman, 16.
 Origin and mineralogy: Schairer, 7.
 Structural behavior: Balk, 13.
 Igneous rocks and depths of the earth: Friedlaender, C., 1.
 Ilmenite, alteration: Moore, E. S., 24.
 Imbricate arrangement, pebbles, pre-Camb. conglom.: Pettijohn, 1.
 Impressions, ice crystals in Lake Bonneville beds: Mark, 1.
 Inclusions, dislocated, in veins: Douglas, C. B. E., 1.
 Inertia, low-angled faulting: Stevens, E. H., 1.
 Influence of replaced rock: Butler, 7.
 Initial dips peripheral to resurrected hills: Bridge, 1.
 Inorganic marine lms.: Gee, 2.
 Insolation hypothesis, rock weathering: Blackwelder, 32.
 Interpretation, fault movements, from mineral fractures: Fraser, D. M., 2.
 Intracrystalline solution process: Stockdale, 3.
 Intrusions, mechanics of: Loewinson-Lessing, 1; Schwartz, 27.
 Isostasy, ideal, departures from: Daly, 19.
 Isotasy and mtn. bldg.: Hoffman, 7.
 Isthmian links: Willis, 10.
 Jointing, systematic, sed. rocks: Parker, J. M., 2.
 Joints, curved columnar, volcanic rocks: Hunt, 6.
 Knickpoints, cyclical significance: Meyerhoff, 19.
 Knickpoints and valley-in-valley forms: Johnson, 37.
 Laboratory manual for: Alexander, H. S., 2; Putnam, W. C., 1.
 Lake, Cladophora, and coal balls: Allen, F. H., 1; Huntsman, 1; Kindle, 23.
 Landslides.
 Analysis and control: Hennes, 1.
 Agriculture and eng.: Sharpe, C. F. S., 6.
 Related phenomena: Ladd, G. E., 2; Sharpe, C. F. S., 2, 3.

Physical geology—Continued.

Land slips, subsidence, and rock-falls:
Ladd, G. E., 2.

Land subsidence, causes: Harris, F. R.,
1; Meinzer, 23.

Land tilt: Delaney, 2.

Lava domes: Jaggar, 28.

Lava tree casts and molds: Finch,
R. H., 5.

Lava viscosity: Kinsley, 1.

Lightning spalling: Lauder milk, 10.

Lime-secreting algae: Howe, M. A., 2;
Kindle, 26.

Limestone.

Development of porosity: Howard,
H. V., 5.

Precipitation by submarine volcanic
action: Kania, 1.

Solution and slope effects: Smith,
J. F., Jr., 1.

Limestone caverns, origin: Davis, 10.

Log jams, Red River: Guardia, 1.

Lowering of playas by deflation: Black-
welder, 20.

Lowlands, S.-cent. and Ouachita provs.:
Ruedemann, P., 3.

Magmas.

Cycles: MacCarthy, 1.

Formation, locus: De Lury, 14.

From subsidence: De Lury, 6.

General: Bowen, 20.

Origin, movement in strong earth:
De Lury, 26.

Primary, ultramafic: Hess, H. H., 11,
13.

Products: Knopf, 17; Singewald,
J. T., 13.

Waves, theory: Lay, 2.

Magmatic cycles: McCarthy, 1.

Magmatic differentiation: Fenner, 15.

Marine lms., fm.: Field, 8.

Metallogenesis and crustal theory: De
Lury, 10.

Metamorphic belt, cent. Appalachians:
Jonas, 1.

Metamorphic orogeny: Willis, B., 6.

Metamorphism and igneous action:
Read, H. H., 1.

Metamorphism, siliceous lms., dol.:
Bowen, 22.

Meteorite scars in ancient rocks: Boon,
4.

Meteoritic craters and structures: Al-
britton, 6; Boon, 6.

Mid-Continent folding: Clark, S. K., 2.

Mid-Continent structure and isostasy:
Harlton, 10.

Migmatites: Trefethen, 4.

Mississippi Delta: Trowbridge, A. C., 3.

Mississippi River: Haas, 1.

Mississippi Valley: Atwater, 2; Eakin,
2; Trowbridge, A. C., 2.

Missouri, striated rock, St. Francis Val-
ley: Wentworth, 30.

Mobile belts of earth: Bucher, 4.

Physical geology—Continued.

Morphological significance, stream tur-
bulence: Leighly, 1.

Motion, compressional phase, earth-
quakes: Sharpe, J. A., 1.

Mountain-building theory: Griggs, 11.

Mountain building on unsymmetrical
earth: Gunn, 3.

Mountains, origin: Longwell, 33.

Movements in earth's crust: De Lury, 7.

Mowry shale, origin: Rubey, W. W., 2.

Mud crack casts: Bradley, W. H., 7.

Mud-cracked layers, curvature: Bradley,
W. H., 10.

Mud stalagmites: Malott, 6.

Nashville-Ozark domes arch: Wilson,
C. W., Jr., 19.

New England structures, intrusions:
Keith, 8.

Nuées ardentes, mechanics: Finch, 11.

Oceans, origin, evolution: Keyes, 323,
359.

Oil fields and continental spreading:
Wade, 1.

Oolites, Great Salt Lake: Mathews, A.
A. L., 3.

Ore bodies, localization: Bruce, 18.

Organic acids, action on lms.: Murray,
A. N., 1.

Origin of caverns: Davis, 8; Swinnerton,
A. C., 5.

Orogenic overthrusting, desert ranges:
Keyes, 116.

Orogeny caused by radioactive heating:
Rich, 25.

Oscillation theory of diastrophism:
Longwell, 7.

Oscillatory, movements, Appalachians:
Ruedemann, 5.

Overthrusting, underthrusting, discrim-
inated: Lovering, 12.

Overthrusts, metamorphic terrane:
Balk, 10; Knopf, E. F. B., 6.

Ozark, Mtn. area: Groshkopf, J., 1;
Schottenloher, 2.

Paleozoic fms., pulsation theory: Schuch-
ert, 49.

Pebble wear, Jarvis Is. beach: Went-
worth, 11.

Pebbles, rounded in geyser tube: Nichols,
R. L., 1.

Pedestal rocks, Appalachian Piedmont:
Crickmay, G. W., 13.

Peneplains, fm.: Rich, 22.

Pensacola shore-line deformation: Lever-
ett, 10.

Periodicities, seismic, criteria: Blake, 7.

Peridotites, intrusion-temperature: Sos-
man, 1.

Serpentinized, distribution: Hess, H.
H., 16.

Permeability, measurement and value:
Nevin, 6.

Pisolites, polyhedral: Shrock, 4.

Plains, rock, base, depositional: Melton,
20.

Physical geology—Continued.

- Planational terms: Glock, 6.
 Planes of lateral corrasion: Johnson, D. W., 9.
 Plastic deformation and creep of solids: Nádal, 2.
 Plasticity, rocks under pressure: Griggs, 1.
 Polygonal cracking in granite: Leonard, 3.
 Porosity, reef lms., origin: Lloyd, E. R., 2.
 Limestones: Murray, A. N., 2.
 Rocks: Lamar, 3.
 Vectoral permeability, resistance to erosion: Landon, 3.
 Power to move continents: Munroe, G. W., 1.
 Principles, structural geology: Nevin, 5.
 Problems of physical geology: Dutton, Clarence E., 1.
 Profiles, buried valleys, Ohio, Tenn., Cumberland Rivers: Rhoades, 1.
 Pseudo-eutectic textures: Schwartz, 6.
 Pyramidal jointing in shale: Sheldon, P. G., 2.
 Quartz "dikes": Furnival, 4.
 Quartz surfaces, chemical activation: Nutting, 2.
 Radioactivity: Willis, 8.
 Rain-wash erosion, humid regions: Lawson, 5.
 Rare elements, concentration: Zies, 6.
 Rates of wear, common minerals: Cozzens, 1.
 Red-bed bleaching: Keller, W. D., 1.
 Red beds, origin: Baker, C. L., 3.
 Rhythmic banding: Cook, C. W., 1.
 Rhythmic bedding, Monterey, Calif.: Bramlette, 4.
 Rift valley types: Willis, 13.
 Rillensteine: Laudermilk, 5.
 Ripple marks: Kindle, 14.
 Rise of molten rock: Miller, W. J., 7.
 Rock expansion, spontaneous: Bain, G. W., 3, 20-b.
 Rock features from glacial movement: Glock, 3.
 Rock foliation: Fairbairn, 7.
 Rock-forming silicates with water components: Goranson, 8.
 Rock plains, arid regions: Johnson, D. W., 20.
 Rock records of meteorites: Anonymous, 145.
 Rock resistance and interfluvial degradation: Rich, 9.
 Rock structure, ancient volcanoes: Hunt, 7.
 Rock surfaced grooved by sand-laden currents: Blackwelder, 26.
 Rock-weathering insolation hypothesis: Blackwelder, 32; Jeffreys, 3.
 Rocky Mts. area: Atwood, W. W., 7, 10; Chamberlin, 19; Keyes, 288; Lugn, 8.

Physical geology—Continued.

- Rocky Mts.-Great Plains cycles: Lugn, 8.
 Roots of volcanoes: Daly, 18.
 Rotational stress, crustal deformation: Baker, C. L., 15.
 Rupture formation of joints: Bridgman, 3.
 St. Croixan ss., origin: Graham, W. A. P., 3.
 Salt deposits, inland basins: Jones, J. C., 1.
 Salt-dome problem: Van Tuyl, 1.
 Salt domes, meteor craters, cryptovolcanic structures: Washburne, 5.
 Salt marshes and coastal stability: Goldthwait, J. W., 1.
 Sand structures, shallow-water: Kindle, 30.
 Sands, Mississippi River, shape: Russell, R. D., 9.
 Schistosity: Fourmarier, 1, 2.
 Schuchert's tectonic ideas: Strahov, 1.
 Sea bottom samples, Cabot Strait: Kindle, 13.
 Sea level studies: Johnson, D. W., 4.
 Secondary oolite: Swartzlow, 1.
 Sedimentation, relation to faulting: Longwell, 25.
 Sediments.
 Continental shelves: Shepard, 6.
 Deep sea, magnitude: Twenhofel, 2.
 Deformed by ice thrust: Glock, 4.
 Reworked by running water: Thiel, 5.
 Seismic activity, megashear zones: Keith, B. A., 3.
 Seismology and structural geology: Thom, 9.
 Selenite fragments, criteria of wind action: Schoewe, 7.
 Sensitivity to tilt, seismograph: Delaney, 1.
 Shafts, vertical lms. caves: Pohl, 12.
 Sheet and stream floods: Davis, 29.
 Shutterridges, characteristic of active faults: Buwalda, 17.
 Sierra Nevada: Lawson, 8; Locke, A., 8.
 Silicates, ig. rocks, research on: Bowen, 17.
 Silicate-water system and osmotic pressure: Goranson, 6, 7.
 Silt in Rio Grande: Flock, 1.
 Slickensides: Morse, W. C., 3.
 Slump scarps: Finch, R. H., 7.
 Soft-rock deformation: Rettger, 3.
 Soil, cost in rock and time: Twenhofel, 37.
 Soil freezing experiments: Taber, S., 2.
 Solubility affected by pressure: Gibson, R. E., 2.
 Solution-faceted lms. pebbles: Bryan, 5.
 Solution in permanent peneplanation: Ward, F., 2.
 Solvent denudation overestimated: Lane, A. C., 2.
 Sorting power, wind, waves: Henderson, J., 2.

Physical geology—Continued.

- South Dakota, Harney Peak granite: Balk, 4.
- Spontaneous rock expansion: Bain, G. W., 3, 20-b.
- Squeeze-ups of lava: Nichols, R. L., 5.
- Stalactites, growth: Ellis, R. W., 3; Johnston, W. D., Jr., 2; Richards, G., 1; Ver Steeg, 10.
- Stalagmites, growth: Edwards, H. M., 1; Ver Steeg, 10.
- Status, importance, isostasy: Hixon, 1.
- Strain ellipsoid theory: Foley, L. L., 2; Griggs, 2; Leith, A., 3; Link, T. A., 3; Mead, W. J., 2.
- Strain and relief: Bain, 9.
- Stream work: Rubey, 5.
- Strength of rocks under high pressure: Griggs, 2.
- Strike and dip determinations: Hubbert, 2.
- Structural behavior, ig. rocks: Barton, 47.
- Structural features, Cordillera: King, 15.
- Structural, magmatic processes: Hoffman, 8.
- Structural petrology: Fairbairn, 9, 12; Griggs, 7; Knopf, E. F. B., 8, 9; Lovering, 29.
- Stylolites: Stockdale, 3, 11.
- Submarine canyons, depth changes at heads: Shepard, 57.
- Origin: Johnson, 44.
- Submarine volcanism: Kania, 2.
- Submountain structure, desert range: Keyes, 23.
- Subsidence, salt domes: Sellards, 13.
- Subsidence and ground movement: Crane, 1.
- Syngenetic nodules, Cret. shales: Roy, C. J., 1.
- System CaO-MgO-SiO₂: Taylor, N. W., 1.
- Tectonic metamorphism, S. Appalachians: Becker, H., 3.
- Tectonic relations, N. Am.-Europe: Stille, 3.
- Tectonics and erosion: Bailey, E. B., 2.
- Temperatures in sinking xenolith: Lovering, 28.
- Textbook: Longwell, 4; Pirsson, 1.
- Thermal stratification in lakes: Kindle, E. M., 5.
- Thrust faults: Willis, R., 5.
- Thrusting, unfolded rocks: De Béthune, 2.
- Younger rocks over older: Billings, 4.
- Tilting, N. Am.: Gutenberg, 8.
- Tilting, secondary: Spieker, 11.
- Tilts, two, and stereographic projection: Fisher, 19.
- Toggling-shelf orogeny: Russell, B., 3.
- Transformation, face of earth: Ysalgue de Massip, 1.

Physical geology—Continued.

- Transportation marine sediments: Raymond, 7.
- Transverse fractures: Lasky, 2.
- Travertine-forming organisms: Howe, M. A., 1, 2.
- Triassic fault-line deflections, warpings: Wheeler, G., 3.
- Turbulence and stream transportation of debris: Leighly, 2.
- Turbulence in flow of water: Leighly, 1.
- Undertow and rip tides: Davis, 11.
- Unsupported inclusions: Talmage, 2.
- Uphrust, geologic term: Willis, 12.
- Viscosity of lava: Nichols, 11.
- Volcanic, activity, surface manifestations: Zies, 7.
- Volcanic domes: Williams, H., 5.
- Volcanism and geol. history: Whitney, D. J., 1.
- Volcanoes, study of: Day, 9.
- Volcanoes and earthquakes: Heck, 37.
- Volcanoes, geysers, and hot springs: Day, 10.
- Volcanology: Adams, L. H., 6.
- Volume, shape, roundness, rock particles: Wadell, 2.
- Water in geol. processes: Morey, G. W., 4.
- Water solubility: Bailey, E. H. S., 1.
- Waves, seismic refraction, reflection: Dix, 2.
- Weathering: Runner, 14.
- Weathering cycles: Krumbein, 18.
- Wind-faceted pebbles: Schowe, 10.
- Zoning, hypogene, metalliferous lodes: Emmons, 8.
- Physical properties, typical rocks: Griffith, 3.
- Physiographic geology (general). For areal see names of States. See also Drainage changes; Glacial geology.
- Ages, Pleist. shore lines: Cooke, C. W., 15.
- Airways of America: Lobeck, 3.
- Allegheny plateau erosion surfaces: Rich, 32.
- Alluvial fan, Potomac River: Campbell, M. R., 8.
- Alpine land forms, west U. S.: Russell, R. J., 7.
- America: Drygalski, 1.
- American landscape: Grace, 4.
- Ancient marine levels, correl.: Johnson, D. W., 22.
- Antillean-Caribbean area: Schuchert, 31.
- Appalachia: Nelson, 6.
- Appalachian drainage: Johnson, D. W., 12; Macklin, 11; Meyerhoff, 14, 17.
- Appalachian geology: Bevan, 38.
- Appalachian geomorphic evolution: Johnson, D. W., 8, 10.
- Appalachian Highlands: Billings, M. P., 3.
- Appalachian Mtn. sculpture: Ashley, 21.
- Appalachian Mts. and plateau: Rich, 30.

Physiographic geology—Continued.

- Appalachian peneplains: Ashley, 3;
Bryan, 19; Ver Steeg, 3, 7.
Appalachian Piedmont deformation:
Campbell, M. R., 1.
Appalachian Plateau and Mississippi
Valley: Butts, 12.
Appalachians, older: Wright, F. J., 4.
Southern: Wright, F. J., 7.
Arid regions during ice age: Pittelkow,
1.
Atlantic coastline: Johnson, D. W., 2-a,
33-b.
Atlantic and Gulf Coastal Plains:
Stephenson, 24.
Atlas of American geology: Lobeck, 3.
Available relief, profile of land form:
Glock, 9.
Available relief, texture of topography:
Johnson, D. W., 23.
Baer's law, significance: Russell, R. J., 4.
Bartlett Trough: Taber, 8, 10.
Base-level: Chamberlin, R. T., 1; John-
son, D. W., 3.
Basin Range hypothesis: Keyes, 257.
Basin Range problem: Longwell, 30.
Basin Range types: Davis, 18.
Basin ranges: Keyes, 140.
Bay-bar, shore-line processes: Brown,
C. W., 6.
Beach cusps and tides: Shepard, 44.
Beaver dams as geol. agents: Ruede-
mann, 45.
Berms: Bascom, 2.
Blue Ridge escarpment: Johnson, D.
W., 25.
Bluffs: Lee, H. E., 1.
Bolsons, desert: Keyes, 50.
Boulders, Hudson River fm.: Warthin, 1.
California coast, submarine mock val-
leys: Davis, 23.
Canadian Shield: Cooke, H. C., 2.
Canyons, major, Rocky Mts.: Atwood,
W. W., Jr., 12.
Central Appalachian area: Johnson, D.
W., 13.
Changes attending an ice age: Lombard,
1.
Changing sea level: Johnson, 35.
Chapairo: Fenton, C. L., 11.
Climatic boundary: Russell, R. J., 3.
Coastal terraces, correl.: Flint, 4.
Colorado River area: Reichel, 1.
Delta: Blackwelder, 23; Sykes, 1, 4.
Composite peneplains: Campbell, M. R.,
9.
Continental abyssal slopes: Shepard,
F. P., 1.
Continental and oceanic structure: Field,
24.
Continents, form, drift, rhythm: Watts,
1, 2.
Copper, lost stones, in glacial till: Glock,
14.
Correlations.
American and European: Keyes, 298.

Physiographic geology—Continued.

- Correlations—Continued.
Coastal terraces: Cooke, C. W., 4.
Connecticut Valley Great Lakes, late
glacial: Lougee, 4-a.
Erosion surfaces, Ohio-Pa.: Ver
Steeg, 31.
Mississippi River terraces and Gulf
Coast shore lines: Price, 21.
Ohio-Pa. erosion surfaces: Ver Steeg,
31.
Regional physiol. studies: Atwood,
W. W., 2.
River terrace remnants: St. Clair,
D., 1.
Corsair Gorge, submarine valley: Shep-
ard, F. P., 4.
Craters, meteoric, formation: Wylie, C.
C., 2.
Cryptovolcanic structures, Mid-conti-
nent: Bucher, 15.
Cycles, erosion and orogeny: Baulig, 4.
Erosion, later stages: Crickmay, 22.
Decline of Great Basin: Eaton, J. E., 4.
Definitions vs. concepts: Anonymous,
161.
Deflection of streams by earth's rotation:
Glock, 11.
Deltas, channel-like deposits: Tanner,
W. F., 3.
Desert bolsons: Keyes, 44, 50.
Desert cliff-recession: Glock, 15.
Desert denudation: Keyes, 137.
Desert geomorphogeny: Davis, 24.
Desert mts.: Field, R., 1.
Desert plains: Blackwelder, 22.
Desert rock-cut surfaces: Johnson, D.
W., 11.
Drainage alignment, Great Plains: Rus-
sell, W. L., 2.
Drainage changes: Johnson, 42.
Drainage during deglaciation: Keyes,
446.
Drainage patterns, significance: Zernitz,
1.
Drainage systems, development: Glock, 5,
7, 8.
Appalachians, S.: Thompson, H. D., 2.
Eastern N. Am.: Johnson, D. W., 23.
Drainage systems and dynamic cycles:
Johnson, D. W., 24.
Earth features: Hobbs, 4.
Earth forms and military operations:
Patton, 5.
Earth science: Stone, D. B., 1.
East and West contrasts: Davis, 6.
Eastern, U. S.: De Bethune, 1.
Eolian action in glacial period, N. Am.:
Cailleux, 1.
Erosion cycle, mtn. regions: Atwood, W.
W., 8.
Erosion, cyclic, non-cyclic aspects: Fen-
neman, 6.
Physiographic research on: Stewart,
C. F., 1.

Physiographic geology—Continued.

- Erosion surfaces.
 - Appalachian Plateau: Ver Steeg, 13.
 - Correlation: Fenneman, 5.
 - Mountain regions: Atwood, W. W., 8.
 - Multiple: Bates, R. E., 3; Rich, 31.
- Even-crested ridges without peneplanation: Rich, 14.
- Faceted piedmont spurs, desert mts.: Keyes, 32.
- Fall zone peneplain: Sharp, H. S., 2.
- Fault, fault-line, scarps: Johnson, 43.
- Fenstreams: Holden, R. J., 2.
- Flint flakes, artifacts, weathering: Smith, L. P., 1.
- Fundian faults or glaciers: Shepard, F. P., 2.
- Gaps, Appalachian ridges: Shu'er, 2.
- Gateways, river-cut thro mts.: Johnson, D. W., 29.
- General: Bretz, R., 1; Bryan, 10; Daly, 16; Keyes, 9, 204; Leighton, H., 1; Longwell, 31; Meyerhoff, 28; Richards, H. F., 1; Worcester, P. G., 5.
- Geologic periods and disastrophic circuits: Keyes, 435.
- Geologic structures: Cloos, 11; Willis, B., 1.
- Geomorphic value, river gravel: Campbell, M. R., 3.
- Geomorphology.
 - Deserts, mountainous: Davis, 28.
 - General: Lobeck, 5; Meyerhoff, 30.
 - Glacial: Engeln, von, 13.
 - Georges Bank: Shepard, 13; Stetson, 8.
 - Glacial erosion, quality: Engeln, von, 14.
 - Glacial features, boundary recognition by veg.: Kirkendall, 1.
 - Glacial movement and erosion: Demorest, 4.
 - Glacial sediments: Flint, 24.
 - Glacial trough, continental shelves: Shepard, F. P., 3.
 - Glaciation, correl. northern-southern hemispheres: Coleman, 7.
 - Glacier motion: Engeln, von, 13.
 - Glaciers, age of: Matthes, 30.
- Great Basin.
 - Physiographic history: Fenneman, 4.
 - Ranges: Keyes, 411.
- Great Lakes: Taylor, 14.
- Great Lakes basins, origin: Shepard, 41.
- Gulf Coast, Pleist.: Price, 20.
- Hall prints, mud cracks, Proterozoic: Fenton, 31.
- Headward, erosion: Rappenecker, 2.
- Hudson submarine canyons: Shepard, 32.
- Huron-Erie dist., tilt variations: Leverett, 18.
- Ice sheets, Pleist., retreat: Antevs, 26.
- Ideal geographical cycles: Gabriel, V. G., 1.
- Illinoian drift weathered zone: Conrey, 2.
- Insolation effects, headward erosion, Osage plains, valleys: Melton, 23.

Physiographic geology—Continued.

- Intersequent streams: Buwalda, 9.
- Iowan drift, age: Leverett, 23.
- Island arcs and ocean deeps: Bucher, 7.
- Kettle holes, eskers: Nichols, 6.
- Klintar, Wabash Valley, Ind.: Shrock, 1.
- Knickpoints and valley-in-valley forms: Johnson, 37.
- Labrador Penin., mature valleys: Cooke, H. C., 2.
- Lakes and mtn. barriers theory: Furon, 6.
- Land forms: Buss, F. E., 1.
- Landscape changes: Ashley, 7.
- Landslide family: Blackwelder, 17.
- Landslides, related phenomena: Russell, R. J., 20.
- Land surfaces, slope determination: Wentworth, 6.
- Land tilting, Great Lakes: Taylor, F. B., 1.
- Life cycle, mtn. system: Rich, 6.
- Limestone solubility: Adams, A. C., 10.
- Limestone terranes: Swinnerton, 10.
- Lowlands, S.-cent. and Ouachita provs.: Ruedemann, P., 3.
- Manual, lab.: Mather, 14.
- Maps, geomorphic notes: Sharp, 9.
- Marine shore lines, classn.: Lucke, 9; Shepard, 51.
- Mature lands: Johnson, D. W., 42.
- Mean sea level: Johnson, D. W., 5, 6.
- As geophysical datum: Marmer, 2.
- Meanders, cut off, effects of: Macar, 1.
- Development, intermittent streams: Leighly, 3.
- Meteor Crater: Spencer, L. J., 2.
- Meteor craters: Nüniger, 26.
- Meteoritic craters and structures: Albritton, 6; Boon, 3, 6.
- Meteorite scars in ancient rocks: Boon, 4.
- Mexico, physlog. provs.: Ordoñez, 4.
- Mid-Atlantic ridge: Washington, 3.
- Minisink Valley, N. Y., Pa.: Happ, 3.
- Mobile belts of earth: Bucher, 4.
- Morphologic significance, stream water turbulence: Leighly, 1.
- Mountain pediments: Davis, W. M., 3.
- Mud cracks, hall prints, Proterozoic: Fenton, 31.
- Natural mounds, Tex.-Ark.-La.: Melton, 2.
- Native copper in glacial till: Glock, 13.
- New England-Acadian shore line: Moore, B., 1.
- New England ground-water supply: Bryan, 28, 34.
- New England upland: Johnson, D. W., 1.
- Newer Appalachians, S.: Wright, F. J., 7.
- Nipissing Great Lakes, outlets: Taylor, 8.
- Nomenclature: Rigdon, 1.

Physiographic geology—Continued.

- North America, regional history of: Joerg, 1.
 Northern Canada: Nichols, D. A., 2.
 Ocean basins and margins: Field, 7.
 Bottom, geol. mapping: Shepard, 21
 Deep: Little shales, 1.
 Level, Cenozoic era: Fretz, 1.
 Oceans: Keyes, 397.
 Classification: Giles, 11.
 Geological misconceptions: Shepard, 11.
 Off-shore bars, changes of sea level: Price, 22.
 Outlines: Hinds, 1; Longwell, 19, 23-a.
 Ozark Mtn. area: Grohskopf, J., 1.
 Patrician center of glaciation: Tyrrell, J. B., 1.
 Patrician glaciation: Keyes, 235.
 Patrician ice movements: Leverett, 19.
 Patrician ice sheet: Martin, L., 3.
 Pediments.
 Arid: Davis, 14.
 Dissection: Koschmann, 2.
 Formation: Bryan, 29; Rich, 19.
 Great Basin: Blackwelder, 5.
 Peneplains.
 Formation: Rich, 22.
 General: Gabriel, V. G., 2; Ver Steeg, 1.
 Inland phases: Van Tuyl, 13.
 Susquehanna Valley: Stose, G. W., 2.
 Peneplanation: Gabriel, V. G., 2.
 Concept and land forms: Gabriel, V. G., 2.
 Continental Divide: Keyes, 11.
 Periodicity, desert physiography: Davis, W. M., 5.
 Phenomena, arid regions: Bryan, 9.
 Physiography of U. S.: Loomis, 14.
 Piedmont benchlands: Davis, 17.
 Primärrümpfe: Davis, 17.
 Plains, rock, base, depositional: Melton, 20.
 Planational terms: Glock, 6.
 Planes of lateral corrosion: Johnson, D. W., 9.
 Pleistocene lakes, Basin Range prov.: Blackwelder, 19.
 Pleistocene sea shores: Cooke, C. W., 3.
 Polar elevation and last ice age: Hills, G. F. S., 2.
 Pre-Cambrian buried surface, U. S.: Moss, 3.
 Preglacial sea levels, determination: Miller, A. A., 1.
 Provinces in desert: Keyes, 21.
 Quaternary, Atlantic and Gulf Coastal Plain: Cooke, C. W., 26.
 Quaternary ice age: Flint, 22.
 Radio talks: Leighton, H., 1.
 Rain-wash erosion, humid regions: Lawson, 5.
 Regoliths of deserts: Sykes, 5.
 Representing scenery on maps: Raisz, 8.

Physiographic geology—Continued.

- Reversed cycles: Ward, F., 3.
 Reviews, geomorphologic papers: Bryan, 14, 21, 22.
 Ridges, terminal moraine: Engeln, von, 15.
 Rift valleys: Johnson, D. W., 7.
 Rise of physiography: Fenneman, 10.
 River system nomenclature: Campbell, M. R., 2.
 River valleys, older Appalachians: Wright, F. J., 3.
 Roches moutonnées: Longwell, 18.
 Rock fans, arid regions: Johnson, D. W., 15.
 Rock fans and pediments: Rich, 19.
 Rock floors, arid and humid climates: Davis, W. M., 3.
 Rock Plains, arid regions: Johnson, D. W., 20.
 Rock sculpture by glaciers: Engeln, von, 11.
 Rocky Mts.: Atwood, W. W., 7, 10; Keyes, 208, 271; Knight, S. H., 13; Ray, L. L., 4; Strzygowski, 1.
 Salt domes, meteor craters, cryptovolcanic structures: Washburne, 5.
 Salt domes related to Mississippi submarine trough: Shepard, 37.
 Sand dunes, fixed, High Plains: Melton, 25.
 Scope of physiography: Johnson, D. W., 18.
 Sea level: Johnson, D. W., 5.
 Sedimentation, relation to faulting: Longwell, 25.
 Sediments of continental shelves: Shepard, 6.
 Seismic zones, ocean bottom relief: Heck, 11.
 Shifting bottoms, submarine canyon heads: Shepard, 38.
 Shore lines, marine, classn.: Howard, A. D., 9; Shepard, 36; Smith, P. A., 2.
 Shutterridges, characteristic of active faults: Buwalda, 17.
 Slump scarps: Finch, R. H., 7.
 Slumping and gully formation: Mitchell, 6.
 Solution in peneplanation: Ward, F., 2.
 Snow melting, evaporation, mtn. Alpine zone: Matthes, 29.
 Snowslide erosion, striation: Wells, J. R., 1.
 Southern Appalachians: Wright, F. J., 4.
 Southwestern U. S.: Eaton, J. E., 4.
 Strath: Bucher, 5.
 Stream profiles, longitudinal: Woodford, 1.
 Stream sculpture, Atlantic slope: Johnson, D. W., 8.
 Stream terminology: Baulig, 3.
 Streams, flood-plain: Melton, 22.

Physiographic geology—Continued.

- Streams and their significance: Johnson, D. W., 19.
- Structural contouring: Ley, H. A., 1.
- Structural features, Cordilleran prov.: King, 15.
- Structure, original, beaches, bars, dunes: Thompson, W. O., 6.
- Submarine canyons and valleys, origin: Daly, 15; Hess, H. H., 8, 9; Johnson, 40, 44; Lambert, 8; Shepard, 8, 9, 10, 12, 15, 16, 19, 28, 30, 50.
- Age, cent. Atlantic Coast: Stetson, 11.
- Atlantic Coast: Stetson, 16.
- Changes of sea level as cause: Shepard, 23, 26.
- Continental shelves, changes of level: Treasher, 4.
- Continental slopes: Hess, H. H., 8.
- Distribution, longitudinal profiles: Shepard, 48.
- Hudson Gorge to Chesapeake Bay; dredge samples: Stetson, 12.
- Landslide modifications: Shepard, 5.
- Mock-valleys: Davis, 23.
- Valley thro Mackinac Straits: Stanley, 8.
- Submarine topography inv.: Shepard, 34.
- Suboceanic relief, intermediate scale maps: Joerg, 2.
- Surfaces of the earth: Bowie, 10.
- Taconian orogeny: Schuchert, 11.
- Talus slopes, Basin Range prov.: Blackwelder, 34.
- Tectonics and erosion: Bailey, E. B., 2.
- Terminology, erosion-cycle surface forms: Maxson, 9.
- Terraces, Miss., Minn., St. Croix Rivers: Dutton, 4.
- Hawaii: Howard, A. D., 7.
- United States: Howard, A. D., 7.
- Tertiary mtn. ranges, correl.: Taylor, F. B., 7.
- Till sheets, glacial, front moraine disappearance: Keyes, 387.
- Tilting, proglacial lakes: Hitchcock, C. B., 3; Rodgers, 1.
- Topographic features, geol. age: Blackwelder, 13.
- From glacial erosion: Belknap, 3.
- Transformation, face of earth: Ysagüe de Massip, 1.
- Tundra climate land forms: Russell, R. J., 2.
- United States:
- Eastern: Fenneman, 7.
 - General: Loomis, 14; Lucke, 6.
 - Physical divisions: Fenneman, 1, 2.
 - Structural features: King, 9.
 - Western: Fenneman, 3; Fillman, 1.
- Varves, nonglacial: Bradley, 17.
- Wind deposition shore lines: Bryan, 41.
- Wind gaps, water gaps, and erosion surfaces: Ver Steeg, 2, 18, 22.

Physiographic geology—Continued.

- Wind gaps, etc.—Continued.
- Erosion surfaces, relations: Ver Steeg, 2, 18, 22.
- Peneplanation, relation to: Ver Steeg, 2.
- Physiographic nomenclature: Rigdon, 1.
- Physiography, dual nature: Glock, 2.
- New presentation: Atwood, W. W., Jr., 8, 9.
- United States: Loomis, 14.
- Physiography, sedimentation, and oil geology: Rich, 17-a.
- Phytosaurs: Camp, 3.
- Piezometric maps.
- Arizona valleys and ground water: Smith, G. E. P., 2.
- Florida, ground-water supplies: Stringfield, 4.
- New Mexico, Roswell artesian basin: Morgan, A. M., 1.
- Pine Island oil field, La.: Crider, 1.
- Pine Mtn. quartzites, Ga.: Adams, G. I., 3.
- Pioche dist., Nev.: Westgate, 6.
- Pisces.
- Age, Harding ss., Colo.: Ulrich, 32.
- Alaska: Schlaikjer, 8.
- Albert shales, New Brunswick: Sternberg, R. M., 1.
- Alberta: Russell, L. S., 28; Warren, 15.
- Albula, Fla.: Cockerell, 12.
- Albulid, Md.: Myers, G. S., 1.
- Amia, Alberta: Jordan, 1.
- Anomoedus, Md.: Berry, C. T., 13.
- Arthrodira: Case, E. C., 4; Gross, W., 1; Stensl , 3; Stetson, H. C., 3.
- Barbados, Scotland beds: White, E. I., 1.
- Beartooth Butte, Wyo.: Bryant, 7; Dorf, 5.
- Bothriolepis, Quebec: Sohn, 1.
- Bothriolepis stensl i probably *B. canadensis*: Robertson, G. M., 4.
- Brachydegma, Tex.: Dunkle, 2.
- Brain, fish to man: Gregory, 27.
- California, Miocene: David, L. R., 1, 2.
- Carboniferous, Ill.-Ohio-Tex.: Romer, 10.
- Carcharodon, Mass.: Sanford, S. N. F., 1.
- Caturus, Greenland: Aldinger, 1.
- Centroleura fauna, Vt.: Howell, 30.
- Cephalaspis, Quebec: Robertson, G. M., 1, 3.
- Ceratodus browni for *Polyporites browni*: Brown, 18.
- Chlamydoselachus, Trinity Is., West Indies: Leriche, 1.
- Cladoselache: Harris, J. E., 1, 2; Woodward, A. S., 4.
- Coccosteus, N. Y.: Bryant, 2.
- Coelacanthus, Kans.: Hibbard, 2.
- Cognathus for *Xenognathus*: Case, 12.
- Coprolites, Colo.: Johnson, J. H., 20.
- Cyprinidae, Okla.: Stovall, 16.
- Descriptions: Roy, S. K., 2.
- Devonian.
- Colorado: Bryant, 9.

Pisces—Continued.

Devonian—Continued.

- New locs.: Branson, E. B., 8.
 New York: Bryant, 6.
 Utah: Branson, E. B., 8.
 Wyoming: Branson, E. B., 8.
 Dinichthys: Heintz, 2, 4; Stetson, H. C., 3.
 Diplopterax, Greenland: Sæve-Söderbergh, 3.
 Dipnoans, Paleozoic, cranial roof: Romer, 17.
 Quebec: Graham-Smith, 2.
 Dolophonodus, Greenland: Woodward, A. S., 1.
 Dutchtown Ord. fauna, Mo.: Cullison, 4.
 Euhanerops, Canada: Stensiö, 5.
 Eurylepidoides, Tex.: Case, 17.
 Eusthenopteron vertical column: Gregory, 30.
 Evolution: Eaton, T. H., 1; Evans, G. F., 1; Hildebrand, 1.
 Faunas.
 Kansas Coal field: Williams, J. S., 12.
 Missouri: Branson, 33, 37; Cullison, 4.
 New Mexico: Cooper, C. F., 1; Matthew, 17.
 Fellichthys, Md.: Lynn, 3.
 Fish otoliths: Campbell, R., 1.
 Fish to man: Gregory, 9.
 Ganoid, Greenland: Aldinger, 4, 6.
 Greenland, eastern.
 Arthrodira: Stensiö, 3.
 Devonian: Aldinger, 4, 6; Heintz, 1, 3; Stensiö, 1, 4, 6.
 Permian: Aldinger, 4, 6; Branson, C. C., 7.
 Permo-Carboniferous: Nielsen, E., 1.
 Phyllolepid: Stensiö, 3.
 Sharks, Perm.: Branson, C. C., 7.
 Triassic: Nielsen, E., 3; Stensiö, 2.
 Gymnotrachelus, Ohio: Dunkel, 3.
 Heliocoprion, Calif.: Wheeler, 10.
 Idaho, Latah fm.: Scheid, 2.
 Kindeleia: Russell, L. S., 2.
 Lagodon, Md.: Berry, C. T., 2.
 Lake Uinta, Utah-Colo.: Bradley, 15.
 Listracanthus, Mo.: Hibbard, 11.
 Macropetalichthys: Stetson, H. C., 3.
 Megalichthys, Tex.: Romer, 19.
 Cranial evolution: Eaton, T. H., Jr., 1.
 Missouri, Mississippian: Branson, 35.
 Montana, Fort Union, Crazy Mtn. field faunas: Simpson, 38.
 Myliobatis, N. J.: Chaffee, 2.
 New Mexico, Jurassic: Koerner, 1.
 New York, Catskill facies: Mencher, 2.
 Devonian: Reimann, 14.
 Hamilton shales: Bryant, 19.
 Tully fm.: Wells, J. W., 11.
 Oregon, Lane Co.: Smith, W. D., 11.
 Osteostrachi, sensory canal system: Robertson, G. M., 2.
 Paleoniscid, Mo.: Case, 23.
 Brain, Iowa: Moodie, 10.
 Brain case, Mo.: Eaton, T. H., 3.

Pisces—Continued.

- Pelvis, fish to man: Gregory, 19.
 Pennsylvania, Schuylkill Valley: Willard, 57.
 Pennsylvanian, Mo.: Bailey, W. F., 4.
 Pennsylvanian, Mo. and Kans.: Gunnell, G. H., 8.
 Permian shark: Branson, C. C., 4.
 Phlyctaeaspis, New Brunswick: Hussakof, 3.
 Placodermi, Greenland: Stensiö, 3.
 Phylloodus, Va.: Gildersleeve, 6.
 Phyllolepid: Stensiö, 3.
 Plancterus, Okla.: Stovall, 19.
 Portheus molossus Cope: Gregory, W. K., 2.
 Portheus, Kans.: Thorpe, 5.
 Preoccupied names: Whitely, 1.
 Priscacara, Wash.: Hesse, 12.
 Quebec, Dev.: Russell, 42.
 Restorations, Niagara area fossils: Reimann, 11.
 Sauripterus, Pa.: Gregory, 16.
 Semionotus, Conn., Utah: Hesse, 8; Thorpe, 6.
 Shark teeth: Carroll, 1.
 Snapper, Florida: Gregory, W. K., 3.
 Skulls, evolution: Gregory, 10.
 South Dakota, Sully microfauna: Seagriff, 6.
 Spermatodus, Tex.: Westoll, 3.
 Stylomyledon: Russell, L. S., 2.
 Sunfish, Kans.: Hibbard, 4.
 Syngnathus, Calif.: Hesse, 15.
 Teleost, Fla.: Gregory, W. K., 6.
 Niobrara, Kans.: Hussakof, 1.
 Tertiary.
 California well cores: Hesse, 16.
 Mexico: Leriche, 2.
 Trinidad: Leriche, 2.
 West Indies: Leriche, M., 2.
 Tetrapods, Greenland: Westoll, 2.
 Origin: Westoll, 2.
 Texas fauna: Howard, C. A., 1.
 Fish spine: Moore, R. C., 6.
 Titanichthys dental elements: Hussakof, 2.
 Triassic.
 America, western: Hesse, 9.
 Interior, western: Branson, E. B., 11.
 Pennsylvania: Bryant, 5.
 Trinidad: Trechmann, 7.
 Tully fm., N. Y.: Wells, J. W., 11.
 Utah: Branson, E. B., 12; Tanner, V. M., 1.
 Jefferson fm. fauna: Branson, E. B., 12.
 Vertebrates, Coso Mts., Calif.: Schultz, J. R., 5.
 Wyoming.
 Beartooth Butte: Bryant, 3, 4.
 Eocene: Bates, W. N., 1; Hesse, 17; Thorpe, 16.
 Permian sharks: Branson, C. C., 7.
 Phosphoria fm. fauna: Branson, C. C., 6.

Pisces—Continued.

Xiphactinus, Tex.: Price, L. L., 1; Stovall, 2.

Xiphias?, Md.: Berry, E. Willard, 2.

Pisolites, polyhedral: Shrock, 4.

Pitchblende.

New York, Peekskill: Zodac, 29.

Northwest Territories.

Beaverlodge Lake: Haycock, 3.

Eldorado mine: Ryan, J. P., 1.

General: Jolliffe, A. W., 1.

Great Bear Lake: Kidd, D. F., 1, 5, 7; Marble, 6, 9; Merkel, 1; Pochon, 1; Spence, 10, 13.

Hottah Lake: Spence, 13.

Rae, Mackenzie dist.: Kidd, 7.

Silver deposits: Furnival, 5.

Placers.

Alaska.

Circle area: Mertie, 19.

Copper River area: Moffit, 8, 9.

Eagle area: Mertie, 19.

Fortymile area: Mertie, 19.

General: Smith, P. S., 12.

Geologic features: Mertie, 22.

Kodiak Island area: Capps, 12.

Koyukuk region: Ohrenschall, 2.

Platinum, Goodnews Bay: Mertie, 18.

Ruby-Kuskokwim area: Mertie, 14.

Slana-Tok dist.: Moffit, 11.

Tanana River area: Moffit, 8.

Valdez Creek dist.: Tuck, 9.

Yukon-Tanana area: Mertie, 16.

Arizona, identification: Fansett, 3.

British Columbia.

Bridge River mining area: Cairnes, 15.

Canadian Nat. Rys. area: Kerr, F. A., 18.

Cariboo dist.: Cockfield, 16; Hanson, 9; Lay, 3.

Central mineral dist.: Hedley, M. S., 2.

Cranbrook area: Rice, H. M. A., 4.

Eagle-McDame area: Hanson, 13.

Eastern mineral dist.: Sargent, 1.

Keithley Creek area: Lang, A. H., 7.

Kettle River area: Cairnes, 17.

Northeastern mineral dist.: Lay, 4.

Southern mineral dist.: Hedley, M. S., 2.

Vancouver Island: Bancroft, 1.

California.

General: Jenkins, 18.

Sierra Nevada: Jenkins, 15.

Southern: Sampson, R. J., 3.

Colorado.

Golden area: Van Tuyl, 18.

Roscoe area: Wantland, 3.

Tincup mining dist.: Goddard, 3.

Columbia River Basin, Wash.-Oregon: Landes, H., 1.

Dominican Republic: Lengweiler, 2.

Examination of: Graves, 1.

General: Fitzhugh, 1.

Gold nuggets in: McKinlay, 1.

Placers—Continued.

Gold prospecting: Jacy, 1; Storms, 1.
Gravel channels, buried, location: Crampton, 1.

Idaho.

Bayhorse region: Ross, C. P., 31.

Dixie dist.: Capps, 14.

Edwardsburg area: Shenon, 16.

Florence mining dist.: Reed, J. C., 19.

Gold: Lorain, 3.

Murray area: Shenon, 17.

Thunder Mtn. area: Shenon, 16.

Warren dist.: Reed, J. C., 14.

Mexico, gold: Barrera, 5.

Bajada: Webber, B. N., 2.

Montana, Butte dist.: Dickey, F. H., 2.
Nevada.

Gold: Vanderburg, 1.

Lander Co.: Vanderburg, 4.

Singatse Range channel: Penrose, R. J., 1.

Tuscarora dist.: Nolan, 9.

New Mexico, Bayard area: Lasky, 12.

Oregon.

Applegate River area: Treasher, 3.

Baker quad.: Gilluly, 16.

Northeastern: Oregon Dept. Geology, 1.

Quebec.

Eastern Tps. area: McGerrigle, 5.

Mount Megantic area: McGerrigle, 4.

Streams, gold in: Crampton, 2.

Virginia, gold, Piedmont: Park, 6.

Yukon, Laberge area: Bostock, 11.

Mining development, 1938: Bostock, 12.

Placoderms, Greenland: Stensiö, 1.

Plains, desert: Blackwelder, 22.

Planetary deformation of earth: Dennis, C. E., 1.

Planetesimal hypothesis: Jeffreys, 2; Keyes, 7; MacMillan, 1; Willis, B., 5.

Development: MacMillan, 1.

Meteoritic agglomeration: Keyes, 7.

Planktonic faunas, Paleozoic: Reed, R. D., 20; Ruedemann, 16; Schuchert, 33.

Plant distrib. guide to age determination: Chaney, 25.

Plant fossils in the making: Anonymous, 134.

Plants, fossil. See also Paleobotany.

Collecting and preserving: Sanborn, 4.

Plastic deformation and creep of solids: Nádai, 2.

Plasticity, rocks under high pressure: Griggs, 1.

Platinum.

Alaska.

Goodnews dist.: Mertie, 21.

Placers, Goodnews Bay: Mertie, 18.

Canada, general: O'Neill, 3.

Timiskaming sub-prov.: Collins, 12.

Colorado, general: Anonymous, 176.

La Plata dist.: Eckel, E. B., 10;

Anonymous, 165.

Idaho, Snake River: Hite, 1.

Platinum—Continued.

Meteorites, content of: Hawley, F. G., 1.
Mexico.

Aranjuez area: González, J., 1.

General: Santillán, 12.

Mequitil Valley: Flores, 9.

Montana, Stillwater igneous complex:
Howland, 2.

Ontario, Renfrew Co.: Freeman, B. C., 4.

Shebandowan Lake: Watson, E. H., 3.

Oregon, beach placers: Pardee, 6.

Blue Creek dist.: Shenon, 6.

Northeastern: Oregon Dept. Geology,
1.

Southwestern: Kellogg, A. E., 1.

Takilma-Waldo dist.: Shenon, 6.

Precious metal elements, tests for in
ores: Fraser, H. G., 6.

Washington, black sand: Pardee, J. T., 1.

Wyoming, Centennial dist.: Coulter,
C. C., 2.

Playas.

Border region, Tex.-Mexico: Hill, 8.

New Mexico, Pecos River Valley: Rob-
inson, T. W., Jr., 6.

Pleistocene. See also Glacial geology:
Quaternary.

Term in glacial geology: Keyes, 289.

Pleistocene glaciation, cause, result: Fair-
child, 20.

Pleochroic haloes: Sparks, F. W., 1.

Pliocene. See Tertiary.

Plotting maps from aerial photographs:
Birdseye, 1.

Plutonic phase, seismic prospecting: Leet,
12.

Polarity in magnetite: Walker, T. L., 6.

Pollen analysis.

Alaska, Kodiak bogs: Bowman, P. W., 2.

Bibliography, 1935-38: Sears, 14.

Connecticut, lake sediments: Deevey, 1.

Dating aid: Sears, P. B., 11.

Erie Basin: Sears, P. B., 1.

General: Wodehouse, 3.

Idaho, bog in glacial kettle: Hansen,
H. L., 3.

Illinois, bogs on glacial drift: Voss, 3.

Forests, interglacial: Voss, 4.

Volo bog, Lake Co.: Artist, 1.

Indiana, Bacon's Swamp: Otto, J. H., 1.

Cranberry Pond Bog: Barnett, 1.

Fox Prairie Bog: Prettyman, 1.

Kokomo Bog: Howell, J. W., 1.

Lake Cicott Bog: Smith, Wm. M., 1.

Otterbein Bog: Richards, R. R., 1.

Iowa, peat bed: Lane, G. H., 1.

Michigan, pollen showing forest success-
sion: Potzger, 1.

Minnesota, Anoka sand plain bogs:
Artist, 2.

Ohio, Mud Lake Bog: Sears, P. B., 3.

Ontario, peat bog: Janson, 1.

Paleoecology, study of: Erdtman, 2.

Pollen analysis—Continued.

Paleo-ecological research method: Cain,
1.

Peat bed, Iowa: Lane, G. H., 1.

Post-glacial climate, E. N., Am.: Sears,
P. B., 4.

Quebec, Matemek River peat bog:
Bowman, P., 1.

Statistical theory: Barkley, 1.

Washington, peat bog: Hansen, H. P., 4.

Puget Sound area: Hansen, H. P., 2.

Wisconsin bogs: Hansen, H. P., 1.

Driftless area veg.: Hansen, H. P., 5.

Microfossil succession, lake bog: Wil-
son, L. R., 6.

Pollen, profiles, types: Sears, 10.

Pollucite, Maine: Fleischer, 2; Richmond, 5.

Polygonal cracking in granite: Leonard,
R. J., 3.

Polyzoa. See Bryozoa.

Pomperaug Basin, Conn.: Meinzer, 2.

Popular and elementary geology.

Along the hill: Fenton, 35.

Animal evolution: Reed, W. M., 2.

Big Horn Mts. of Wyoming: Taylor,
I. N., 1.

Biography of Mother Earth: Williams,
H. S., 1.

California, ancient life: Camp, 10.

Copper, native: Anonymous, 152.

Crystallography: Lazell, 1.

Dinosaurs on parade: Brown, B., 14.

Dogs, origin: Colbert, 11.

Early man: Mason, L., 1.

The earth: Reeds, 6.

Earth and its life: Cureton, 1; Seers, 1.

Earth changes: Lucas, J. M., 1.

This earth of ours: Allen, 21.

Earth oil: Egloff, 1.

Earth, our amakinz: Fenton, 55.

Earthquakes and volcanoes: Johnson,
G., 1.

Fossil plants and evolution: Darrah, 16.

Fossils: Lull, 4; Randolph, 12.

Canadian Rockies: Fenton, 44.

Early views on: Carpenter, 18.

How collected: Simpson, 41.

Frobisher Bay, Arctic America: Buer-
ger, 27.

General: Reed, W. M., 1.

Grand Canyon area: McKee, 1.

Geological clock in Minnesota: Powell,
L. H., 2.

Geology: Lane, 34-a.

Glacial period: Bretz, 8.

Life long ago: Fenton, 59.

Mammoths and mastodons: Broms, 1.

Minerals: Vaughan, H., 2.

Minerals, metals, and gems: Verrill, 1.

Moon, origin: Nissen, 1.

Mountains, origin: Longwell, 34.

New Hampshire, Mt. Cube, Mascoma
quads.: Hadley, J. B., 1.

Our stone-pelted planet: Nininger, 20.

Petroleum: Melhase, 15.

Popular and elementary geology—Continued.

- Pyrite: Anonymous, 151.
 Rocks and minerals, Mich.: Poindexter, 4.
 Skeleton devel.: Gregory, 25.
 Story of a billion years: Hotchkiss, 3.
 Strange adventures of a pebble: Hawksworth, 1.
 Treasures in the earth: Krumbein, 13.
 Porifera. See also Spongiae.
 Quebec, Mingan Is.: Twenhofel, 31.
 Yukon, Laberge area: Lees, E. J., 1.
 Porosities, ss., Paleozoic, Ark.: Branner, 17.
 Porosity and permeability: Gratton, 8; Tickell, 3.
 Porphyries and ore deposition, Colo.: Singewald, Q. D., 9.
 Portland cement. See Cement materials.
 Porto Rico. See Puerto Rico.
 Postglacial veg., Lake Michigan area: Fuller, G. D., 1.
 Potash. See also Alunite.
 Alunite, Boulder Dam area: Lee, 7.
 Bibliography: Berliner, 1.
 California, lake deposit minerals: Melhase, 17; Scott, D. B., 1.
 Canada Maritime Provinces: Cole, L. H., 3.
 General: Johnson, B. L., 3; Smith, H. I., 2.
 Geologic age of deposits: Rutherford, 11, 13.
 Heat of solution, potash minerals: Richardson, L. T., 1.
 Industrial minerals and rocks: A. I. M. E., 2.
 Montana, Highwood Mts.: Larsen, 23.
 Nebraska: Condra, 1.
 Nevada, alunite: Heineman, 5.
 New Hampshire: Billings, 15.
 New Mexico: Ageton, R. V., 2; Delacote, 1; Kroenline, 2; Mansfield, G. R., 4, 6, 11, 16, 20; Smith, H. I., 1, 3.
 Occurrence: Johnson, B. L., 3.
 Pennsylvania: Fraser, D. M., 7.
 Permian salt basin, Tex., N. Mex.: Smith, H. I., 3.
 Polyhalite: Cunningham, W. A., 2; Ramsdell, 5.
 Rocks rich in potash: Terzaghi, R. A. D., 3.
 Salado halite fm.: Mansfield, G. R., 23.
 Texas: Cunningham, W. A., 2, 3; Delacote, 1; Mansfield, G. R., 4, 6, 15, 20.
 United States: Mansfield, G. R., 8.
 Utah: Mansfield, G. R., 11.
 Salt Valley: Dane, 7.
 Potash-rich rocks, origin: Terzaghi, R. A. D., 3.
 Potassium, radioactive disintegration: Anonymous, 157.
 Potholes.
 Erosion: Alexander, C. I., 9.
 New Hampshire, Cardigan quad.: Fowler-Lunn, 1.

Potholes—Continued.

- Ontario, Cloche Mts.: Stanley, G. M., 1.
 Vermont, Burnt Rock Mtn.: Doll, 1.
 Power to move continents: Munroe, G. W., 1.
 Pravognathus for Heterognathus: Stauffer, 15.
 Pre-Cambrian. See also Paleontology, pre-Cambrian.
 Alabama: Johnston, W. D., Jr., 6; Jones, W. B., 11.
 Alaska: Capps, 6; Mertie, 4, 7, 10, 13, 16; Moffit, 11.
 Alberta: Allan, 7, 8; Cameron, A. E., 2; Hake, 2; Sproule, 4.
 Algonkian: Hinds, 24; Lane, 33.
 Ancient life: Keyes, 248; Raymond, 12.
 Antillean-Caribbean area: Schuchert, 31.
 Appalachian Plateau, Mississippi Valley: Butts, 12.
 Appalachians, S.: Crickmay, G. W., 16.
 Archean "ripple mark" is drag fold: Maxson, 13.
 Archean, SW. United States: Campbell, I., 8.
 Arctic America: Benthams, 2; Downes, 1; Mathiasen, 2.
 Arizona: Butler, 17, 18, 19, 20, 21; Campbell, I., 2, 3; Galbraith, F. W., 3d, 1; Gilluly, 17; Harrell, 2; Hennon, 1; Hinds, 13, 19, 27; Holm, 1; Keyes, 184, 185, 423, 428; Laussen, 2, 4; Lindgren, 3; Longwell, 23; Maxson, 8, 11; Peterson, N. P., 1, 2; Reber, 1; Rubly, 1; Schwartz, 25; Sharp, R. P., 6; Short, 6; Stark, 17; Trischka, 4; Van Gundy, 1, 3; Whitman, 2; Wilson, E. D., 8; Anonymous, 179.
 Belt ser.: Fenton, 54; Gibson, 6.
 Big Horn Basin-Yellowstone Valley area: Anonymous, 117.
 British Columbia: Cairnes, 13; Cockfield, 16; Davis, N. F. G., 1; De Bethune, 3; Evans, C. S., 4; Hanson, 9, 12; Johnston, W. A., 11; Lang, W. D., 1; Marshall, I. M., 1; Rice, 4, 5, 6; Walker, J. F., 1, 4, 5; Williams, M. Y., 4; Wright, L. B., 5.
 California: Anderson, G. H., 8; Hazard, J. C., 5, 7, 8, 10; Hopper, 3; Maxson, 7; Miller, W. J., 17; Murphy, F. M., 3; Noble, L. F., 3, 4; Simpson, E. C., 1; Willis, 18; Anonymous, 60.
 Cambrian and pre-Cambrian, upper Mississippi Valley: Atwater, 4.
 Canada: Bain, 8; Baker, M. B., 2; Brock, R. W., 2; Bruce, 10, 19, 23; Chamberlain, 11, 16; Collins, 11, 12; Cooke, H. C., 17; Derry, 9; Dougherty, 4, 5; Dufresne, 4; Faessler, 21; Freuchen, 1; Kindle, 40; Lane, 28; Lawson, 6, 7; Legraye, 2; Moore, E. S., 22, 23; Pettijohn, 11; Royce, 2; Teichert, 12; Weeks, L. J., 5; Wilson, M. E., 20, 21; Wright, L. B., 2; Young, G. A., 1, 2.

Pre-Cambrian—Continued.

- Canada vs. Congo: Legraye, 2.
 Canadian Shield: Bain, 8; Brock, R. W., 2; Bruce, 10, 19, 23; Chamberlin, 16; Collins, 11; Cooke, H. C., 17; Derry, 9; Wilson, M. E., 20; Young, G. A., 1, 2.
 Champlain Valley, N. Y.-Pa.: Rodgers, 2.
 Classification, correl.: Chamberlin, 9; Lawson, 2.
 Clays, fire, distrib., U. S.: Chelikowsky, 1.
 Colorado: Barnes, F. F., 2; Bassett, 3; Behre, 32; Blackmer, 1; Boos, 10, 15; Boyd, James, 1; Burbank, W. S., 3, 4, 16; Butler, 6, 9; Cross, C. W., 2; Effinger, 3; Erdmann, 1; Goddard, E. N., 2, 3, 6; Green, T. H., 1; Heaton, 8; Ives, 9; Jahns, 2; Johnson, J. H., 17, 19; Kans. G. Soc., 11; Kessler, F. C., 1; Loughlin, 11; Lovering, 3, 17, 20, 30; Reno, 2; Rohlfing, 1; Smith, Ward C., 1; Stark, 5, 8, 9, 11; Vanderwilt, 8, 11; Van Tuyl, 17, 18; Waldschmidt, 7; Wilkerson, A. S., 5.
 Columbia River Basin, Wash.-Oreg.: Landes, H., 1.
 Connecticut: Agar, 13; Cook, T. A., 1.
 Continents, stable platform areas: Moore, 35.
 Crystalline schists, Pa.-Md.: Jonas, 12.
 Delaware, Coatesville-West Chester quad.: Bascom, 3.
 District of Columbia, Washington area: Cloud, P. E., Jr., 3.
 Duparquet Township, Quebec: O'Neill, J. J., 2.
 East New York-west New England: Longwell, 14.
 Ep-Archean, Ep-Algonkian intervals: Hinds, 19.
 Gaspé, Quebec: Kindle, C. H., 3.
 General: Keyes, 38, 275, 485; Miller, 10; White, C. D., 20.
 Geologic fms.: Alcock, 7.
 Georgia: Crickmay, G. W., 22; Georgia, G. S., 1; Hewett, 13.
 Gogebic iron dist., Mich.-Wis.: Atwater, 3, 5.
 Gold, Ontario: Mather, W. B., 1.
 Gold producing areas: Danloux-Dumesnil, 1.
 Grand Canyon group: Keyes, 429.
 Great Smoky fm., Tenn.-N. C.: Money-maker, 5.
 Greenland: Backlund 1; Bentham, 1, 2; Büttler, 2, 3, 4; Cleaves, 3; Koch, L., 1, 2, 7, 8, 10, 11, 12; Kranck, 3, 4; Kulling, 1; Odell, 5; Sugden, 1; Teichert, 3, 8, 14, 16; Wager, 3; Wegmann, 1, 4, 6, 8; Wordie, 2.
 Greenland-Labrador correlations: Kranck, 3.
 Grenville ser. correlatives, Quebec-Ont.-N. Y.: Bain, 20.

Pre-Cambrian—Continued.

- Guidebook, Pa. geologists' conf., 1936: Bevan, 34.
 Huronian, disappearance: Collins, W. H., 6.
 Huronian problems: Lawson, 1.
 Idaho: Anderson, A. L., 3, 5, 9; Capps, 14; Dickey, F. H., 1; Gibson, 6; McConnel, 1; Reed, J. C., 14; Ross, C. P., 22; Shenon, 10, 16, 17, 18; Umpleby, 1; Wilson, R. A., 5.
 Illinois: Payne, J. N., 1.
 Illinois Basin: Weller, J. M., 5.
 Kansas: Bass, 9; Kans. G. S., 2; Koester, 2; Kornfeld, James A., 1; Landes, 26, 30; McClellan, 1, 3; Ockerman, 3; Osborn, W. G., 2; Ver Wiebe, 16; Wilhelm, C. J., 1.
 Keewatin-Timiskaming boundary: Moore, E. S., 5.
 Keweenaw age by helium: Lane, 29.
 King's Mt. area, N., S. Car.: Frink, 1.
 Labrador: Gardner, G., 1; Gill, 6; Kranck, 3, 4; Odell, 4, 6.
 Lake Superior area: Leith, A., 1; Merrill, J. A., 1; Tyler, S. A., 5-a.
 Lowlands, S.-cent. and Ouachita prov.: Ruedemann, P., 3.
 Manitoba: Ambrose, 2, 3; Brownell, G. M., 2; Downie, D. L., 1; Horwood, 2; Johnston, A. W., 1; Shepherd, F. D., 1; Stockwell, 7, 9, 10, 11; Wright, J. F., 2, 13, 15, 21.
 Manitoba and Ontario mining dists.: Wright, J. F., 21.
 Map, sed. fms., Canadian Shield: Canada G. S., 3.
 Maryland: Bascom, 5; Cloos, 14; Darton, 15; Hershey, H. G., 1; Jonas, 4; Knopf, E. F. B., 2; Marshall, J., 1; Stose, 11.
 Massachusetts: Billings, 18; LaForge, 1; Prindle, 1.
 Mexico: Imlay, 12; Müllerried, 25; Santillán, 15, 16.
 Michigan: Adler, 1; Broderick, 9, 12; Butler, B. S., 1; Dickey, R. M., 1, 2, 3; Dutton, 5; Lamey, 2, 5, 6, 7, 8; Leith, 10; Mich. Acad. Sci., 3; Rama Rao, B., 1; Royce, 2; Zinn, 2.
 Minnesota: Atwater, 4; Berg, E. L., 3; Couser, 2; Grout, F. F., 1, 3; Gruner, 1; Lamey, 9; Leith, 10; Royce, 2; Sandberg, 4; Sardeson, 5; Schwartz, 16; Sleight, 1; Stark, 16; Swanson, R. W., 1; Thiel, 13, 14; Zapfe, 1; Anonymous, 199.
 Miquelon, St. Pierre Is.: Aubert de la Rue, 1.
 Mississippi Valley: Atwater, 4; Howell, J. V., 4; Kans. G. Soc., 8; Leith, A., 1.
 Missouri: Bridge, 2; Condra, 12; Duke, C. L., 1; Graves, 1; Grohskopf, J. J., 3; Tolman, 17.

Pre-Cambrian—Continued.

- Montana: Bevan, 3; Clapp, C. H., 1; Collier, 1; Deiss, 3, 4; Dyson, 3; Gibson, 1, 4, 6; Keyes, 257; Lammers, 2, 6; Langton, 1; Lorain, 1; Lovering, 1; Neely, 2; Pardee, J. T., 2; Sabinen, 4; Schafer, 1, 2, 3; Shenon, 1, 15; Skeels, 1; Spiroff, 3; Thom, 14.
- Nebraska: Condra, 12, 14, 19; Lugn, 4; Reed, E. C., 1.
- Nevada: Callaghan, 13; Hewett, 4.
- New Brunswick: Alcock, 18; Hayes, 7.
- Newfoundland: Bain, 18; Betz, 1; Hayes, 3; Heyl, 2; Snelgrove, 5; Twenhofel, 40; Vbay, 1.
- New Jersey: Berkeley, 12.
- New Mexico: Dunham, 3; Just, 3; Keyes, 437; Lasky, 12; Muench, 6; Smith, J. F., Jr., 2; Stott, 1; Talmage, 7.
- New York: Balk, 5, 11; Berkeley, 13; Brown, J. S., 2, 7; Buddington, 3, 8, 17, 23; Cannon, R. S., 1; Chadwick, 5; Dale, N. C., 2, 3, 5; Denny, 2; Kaye, 1; Megathlin, 3; Newland, 9, 18, 20; Reed, R. C., 5; Strzygowski, 2; Swinnerton, 7.
- North America.
Atlantic Coastal area: Boesch, H. H., 3; Keith, B. A., 3.
Copper deposits: Butler, 16.
Cordillera and Caribbean regions: Waters, 13.
Paleozoic: Waterschoot van der Gracht, 15.
Structures: Schuchert, 57.
Western: Hinds, 21, 23, 33, 34.
- North Carolina: Fabianic, 1; Keith, Ar., 2; Moneymaker, 2; Murray, 5; Stuckey, 11; Vitz, 1.
- Northwest Territories: Furnival, 3, 5; Henderson, J. F., 3, 4, 5, 6; Jolliffe, A. W., 2; Jolliffe, F. J., 3; Kidd, D. F., 1, 6, 7; Lausen, 1; Lord, C. S., 1; Marble, 6; Norman, 5; Riley, C., 1, 3; Robinson, H. S., 1; Ryan, J. P., 1; Stockwell, 4; Weeks, L. J., 3.
- Nova Scotia: Bailey, H. B., 2; Bell, W. A., 1; Belyea, 1; Cameron, H. L., 1; Douglas, 5; Howse, 1; Malcolm, 1; Wilson, J. T., 4.
- Ohio: Hubbard, 5.
- Oklahoma: Decker, 6; Ham, 1; Merritt, 6, 7; Wrather, 3.
- Ontario: Bartley, 1, 2; Bannerman, 1, 3; Bateman, J. D., 2; Bell, L. V., 2; Bothwell, 1; Brenneman, 1; Bruce, E. L., 1, 8, 16, 24; Burrows, 2, 3; Burwash, E. M. J., 1, 2, 4, 8, 9; Coleman, 10; Collins, W. H., 5; Cooke, H. C., 25; Derry, 1, 5, 6, 10; Dyer, 1, 16, 18, 20, 21; Emmons, R. C., 1; Emmons, W. H., 9; Fairbairn, 11, 15; Freeman, B. C., 4; Froberg, 3; Furse, 2, 3; Gledhill, 1; Graham, A. R., 3, 4, 5, 6; Graton,

Pre-Cambrian—Continued.

- Ontario—Continued.
5; Greer, L., 1; Harcourt, 4; Harding, W. D., 2, 4, 5; Hawley, J. E., 2, 4; Horwood, 9, 10, 11, 12; Hurst, 1, 4, 5, 9, 10, 11, 12; Kelth, M. L., 4; Kidd, D. F., 4; Kindle, E. D., 1; Kindle, L. F., 2, 3; Kranek, 1; Laird, H. C., 2, 3, 5, 7, 8, 9, 10; Langford, 1, 4; Matheson, 1; Maynard, J. E., 1; Merritt, P. L., 2; Moore, E. S., 2, 6, 8, 10, 11, 16, 17; Moorhouse, 1, 3; Osborne, 3, 31; Perdue, 1; Pettijohn, 7, 8, 9, 15; Prest, 1; Quirk, 3, 7, 21; Rickaby, 1, 3, 4, 6; Ringsleben, 1; Rittenhouse, 3; Robson, 1; Sandberg, 2; Satterly, 3; Savage, W. S., 1; Spearman, 3; Suffel, 2; Tanton, 1, 5; Thomson, James E., 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17; Thomson, R., 4; Tolman, C., 1; Tuck, 2; Williams, M. Y., 14; Wilson, M. E., 10, 11, 13, 18; Anonymous, 121, 149.
- Ontario-Manitoba boundary: Derry, 6.
- Pegmatites, age, distrib.: Landes, 20.
- Pennsylvania: Bascom, 1, 3, 5, 6; Berkeley, 12; Fraser, 11, 12, 15; Jonas, 4, 9; Knopf, E. F. B., 3; Mackin, 4; Miller, B. L., 4, 7, 8, 13, 15; Stose, G. W., 1, 8, 11, 12, 15, 17, 21, 22; Ward, F., 5; Watson, E. H., 6; Willard, 55, 58.
- Pre-Ordovician age by helium method: Lane, 29.
- Quebec: Auger, 1, 2; Backman, 1; Bannerman, 4, 6; Bell, A. M., 1; Bell, L. V., 3, 4, 7, 10, 11, 12, 14, 15, 16; Bruce, 7; Butterfield, 1; Conolly, H. J., 1; Cooke, H. C., 11, 12; Denis, 1, 2, 3, 4, 5, 6, 7, 8; Derry, 10, 11; Douglas, 4; Dresser, 6; Faessler, 2, 3, 4, 5, 6, 7, 9, 12, 13, 16; Gill, 3, 7; Glissow, 1; Gunning, 12, 13, 22, 24; Hawley, 7, 8, 10; Hendreson, J. F., 1, 2; Lang, A. H., 3, 4, 5; Laverdière, 1, 4, 6; Longley, 1, 2, 3, 4; Lowther, 1; McGerrigle, 8; Mackenzie, 1, 4, 5; Malouf, 1; Mawdsley, 1, 6; Moore, E. S., 5; Norman, 6, 7, 9, 10; O'Neill, 4, 5, 6; Osborne, 16, 17, 20, 21, 22, 23, 26, 29, 30; Price, P., 3; Retty, 1, 2, 3, 4, 5, 6; Ross, S. H., 1; Shaw, G., 1; Snider, 4; Spearman, 3; Tolman, C., 2, 3, 6, 15; Weeks, L. J., 5-a; Wilson, H. S., 1; Wilson, J. T., 6, 7; Wilson, M. E., 12, 14, 17, 18, 19.
- Replacement shells around batholiths: Freeman, B. C., 5.
- Research, prog. and scope: Sederholm, 2.
- Rhode Island, Copper Mine Hill: Quinn, 5.
- Rio Grande depression, Colo.-N. Mex.: Bryan, 36.

Pre-Cambrian—Continued.

- Rocky Mts. area: Bartram, 10; Warren, P. S., 1.
- Saskatchewan: Alcock, 13, 16, 17, 19; Cameron, A. E., 3; Canada, G. S., 1; Keith, M. L., 3; McLearn, 4; Ross, S. H., 2; Satterly, 1; Sproule, 2, 3, 5; Stockwell, 1; Weeks, 9; Wright, 16, 19.
- South Carolina: Keith, Ar., 2.
- South Dakota: Connolly, 3; Cummings, J. B., 2; Runner, J. J., 3, 5, 8; Stobbe, 1; Taylor, G. L., 3; Tullis, 5, 6, 7; Wright, L. B., 3.
- Southwestern U. S.: Effinger, 4.
- Taconic Olenellus fauna: Keyes, 268.
- Tennessee: Born, 5; Laurence, 4.
- Texas: Baker, 24; King, 19, 29; Sel-lards, 28; Stenzel, 9, 10, 12.
- Uinta Mts., Utah-Colo.: Forrester, 1.
- Unconformity, Mississippi Valley: Atwater, 2.
- United States.
- Buried surface: Moss, 3.
- Southeastern: Lloyd, S. J., 1.
- Western, orogeny: Hinds, 29.
- Utah: Blackwelder, 38; Dane, 7; Dobbin, 17; Eardley, 2, 12, 14; Hintze, 2.
- Vermont: Foyles, 3; Jacobs, 2, 3; Krieger, M. H., 1; Perry, E. L., 1.
- Virginia: Bevan, 9, 15, 37-a; Brown, C. B., 3; Cady, R. C., 4; Furcron, 3, 4, 9; Jonas, 3, 5, 7, 14; Moore, C. H., Jr., 3; Sears, C. E., Jr., 3; Stose, A. J., 1; Stose, G. W., 6, 13, 20-a; Thiesmeyer, 5-a; Woodward, 8.
- Washington: Culver, 6; Park, 9.
- West Virginia: Price, P. H., 8-a, 14.
- Wisconsin: Aldrich, H. R., 1; Atwater, 4; Bates, R. E., 4; Dickey, R. M., 4; Gwynne, 1; Hotchkiss, W. O., 1; Leith, 10; Raasch, 2; Royce, 2; Stark, 3, 12; Thwaites, F. T., 2, 6; Wang, 1.
- Wyoming: Baker, 27; Beckwith, 4, 5; Bostock, 4; Blackwelder, 38; Bradford, C. E., 1; Fanshawe, 1; Gwynne, 6; Hares, 3; Horberg, 1; Johnson, G. D., 1; Jones, C. T., 2; Lammers, 6; Lees, E. J., 1; Love, J. D., 1; Nace, 2; Wilson, C. W., Jr., 3; Wright, L. B., 3.
- Yukon: Bostock, 6, 11; Johnston, J. R., 1, 2; Lees, E. J., 2.

Precious metal elements, ore tests: Fraser, H. J., 6.

Precious stones.

- American gem minerals: McIntosh, F. G., 3.
- Amethysts, Colo.: Caplan, 3.
- Asterism: Walcott, A. J., 2, 3.
- Canada, semi-precious and ornamental stones: Parsons, 13.

Precious stones—Continued.

- Gem minerals.
- American: McIntosh, F. G., 3.
- California: Sperisen, 1.
- Idaho: Olson, B. H., 1.
- Identification: Howell, D. H., 1.
- Oregon: Dake, 19.
- General: Rogers, 19; Whitlock, 9.
- Industrial minerals and rocks: A. I. M. E., 2.
- Opal: Melhase, 20; Randolph, G. C., 9.
- Oregon: Melhase, 20; Anonymous, 57.
- San Francisco collection: D'Arcy, 2.
- Staurolite, Va.: Roberts, 21.
- Sunstone, Oreg.: Anonymous, 57.
- Turquoise, Ariz.: Crawford, W. P., 2.
- Valuation and prices, history: Ball, S. H., 4.
- Virginia, staurolite: Roberts, 21.
- Pre-Devonian structural zones, Scotland-America: Jonas, 8.
- Prehnite, N. J.: Anonymous, 164.
- Premonitory fms.: Washburne, 1.
- Pribilof Is., rocks: Washington, 4.
- Primary banding, basic plutonic rocks: Coats, 1.
- Primates. See Mammalia.
- Priority vs. usage, geol. terms: Keyes, 261.
- Problems, petroleum geology: Wrather, 2.
- Proboscidea. See also Mammalia.
- Evolution: Osborn, 29.
- Profile mapping: Jakosky, 10.
- Projection, diag., figs.: Quirke, 18; Wright, F. E., 1.
- Proper names, nomenclature and classn.: Wadell, 10.
- Prospecting handbook: Walker, J. F., 8.
- Prospecting in Canada: Canada, G. S., 2.
- Prospector's guide: Manitoba Dept. Mines, 1.
- Protactinium, terrestrial, meteoritic: Evans, R. D., 6.
- Protaspides of trilobites: Raymond, 16.
- Protozoa. See also Foraminifera: Invertebrates, (general).
- Fauna, Kansas coal field: Williams, J. S., 12.
- Fusulinidae, distrib.: Berry, E. Willard, 7.
- Permian fusulinids, Tex.: Dunbar, C. O., 3.
- Primitive fusulinids, Mid-continent: Skinner, 2.
- Sea balls, Sil., Ill.: Croneis, 46.
- Silicoflagellates, Calif.: Hanna, 19.
- Wedekindia: Dunbar, C. O., 2.
- Protractor to show structure: Postel, 3.
- Pseudo-eutectic textures: Anderson, 17; Schwartz, 6.
- Pseudoleucite, Mont.: Larsen, 23.
- Pseudomorphs.
- California.
- Gold-bearing hematite: Esselink, 3.
- Montmorillonite after feldspar: Landermilk, 6.
- Quartz fluorite: Murdoch, 2.
- Silica fluorite: Murdoch, 3.

Pseudomorphs—Continued.

- Chalcedony, agate, after prehnite: Casperson, 2.
 Dolomite, castellated: Merritt, 4.
 Galena replacing rootlet, Ill.: Allen, V. T., 6.
 Halite crystal casts, Pa.: Miller, B. L., 9.
 Mineral, in Am. Mus.: Frondel, C. 6.
 Quebec, after spinel: Osborne, 28.
 Spodumene to kaolinite, S. Dak.: Schwartz, 21.
 Vein quartz, of cross-fiber asbestos: Thiesmeyer, 2.
 Fauquier Co.: Thiesmeyer, 2.
 Washington, coprolites: Major, 1.
- Pteropoda.**
 American Tert.: Collins, R. E. L., 2.
 Barbados: Trechmann, 10.
 Centropleura, Vt.: Howell, 30.
 Puercan series, Cret.: Keyes, 135.
- Puerto Rico.**
 Geology: Meyerhoff, 4.

Areas described.

Fajardo dist.: Meyerhoff, 3.

Economic geology.

- General: Meyerhoff, 10.
 Manganese, origin: Harper, M. F., 2.
 Mineral deposits: Low, B., 1.
 Mineral resources: Britton, N. L., 1;
 Eckel, E. C., 4; Meyerhoff, 9; Ray,
 H. C., 1, 2.

Historical geology.

- Fajardo dist.: Meyerhoff, 5.
 General: Maury, 1; Meyerhoff, 10.
 Pre-Oligocene stratigraphy: Meyerhoff, 2.

Mineralogy.

- General: Ray, H. C., 3.
 Magnetite: Colony, 5.

Paleontology.

- Chiroptera: Anthony, 1.
 Corals, Tert.: Coryell, 1.
 Corvus: Wetmore, 3.
 Edentata: Anthony, 2.
 Insectivora: Anthony, 1.
 Nesotrochia: Wetmore, 2.
 Oreopeleia: Wetmore, 2.
 Polyborus: Wetmore, 2.
 Rodentia, Pleist.: Anthony, 2.
 Tyto, caves: Wetmore, 3.

Petrology.

- General: Ray, H. C., 3, 4.
 Sands, white quartz: Thorp, J., 2.

Physical geology.

- General: Meyerhoff, 10.
 Karst topography: Meyerhoff, 25.
 Pepino Hills: Thorp, J., 1.

Pystographic geology.

- General: Meyerhoff, 10.
 Karst topog.: Meyerhoff, 25.

Underground water.

- Karst topography: Meyerhoff, 25.

- Pulaski overthrust, Va.: Woodward, 11.
 Pulpstone, W. Va.: Smith, W. L., 1.
 Pulsation theory, N. Am.: Grabau, 3, 4, 5.

Pumice.

- Industrial minerals and rocks: A. I.
 M. E., 2.
 Oregon: Becker, C. P., 1; Fuller, 12;
 Moore, B. N., 4, 5, 8.

Pyrite.

- Alabama: Adams, G. I., 4.
 Illinois: Born, K. E., 2.
 Ontario: Thomson, J. Ellis, 19.
 Oxidation: Bain, 13.

Pyrites, Cuba, crystals: Huerta, 1.

Pyroaurite, Ontario: Ellsworth, 11.

Pyroclastic rocks: Wentworth, 18.

Zeolitic alteration: Bramlette, 2.

Pyrophyllite.

- Industrial minerals and rocks: A. I.
 M. E., 2.

Newfoundland: Vhay, 1.

North Carolina: Burgess, B. C., 1;
 Stuckey, 12.

South Carolina: Bryson, 8; Stuckey, 12.

Pyroxenes.

- Greenland: Deer, 1.
 Triclinic manganiferous: Sundius, 2.

Pyrrhotite, paragenesis: Blanchard, 5;
 Schwartz, 19; Spence, 15.

Quadra Is., British Columbia: Ellsworth, 7.

Quakertown-Doylestown dist., N. Y.-Pa.:
 Bascom, 1.

Quartz.

- Arizona: Johnson, R., 1.
 Arkansas: Toothaker, 3.
 British Columbia: Walker, 18.
 California: Johnston, W. D., Jr., 14;
 Kennard, T. G., 2.
 Clastic, orientation: Wayland, 2.
 Colorado: Hurlanek, 1; Rogers, 27.
 Content, industrial dusts: Hulin, 10.
 Correlation, deformation: Fairbairn, 13.
 Dikes: Furnival, 4.
 Etching: Meen, 3.
 Forms: Van Amringe, 1.
 General: Dake, 26; Van Amringe, 1.
 Geodes containing petroleum: Anonymous, 181.
 Georgia, Graves Mt.: Zodac, 28.
 Greenland: Moos, von, 2.
 Minnesota: Zodac, 23.
 Nevada: Garaventa, 1.
 New York: Hollister, J. S., 1; New-
 land, 16; Zodac, 19, 20.
 North Carolina: Bryson, 7-a.
 Northwest Territories: Furnival, 2.
 Nova Scotia: Messervy, 6.
 Ontario: Walker, 16.
 Orientation, deformed rocks: Griggs, 9.
 Tectonites: Fairbairn, 14.
 Pacific Northwest: Hodge, 24.
 Paramorphs of: Moehliman, 3.
 Pennsylvania: Zodac, 22.
 Porphyroblasts in hornfels: Goodspeed,
 9.
 Precious: D'Arcy, 3.
 Rhode Island: Flagg, 1.
 Rock crystal, inclusions: Zodac, 18.

Quartz—Continued.

- Silica deposits, Calif.-Nev.-Canada:
Hodge, 24.
Smoky, study: Mohler, N. M., 2.
South Dakota, Black Hills: Tullis, 7.
Temperature of formation in veins:
Meen, 5.

Quartzite.

- Greenland: Moos, von, 2; Wegmann, 10.
Nova Scotia: Messervey, 6.
Oklahoma: Hickock, 1.
Ontario: Bruce, 25.

Quaternary. See also Glacial geology; Paleontology, Quaternary.

- Ages, tentative, Pleist. shore lines:
Cooke, C. W., 15.
Alaska: Capps, 2, 12; Kerr, F. A., 19;
Mertie, 15, 16, 20; Park, 2; Reed,
J. C., 3; Sachs, V. N., 1; Saks, 1;
Smith, P. S., 12; Tuck, 5, 7; War-
ring, 2; Wilkerson, A. S., 2.
Alberta: Allan, 7; Heiland, 19; Mac-
Kay, 12; Warren, 22.
Antillean-Caribbean region: Schuchert,
31.
Arctic America: Kindle, 40.
Arizona: Butler, 17, 18, 21; Gilluly,
20; Hack, 1; Harrell, 2; Hernon,
1; Longwell, 23; Reagan, 5; Wer-
ber, 1.
Aruba, West Indies: Westermann, 4.
Atlantic and Gulf Coastal Plain: Cooke,
C. W., 26; Stephenson, 24.
Barbados: Saint, 1.
Bermuda: Sayles, 4.
Bonaire, West Indies: Pijpers, 4, 6.
Bradford field, Pa.-N. Y.: Fettke, 11.
British Columbia: Armstrong, J. E., 2;
Bancroft, 1; Cairnes, 17; Crickmay,
6; Kerr, F. A., 19; Kindle, E. D.,
2, 3, 4; Marshall, I. M., 1; Math-
ews, W. H., 1; Rice, 4.
California: Andrews, P., 2; Averill, 7;
Barbat, 6; Bremner, 1, 2; Clark,
19; Clements, 6, 9; Conkling, 1;
Crickmay, C. H., 5; Diepenbrock, 1;
Eaton, 9; Eckis, 1; Etcheverry, 1;
Glendinning, 1; Henry, 5; Hert-
lein, 11; Hill, R. T., 1; Hinds,
14, 18, 33; Hoots, 16; How-
ard, P. J., 1; Jenkins, 12; Johnson,
F. A., 1; Kelley, 8, 10; Knopf, 18;
Livingston, A., Jr., 1; Louderback,
3; Mielenz, R. C., 1; Miller, R. H.,
1; Miller, W. J., 11; Oakeshott, 1;
Piper, 16; Porter, 5; Powers, H.
A., 7; Putnam, 4, 5; Reed, R. D.,
9, 11, 25; Reiche, 1; Soper, E. K.,
2, 4; Stephens, F., 1; Stock, 7;
Stockman, 1, 3; Swartzlow, 5-a;
Vallat, 1; Woodring, 11, 12.
Canada: Alcock, 10; Kindle, 40.
Colorado: Atwood, W. W., 1; Effinger,
3; Ives, 9; Johnson, J. H., 22;
Lovering, 4, 17, 30; Upson, J. E.,
1; Van Tuyl, 17; Waldschmidt, 7.

Quaternary—Continued.

- Connecticut: Brown, R. W., 2; Cook, T.
A., 1.
Correlations, glacial chronology-Pleist.
terraces: Cooke, C. W., 8.
Criteria for, Pleist.: Leverett, 8.
Gulf Coast-Miss. Valley Pleist.:
Price, W. A., 17.
Cuba: Bermudez y Hernández, 10;
Meinzer, 8; Ortega y Ros, 1; Pal-
mer, R. H., 3; Taber, 13.
Curaçao, West Indies: Molengraaff, G.
J. H., 1-a, 2.
Delaware: Bascom, 3; Stephenson, L.
W., 6.
District of Columbia, Washington area:
Cloud, P. E., Jr., 3.
Florida: Blanchard, W. G., 1; Con-
nery, 1; Cooke, C. W., 1, 24; Rich-
ards, 18.
Gaspé, Quebec: Jones, I. W., 15.
Georges Bank, canyons: Stetson, 10.
Georgia: Cooke, C. W., 21; Munyan, 2.
Greenland: Bentham, 2; Odell, 5.
Gulf Coast, heating shales, Tex.-La.:
Halbouty, 10.
Marine, Pleist.: Richards, 21.
Hawaii, Is. of Oahu: Stearns, 14, 15.
Ice sheets, Pleist., retreat: Antevis, 26.
Idaho: Anderson, 23; Kirkham, 14;
Reed, J. C., 19; Ross, C. P., 31;
Shenon, 17, 18; Stearns, 27.
Illinois: Bretz, 10; Kansas G. Soc., 12;
Payne, J. N., 1.
Illinois-Missouri sec.: Kansas G. Soc.,
12.
Iowa: Tester, 18; Wood, L. W., 7.
Kansas: Elias, 2, 19; Knight, G. L., 3;
Landes, 28; Lohman, 9; Pierce, 9;
Smith, H. T. U., 6.
Kentucky: Roberts, 14; Wesley, 1.
Louisiana: Bridges, 1; Chawner, 3;
Doering, 1; Fisk, 2, 3, 4; Hal-
bouty, 3; Huner, 1; Russell, R. J.,
19, 27.
Lowlands, S.-cent. and Ouachita prov.:
Ruedemann, P., 3.
Maine: Sayles, 8.
Maryland: Berry, E. W., 19; Cooke,
C. W., 7; Darton, 15; Dryden, 11;
Stephenson, L. W., 6.
Massachusetts: Chute, 1; Woodworth,
J. B., 2.
Mexico: Diaz, 1; Gibson, J. R., 1; Im-
lay, 2, 4, 10; Jones, T. S., 1; King,
R. E., 6; Manger, 1; Wittich, 1.
Michigan: Bergquist, 8; Stanley, G. M.,
3.
Minnesota: Jenks, A. E., 4; Leverett,
13; Sardeson, 31; Schwartz, 16;
Thiel, 14; Anonymous, 199.
Mississippi: Foster, V. M., 1, 5; Morse,
H. M., 1.
Mississippi River, Delta: Russell, R. J.,
1.

Quaternary—Continued.

Mississippi River—Continued.

Pleistocene: Robertson, P., 4.

Valley: Kansas G. Soc., 8; Workman, 7.

Missouri: Farrar, 2; Grohskopf, 3.

Montana: Lammers, 2; Langton, 1;

Parker, F. S., 1, 2; Pierce, 6, 7;

Sahinen, 4; Shenon, 15; Skeels, 1;

Wilson, C. W., Jr., 15.

Nebraska: Condra, 19; Cook, 15; Lev-
erett, 20; Lugin, 3, 5, 11.Nevada: Burgess, J. A., 1; Cameron,
E. N., 2; Glanella, 9; Jones, J. C.,
1; Rose, R. H., 1; Schuette, C. N.,
3; Sharp, R. P., 3, 5; Thayer, T.
P., 3.

New Brunswick: Alcock, 18.

Newfoundland: Bain, 18; Flint, 25;
Foley, F. C., 1; Heyl, 2; Twen-
hofel, 40.

New Jersey: Richards, 5.

New Mexico: Antevs, 17; Bryan, 35;
Hunt, 4; Just, 3; Lasky, 14; Mc-
Cann, 1; Morgan, A. M., 1; Renick,
3; Robinson, T. W., Jr., 6; Schmitt,
10; Smith, H. T. U., 4; Talmage,
7; Winchester, 3.New York: Buddington, 8, 17; Cannon,
R. S., 1; Kaye, C. A., 1; Megathlin,
3; Thompson, 16; Wells, F. G., 8.

Nicaragua: Burri, 3, 4.

North America, glaciation: Wright, W.
B., 1.

Submarine canyons: Shepard, 58.

Upwarping, northeast: Antevs, 27.

North Carolina: Murray, 5.

North Dakota: Andrews, 6.

Oahu, Hawaii: Stearns, 14, 15.

Ohio: Desjardins, 1-a; Kelley, J. A., 1.

Oklahoma: Ham, 1; Hendricks, 9; Sav-
age, D. E., 1; Schoff, 4; Sellards,
26; Strain, 1.Ontario: Bartley, 1, 2; Bateman, J. D.,
2; Bruce, 16; Burwash, 8, 9; Cole-
man, 10; Dyer, 20; Fairbairn, 15;
Frohberg, 3; Harcourt, 4; Hard-
ing, 4, 5; Horwood, 10, 12; Hurst,
12; Laird, 7; Pettijohn, 7; Prest,
1; Satterly, 4; Stanley, G. M., 1;
Thomson, James E., 14, 15, 16.Oregon: Buwalda, 19; Gilluly, 16; Ore-
gon Dept. Geology, 1; Piper, 4, 17;
Smith, W. D., 11; Thayer, T. P., 3.

Ozark province: Cozzens, A. B., 2.

Panama: Sapper, 7.

Pennsylvania: Bascom, 3, 6; Butts, 10,
13; Legette, 9; Lohman, S. W., 4;
Moyer, F. T., 1; Stose, G. W., 1, 21;
Strock, 1; Watson, E. H., 6; Wil-
lard, 49, 55, 58.

Pleistocene, age: Harrington, M. R., 1.

America-Europe: Wormington, 1.

Boundary with Pliocene: Cross, R. K.,
1.Lakes, Basin Range prov.: Black-
welder, 19.

Quaternary—Continued.

Pleistocene, age—Continued.

Seashores: Cooke, C. W., 3.

Strict meaning: Keyes, 466.

Post-Keweenaw age by helium: Urry,
8.

Puerto Rico: Meyerhoff, 3.

Quebec: Auger, 1, 2; Bannerman, 4;
Clark, T. H., 11; Cross, R. K., 1;
Denis, 6, 7; Faessler, 5, 13, 16, 22;
Hawley, 10; Henderson, J. F., 1;
Laverdière, 6; Longley, 1, 2, 4;
Lowther, 1; Northrop, 10; O'Neill,
4; Osborne, 21; Retty, 4; Twen-
hofel, 31.

Rhode Island: Woodworth, 2.

St. Martin, West Indies: Molengraaff,
G. A. F., 1.Saskatchewan: Fraser, F. J., 6; Sproule,
5.South Carolina: Cooke, C. W., 17, 20;
Glen, 4; Taber, 14.

South Dakota: Searlight, 3.

Subdivisions: Girmounsky, 1.

Tennessee: Theis, 4.

Terraces, U. S. and Hawaii: Howard,
A. D., 7.Texas: Albritton, 9; Baker, C. L., 19;
Barton, 10; Brucks, 3; Deussen, 1;
Doering, 1; Halbouty, 7; Johnson,
E. L., 1; King, 29; Lonsdale, 7,
10; Martyn, 1; Meyer, W. G., 1;
Plummer, 14; Price, W. A., 10, 11,
23; Reed, L. C., 2; Renick, 5; Rich-
ards, 22; Sayre, 4, 6; Shuler, 6;
Stamey, 1; Stenzel, 17; Trowbridge,
6; Weeks, A. J., 2, 3.

Tobago, West Indies: Trenchmann, 6.

Trinidad: Illing, 1.

Uinta Mts., Utah-Colo.: Forrester, 1.

United States.

East-central: Ballard, 1.

Pleistocene climate: Antevs, 19.

Southwestern: Antevs, 19.

Volcanic ash: Landes, 27.

Utah: Callaghan, 9, 12; Eardley, 2;
Fisher, D. J., 7; Gilluly, 5; Gregory,
H. E., 4.

Vermont: Doll, 2; Larrabee, 1.

Virginia: Brown, C. B., 3; Cady, R. C.,
4; Cederstrom, 2; Furcron, 9; Snif-
fen, 1; Stephenson, L. W., 6.Washington: Culver, 6, 10; Flint, 18, 19;
Kirkham, 14; Park, 9.

Wisconsin: Raasch, 4; Thwaites, 10.

Wyoming: Beckwith, 4; Horberg, 1;
Love, 6; Nace, 2; Raasch, 4;
Stevens, E. H., 2; Veatch, A. C., 1.Yellowstone Nat. Park: Howard, A. D.,
6.Yukon: Bostock, 6; Johnston, J. R., 1;
Lees, E. J., 1, 2.Quatsino-Nimkish area, Vancouver Is.,
British Columbia: Guhning, 3.

Quebec.

Borings: Maddox, 6.

Bureau of Mines: Dresser, 4.

Quebec—Continued.

- Geologic traverses: Dresser, 2.
 Geophysical inv.: Gilchrist, 2.
 Gravity anomalies, Gaspé: Jones, I. W., 3.
 Podsol soils: McKibbin, 1.
 Reconnaissance: Fassler, 1.

Areas described.

- Assup River area: Bell, A. M., 1.
 Bell River area: Bell, L. V., 7.
 Berry Mt., Gaspé: Jones, I. W., 1.
 Black River area: Retty, 4.
 Blondeau Tp. area: Retty, 2.
 Bonnecamp area: Jones, L. W., 3.
 Bosquet-Cadillac area: Bell, L. V., 1.
 Cadillac area: Bell, L. V., 3.
 Clérice-Joannès area: Bell, L. V., 4.
 Coulonge River area: Retty, 4.
 Dartmouth River area: Jones, I. W., 8.
 Desmeloizes area: Bell, L. V., 1.
 Foch area: Bell, L. V., 10.
 Gaboury Tp. area: Retty, 2.
 Gaspé Peninsula: Jones, I. W., 11, 12, 13; Parks, 4.
 Granada gold mine area: Hawley, 7.
 Grevet (Kamshigama) Lake area: Longley, 1.
 Lacente area: Osborne, 20.
 Lake Aylmer area: Burton, F. R., 1.
 Lake Ostaboning map area: Retty, 3.
 Launay Tp.: Ross, S. H., 1.
 Lesseps area: Jones, I. W., 2.
 Lower Laflamme River: Auger, 2; Longley, 4.
 McKenzie Township: Retty, 1.
 Marsoui area: Jones, I. W., 6.
 Mingan Is.: Twenhofel, 6.
 Mt. Alexander area: Jones, I. W., 14.
 New Quebec (Ungava): Anonymous, 3.
 North shore, St. Lawrence: Faessler, 2, 3, 4, 5.
 Obatogamau River area: Tolman, C., 2.
 Opemiska area: Moehlman, 1; Tolman, C., 3.
 Palmarolle map area: Lang, A. H., 3.
 Risborough Marlow area: Faessler, 22.
 Rouyn-Harricaw area: Cooke, H. C., 11.
 St. John River area: McGerrigle, 9.
 Ste. Anne River area: Laverdière, 6.
 Senterre area: Bell, L. V., 11.
 Simard (Expanse) Lake area: Denis, 7.
 Siscoe gold deposit: Hawley, 8.
 Southern Quebec: Clark, T. H., 2.
 Suzor-Letondal area: Faessler, 16.
 Taschereau map area: Lang, A. H., 3.
 Thetford area: Cooke, H. C., 12.
 Villebon-Denain area: Lowther, 1.
 Waite-Ackerman-Montgomery property: Gill, 3.
 Waswanipi Lake area: Lang, A. H., 4.
 York River area: Jones, I. W., 11, 13.

Economic geology.

- Abana mines: Mawdsley, 3, 4.
 Abitibi area: Dresser, 6.
 Aldermac ore, origin: Cooke, H. C., 5.

Quebec—Continued.

Economic geology—Continued.

- Amber: Wilson, M. E., 18.
 Amulet mine: Cooke, H. C., 6, 8.
 Arntfield-Aldermac mines: Bruce, 7.
 Asbestos: Cooke, H. C., 15, 20; Denis, 1; Paige, 3; Starks-Field, 1.
 Assup River area: Bell, A. M., 1.
 Beattie-Galatea map area: O'Neill, J. J., 4.
 Beattie gold mine. O'Neill, J. J., 2, 3; Rowe, R. C., 1.
 Bell River area: Bell, L. V., 7.
 Bosquet-Cadillac area: Bell, L. V., 1.
 Bosquet Tp.: Gunning, 23.
 Cadillac area: Gunning, 13, 15, 22.
 Cadillac-Malartic area: Gunning, 22.
 Canadian Malartic gold mine: Derry, 11.
 Canton Destor: Bannerman, 6.
 Canton Vauquelin: Tolman, 15.
 Cape Smith sulfide deposits: Airth, 1.
 Chibougamau Lake area: Mawdsley, 6; Norman, 6, 9.
 Chromite: Denis, 2, 5.
 Chrysotile veins: Taber, 1.
 Copper: Cooke, H. C., 1; Goodwin, W. M., 2; Hawley, 5.
 Currie area: MacKenzie, 4.
 Desmeloizes area: Mawdsley, 1.
 Disraeli quad: Bain, 21; Cooke, H. C., 18, 22.
 Ditton gold placers: Goodwin, W. M., 5.
 Dubuisson area: Bell, L. V., 16.
 Duvernay Township: Weeks, L. J., 5-a.
 Eustis copper mine: Goodwin, W. M., 2.
 Gaspé: Jones, I. W., 5, 7, 12, 15.
 Geology in prosp.: Bell, L. V., 15.
 Gold: Bain, G. W., 2; Bell, L. V., 6, 8, 13; Cooke, H. C., 1; Goodwin, W. M., 5; Hawley, 5, 7; McGerrigle, 5; Malouf, 1; Robinson, B., 1; Spearman, 3.
 Granada gold mine: Hawley, 7; Robinson, B., 1.
 Granites: Burton, F. R., 2; Osborne, 14, 20.
 Graphite: Bain, G. W., 1.
 Gravels: McGerrigle, 6; Picher, 3, 4, 5.
 Grenville series: Goodwin, W. M., 1.
 Grevet (Kamshigama) Lake area: Longley, 1.
 Guillet (Mud) Lake area: Henderson, J. F., 2.
 Guillet Township: Denis, 6.
 Halliwell mine area: MacKenzie, 5.
 Horne Mine, Noranda: Butterfield, 1; Newhouse, 11; Price, P., 1, 2; Price, W. A., 6; Suffel, 3.
 Ilmenite: Gilson, 7; Keys, 2.
 Intrusives, Rouyn-Bell River area: Gussow, 1.
 Josselin-Delestre area: Bannerman, 4.
 Labelle-L'Annonciation area: Osborne, 20.
 Lachute lowland: McGerrigle, 8; Osborne, 29.
 Lake Etchemin area: Tolman, 12.

Quebec—Continued.

Economic geology—Continued.

- Lamaque-Sigma mine areas: Bell, L. V., 12; Wilson, H. S., 1.
 Late gold: Mawdsley, 8.
 Limestones: Goudge, 5.
 McWatters mine gold belt: Hawley, 10
 Madeline Lake gold: MacKenzie, 2.
 Malartic gold mine area: O'Neill, 6.
 Marbleton area: Laverdière, 4.
 Megiscane River area: Faessler, 13.
 Mica: Wilson, M. E., 18.
 Mineral prosp.: Goodwin, W. L., 2.
 Mineral resources: Gill, 7.
 Mineralization, metamorphism, Eustis mine: Stevenson, 12.
 Mining operations: Dufresne, 1, 2.
 Mistawak area: Wilson, J. T., 6.
 Molybdenite: Hawley, 6.
 Montauban mineralized zone: Osborne, 30.
 Mt. Alexander area: Jones, I. W., 14.
 Mt. Megantic gold placers: McGerrigle, 4.
 Natural gas: DeMille, 2; Parks, 3; Snider, 4.
 Nickel-cobalt, Calumet Is.: Ellsworth, H. V., 1.
 Noranda dist., Amulet mine: Wilson, M. E., 14, 17.
 Oil shales, Pt. Daniel: Swinnerton, A. A., 2.
 Opawica-Lewis Lakes area: Shaw, G., 1.
 Opémisca area: Norman, 10, 11.
 Palmarolle area: Lang, A. H., 3.
 Pascalis-Louvicoart area: Bell, L. V., 9.
 Petroleum poss.: Spearman, 1.
 Petroleum and gas res.: Parks, W. A., 1.
 Prospecting, western: Bell, L. V., 15.
 Recent mining devel.: Fairbairn, H. W., 1.
 Risborough-Marlow area: Faessler, 22.
 Road materials: Picher, 3, 4, 5.
 Roselake dist.: MacKenzie, 3.
 Rouyn, Aldermac mine: Alderson, 1.
 Rouyn-Bell River area: Lang, A. H., 5.
 Ste. Agathe-St. Jovite area: Osborne, 21.
 Sand and gravels: McGerrigle, 6.
 Simard (Expanse) Lake area: Denis, 7, 8.
 Siscoe gold mine: Backman, 1, 2; Hawley, 8.
 Steatite: Archambault, 1.
 Suzor-Letondal area: Faessler, 16.
 Tashchereau area: Lang, A. H., 3.
 Telluride ores. Eureka mine: Thomson, J. Ellis, 13.
 Thetford dist.: Bain, 21; Cooke, H. C., 16, 18, 22.
 Venus gold mine: Bell, L. V. 5.
 Waite-Ackerman-Montgomery ore deposit: Peale 1.
 Warwick map area: Bain 21; Cooke, H. C., 22.
 Waswanipi area: Lang, A. H., 4; Norman, 7; Sproule, 1-a.
 Western Quebec: Bell, L. V., 14.
 York River area: Jones, I. W., 13.

Quebec—Continued.

Historical geology.

- Abitibi area: Dresser, 6.
 Aldermac-Arntfield mines area: Bruce, 7.
 Amos map area: Canada G. S., 1.
 Amulet area: Canada G. S., 1.
 Appalachians: Keith, 10.
 Arntfield-Aldermac mines area: Bruce, 7.
 Asbestos area, Thetford: Cooke, S. R. B., 2.
 Beattie-Galatea map area: O'Neill, 4.
 Beauchastel Township: Malouf 1.
 Beupré area: Faessler, 9.
 Bell River complex: Freeman, B. C., 1.
 Bigniba area: Auger, 1.
 Black River group: Okulitch, 4, 14.
 Bolton ser.: Clark, T. H., 5.
 Bousquet Township: Gunning, 23.
 Bruneau Township area: Douglas, 4.
 Cadillac area: Canada G. S., 1; Gunning, 15.
 Cadillac belt: Gunning, 13.
 Cadillac-Malartic area: Gunning, 22.
 Cambrian: Clark, T. H., 1, 7; Resser, 18.
 Canadian Malartic gold mine: Derry, 11.
 Canadian Pacific Ry. tunnel: Graham, R. P. D., 2.
 Canton Destor: Banuerman, 6.
 Canton Vauquelin: Tolman, 15.
 Cape Smith area: Gunning, 12.
 Chaleur Bay area: Alcock, 13; Canada G. S., 1.
 Chaleur series: Northrop, 1, 8.
 Chibougamau area: Canada G. S., 1; Mawdsley, 6.
 Chibougamau-Opawica area: Norman, 6.
 Chibougamau-Waswanipi area: Norman, 9.
 Chicouti area: Laverdière, 2.
 Cléricy area: Gussow, 1.
 Currie area: MacKenzie, 4.
 Dartmouth River area: Jones, I. W., 8.
 Deep well log, Montreal: Clark, T. H., 10.
 Desboves area: Canada G. S., 1.
 Deschambault area: Laverdière, 1.
 Desmeloizes area: Canada G. S., 1.
 Desplassy area: Faessler, 7.
 Devonian: Alcock, 4; Kindle, 8.
 Disraeli area: Bain, 21; Cooke, H. C., 18, 22.
 Dubuisson area: Bell, L. V., 16; James, W. F., 2.
 Dufault area: Canada G. S., 1.
 Duparquet area: Canada G. S. 1.
 Duparquet Tp.: O'Neill, J. J. 2.
 Duvernay area: Canada G. S., 1; Weeks, L. J., 5-a, 6, 7.
 Escuminac area: Canada G. S., 1.
 Gaspé: Alcock, 2; Corminboeuf, 2; Jones, I. W., 7, 9, 12; Kindle, 35.
 Correlation, Dev. faunas: Kindle, 35.
 Gatineau area: Retty, 5.
 Geology in prosp., western: Bell, L. V., 15.
 Glacial geol.: Wilson, J. T., 5.
 Gold areas, pre-Cambrian: Spearman, 3.

Quebec—Continued.

Historical geology—Continued.

- Gold placers, eastern: McGerrigle, 5.
 Gravel areas: McGerrigle, 6.
 Grenville, Côte Nord area: Faessler, 12.
 Grenville ser., correls: Bain, 20.
 Grevet (Kamshigama) Lake area: Longley, 1.
 Guillet (Mud) Lake area: Canada G. S., 1; Henderson, J. F., 1.
 Guillet Tp.: Denis, 6.
 Halliwell mine area: MacKenzie, 5.
 Horne mine, Noranda: Price, P., 2.
 Intrusives, Laurentian complex: Osborne, 26.
 Josselin-Delestre area: Bannerman, 4.
 Keewatin volcanics: Wilson, M. E., 19, 22.
 Keewatin-Timiskaming boundary: Moore, E. S., 5.
 Kinojevis area: Canada G. S., 1.
 Laas-Fraser area: Longley, 2.
 Labelle-L'Annonciation area: Osborne, 19.
 Lachute area: McGerrigle, 8; Osborne, 29.
 Lacolle conglom.: Clark, T. H., 6.
 Lac St. Jean area: Denis, 3.
 Lake Dufault laccolith: Cooke, H. C., 5.
 Lake Etchemin area: Canada G. S., 1; Tolman, 12.
 Lake Mattagami area: Longley, 3.
 Lake Memphremagog area: Clark, T. H., 4.
 Lamaque mine area: Wilson, H. S., 1.
 Lamaque-Sigma mines area: Bell, L. V., 12.
 La Pause area map: Ambrose, 4.
 Launay Tp.: Ross, S. H., 1.
 Lava field, Canadian Shield: Wilson, M. E., 12.
 Levis area: Laverdière, 3.
 Limestones: Goudge, 5.
 Lower Laflamme River: Auger, 2; Longley, 4.
 Macamic area: Canada G. S., 1.
 McWatters mine gold belt: Hawley, 10.
 Malartic gold area: Gunning, 16; O'Neill, 6.
 Marbleton area: Laverdière, 4.
 Matapedia Valley: Crickmay, G. W., 1.
 Megantic area: Canada G. S., 1.
 Megiscane River area: Faessler, 13.
 Mingan Islands: Twenhofel, 31.
 Mistawak area: Wilson, J. T., 6, 7.
 Monazite, age: Muench, 4.
 Montgay area: Weeks, 8.
 Mt. Alexander area: Jones, I. W., 14.
 Mt. Megantic area: McGerrigle, 4.
 Newbec area: Canada G. S., 1.
 Noranda dist., Amulet mine: Wilson, M. E., 14.
 Opasatika area: Cooke, H. C., 3.
 Opawica-Lewis Lake area: Shaw, G., 1.
 Opémisca area: Canada G. S., 1; Norman, 10, 11; Tolman, C., 6.

Quebec—Continued.

Historical geology—Continued.

- Ordovician: Maddox, 5; Wilson, A. E., 6.
 Osisko Lake area: Conolly, H. J., 1.
 Ottawa area: Canada G. S., 1.
 Paleozoic, Deschambault area: Laverdière, 1.
 Palmarolle area: Canada G. S., 1.
 Percé: Schuchert, 9.
 Perron-Rousseau area: Flaherty, 3.
 Petrotectonics, Shawinigan Falls area: Osborne, 24.
 Phillipsburg series: McGerrigle, 2, 7.
 Piedmont area, Abitibi Co.: James, W. F., 1.
 Pre-Cambrian sed. ser.: Tolman, C., 6.
 Pre-Cambrian structure: Derry, 10.
 Pre-Cambrian tectonics: Norman, 8.
 Prospecting, western: Bell, L. V., 15.
 Pusticamica Lake area: MacKenzie, 1.
 Replacement shells around batholiths: Freeman, B. C., 5.
 Risborough-Marlow area: Faessler, 22.
 Rose Lake dist.: MacKenzie, 3.
 Rouyn-Bell River area: Canada G. S., 1.
 Rouyn-Harricana area: Canada G. S., 1.
 Sabourin area: Denis, 4.
 St. John River area: McGerrigle, 9.
 St. Lawrence area: Clark, T. H., 11; Faessler, 6; Morin, 1; Parks, 3.
 Ste. Agathe-St. Jovite area: Osborne, 21.
 Ste. Anne River area: Laverdière, 6.
 Sand areas: McGerrigle, 6.
 Shawinigan Falls area: Backman, 1.
 Silurian, Gaspé: Northrop, 10.
 Simard (Expanse) Lake area: Denis, 7, 8.
 Siscoe gold mine: Backman, 1, 2.
 Southern Quebec: Clark, T. H., 2.
 Suzor-Letondal area: Faessler, 16.
 Tabletop area, Gaspé: Jones, I. W., 4.
 Taconic orogeny, Matapedia Valley: Crickmay, G. W., 2.
 Taconic revolution, Appalachians: Keith, 11.
 Taschereau area: Canada G. S., 1.
 Témiscuata area: McGerrigle, 3.
 Thetford area: Bain, 21; Cooke, H. J., 18, 22.
 Timiskaming-Keewatin problem, Rouyn area: Gunning, 24.
 Timiskaming outlier: Wilson, A. E., 8.
 Travers Lake area: Retty, 6.
 Trenton fm.: Okulitch, 13.
 Uraninite, age: Muench, 7.
 Villebon-Denain area: Lowther, 1.
 Ville-Marie area: Canada G. S., 1; Henderson, J. F., 1.
 Waite area: Canada G. S., 1.
 Waite-Ackerman-Montgomery mine: Wilson, M. E., 16.
 Warwick area: Bain, 21; Cooke, H. C., 22.
 Waswanipi area: Norman, 7, 9; Sproule, 1-a.
 Western Quebec: Bell, L. V., 14.
 York River area, Gaspé: Jones, 11, 13.

Quebec—Continued.

Mineralogy.

- Apatite: Alfani, 1.
 Anorthosite: Faessler, 10.
 Asbestos: Cooke, H. C., 20.
 Brucite: Berman, 4.
 Cadillac area: Gunning, 15.
 Canadian Malartic gold mine: Derry, 11.
 Chibougamau-Waswanipi area: Norman, 9.
 Chromite: Denis, 5; Poitevin, 1.
 Dalmatianite: Walker, T. L., 2.
 Garnet: Parsons, 15.
 General: Faessler, 11.
 Halliwell mine: MacKenzie, 5.
 Intrusives, acid: Güssow, 1.
 Magnesiochromite: Parsons, 18.
 Magnesite: Osborne, 29.
 Mica: Meen, 7.
 Mineral resources: Gill, 7.
 Mineralization, metamorphism, Eustis mine: Stevenson, J. S., 2.
 Monazite, analysis, age: Muench, 4; Spence, 14.
 Montauban mineralized zone: Osborne, 30.
 Mt. Alexander area: Jones, I. W., 14.
 Natrolite crystals: Poitevin, 5.
 Pegmatite minerals: Spence, 5.
 Pseudomorphs after spinel: Osborne, 28.
 Pyrrhotite in chalcopyrite: Stevenson, J. S., 1.
 Pyroxene: Parsons, A. L., 3.
 Rare earths: Joashim, 1.
 Replacement shells around batholiths: Freeman, B. C., 5.
 Scapolite: Parsons, A. L., 3.
 Silica: Cole, 7.
 Suzorite stock: Faessler, 18.
 Telluride ores, Eureka mine: Thomson, J. Ellis, 13.
 Thomsonite, E. Tps.: Poitevin, 4.
 Tungsten: Faessler, 17.
 Uraninite: Ellsworth, H. V., 2, 8; Muench, 7.

Paleontology.

- Bothriolepis: Sohn, 1.
 Brachlopoda: Cooper, 23; Northrop, 9; Twenhofel, 31, 32.
 Bryozoa: Fritz, 8.
 Cephalaspis: Robertson, G. M., 1, 3.
 Cephalopoda: Foerste, 26, 27, 28, 30.
 Chicoutimi area: Laverdière, 2.
 Conodonts: Branson, E. B., 17.
 Devonian plants: Alcock, 1; Arnold, 19.
 Dipnoan skull roof: Romer, 16.
 Eurypterus: Kindle, 21.
 Faunas.
 Black River group: Okulitch, 3.
 Cambrian, Gaspé: Kindle, C. H., 5.
 Helderberg: Clark, T. H., 9.
 Timiskaming outlier: Wilson, A. E., 8.
 Fish, Devonian: Graham-Smith, 2; Russell, 42.
 Fletcheria: Okulitch, 10.

Quebec—Continued.

Paleontology—Continued.

- Fossils, collecting, Gaspé: Cooper, G. A., 9.
 Gaspé, correl. Dev. faunas: Kindle, 38.
 Gastropoda: Wilson, A. E., 9.
 Graptolites: Laverdière, 5; Ruedemann, 29, 39, 41.
 Lévis area: Laverdière, 3.
 Mingan Is.: Twenhofel, 31.
 Percé: Kindle, C. H., 2; Schuchert, 9.
 Pollen analysis: Bowman, P. W., 1.
 Psilophyton: Lang, W. H., 1.
 Pteropod record: Kindle, 37.
 Ste. Anne River area: Laverdière, 6.
 Scaumanella: Graham-Smith, 1.
 Silurian: Northrop, 10; Parks, 5.
 Syndetocrinus: Kirk, 12.
 Trilobita: Cooper, 23; Cox, 4.
 York River area: Jones, I. W., 13.
- Petrology.*
 Amulet mine: Cooke, H. C., 6, 8; Wilson, M. E., 17.
 Anorthosite: Faessler, 10.
 Bell River complex: Freeman, B. C., 7.
 Bruneau Tp.: Douglas, 4.
 Caldwell quartzites: Cooke, H. C., 9.
 Chatham-Grenville stock: Osborne, 16.
 Currie area: MacKenzie, 4.
 Disraeli area: Cooke, H. C., 22.
 Heavy minerals, Ord. ss.: Fraser, F. J., 4.
 Intrusives, Rouyn-Bell River area: Güssow, 1.
 Keewatin lavas: Wilson, M. E., 19.
 Lachute area: McGerrigle, 8; Osborne, 29.
 Lacolle conglomerate: Clark, T. H., 6.
 Lake Dufault laccolith: Cooke, H. C., 5.
 Lake Etchemin area: Tolman, 12.
 Launay Township: Ross, S. H., 1.
 Metabasalts: Fairbairn, H. W., 2.
 Mineral composition of sands: Martens, 1.
 Mineralization, metamorphism, Eustis mine: Stevenson, J. S., 2.
 Mount Johnson dikes: Osborne, 15.
 Mount Megantic: McGerrigle, 4.
 Mount Royal: Finley, 1.
 Opemiska intrusive: Tolman, 7.
 Panache dist. dikes: Quirke, 18-d.
 Petrotectonics: Osborne, 24.
 Pierre River massifs: Osborne, 18.
 Quartz: Fairbairn, 10.
 Replacement shells around batholiths: Freeman, B. C., 5.
 Risborough-Marlow area: Faessler, 22.
 Shawinigan Falls area: Osborne, 22, 24.
 Silurian, Gaspé: Northrop, 10.
 Suzorite stock: Faessler, 18.
 Thetford area: Cooke, H. C., 22.
 Ville-Marie, Guillet (Mud) Lake areas: Henderson, J. F., 1.
 Warwick area: Cooke, H. C., 22.

Quebec—Continued.

Physical geology.

- Appalachians: Keith, 10.
 Asbestos deposits, Thetford: Cooke, H. C., 21; Paige, 3.
 Beattie-Galatea area: O'Neill, 4.
 Beauchastel Tp.: Malouf, 1.
 Bell River complex: Freeman, B. C., 7.
 Bic area: Rousseau, 2.
 Bigniba area: Auger, 1.
 Bousquet Tp.: Gunning, 23.
 Breccia, St. Helen Is.: Osborne, 23.
 Cadillac area: Gunning, 15.
 Cadillac belt: Gunning, 13.
 Canadian Malartic gold mine: Derry, 11.
 Chaleur Bay area: Alcock, 13.
 Chatham-Grenville stock: Osborne, 16.
 Chibougamau Lake area: Mawdsley, 6.
 Cléricy area: Güssow, 1.
 Currie area: MacKenzie, 4.
 Disraeli area: Cooke, H. C., 22.
 Dubuisson area: Bell, L. V., 16.
 Duvernay Tp.: Weeks, L. J., 5-a.
 Earthquake, Timiskaming, 11/1/35: Hodgson, 11; Anonymous, 113.
 Gaspé: Jones, I. W., 12, 15.
 Gold area, pre-Camb.: Spearman, 3.
 Guillet Tp.: Denis, 6.
 Halliwell mine area: MacKenzie, 5.
 Intrusives, Laurentian: Osborne, 2.
 Josselin-Delestre area: Bannerman, 4.
 Keewatin Volcanics: Wilson, M. E., 19, 22.
 Keystone faulting: Crosby, 2.
 Laas-Fraser area: Longley, 2.
 Labelle-L'Annonciation area: Osborne, 19.
 Lachute area: McGerrigle, 8; Osborne, 29.
 Lake Etchemin area: Tolman, 12.
 Lake Mattagami area: Longley, 3.
 Lamaque-Sigma mines area: Bell, L. V., 12.
 Launay Tp.: Ross, S. H., 1.
 Lower Laflamme River: Auger, 2; Longley, 4.
 McWatters gold belt: Hawley, 10.
 Malartic gold mine area: O'Neill, 6.
 Marbleton area: Laverdière, 4.
 Mégiscane River area: Faessler, 13.
 Mineralization, metamorphism, Eustis mine: Stevenson, J. S., 2.
 Mistawak area: Wilson, J. T., 6, 7.
 Montauban mineralized zone: Osborne, 30.
 Monteregian Hills intrusions: Osborne, 29-a.
 Mt. Alexander area: Jones, I. W., 14.
 Opawica-Lewis Lakes area: Shaw, G., 1.
 Opémisca area: Norman, 11.
 Osisko Lake area: Conolly, H. J., 1.
 Panache dist.: Quirke, 18-d.
 Peridotites, eastern: Cooke, H. C., 19.
 Petrotectonics: Osborne, 24.
 Phlogopite-apatite deposits: Landes, 25.
 Pre-Cambrian structures, tectonics: Norman, 8.

Quebec—Continued.

Physical geology—Continued.

- Risborough-Marlow area: Faessler, 22.
 Ste. Agathe, St. Jovite area: Osborne, 21.
 St. John River area: McGerrigle, 9.
 St. Lawrence lowlands: Clark, T. H., 11.
 Silurian, Gaspé: Northrop, 10.
 Simard (Expense) Lake area: Denis, 7, 8.
 Siscoe gold mine area: Backman, 1.
 Suzor-Letondal area: Faessler, 16.
 Taconic revolution: Keith, 11.
 Thetford area: Cooke, H. C., 22.
 Timiskaming earthquake data: Hodgson, 15.
 Villebon-Denain area: Lowther, 1.
 Ville Marie and Guillet (Mud) Lake area: Henderson, J. F., 1.
 Waite-Ackerman-Montgomery area: Wilson, M. E., 16.
 Warwick area: Cooke, H. C., 22.
 Waswanipi area: Norman, 9-a; Sproule, 1-a.
 York River area: Jones, I. W., 13.
Physiographic geology.
 Akpatok Is.: Cox, I. H., 1.
 Beach cusps, Lake Olga: Butler, J. W., 4.
 Beattie-Galatea area: O'Neill, 4.
 Bigniba area: Auger, 1.
 Chaleur Bay area: Alcock, 13.
 Chateauguay Valley: McGerrigle, 8-a.
 Clay rhizoconcretions, St. Lawrence River: Rousseau, 1.
 Currie area: MacKenzie, 4.
 Disraeli area: Cooke, H. C., 22.
 Gaspé: Jones, I. W., 12; Morin, 2.
 Gatineau area: Retty, 5.
 Glacial boulders, Thetford: Cooke, H. C., 26.
 Glacial geology, northwestern: Wilson, J. T., 5.
 Glacial Lake Barlow-Ojibway: Norman, 13.
 Glacial lakes: Gill, J. E., 1.
 Glacial remnants, Côte-Nord: Faessler, 8.
 Guillet Tp.: Denis, 6.
 Ice, northward moving: Clark, T. H., 8.
 Josselin-Delestre area: Bannerman, 4.
 Laas-Fraser area: Longley, 2.
 Labelle-L'Annonciation area: Osborne, 19.
 Lachute area: McGerrigle, 8; Osborne, 29.
 Lake Etchemin area: Tolman, 12.
 Lake Olga beach cusps: Evans, 10.
 Lakes, Laurentian, disappearing: Irénée-Marie, 1.
 Launay Tp.: Ross, S. H., 1.
 Lower Laflamme River: Auger, 2; Longley, 4.
 McWatters gold belt: Hawley, 10.
 Mégiscane River area: Faessler, 13.
 Mingan Islands: Twenhofel, 31.
 Mistawak area: Wilson, J. T., 7.

Quebec—Continued.

Physiographic geology—Continued.

Montmorency River preglacial bed:
Faessler, 14.

Moraines, washboard: Mawdsley, 7.

Mt. Megantic area: McGerrigle, 4.

Pleistocene ice front, last: Norman, 12.

Pre-Cambrian structures: Derry, 10.

Risborough-Marlow area: Faessler, 22.

Saguenay-Lake St. John area: Blanchard, Raoul, 1.

Ste. Agathe-St. Jovite area: Osborne, 21.

Ste. Anne River area: Laverdière, 6.

St. John River area: McGerrigle, 9.

St. Lawrence area: Clark, T. H., 11;
Faessler, 6; Morin, 1.

Submarine trough: Shepard, 7.

St. Maurice Valley, drainage changes:
Crosby, 3, 4.

Sand and gravel areas: McGerrigle, 6.

Silurian, Gaspé: Northrop, 10.

Suzor-Letondal area: Faessler, 16.

Tabletop area, Gaspé: Jones, I. W., 4.

Talus slopes, Gaspé: Miner, N. A., 1.

Temiscouata area: McGerrigle, 2.

Theftford area: Cooke, H. C., 22.

Villebon-Demain area: Lowther, 1.

Warwick area: Cooke, H. C., 22.

Waswanipi area: Norman, 6.

York River area: Jones, I. W., 13.

Underground water.

Ste. Agathe-St. Jovite area: Osborne, 21.

Quicksilver.

Arizona: Lausen, 5.

Arkansas: Branner, 10; Hansell, 1;
Reed, J. C., 6, 7, 8, 16; Sohlberg, 1,
2; Stearn, 7, 8, 11.

British Columbia: Warren, H. V., 6.

California: Anderson, C. A., 5; Baum,
2; Franke, H. A., 2; Maxson, 5;
Schuette, C. N., 4; Warner, T., 1.

Cinnabar, spectrographic study: Dreyer,
R. M., 3.

General: Ross, C. P., 31; Schuette, C.
N., 2.

Geology of deposits: Schuette, C. N., 4.

Mexico: Franks, 1; Santillán, 14; Vau-
pell, 1.

Nevada: Dreyer, R. M., 2; Schuette, C.
N., 3.

North America, Cordillera and Caribbean
areas: Waters, 13.

Occurrence of ore bodies: Schuette, C.
N., 1.

Oregon: Lewellen, 3; Oregon Dept.
Geology, 1; Schuette, C. N., 5;
Smith, W. D., 11; Wells, F. G., 7.

Texas: Duncan, F., 1; Lonsdale, 2;
Ross, C. P., 19, 26, 27; Schoff-
mayer, 1.

Utah: Crawford, A. L., 2.

Washington, cinnabar: Ott, 1.

Western States: Ross, C. P., 13.

Radio transmission and geology: Spieker, 8.

Radioactive disintegration of potassium:
Anonymous, 157.

Radioactive elements: Wells, R. C., 10.

Radioactivity.

Age of matter by potassium, rubidium:
Brewer, A. K., 2.

Ages, astron., geol.: Urry, 4.

Arkansas, Hot Springs water: Schlundt,
1.

Asthenolith theory: Willis, 16.

Earth, age: Whitney, 6.

Earth, crust: Evans, R. D., 3.

Gamma-ray well logging: Howell, L. G.,
1.

General: Lovering, 27; Willis, 8.

Geologic time: Gries, 4; Holmes, A., 1.

And age of earth: Gries, 4.

Geothermal gradients: De Lury, 20.

Helium method: Mead, 6; Urry, 5, 7.

Lead, age, Great Bear Lake, Northwest
Territories: Marble, 5.

Leads, atomic weights: Baxter, 1.

Magmatic lead ores: Graton, 12.

Measurements of: Landsberg, 13.

Meteorites, iron, age by: Evans, R. D., 4.

Methods of prosp.: Heiland, 23.

Minerals, Quincy granite: Keevil, 4.

New Hampshire, Grafton: Shortle, 1.

New York, Saratoga Springs water:
Baudisch, 2.

Northwest Territories, silver-pitchblende
deposits: Furnival, 5; Marble, J.
P., 2, 5; Spence, 13.

Nova Scotia, ocean-bottom cores:
Piggot, 9.

Petroleum core testing: Landsberg, 10.

Photography in study of: Wilkins, 1.

Pitchblende area, Great Bear Lake:
Marble, J. P., 2, 5; Spence, 13.

Potassium, and geol. time: Brewer, A.
K., 1.

Protactinium, terrestrial and meteoritic:
Evans, R. D., 6.

Rocks and minerals: Kovarik, 1.

Sedimentary rocks, correl. by: Lands-
berg, 14.

And petroleum: Goodman, C., 1.

Springs, Va., W. Va.: Hootman, 2.

Uraninite, Beaver Lake, Northwest Ter-
ritories: Bruner, 2.

Variation in strata: Klepper, 1.

Yellowstone, waters, gases, deposits:
Schlundt, 2.

Radiolaria.

California: Clark, B. L., 29.

Cuba: Palmer, D. B. K., 3.

New York.

Cherts, Ord.: Ruedemann, 40.

Plankton, radiolarian ooze: Ruede-
mann, 42.

Novaculite and chert, origin: Henbest, 8.

South Dakota, Pierre microfauna: Sea-
right, 6.

Texas, Caballos fm.: Aberdeen, 1.

Radium. See also **Carnotite.**

- California: Evans, R. D., 1.
 Canada: Ellsworth, H. V., 4.
 Colorado: Ives, 6.
 General: Adams, G. W., 1.
 Granites: Piggot, 1.
 Hawaiian lavas: Piggot, 1.
 New York, Saratoga Springs water:
 Baudisch, 2.
 North America, Pacific NW. ocean sedi-
 ments: Utterback, C. L., 1.
 Northwest Territories, Great Bear Lake
 area: Camsell, 14; Kidd, 5; Pochon,
 1; Robinson, H. S. 1; Spence, 9, 11,
 13; Thomson, J. Ellis, 12; Wright,
 H. M., 1.
 Nova Scotia, ocean-bottom core: Piggot,
 9.
 Ocean-bottom sediments: Piggot, 3.
 Ontario, Wilberforce: Spence, 2, 4.
 Pacific Ocean, water and sediments:
 Evans, R. D., 5.

- Rainbow Bend oil field, Kans.: Snow, D. R., 1.
 Ralstonite, Greenland: Gordon, S. G., 3;
 Pabst, 15.

Rammelsbergite, Ontario: Peacock, 19.**Ramparts.**

- Ice, fm.: Evans, O. F., 6.
 Iowa, around lakes: Stookey, D. W., 1.

**Rankin Inlet, Northwest Territories: Weeks,
L. J., 3.****Rare earths.**

- Canada: Ellsworth, H. V., 4.
 Quebec: Joachim, 1.

Rare metals and minerals: Hess, F. L., 12.**Rate, meteoric accretion: Watson, F. G., Jr.,
4.****Ray-filter for photography: Blackwelder, 21.****Recent marine sediments: Trask, 43.****Receptaculites lms. Miss. Valley: Keyes, 336.****Red beds.**

- America: Keyes, 406.
 Catskill facies, N. Y.: Mencher, 2.
 Origin: Baker, C. L., 3.

Reefs or bioherms.

- Alabama, coral: McGlamery, 1.
 Algal, barrier: Goldring, 17.
 Calcareous: Johnson, J. H., 13-a.
 Limestone: Johnson, J. H., 27, 33.
 Belt series: Fenton, 54.
 Bermuda beaches: Prat, 1.
 California: Anderson, J. Q., 1.
 Colorado: Johnson, J. H., 26.
 Florida: Berger, P., 1; Cooke, C. W., 24.
 General: Cumings, 4.
 Georgia, coral: McGlamery, 1.
 Illinois, Chicago area: Bretz, 10.
 Jamaica coral cays: Steers, 1.
 Kansas, Flint Hills: Keyes, 419.
 Limestone: Johnson, J. H., 27, 33; Keyes,
 179.
 Minnesota, Niagaran: Shrock, 18.

Reefs or bioherms—Continued.

- Nevada, Hawthorne, Tonopah quad.:
 Muller, 14.
 New Mexico, Carlsbad reef: Johnson,
 J. H., 33.
 Castle fm.: Kroenlein, 2.
 Pecos River Valley: Lang, W. T. B., 6;
 Robinson, T. W., Jr., 6.
 North America, Dev., Sil.: Lecompte, 1.
 Oklahoma, Verden ss.: Bass, 15.
 Permian, Pecos Valley, Tex.-N. Mex.:
 Lang, W. T. B., 6.
 Texas.
 Barriers theory: Lloyd, E. R., 4.
 Capitan lms.: Keyes, 179.
 Marine Pleist.: Richards, 22.
 Pecos River Valley: Lang, W. T. B., 6.
 Trinidad, Biche Quarry lms.: Hutchison,
 3.
 Utah, Capitol Reef: Gregory, H. E., 5.
 Great Salt Lake: Eardley, 11.
 Vermont, Camb., Ord.: Schuchert, 43.
 Wisconsin, Sil.: Shrock, 14.

**Reflection, elastic waves from layers: Wolf,
Alfred, 2.****Patterns, complex, and geol. source:
Rieber, 9.****Seismic instruments: Heiland, 20.****Refractive indices determination: Slawson, 7.****Refugian stage, Pacific Coast: Schenck, 22.****Regional granitization, metamorphism, New
England: Currier, 10.****Relative growth, vertebrate phylogeny, Phle-
ger, 1, 2.****Relief maps.**

- Alberta: Allan, 21.
 Antillean-Caribbean area: Schuchert, 31.
 Arkansas: Stearn, 11.
 California: Reed, R. D., 9, 13; Sedel-
 meyer, 1; Simpson, E. C., 1.
 Colorado: Cross, C. W., 2.
 Florida: Blanchard, W. G., 1; Cooke,
 C. W., 24.
 Greenland: Lacmann, 1.
 Idaho: Livingston, D. C., 4.
 Lake Superior area: Leverett, 2.
 Method of making: Troxell, 7.
 Mexico: Imlay, 2, 4; Sánchez, P. C., 4.
 New York City area: Strzygowski, 2.
 North America (part): Cooke, C. W., 1.
 Ohio: Smith, G.-H., 2.
 Oklahoma: Bollinger, 1.
 Ontario: Anonymous, 149.
 Pennsylvania: Willard, 30.
 Texas, Van oil field: Liddle, 3.

Reptilia.

- Alabama, Cret.: Renger, 1, 2, 3.
 Alberta, dinosaurs: Parks, 6.
 Lizard: Gilmore, 10.
 Milk River Cret.: Russell, 30.
 Ornithomimus, Struthiomimus, co-
 specific: Sternberg, 15.
 Turtles, Parks, 6.
 Alligator, osteology: Mook, 4.

Reptilia—Continued.

- Alligators, Tert.: Barbour, T., 1.
 Allognathosuchus: Patterson, B., 1;
 Simpson, 13.
 Amyda, Va.: Lynn, 1.
 Anchiceratops, Alberta: Sternberg, C.
 M., 2.
 Anchisauridae, Ariz.: Brady, 11.
 Ancylocentrum, N. J.: Chaffee, 3.
 Angistorhinus, Tex.: Stovall, 9.
 Anodontosaurus, Alberta: Sternberg, C.
 M., 1.
 Anosteirid, Utah: Clark, J., 2.
 Apatosaurus, Utah: Gilmore, 16.
 Archaeosuchus, Ariz.: Brown, B., 5.
 Arizona, Trias.: Camp, 4.
 Aspideretes, Alberta: Russell, L. S., 5.
 Batrachians, Mex.: Taylor, E. H., 2.
 Brachysuchus megalodon: Case, E. C.,
 3.
 Brain, fish to man: Gregory, 27.
 Bysmachelys, Tex.: Johnson, C. S., 5.
 California, Cret.: Stock, 79.
 Camarasaurus lentus mount: Lull, 2.
 Captorhinus brain case: Price, L. I., 1.
 Centrosaurus, Alberta: Sternberg, 19.
 Ceratopsia: Lull, 9; Russell, L. S., 26;
 Wiman, 1.
 Champsoosaurus, Alberta: Parks, 9.
 Chasmosaurus, Alberta: Brown, B., 8.
 Chelonia (?), Calif.: Gilmore, 19.
 Comanchean, Kans., Okla., Tex.: Gould,
 C. N., 7.
 Connecticut: Cook, T. A., 1.
 Corosaurus, Wyo.: Case, 20.
 Cotylosaurs, Tex.: Price, L. I., 2.
 Cotylorhynchus, Okla.: Stovall, 15.
 Crocodilia.
 Classification: Mook, 8.
 Colorado: Schmidt, K. P., 1.
 Evolution: Mook, 8.
 Kansas: Mehl, 8.
 New Jersey: Mook, 3.
 New Mexico: Mook, 2; Wiman, 3.
 Saskatchewan: Sternberg, 9.
 Wyoming: Mook, 7.
 Cynodont skull: Simpson, 25.
 Diadectes: Romer, 4.
 Dinosauria.
 Ancestors and neighbors: Anonymous,
 198.
 Bipedal, Ariz.: Camp, 5, 6.
 Carnegie Mus., Pa.: Gilmore, 15-a.
 Collecting: Gilmore, C. W., 1; Kindle,
 E. M., 5; Sternberg, C. H., 1.
 Crested, Mont.: Gilmore, 18.
 Cretaceous.
 Alberta: Parks, 10.
 Arizona: Gilmore, 20.
 California: Hesse, 11.
 Colorado: Brown, B., 16.
 Montana: Gilmore, 8, 25.
 Upper, faunas: Russell, L. S., 4.
 Utah: Gilmore, 20, 22.
 Wyoming: Gilmore, 8.
 Distribution: Gries, 3.

Reptilia—Continued.

Dinosauria—Continued.

- Eggshell, Mont.: Jepsen, 4.
 Footprints, Tex.: Houston, S. H., Jr.,
 1.
 Fort Peck, Mont.: Harbicht, 1.
 General: Bump, 5, 6; Gilmore, 13;
 Lucas, F. A., 2; Reed, 15.
 Gizzard stones: Minor, W. C., 1.
 Greybull, Wyo.: Anonymous, 56.
 Group, Buffalo Mus.: Cummings, C. E.
 1.
 Hunting dinosaurs: Sternberg, C. H., 1.
 Jurassic.
 Colorado: Schuchert, 55.
 Oklahoma: Stovall, 17.
 Parade of: Brown, B., 14.
 Peabody Museum: Anonymous, 31.
 Pierre fm.: Wieland, 3.
 Sinclair expedition, 1934, Wyo.:
 Brown, B., 11.
 Tendons: Moodie, 4.
 Texas: Case, 10.
 Theropod: Brady, 10, 12; Sternberg, 7.
 Trachodont: Barbour, 10; Lull, 14;
 Parks, W. A., 2; Sternberg, 17;
 Toepelmann, 2.
 Tracks: Shuler, 7.
 British Columbia: Sternberg, 6, 12.
 Colorado, Juras.: MacClary, 2.
 Connecticut River Valley: Perry, K.
 P., 1.
 Pennsylvania: Anonymous, 142.
 South Dakota: Anderson, S. M., 1.
 Texas: Bird, R. T., 1; Shuler, 9.
 Triassic:
 Arizona: Gilmore, 20, 22.
 Pennsylvania: Hickok, 3; Willard,
 23.
 Utah: Gilmore, 20.
 Two Medicine fm., Mont.: Gilmore, 4.
 Wyoming: Frison, 1; Moodie, 5.
 Dinosaurs on parade: Brown, B., 14.
 Diplodocus: Gilmore, 9.
 Edaphosaurus, W. Va.: Whipple, 2.
 Edmontonia, Alberta: Russell, 40.
 Egg, Perm., Tex.: Romer, 25.
 Elasmosaurus, Mont.: Riggs, 6.
 Evolution: Evans, F. G., 1.
 Faunas.
 Burnet Cave, N. Mex.: Schultz, C. B.,
 3.
 Chadron fm., S. Dak.: Clark, J., 3.
 Fort Union, Mont.: Simpson, 38.
 Paleocene, N. Mex.: Cooper, C. F., 1;
 Matthew, 17.
 Texas: Howard, C. A., 1.
 Williams Cave, Tex.: Ayer, 1.
 Flying, Perm., Tex.: Mathews, 14.
 Footprints, Ala.: Aldrich, T. H., 1.
 General: Gilmore, 5.
 Goniolophis, Colo.: Mook, 6.
 Greenland, primitive: Romer, 15.
 Hadrosauridae: Sternberg, 20.
 Hadrosaurs, Alberta: Sternberg, 16.
 Hierosaurus, Kans.: Mehl, 9.

Reptilia—Continued.

- Homoeosaurus, squamation: Barbour, T., 2.
 Icthyosaurus, Cuba: Torre, R., de la, 2.
 Iguana, Barbados: Swinton, 1.
 Kirtland fm., N. Mex.: Gilmore, 14.
 Labidosaurus, Tex.: Olson, 3.
 Lambeosaurus, Alberta: Russell, 43.
 Leidyosuchus, Alberta: Sternberg, 8.
 Lizards, Tertiary.
 Burrowing, Wyo.: Walker, M. V., 4.
 Montana: Gilmore, 22.
 Wyoming: Gilmore, 22.
 Machaeroprotopus, N. Mex.: Stovall, 18.
 Monoclonius, Alberta: Sternberg, 19.
 Mosasaur, Mex.: Mehl, 4; Müllerried, 7.
 Myopterygius, Wyo.: Nace, 3.
 New Mexico, Carb.: Romer, 22.
 Nothosaur, Wyo.: Case, 19.
 Nodosaurus, habitat, characters: Sternberg, 11.
 Oklahoma: Stovall, 12.
 Ostodolepis, Tex.: Case, E. C., 1.
 Paleontology, reptilian: Gilmore, 24.
 Parasaurolophus, N. Mex.: Wiman, 2.
 Parkosaurus, proposed genus: Sternberg, 18.
 Pelycosauria: Romer, 21.
 Pelvis, fish to man.: Gregory, 19.
 Peritresius, Va.: Berry, C. T., 6.
 Phytosaurs.
 Arizona: Camp, 3.
 Armor, Tex.: Case, 9.
 General: Camp, 3.
 Models of heads: Case, 5.
 Texas: Case, 9, 14.
 Placerias, Ariz.: Camp, 12.
 Platecarpus: Mehl, 4.
 Pleistocene cave fossils, Tenn.: Cahn, 4.
 Plesiosauria.
 Arizona: O'Connell, 1.
 California: Welles, 2.
 Classification and type: White, T. E., 2.
 Fresh-water: Russell, L. S., 8.
 Greenland: Huene, F. von, 1.
 Type and classification: White, T. E., 2.
 Primitive, Greenland: Säve-Söderbergh, 5.
 Protosuchus, Ariz.: Brown, B., 10.
 Pseudemys, Idaho: Gilmore, 12.
 Pteranodon, Tex.: Gilmore, 15.
 Sauropod tracks, Tex.: Bird, R. T., 1.
 Segisaurus, Ariz.: Camp, 8.
 Seymouria, Tex.: White, T. E., 1.
 Sinclair dinosaur book: Sinclair Refining Co., 1.
 Snakes, N. Am.: Gilmore, 23; Lynn, 2.
 South Dakota: Bump, 6.
 Squamation. Homoeosaurus: Barbour, T., 2.
 Stegocephalia, Ariz.: Brown, B., 6.
 Progressive chondrification: Case, 11.
 Stegosaurus: Brown, B., 3.
 Stylemys, S. Dak.: Case, 22.

Reptilia—Continued.

- Styracosaurus, Alberta: Brown, B., 15.
 Syllomus, Va.: Berry, C. T., 10.
 Teleorhinus, Mont.: Mook, 5, 8.
 Terrepene, Fla.: Barbour, 3.
 Tetrapoda: Olson, E. C., 1; Romer, 17.
 Texas: Case, 10; Romer, 22.
 Theromorph, Perm.: Broom, 1.
 Theropoda.
 Alberta: Sternberg, 7.
 Arizona: Brady, 10, 12.
 Thescelosaurus, classn.: Sternberg, 18.
 Tortoise, Fla.: Wark, 1.
 Trachemys, Fla.: Gilmore, 3.
 Trachodon, Neb.: Barbour, 10.
 Jaw, Colo.: Toepelmann, 2.
 Systematic position: Sternberg, 17.
 Trachodont dinosaurs: Lull, 14.
 Alberta: Parks, W. A., 2.
 Jaw, Colo.: Toepelmann, 2.
 Triassic.
 Arizona: Mehl, 1.
 New Mexico: Mehl, 1.
 Utah: Gilmore, 20.
 Wyoming: Huene, F. von, 3.
 Triceratops, mounted skull: Lull, 10.
 Montana: Brown, B., 7; Osborn, 31.
 Wyoming: Osborn, 31; Schlaikjer, 3.
 Trinacromerum, Manitoba: Russell, 30.
 Troodon, habit, characters: Sternberg, 11.
 Alberta: Russell, L. S., 16.
 General: Nopcsa, 1.
 Wyoming: Gilmore, 6, 17.
 Turtles.
 Alabama: Anonymous, 73.
 Alberta: Parks, 8.
 Jaws and skulls: Martin, H., 2.
 Maryland: Collins, R. E. L., 4.
 New Mexico: Wiman, 4.
 Saskatchewan: Russell, L. S., 22.
 Skulls and jaws: Martin, H., 2.
 Tennessee: Whitlatch, 6.
 Utah: Clark, J., 1.
 Upper Cretaceous dinosaur faunas: Russell, L. S., 4.
 Vertebrates, Uinta Mts.: Peterson, 7.
 Xenocephalus, Neb.: Campbell, C. B., 1.
 Research, geol., status: Ley, 7.
 Suggested: Levorsen, 14.
 Research, geology, paleontology, geography: Bastin, 11.
 Geology, possible program: Fenneman, 8.
 Geology and geophysics: Anonymous, 133.
 Geophysics: Roman, 6.
 Mineralogical, trend: Tarr, 28.
 Reservoir and dam sites: Bryan, K., 2.
 Residues, insoluble, by acetic acid: St. Clair, D. W., 1.
 Restorations. See also Paleontology.
 Amphibia: Kindle, 17.
 Apatosaurus, Utah: Gilmore, 16.
 Baluchitherium: Granger, 3; Gregory, 18.

Restorations—Continued.

- Carboniferous forest: Noé, 8.
- Ceratopsia: Lull, 9.
- Chasmosaurus: Russell, L. S., 24, 26.
- Cladoselache with dorsal spine: Harris, J. E., 1.
- Corosaurus, Wyo.: Case, 20.
- Dinichthys: Heintz, 2.
- Dinosauria: Bump, 5; Moodie, 5.
- Alberta: Russell, L. S., 29.
- Canada, Peace River: Sternberg, 12.
- Carnegie Mus., Pa.: Gilmore, 15-a.
- Eporeodon socialis: Thorpe, 2.
- Eurylepidolepidoides, Tex.: Case, 17.
- General: Fritz, 3.
- Geologic landscapes: Reid, G. A., 1.
- Gonloceras, Minn.: Sardeson, 21.
- Horse: Riggs, E. S., 1.
- Labidosaurus, Tex.: Olson, E. C., 3.
- Mammalia .
- California: Burroughs, H., 1.
- Florida: Simpson, G. G., 2.
- Nebraska: Colbert, E. H., 2.
- Merycoidodon gracilis: Matthew, 15.
- Nannotragulus loomisi: Loomis, 7.
- Neanderthal man: Farrington, 4.
- Niagara area fossils: Reimann, 11.
- Nothrotherium, N. Mex.: Lull, 1.
- Oreodonts, S. Dak.: Loomis, 8.
- Paleontological reconstructions: Johnson, H., 5.
- Paleozoic marine life: Ruedemann, 20.
- Phenacodus typus: Peterson, O. A., 1.
- Plants: Wilcox: Berry, 21.
- Pterygotus, Wyo.: Ruedemann, 21.
- Protaspis, Wyo.: Bryant, 4.
- Sinclair dinosaur book: Sinclair Refining Co., 1.
- Stegosaurus: Brown, B., 3.
- Struthiomimus currellii: Parks, 6.
- Triceratops, Mont., Wyo.: Osborn, 31.
- Trimerorhachis, Tex.: Case, 16.
- Wilcox plants: Berry, 21.
- Zarhachis, Md.: Kellogg, 7.

Retrogressive metamorphism, phyllonitization: Knopf, E. F. B., 4.

Rhode Island.

Areas described.

Block Is.: Woodworth, J. B., 2.

Economic geology.

Limestone: Willard, 9.

Minerals, rocks, Copper Hill mine: Quinn, 5.

Historical geology.

Copper Hill mine area: Quinn, 5.

General: Foye, 5.

Mineralogy.

Kellbavite, Sterling granite: Young, J. A., Jr., 1.

Manton minerals: Stewart, D., Jr., 2.

Minerals, rocks, Copper Hill mines: Quinn, 5.

Quartz locs.: Flagg, 1.

Palaeontology.

Amphibian footprints: Willard, 6.

Fern garden, Carb.: Sanford, S. N. F., 2.

Rhode Island—Continued.

Physical geology.

Earthquake, 11/3/13: Brown, C. W., 5.

Physiographic geology.

Shore-line changes: Brown, C. W., 7.

By hurricane: Nichols, 8-a, 14.

Rhyodacite, British Columbia: Stevenson, L. S., 1.

Rhythmic bedding, Monterey, Calif.: Bramlette, 4.

Rift valleys, geomorphology: Johnson, D. W., 7.

Rigidity, rock, pressure effect: Birch, 4.

Rillensteine: Lauder milk, 5.

Ripple marks.

Archean, Grand Canyon: Maxson, 8, 14.

Balt series: Fenton, 54.

California, Laguna Beach, Woodford, 4.

Canada, Dundas fm., Toronto: Okulitch, 16.

Ottawa Valley: Wilson, M. E., 5.

Fabric criteria for: Ingerson, 8.

General: Kindle, 14.

Giant, in coarse fluvial gravel: Thiel, 4.

Montana, Glacier Nat. Park: Fenton, 60.

New York, Catskill facies: Mencher, 2.

Ohio, Cincinnati area: Sanger, 1.

Oklahoma, Carb.: De Béthune, 4.

Ontario, Perth area: Wilson, M. E., 4.

Sand structures, shallow water: Kindle, 30.

Tennessee, Sil.: Prouty, C. E., 1.

Texas, Hood Co.: Scott, G., 3.

River capture. See Stream capture.

River deflection: Fairchild, 13.

Rivers.

Alluvial islands: Rubey, 7.

Appalachian rivers, evolution: Johnson, D. W., 8.

Beaver dams as geol. agents: Ruedemann, 45.

Bed-sediment transp.: MacDougall, 1.

British Columbia, Hunlen Falls, Turner Lake: Munday, 2.

California, San Gabriel Mts.: Louderback, 7.

Classification, flood-plain streams: Melton, 22.

Colorado River Delta: Blackwelder, 23, 37; Sykes, 1.

Columbia River, ancient: Randolph, 11.

Delaware River, N. J., preglacial course: Miller, R. L., 3.

Des Moines River, Iowa: Keyes, 210, 331, 381.

Dynamics of streams: Straub, 2, 3.

Earth rotation and river erosion: Fairchild, 12.

Equilibrium conditions, debris-laden streams: Rubey, 10.

Geological evidence of floods: Hinds, 30.

Grey Bull River, Wyo.: Mackin, 5.

Hudson River Valley, N. Y.: Morris, 5.

Illinois River channel equilibrium: Rubey, 6.

Rivers—Continued.

- Juniata River meanders, Pa.: Stone, 16.
 Little Colorado River valley, Ariz.: Richter, R., 4.
 Louisiana, Ascension, Iberville Parishes: Howe, 30; Russell, R. J., 21.
 Stream patterns: Russell, R. J., 25.
 Meanders.
 Cut off, effects of: Macar, 1.
 Development, intermittent streams: Leighly, 3.
 Incised, modified by floods: Cole, 13.
 Scroll and bar plains: Melton, 14.
 Underfit, flood-plain streams: Melton, 27.
 Mexico, hydrology of river basins: Hernandez, 1.
 Canyon of Texcalatlaco: Waitz, 8.
 Mississippi River: Elliott, D. O., 1.
 Bibliography: Haferkorn, 2.
 Delta: Price P. H., 16.
 Larto Lake: Russell, R. J., 6.
 Problem of: Haas, 1.
 Sedimentary load: Russell, R. D., 16.
 Upper: Flint, 16.
 Montmorency River, Quebec, preglacial bed: Faessler, 14.
 Morphology, fluvial: Shulits, 1.
 New Mexico, meandering arroyos: Leighly, 4.
 North Santiam River, Ore.: Thayer, 4.
 Ohio River: Fowke, 2.
 Upper Valley: Leverett, 26.
 Potomac River, South Branch, W. Va.: Fridley, 6.
 Red River sediments: Jones, V. H., 1.
 Rio Grande depression, Colo., N. Mex.: Bryan, 36.
 Rio Santa Cruz, Ariz.: Sykes, 6.
 St. Lawrence River, history: Gill, 6-a.
 Sediment, diversion at branching channels: Matthes, G. H., 2.
 Stream dynamics: Lane, E. W., 1.
 Stream terminology: Baulig, 3.
 Susquehanna, drainage changes: Anonymous, 171.
 Tennessee River channel holes: Money-maker, 8.
 Terrace remnants, correl.: St. Clair, D., 1.
 Texcalatlaco Canyon, Mex.: Waitz, 8.
 Tower Creek autopyracy, Yell. Nat. Park: Howard, A. D., 11.
 Tygart River, W. Va.: Maxwell, C. W., 2.
 Wabash, Ind.: Fidler, 3.
 Washita River Valley, Okla.: Strain, 1.
 Wisconsin, Kickapoo region: Bates, R. E., 4.
 Wyoming, stream capture Big Horn Basin: Mackin, 3.
 Yukon, Alaska, channel shifting: Eardley, 9; Lowenstein, 1.

Road materials.

- Caliche: Runner, D. G., 9.
 California: Dudley, 1; Miller, W. J., 12.
 Chert: Runner, D. G., 8.

Road materials—Continued.

- Columbia River Basin, Wash.-Oreg.: Landes, H., 1.
 Geologic fms., relation to: Runner, D. G., 2.
 Geological terms for highway eng.: Runner, D. G., 12.
 Hawaii, Is. of Oahu: Stearns, 28.
 Illinois, lms., dolomite: Lamar, 15.
 Iowa: Goshorn, G., 1; Morris, M., 1; Wood, L. W., 1.
 Kansas: Landes, 24; Pierce, 9.
 Kentucky, rock asphalt: Marks, 1.
 Lime rocks: Thoreen, 1.
 Limestone: Runner, D. G., 10.
 Maryland: Darton, 15.
 Montana: Perry, 15.
 Oklahoma: Decker, 25; Gould, 13; Schoff, 4; Wolfard, 1.
 Oregon: Smith, W. D., 11; Thomas, C. E., 1.
 Prince Edward Is.: Picher, 1, 2.
 Quebec: Picher, 3, 4, 5.
 Rock quality, determination: Runner, D. G., 15.
 Shale: Runner, D. G., 7.
 Survey for: Runner, D. G., 1.
 TVA region: Spain, 4; Anonymous, 139.
 Texas, Marathon area: King, 29.
 United States, glacial sand and gravel deposits: Runner, D. G., 13.
 Virginia: Bates, R. L., 4; Brown, C. B., 3; Furcron, 9.
 West Virginia: Price, P. H., 17.
 Wisconsin, weathered pre-Camb. rocks: Gwynne, 1.
 Roches moutonnées: Demorest, 4.
 Rock crystal glossary: Zodiac, 21.
 Rock crystal inclusions: Zodiac, 18.
 Rock falls north of Savanna: Ekblaw, G. E., 2.
 Rock fans, arid regions: Johnson, D. W., 15.
 Origin, evolution: Rich, 19.
 Rock-forming silicates, water components: Goranson, 8.
 Rock pediments, origin, evolution: Rich, 19.
 Rock records of meteorites: Anonymous, 145.
 Rock River oil field, Wyo.: Emery, W. B., 2.
 Rock saw: Vanderwilt, 7.
 Rock sculpture by glaciers: Engeln, von, 11.
 Rock slides. See Landslides.
 Rock temperature and depths: Spicer, 1.
 Rock temperatures, deep mines, Ontario: Cleland, R. H., 1.
 Rock weathering study: Goldich, 2.
 Rock wool.
 Georgia: Furcron, 8.
 Illinois: Lamar, 12, 15.
 Industrial minerals and rocks: A. I. M. E., 2.
 Kansas: Landes, 24; Plummer, N. V., 1.
 Missouri: McQueen, 7.
 Oklahoma: Ham, 2; Wood, F. C., 2.
 Ontario: Goudge, 6.

- Rocks. See Igneous and volcanic rocks; Sedimentary rocks.
- Rocky Mts., Cret. geosyncline: Keyes, 236.
Geometric type: Keyes, 360.
Former lateral expanse: Keyes, 56.
- Römerite, notes on: Wolfe, 1, 2.
- Roemer's Paleozoic types, Tex., redescription: Bridge, 8.
- Rome fm., Appalachian Valley: Woodward, H. P., 4.
- Roots of mts. or continents: Macelwane, 22.
- Roselite: Peacock, 13.
- Rubber casts and molds of fossils: Fischer, A., 1.
- Ruby, N. C.: Scroggs, 1.
- Rudistae.
Cuba: Thladens, 3, 5; Vermunt, 4.
Curacao, West Indies: MacGillivray, 1.
Texas: Grubbs, 2.
Trinidad: Bouwman, 1.
- Rutile.
Georgia: Zodac, 28.
Virginia: Brown, C. B., 3.
- Saginaw oil field, Mich.: Carlson, C. G., 1.
- St. Kitts, West Indies.
Historical geology.
Brimstone Hill: Trechmann, 3.
Paleontology.
Brimstone Hill: Trechmann, 3.
Petrology.
Brimstone Hill: Trechmann, 3.
- St. Lawrence submarine trough: Shepard, 7.
- St. Peter group, Minn.: Sardeson, 15.
- St. Peter ss., analysis: Thiel, 9.
- St. Pierre.
Economic geology.
General: Aubert de la Rue, 9.
Historical geology.
Cambrian Langlade: Aubert de la Rue, 8.
General: Aubert de la Rue, 1, 7, 9.
Mineralogy.
Manganese: Aubert de la Rue, 7.
Minerals: Aubert de la Rue, 10.
Physiographic geology.
General: Aubert de la Rue, 5.
- St. Pierre and Miquelon Is.: Aubert de la Rue, 1, 2, 3, 4, 6, 7.
- St. Vincent, West Indies, Soufriere Volcano: Jaggard, 25.
- Saline domes. See salt domes.
- Saline lake deposits, Downey Lakes, Wyo.: Knight, S. H., 10.
- Salinity, Chesapeake Bay water: Wells, R. C., 2.
- Salt.
Alabama: Barkdale, J., 1.
Alberta: Allan, 3, 20.
Arkansas: Bell, H. W., 1; Spooner, W. C., 3; Weeks, W. B., 4.
- Salt—Continued.
California: Hertlein, 11; Melhase, 17; Scott, S. B., 1.
Canada: Cole, L. H., 2.
Halite crystal casts, Pa.: Miller, B. L., 9.
Industrial minerals and rocks: A. I. M. E., 2.
Kansas: Carpenter, A. C., 1; Landes, 24; Sangster, 1.
Louisiana: Howe, H. V., 7, 13; Huner, 1; O'Donnell, 1; Weigel, 2.
Michigan: Exworthy, 1; Poindexter, 5; Slawson, 9; Spiroff, 1.
Mississippi: Munroe, D. J., 2.
Montana: DeWolf, 4.
Nebraska: Condra, 19.
New Brunswick: Norman, 1.
New Mexico: Ageton, R. V., 2; Kroenlein, 2; Robinson, T. W., Jr., 6; Smith, H. I., 3.
New York: Brown, J. S., 1, 7; Hartnagel, 2.
North America, Cordillera, Caribbean regions: Waters, 13.
Northwest Territories: Soper, J. D., 1.
Nova Scotia: Bancroft, 2; Miller, Andrew H., 8.
Ohio: Stout, 7.
Oklahoma: Ham, 2.
Oregon: Melhase, 14; Stafford, 1.
Origin of deposits: Reed, 32.
Pennsylvania: Leighton, H., 6; Miller, B. L., 9; Stone, 21.
Permian basin, N. Mex., Tex.: Smith, H. I., 3.
Salado halite fm.: Mansfield, G. R., 23.
Salt domes and their ceramic deposits: Steinmayer, 3.
Texas: Barton, 6; Marx, 1; Smith, H. I., 3; Weigel, 2; Young, F. S., 1.
Utah: Adams T. C., 3; Dane, 7; Eardley, 11; Martin, G., 1.
West Virginia: Price, P. H., 8-a.
Wyoming: Knight, S. H., 10.
- Salt deposits, in inland basins: Jones, J. C., 2.
- Salt, rock, and potash: Reed, 30.
- Salt Creek oil field, Wyo.: Beck, E., 1.
- Salt-dome problem: Van Tuyl, 1.
- Salt domes.
Anhydrite cap rock, origin: Goldman, 6, 7; Hanna, M. A., 10.
Antillean-Caribbean region: Schuchert, 31.
Arkansas: Bell, H. W., 1; Spooner, 3.
Atlantic Coastal Plain: Stephenson, 24.
Cap rock: Barton, 12; Brown, L. S., 3; Goldman, 6, 7; Hanna, M. A., 10.
Ceramic deposits: Steinmayer, 3.
Distribution in depth: Rosaire, 1.
Domes: Balk, 9.
Effect on oil accumulation: Barton, 13.
Experimental inv.: Link, 4.
Fluid mechanics: Nettleton, 2, 3.
Formation: Escher, 1.

Salt domes—Continued.

- Geophysics and structure: Barret, 3; Eby, J. B., 3.
- Gulf Coast: Barton and Sawtelle, 1; Clark, R. P., 2; Halbouty, 9, 10; Hanna, M. A., 7; Kornfeld, Joseph A., 2; Logan, J., 5; Minor, H. E., 2; Ritz, 1; Rosaire, 5, 13; Schmidt, C., 1; Stephenson, 24; Williams, J. S., 6; Williams, N., 4.
- Geophysical inv.: Schmidt, C., 1.
- Louisiana: Barton, 22, 23, 26; Bornhauser, 1; Buchanan, 2; Clapp, F. G., 4; Crider, 3; Cook, C. E., 1; Easton, 2; Halbouty, 3; Hanna, M. A., 11; Howe, H. V., 3, 13, 26, 30, 31; Huner, 1; Hurlbut, 8; Janssen, 2; McGuirt, 1; O'Donnell, 1; Steinmayer, 2; Taylor, R. E., 3; Wiegell, 2.
- Louisiana and Texas: Barton, 23; Clapp, F. G., 4; Howe, H. V., 7; Judson, 3, 4; Rolshausen, 1; Sawtelle, 1; Weigel, 2.
- Mississippi: Munroe, D. J., 2.
- Mississippi trough, relation to: Shepard, 37.
- Oil fields, Gulf Coast: Woodruff, 4.
- Origin of deposits: Brown, R. V., 1; Clapp, F. G., 5; De Golyer, 2; Reed, 32.
- Pool structure: Bignel, 8.
- Relation to Mississippi submarine trough: Shepard, 37.
- Secondary materials: Hanna, M. A., 3.
- Salt flowage: Jones, R. A., 4.
- Structure elements: Balk, 9.
- Subsidence: Sellards, 13.
- Terminology: Taylor, R. E., 2.
- Texas: Barton, 23, 25, 40; Burford, 1; Carlton, D. P., 1; Deussen, 6; Eby, 5, 8; Ferguson, W. B., 1; Goldman, 5, 7; Goldston, W. L., Jr., 1; Halbouty, 4, 6, 7, 9, 11; Hamner, 1; Hanna, M. A., 11, 13; Heath, 2; Judson, 2; Lahee, 3, 4; Liddle, 3; McCarter, 1; McLellan, 1; Marx, 1; Meyer, W. G., 1; Murphy, P. C., 2; Pinkley, 1; Renick, 5; Rolshausen, 1; Sayre, 6; Sellards, 30; Stenzel, 17; Storm, L. W., 1; Tatum, E. P., 1; Weigel, 2; Wendlandt, 1, 2; Zavolco, 4.
- Texas and Louisiana: Clapp, F. G., 4; Judson, 3, 4; Rolshausen, 1.
- Water-insoluble residues, La. salt plugs: Taylor, R. E., 1.

Salt domes, meteor. craters, and cryptovolcanic structures: Washburne, 5.

Salvador.

Historical geology.

General: Sapper, 5.

Salvador—Continued.

Physical geology.

- Izalco Volcano: Sapper, 2; Termer, 1.
- San Miguel eruption, Feb., 1929: Termer, 1; Sapper, 2.
- Volcanoes, active: Sapper, 4.
- Sand. See also Silica.
- Alabama, glass: Jones, W. B., 15.
- Alaska, Yukon Valley: Eardley, 8.
- Alberta: Rutherford, 14.
- Beach: Krumbeln, 17; MacCarthy, 5.
- Border area, Tex.-Mex.: Hill, 8.
- British Columbia: Richmond, A. M., 2.
- Calcium carbonate in beach: MacCarthy, 6.
- California: Allen, 22; Pulitz, 1; Reed, R. D., 4.
- Canada, natural molding: Freeman, C. H., 2.
- Classification, specifications: Tuck, 1.
- Coastal, east U. S.: MacCarthy, 4.
- Collecting: Whittall, 2.
- Colorado, dunes: Wegemann, 3.
- Deserts, mineralogy: White, W. A., 1.
- Dunes: Gates, 1; MacCarthy, 14; Melton, 25; Smith, H. T. U., 12; Wegemann, 3.
- Eolian: MacCarthy, 9.
- Floating, makes swash marks: Evans, 14.
- Formation: Lane, E. W., 2.
- General: Martens, 7; Thoenen, 1.
- Greenland: Cailleux, 2; Crommelin, 1; Edelman, 2; Hübischer, 1; Moos, A. von, 1, 2; Wegmann, 10.
- Gulf Coast: Halbouty, 5.
- Hawaii, Is. of Oahu: Stearns, 28.
- High Plains, fixed dunes: Melton, 25.
- Idaho: Wilson, H., 2.
- Illinois: Ekblaw, 7; Lamar, 13.
- Indiana, foundry: Logan, 7.
- Industrial minerals and rocks: A. I. M. E., 2.
- Iowa: Wood, L. W., 7.
- Kansas: Landes, 24; Michaelson, 1; Smith, H. T. U., 12.
- Louisiana: Chawner, 3.
- Manitoba: Hutt, 3; Stanley, T. R., 1.
- Maryland: Darton, 15.
- Mechanical analysis: Emery, K. O., 1.
- Mexico: Hill, 8.
- Michigan: Brown, G. G., 1; Tague, 1.
- Mineral analysis: Manger, 2.
- Minnesota: Grout, 23.
- Mississippi: Foster, 5.
- Mississippi River: Russell, R. D., 9, 10, 13.
- New Mexico: Needham, 12; Potter, F. C., 2.
- New York: Nevin, 3.
- North Carolina: Bryson, 7-a.
- Oklahoma: Ham, 2; Hendricks, 9; Wilson, C. W., Jr., 13.

Sand—Continued.

- Ontario: Bruce, 16; Fairbairn, 11, 15; Montgomery, R. J., 1.
 Oregon: Thomas, C. E., 1.
 Pacific N. W., silica deposits: Hodge, 24.
 Pennsylvania: Bascom, 6; Butts, 10; Detrick, 2; Krynine, 11; Leighton, H., 6; Anonymous, 175.
 Permeability: Mavis, 1.
 Prospecting and explor. for: Thoenen, 2.
 Puerto Rico: Thorp, J., 2.
 Quebec: McGerrigle, 6, 8; Osborne, 21.
 Regolith of deserts: Sykes, 5.
 Salt domes, ceramic deposits: Steinmayer, 3.
 Sampling for porosity: Fraser, H. J., 3.
 Sand grains, character: Ries, 7.
 Saskatchewan: Henwood, 1.
 Silica deposits, Calif., Nev., Canada: Hodge, 24.
 South Carolina: Cooke, C. W., 17; Taber, 18.
 South Dakota: Rothrock, 7.
 Tennessee, molding: Whitlatch, 15.
 TVA area, res.: Spain, 4; Anonymous, 139.
 Texas, glass: Hill, 8; Huffington, R. M., 1; Plummer, 17; Sidwell, 5; Stenzel, 18; Tanner, W. F., 2.
 United States, glacial: Runner, 13.
 Virginia: Wentworth, 4.
 Washington: Wilson, H., 2.
 Water transp.: Miller, E. B., 1.
 West Virginia: Price, P. H., 17; U. S. Comm., 2; Wilkinson, S. G., 1.
 Wind transportation of: O'Brien, 4.
 Sand calcite crystals, S. Dak.: Connolly, 4.
 Sand craters, possible significance: Macqueen, 1.
 Sand dunes.
 Colorado: Wegemann, 3.
 High Plains, fixed: Melton, 25.
 Kansas, cycles: Smith, H. T. U., 12.
 Michigan, Sleeping Bear: Gates, 1.
 Sorted by wind: MacCarthy, 14.
 Sand movement bibliography: Haferkorn, 1.
 Sandstone. See also Building stone.
 Alabama: Wellman, 2.
 Alberta: Russell, 37.
 Arkansas: Branner, 17; Giles, 1.
 California: Bradley, W. W., 7.
 Kansas: Whitla, 1.
 Mississippi: Morse, 6.
 Missouri: Bartle, 2.
 New York: Mencher, 2; Reed, J. C., 5.
 North Carolina: Murray, G. E., Jr., 6.
 Nova Scotia: Messervey, 3.
 Oklahoma: Hickock, 1.
 Ontario: Cole, L. H., 8; Dyer, 5.
 Pacific Northwest: Hodge, 24.
 Pennsylvania: Butts, 10; Rogers, R. D., Jr., 1.
 Quebec: McGerrigle, 8.

Sandstone—Continued.

- Silica deposits, Calif., Nev., Canada: Hodge, 24.
 Size distrib. heavy minerals in: Rubey, 9.
 TVA area: Spain, 4; Anonymous, 139.
 Virginia: Edmundson, 7.
 Weathering, Iowa State Capitol Bldg.: Gwynne, 5.
 West Virginia: Martens, 6.
 Sandstone, Utah: Stringham, 3.
 Santa Catalina Is. terraces: Smith, W. S. T., 1.
 Santa Lucia Range, Calif.: Stanton, W. L., Jr., 2.
 Santa Maria oil fields, Calif.: Collom, 1.
 Santa Domingo. See Dominican Republic. Sapphires.
 Montana: Howard, J. W., 1; Murdock, H. E., 1.
 Utah: Crawford, 13.
 Saratoga area, N. Y.: Colony, 1.
 Saskatchewan.
 Soils: Edmunds, 1.
 Areas described.
 Amisk Lake area: Wright, 16, 19.
 Lake Athabasca area: Alcock, 16.
 Pelican Narrows area: Satterly, 1.
 Reindeer Lake area: Stockwell, 1.
 Southern Saskatchewan: McLearn, 4.
 Southwestern Saskatchewan: Williams, M. Y., 2.
 Economic geology.
 Amisk lake area: Wright, 16, 19.
 Beaver Lodge area: Cameron, A. E., 3.
 Bentonites: Worcester, W. G., 5.
 Buff., white-burning clays: McLearn, 16.
 Clays: Fraser, F. J., 5; Hamell, 1; Henwood, 1; Hutt, 1, 2; McLearn, 5, 8, 16; Worcester, W. G., 1, 5.
 Coal: Hastings, 1; McLearn, 5.
 Gold: Alcock, 17; Wright, 18.
 Hudson Bay Junction area: McLearn, 17.
 Kaolin: Fraser, F. J., 5.
 Lake Athabasca area: Alcock, 16.
 Limestones: Goudge, 1.
 Mackay Lake area: Keith, M. L., 3.
 Minerals, indust.: Worcester, W. G., 3.
 Natural gas: Hume, 3, 18; Warren, P. S., 2.
 Petroleum: Hume, 18; Warren, P. S., 2.
 Regina area: Fraser, F. J., 6.
 Historical geology.
 Amisk Lake area: Canada G. S., 1.
 Avonlea-Blackfoot area: Wickenden, 13-a.
 Battleford area: Canada G. S., 1; Hume, 24.
 Beaverlodge area: Cameron, A. E., 3.
 Bentonites: Worcester, W. G., 5.

Saskatchewan—Continued.

Historical geology—Continued.

- Borings: Wickenden, 7.
 Central Saskatchewan: Edmunds, 2.
 Cree Lake area: Sproule, 3, 5.
 Cretaceous marine, Lloydminster: Wickenden, 14.
 Eagle Hills anticline: Hume, 24.
 Fond-du-lac area: Canada G. S., 1.
 Fort Pitt area: Canada G. S., 1.
 Foster Lake area: Canada G. S., 1; McMurchy, 1, 2.
 Gold deposits: Alcock, 17; Canada G. S., 1; Cooke, H. C., 24.
 Gravels, Miocene: Sternberg, 4.
 Hudson Bay Junction area: McLearn, 17.
 Interglacial deposits: Wickenden, 2.
 Lac La-Ronge area: Canada G. S., 1.
 Lake Athabasca area: Alcock, 16.
 Lea Park shale: Warren, P. S., 14.
 Mackay Lake area: Keith, M. L., 3.
 Montana sedimentation: Williams, M. Y., 6.
 Mudjatik-Haultin area: Alcock, 14; Canada G. S., 1; Sproule, 2.
 Oliver lake area: Canada G. S., 1.
 Pas sheet: Canada G. S., 1.
 Regina area: Canada G. S., 1; Fraser, F. J., 6; Simpson, H. E., 2.
 Reindeer Lake area: Alcock, 19.
 Reindeer-Spalding Lakes area: Weeks, 9.
 Rottenstone Lake area: Ross, S. H., 2.
 Sources of ground water: Wickenden, 12.
 Stony Rapids area: Canada G. S., 1.
 Tazin Lake area: Canada G. S., 1.
 Thunder Hill structure: McLearn, 20.
 Wapus Lake area: Canada G. S., 1.

Mineralogy.

- Bruno meteorite: Nininger, 37.
 Hypersthene, Lake Athabasca: Cooke, H. C., 23.

Minerals, indus.: Worcester, W. G., 3.

- Springwater meteorite: Nininger, 18.

Paleontology.

- Bearpaw fm.: Warren, P. S., 13.
 Crocodile, Leidyosuchus: Sternberg, 9.
 Dinosaurs, Cret.: Russell, L. S., 4.
 Equisetum: Berry, E. W., 1.
 Faunas.
 Dinosaur, Cret.: Russell, L. S., 4.
 Lea Park shale: Warren, P. S., 14.
 Mammalian, Eocene: Russell, L. S., 18.
 Molluscan: Russell, L. S., 20.

Floras.

- Cypress Hills: Berry, 22.
 Ravenscrag fm.: Berry, 50.

Whitemud fm.: Berry, 50.

- Foraminifera: Wickenden, 8, 10.

- Gyraulus: Baker, F. C., 11.

- Hemipsalodon: Russell, 38.

- Hesperorhynchia: Warren, 17.

- Mammalia: Russell, L. S., 18.

- Merychippus: Russell, L. S., 18.

Saskatchewan—Continued.

Paleontology—Continued.

- Mollusca: Mozley, 1; Russell, L. S., 14, 20.

- Trapa? Eocene: Brown, 21.

- Turtles: Russell, L. S., 22.

- Vertebrata: Russell, L. S., 25.

Petrology.

- Foster Lake area: McMurchy, 1, 2.

- Petrography of sediments: Fraser, F. J., 1, 3.

- Reindeer Lake area: Alcock, 19.

Physical geology.

- Avonlea-Blackfoot area: Wickenden, 13-a.

- Beaverlodge area: Cameron, A. E., 3.

- Foster Lake area: McMurchy, 1, 2.

- Lake Athabasca gold deposits: Alcock, 17.

- Mackay Lake area: Keith, M. L., 3.

- Reindeer Lake area: Alcock, 19.

- Reindeer-Spalding Lakes area: Weeks, 9.

- Rottenstone Lake area: Ross, S. H., 2.

Physiographic geology.

- Age, glacial deposits: Wickenden, 13.

- Avonlea-Blackfoot area: Wickenden, 13-a.

- Central Saskatchewan: Edmunds, 2.

- Cree Lake area: Sproule, 3, 5.

- Driftless area: Wickenden, 1.

- Foster Lake area: McMurchy, 1, 2.

- Glacial Lake Regina: Johnston, W. A., 2.
 Glacial lakes, moraines: Johnston, W. A., 4.

- Lake Athabasca area: Alcock, 16.

- Moraines, glacial lakes: Johnson, W. A., 4.

- Regina area: Fraser, F. J., 6.

- Rottenstone Lake area: Ross, S. H., 2.

- Southwestern Saskatchewan: Williams, M. Y., 1.

Underground water.

- Darmody-Rivernhurst area: Maddox, 7.

- Elbow quad.: Maddox, 8.

- Ground-water res., Regina: Simpson, H. E., 2.

- Moose Jaw, ground water: Johnston, W. A., 5.

- Oil-field waters: Campbell, S., 2.

- Rush Lake quad.: Maddox, 8.

- Sources of ground water: Wickenden, 12.

- Scablands, Washington: Flint, 19, 21; Hodge, 14.

Scale models applied to geol. structure study:

- Hubbert, 10.

Scaphopoda. See also Mollusca.

- Arizona: McKee, 11.

- California: Anderson, F. M., 14; Merriam, C. W., 10; Vokes, 12.

- Florida: Mansfield, W. C., 3, 11, 20.

- Gulf Coastal Plain: Richards, 21.

- Louisiana: Huner, 1.

- Mexico: Jordan, 1.

- Nova Scotia: Stephenson, 13.

Scaphopoda—Continued.

- Oregon: Anderson, F. M., 14; Smith, W. D., 11.
 Texas: Richards, 22.
 Throopella type, Mo.: Greger, 3.
 United States, southern: Palmer, K. E. H. V., 2.
 Utah: McKee, 11.
 Wyoming: Branson, C. C., 14.
- Scavengers, marine, sedimentational effect: Dapples, 2.
- Scenery Hill gas field, Pa.: Robinson, J. F., 1.
- Schists.
 Ontario, Thunder Lake: Pettijohn, 15.
 Origin: Gilluly, 8.
- Science in U. S. Coast and Geod. Survey: Bowie, 21.
- Scientific illus.: Ridgway, J. L., 1.
- Scolecodonts.
 General: Croneis, 15.
 Idraites, N. Y.: Eller, 9.
 Michigan, Dev.: Eller, 15.
 Polychaetae, Ohio, Ont.: Stauffer, 22.
 South Dakota: Furnish, 2.
- Scolithus, fossil phonorid: Fenton, M. A., 6.
- Scorodite, Va.: Morgan, A. L., 1.
- Sea level, mean, determination: Marmer, 1, 3.
- Secondary enrichment. See also Ore deposits, origin.
 Theory: Schneiderhöhn, 2.
- Sedimentary rocks. See also Petrology.
 Accessory minerals: Tester, 9; Winchell, 7.
 Alaska: Capps, 10; Moffit, 10, 11; Smith, P. S., 12; Wentworth, 40.
 Algal reefs and oolites, Green River fm.: Bradley, W. H., 3.
 Anisotropy effect on resistivity curves: Pirson, 4.
 Appalachia: Nelson, 6.
 Appalachian Plateau, Mississippi Valley: Butts, 12.
 Arctic America, Ellesmere Is.: Bentham, 3.
 Arizona: Brown, W. H., 4; Butler, 19, 20; Smith, H. T. U., 11; Stark, 17.
 Arkansas: Giles, 7; Henbest, 7.
 Arkose deposits in humid tropics: Krynine, 3.
 Artificial classn.: Hoover, W. F., 3.
 Aruba, West Indies: Westermann, J. H., 1.
 Atlantic and Gulf Coastal Plain: Stephenson, 24.
 Belt ser. northern: Fenton, 54.
 Bibliography, 1934-37: Stetson, 18.
 Bibliography, calcareous sediments: Vernon, 1.
 Bonaire, West Indies: Pijpers, 4.
 Bottom samples, N. Pacific Ocean: Tyler, S. A., 1.
 Calcareous sediments: Vernon, 1.
 Bibliography of: Vernon, 1.

Sedimentary rocks—Continued.

- California: Averill, 7; Chapman, R. W., 4; Clark, 29; Eaton, 10; Hazzard, 9; Hertlein, 11; Kelley, 10; MacDonald, G. A., 1; Noble, L. F., 4; Shepard, 35; Trask, 39.
- Canada.
 Canadian Shield: Chamberlin, 16; Wilson, M. E., 20.
 Interior plains: Kindle, 40.
 Kirkland Lake area: Dougherty, 5.
 Lake Superior area: Pettijohn, 11.
 Porcupine Lake area: Dougherty, 5.
 Steeprock Lake area: Moore, E. S., 23.
 Carbonaceous sediments: White, C. D., 11.
 Central America: Müllerried, 30.
 Chalk, composition: Frizzel, 2.
 Chart, color, for description: Goldman, M. I., 1.
 Chester ss., Ind.: McCartney, 1.
 Chester ss., Ind.: McCartney, 1.
 Classification: Van Amringe, 5; Van Tuyl, 19.
 Clastic sediments: Wentworth, 14.
 Clay minerals: Ross, C. S., 7.
 Coincidence, climatic and sea-level cycles: Gillette, 5.
 Colloids, clay, cause of bedding: Keller, 6.
 Colorado: Blackmer, 1; Green, T. H., 1; Heaton, 8; Johnson, J. H., 3; Lovering, 30; Traupe, 1.
 Comanchean lms., Tex.: Hanna, M. A., 4.
 Compaction and oil migration: Athy, 2.
 Connecticut: Krynine, 5, 8.
 Consolidation of sediments: Kindle, 27.
 Continental shelf, mid-Atlantic States: Shepard, 22.
 Continents, strat. evidence on tectonics: Moore, 35.
 Correlations.
 By insoluble residues: McQueen, 4; Shrock, 7.
 By radioactivity: Landsberg, 14.
 Guadeloupe and Martinique: Barrabé, 14.
 Paleozoic lms.: Singewald, Q. D., 10.
 Pennsylvanian lms.: Mitchell, R. H., 5.
 Cretaceous, Black Hills area: Rubey, W. W., 3.
 Criteria, marine, nonmarine sediments: Crowley, A. J., 1.
 Cumulative curves and histograms: Dryden, 8; Galliher, 9.
 Curaçao, West Indies: Pijpers, 2; Vermunt, 1.
 Dakota stage: Tester, 3.
 Density, porosity, compaction: Athy, 1.
 Detrital minerals, Canadian sediments: Fraser, F. J., 2.
 Device for holding detrital grains: Howard, A. D., 3.
 Differential compacting: Nevlin, 1.

Sedimentary rocks—Continued.

- Discoloration, sediments by bacteria:
Singewald, Q. D., 2.
Dresbach ss., Wis.: Wilgus, 1.
Eocene sands, Tex.: Lonsdale, 4.
Examination, fragmental rock: Tickell, 1.
Feldspar in beach sand: Martens, 3.
Florida: Martens, 10.
General: Anonymous, 111.
Geological evidence of floods: Hinds, 30.
Geological notes for mtn. climbers: Erwin, 5.
Georgia coastal plain: Cooke, C. W., 21.
Glacial sediments: Leighton, 2, 6.
Glauconite: Burt, 5; Galliher, 13.
Glenwood beds, Minn.: Thiel, 12.
Grain relations: Cooke, H. C., 9.
Greenland: Büttler, 3; Edelman, 2; Hübischer, 1; Mayne, 3; Moos A. von, 1, 2; Teichert, 14; Wager, 3; Wegmann, 8, 10.
Grenville and Potsdam, Ontario: Harding, W. D., 1.
Guadeloupe: Barrabé, 3.
Guatemala: Termer, 7.
Heavy minerals: Becker, H., 1; Derry, 7, 8; Dryden, 2; Edson, 2; Fraser, F. J., 4; Johnson, James H., 1; Kelly, W. A., 3; Pentland, 1; Rittenhouse, 7; Smith, W. C., 1.
Hillsboro ss.: Carman, J. E., 2.
Idaho: Anderson, 23; Dickey, F. H., 1; Livingston, D. C., 4; Shenon, 17, 18; Wilson, R. A., 5.
Insoluble residues, Hunton, Viola lms., Kans.: Ockerman, 2.
Mississippian lms., Ind., Ky.: Martin, H. G., 1, 2.
Jointing, systematic: Parker, J. M., 2.
Jordan ss., Wyo.: Ockerman, 1.
Kansas: Elias, 15; Ockerman, 2.
Kentucky, Missn. lms.: Martin, H. G., 2.
Labrador: Odell, 6.
Lake Agassiz silts, Minn.: Sherman, 1; Thiel, 14-a.
Lithology, selected Tert. sediments: Howard, A. D., 1.
Lowlands, S.-cent., Ouachita provs.: Reudeman, P., 3.
Madison ss., Wyo.: Ockerman, 1.
Maine: Chadwick, 33.
Manganese in sediments: Hewett, 7.
Manitoba: Ambrose, 2; Stockwell, 10.
Marine unconformities and congloms.: Twenhofel, 20.
Massachusetts: Billings, 18.
Measurement, shapes of rock particles: Tester, 4.
Mechanical analysis of: Krumbein, 2, 5; Otto, 5; Rittenhouse, 1; Spieker, 12; Tolman, C. F., 1; Trask, 5.
Merchantville clay, N. J.: Storm, P. J., 1.
Meteorite contrib. to sediments: Lane, 40.

Sedimentary rocks—Continued.

- Mexico: Blásquez L., 3; Díaz, 1; Flores, 10; Hernandez, 2; Imlay, 4, 7, 10; Kellum, 13; Krynine, 1.
Michigan: Alty, 2; Eddy, G. F., 1; Kelly, W. A., 5; Stearns, M. D., 1, 2.
Mineralogy: Pettijohn, 6, 14.
Minerals in, sands, Quebec, Labrador, Greenland: Martens, 1.
Coastal Plain terrace fms., Va.: Gunnell, E. M., 1.
Sandstones, Ozark region: Cordry, 1.
Minisink Valley, Pleist. deltas: Happ, 4.
Minnesota: Bastin, 16; Sherman, 1; Thiel, 12, 14-a.
Mississippi: Grim, 7; Martin, H. G., 1; Needham, 4.
Mississippi Valley area: Bastin, 20.
And Appalachian Plateau: Butts, 12.
Missouri: Conselman, 1; Grawe, 2; Keller, 11.
Missourian series, sed. cycles: Keyes, 350.
Moissanite in sediments: Ohrenshall, 1.
Montana: Deiss, 8; Dickey, F. H., 2; Fenton, 60; Gibson, 5; Huribut, 10; Lorain, 1; Parker, F. S., 2; Stow, 14; Thiel, 12.
Monterey shale: Reed, R. D., 2.
Mud-crack expers.: Kindie, 35.
Nebraska, Pleist.: Lugin, 15.
Nevada: Campbell, D. F., 1; Ferguson, 10; Sharp, R. P., 4, 5.
New Brunswick: Hayes, 7.
Newfoundland: Jewell, 2; Twenhofel, 29.
New Hampshire: White, G. W., 12.
New Mexico: Church, F. S., 1; Hunt, 4; Just, 3; Keyes, 437; Schmitt, 10; Stott, 1.
New York: Berry, G. W., 1; Goldring, 19; Mencher, 2; Sanford, 10; Sheldon, P. G., 1; Warthin, 3; Whitcomb, 11-a.
Niagaran rocks, Ohio, Ind.: Priddy, 1.
North America.
Atlantic Coastal area: Boesch, H. H., 3.
Cordillera and Caribbean areas: Waters, 13.
North Carolina, slates: Alexander, A. E., 1; Murray, 6.
Northwest Territories: Henderson, J. F., 4, 5, 6.
Nova Scotia: Belyea, 1; Douglas, 5.
Ohio: Lamborn, 3.
Oklahoma: Decker, 24, 25; Frele, 1; Lauer, 3; Lucas, E. L., 2; Merritt, C. A., 1; Schoff, 1; Six, 3.
Ontario: Bartley, 2; Bateman, J. D., 1, 2; Bruce, 26; Derry, 7, 8; Fairbairn, 15; Fraser, F. J., 4; Harding, 4, 5; Perdue, 1; Pettijohn, 8, 15; Prest, 1; Robson, 1; Satterly, 4; Thomson, James E., 15; Thomson, R., 4.

Sedimentary rocks—Continued.

- Oregon: Goodspeed, 20; Piper, 17; Smith, W. D., 11; Thayer, 5.
- Origin and composition: Runner, D. G., 4.
- Oriskany ss.: Stow, 3, 11.
- Ouachita Mts., Ark., Okla.: Keyes, 469.
- Packing, differential, bedding: Keller, 12.
- Panama, Los Santos Prov.: MacDonald, D. F., 1.
- Bona, Otoque Is.: Wolff, F. L., von, 2.
- Pennsylvania: Bascom, 6; Ehrenfeld, 2; Graeber, 1; Miller, B. L., 13; Shaffner, 2; Stose, 21; Weller, 6; Willard, 24, 52, 58.
- Percentage representation, heavy minerals: Dryden, 2.
- Petrography and petrology: Grout, 6.
- Petroleum source beds, Okla.-Kans.: Trask, 35.
- And gas accumulation: Bignel, 5.
- Petrological-paleontological relations, strat.: Bulman, 1.
- Physiography, sedimentation, and oil geology: Rich, 17-a.
- Pierre sedimentation, Canada: Williams, M. Y., 6.
- Puerto Rico: Ray, H. C., 4.
- Quartz particles: Wadell, 8.
- Quaternary, Atlantic, Gulf Coastal Plains: Cooke, C. W., 26.
- Quebec: Bannerman, 4; Denis, 7; Gunning, 22, 24; Jones, I. W., 13, 15; Kindle, 38; Longley, 3; Lowther, 1; McGerrigle, 8; Osborne, 29.
- Radioactivity: Goodman, C., 1.
- Rate and continuity of deposition: Twenhofel, 30.
- Red beds, western: Krynine, 9.
- Rilled lms.: Laudermilk, 4.
- Rio Grande depression, Colo., N. Mex.: Bryan, 36.
- Rocky Mts., Great Plains, cycles: Lugn, 8, 9, 10.
- St. Peter ss., analysis: Thiel, 9.
- Sampling sands for porosity: Fraser, H. J., 3.
- Sand.
- Location of deposits: Rich, 29.
- Mineral analysis: Manger, 2.
- Sampling for porosity: Fraser, H. J., 3.
- Saskatchewan: Keith, M. L., 3; McMurphy, 1, 2; Ross, S. H., 2; Sproule, 3, 5; Weeks, 9.
- Scavengers, marine sedimentational effect: Dapples, 2.
- Secondary oolite: Swartzlow, 1.
- Sedimentary environments: Anderson, G. E., 3.
- Sedimentary petrography: Thiel, 15.
- Manual: Trask, 41.
- Sedimentary petrology: Milner, H. B., 1.
- Sedimentation analysis, factors: Galliher, 10.

Sedimentary rocks—Continued.

- Sedimentation cycles, Dev.: Keyes, 475.
- Sedimentation relation to faulting: Longwell, 25.
- Sediments, ancient: Poor, 8.
- Seasonal, annual, accumulations: Thiesmeyer, 5.
- Sespe fm., Calif.: Reed, R. D., 1.
- Shape, large sedimental fragments: Wadell, 5.
- Shapes of rock particles: Wentworth, 20.
- Silicified bog iron deposits, Va.: Goldman, 3.
- Simpson group, Okla.: Decker, 4.
- South Carolina, Santee-Cooper dam: Taber, 18.
- Sphericity, roundness, rock particles: Wadell, 3.
- Structures in sediments: McKee, 12.
- Submarine canyon dredge samples, Atlantic Coast: Stetson, 12.
- Terminology, medium-grained sediments: Allen, 16.
- Siliceous sediments: Tarr, 27.
- Texas: Albritton, 9; Bowling, L., 1; Earl, 1; Meyer, W. G., 1; Patton, 7; Richards, 22; Sayre, 6; Schoffelmayer, 1; Shuler, 3; Trowbridge, 6; Wilgus, 1.
- Triassic, Kans.-Okla.-Tex.: Roth, 11.
- United States, copper-vanadium-uranium deposits: Fischer, R. P., 2; Koberlin, 3.
- Utah: Andrews, W. B., 1; Beutner, 1; Burwash, 10; Dobbin, 17; Green, J., 1; Gregory, H. E., 4, 6; Smith, A. L., 1; Thorpe, 14.
- Varved sediments: Antevs, 5.
- Vermont: Jacobs, 2, 3.
- Virginia: Bates, R. L., 4; Bevan, 27; Cooper, B. N., 2; Furcron, 9; Lammers, 1, 3; Rowland, R. A., 1; Woodward, 13.
- Volcanic deposits, Ark.-Okla.-Tex.: Ross, C. S., 1.
- Volume, shape, roundness, rock particles: Wadell, 2.
- Washington: Goodspeed, 15, 16; Stow, 4.
- West Virginia: Price, P. H., 8-a, 17.
- Wisconsin: Burpee, 1; Drindak, 1; Ellsworth, E. W., 1; Houghton, 1; Tyler, 3; Wentworth, 39; Wilcox, R. E., 1; Wilgus, 1.
- Sedimentary volcanism: Kugler, 3.
- Sedimentation. See also Conglomerates; Erosion; Sedimentary rocks.
- Acid treatment of rocks: Anonymous, 28.
- Alabama: Barnes, F. F., 3; Poor, 6.
- Alaska: Eardley, 8.
- Alberta: Kindle, 8.
- Analysis: Berg, E. L., 1; Krumbein, 10.
- Andros Is., Bahamas, algal: Black, 4.
- Arizona: McKee, 13; Smith, G. E. P., 2.
- Arkansas: Henbest, 7; Stearn, 8.

Sedimentation—Continued.

- Arkose deposits, humid tropics: Kry-
nine, 3.
Assiniboine great cycle: Keyes, 311.
Atlantic slope. N. Am., submarine cores:
Bradley, 18, 20; Phleger, 11.
Bacteria in sediments, geol. effect: Zo-
Bell, 1.
Bahamas, calcareous shallow-water de-
posits: Thorp, E. M., 2, 3.
Barred basins and source rocks of oil:
Woolnough, 3.
Base exchange in sediments: Kelley, W.
P., 1.
Beach sands, Atlantic Coast: MacCarthy,
3.
Composition: Hamaker, 1.
Lake Michigan: Pettifohn, 2.
Mechanical analysis: MacCarthy, 2.
Beaches: Martens, 13.
Beaver dams as geol. agents: Ruede-
mann, 45.
Bed-sediment transp.: MacDougall, 1.
Bentonite settling in water: Kindle, 18.
Bermuda, minerals, deep-sea cores, sur-
face sediments: Young, J. A., Jr., 2.
Shoal-water deposits: Todd, J. P., 2.
Bibliography: Brown, C. B., 6; Stetson,
18; Trask, 28; Vernon, 1.
Calcareous sediments: Vernon, 1.
Chemical studies: Steiger, 1.
Biochemical agencies: Thiel, 3.
Black shale, N. Y.: Hard, E. W., 1.
Bottom-sampling apparatus: Hough, 6.
British Columbia bogs, stratigraphy,
flora: Osvald, 2.
Varved clays: Hanson, 7.
By-passing and discontinuous deposition:
Eaton, J. E., 1.
Calcareous marine deposits, Bahamas,
Fla.: Thorp, 5.
Calcareous sediments: Vernon, 1.
Calcium carbonate precipitation, Great
Bahama Bank: Black, 5.
California: Ashauer, 1; Barnes, F. F., 7;
Cobee, 4; Galliher, 5, 11, 15; Grant,
12, 15, 16; Louderback, 13; Reed,
R. D., 4; Revelle, 1-a, 3; Shepard,
14, 20, 35, 40, 42, 45, 52-a; Shrock,
8; Taliaferro, 9; Trask, 8; Troxell,
H. C., 1.
Carbonaceous sediments: White, C. D.,
11.
Channel-contraction effect on stream
bed: Straub, 4.
Chemical studies: Steiger, 2, 3, 4.
Chert and int. concretions, cone-in-
cone: Tarr, 6.
Clastic sediments: Fraser, H. J., 4;
Muskat, 2; Wentworth, 14.
Clays, colloids, cause of bedding: Keller,
6.
Properties of: Grim, 15.
Rhizoconcretions, St. Lawrence, from
plants: Rousseau, 1.
Coarse sediments: Wentworth, 8.

Sedimentation—Continued.

- Coastal sands, east U. S.: MacCarthy, 4.
Coincidence, climatic and sea-level cycles:
Gillette, 5.
Collecting sands: Whitnall, 2.
Colloids, clay, cause of bedding: Keller,
6.
Colorado: Goddard, 6.
Colorado River Delta: Fox, C. K., 1;
Sykes, 1, 2, 3.
Compaction of sediments: Trask, 9.
Comparison, in sed. deposits: Ritten-
house, 1.
Compressibility, sand-mica mixtures:
Rubey, W. W., 1.
Computing composition types: Went-
worth, 2.
Connecticut, pollen analysis, lake de-
posits: Deevey, 1.
Continental shelf sediments: Alexander,
A. E., 3; Shepard, 22; Stetson, 6.
Continents and oceans, origin: Bowie,
20.
Core samples, ocean bottom: Bradley,
18, 20; Piggot, 5, 6, 7; Varney, 1;
Anonymous, 114.
Criteria, marine, nonmarine sediments:
Crowley, A. J., 1.
Cumulative curves and histograms:
Dryden, 8; Galliher, 9.
Cycle of erosion, later stages: Crick-
may, C. H., 22.
Cycles of sedimentation.
Late Paleozoic: Benson, E. T., 2.
Paleozoic: Wanless, 13.
Pennsylvanian, Mid-continent:
Moore, R. C., 23.
Permian, Mid-continent: Moore, R. C.,
28.
Davis Strait sediments: Trask, 12.
Deep-sea bottom samples, N. Atlantic
and Caribbean: Thorp, E. M., 1.
Deep-sea cores, N. Atlantic: Bradley,
18, 20; Piggot, 5, 6, 7; Varney, 1;
Anonymous, 114.
Deep-sea sedimentation, total amount:
Kuenen, 1.
Delta, Mississippi River: Russell, R. J.,
13-a, 16, 26.
Deltas, channel-like deposits: Tanner,
W. F., 3.
Deposition in lakes by glacial streams:
Engeln, von, 3.
Detritus transp.: Straub, 6.
Earth, age: Louderback, 8.
Ecology, sand areas: Twenhofel, 17.
Effects of transp. on particles: Russell,
R. D., 15.
Equilibrium conditions in debris-laden
streams: Rubey, 10.
Faecal pellets in marine sediments:
Moore, H. B., 1.
Feldspars, authigenic, in sediments:
Tester, 11.
Fluvial deposits: Trowbridge, A. C., 1.
Fluviatile sediments, criteria: Ritten-
house, 5.

Sedimentation—Continued.

- Florida, calcareous shallow-water sediments: Thorp, E. M., 2, 3.
 Coast: Tyler, S. A., 2.
 Force required to move particles on stream bed: Rubey, 13.
 Formulas, new: Wadell, 7.
 General: Blackwelder, 29; Field, R. M., 3; Ramser, 1; Reed, R. D., 2; Trask, 28; Trowbridge, 11; Twenhofel, 3, 4, 8, 14.
 Geologic rhythms: Wanless, 15.
 Geological evidence of floods: Hinds, 30.
 Geological periods and diastrophic circuits: Keyes, 435.
 Georges Bank: Stetson, 8.
 Glacial sediments: Flint, 24; Leighton, M. M., 6.
 Glauconite, foraminiferal shells: Dryden, 3.
 Great Salt Lake: Eardley, 11.
 Greenland: Crommelin, 1; Edelman, 2; Moos, A. von, 1.
 Ground water inv.: Piper, 6.
 Gulf of Mexico: Levorsen, 15.
 Hawaii, Pearl and Hermes reef: Thorp, 4.
 Hydrologic, hydrog. inv.: Piper, 13.
 Ice jams, sub-Arctic rivers: Wentworth, 17.
 Idaho: Hough, 4; Reed, J. C., 19.
 Illinois: Glymph, 4; Grim, 13; Jones, V. H., 3, 4.
 Indiana: Thornbury, 5; Wilson, I. T., 1.
 Iowa, major coal cycles: Keyes, 380.
 Kansas: Abernathy, 1; Flaxman, 1; Hoover, W. F., 1; Jewett, 3; Jones, V. H., 6, 8, 9.
 Kentucky, new island in Mississippi River: Shull, 1.
 Lake Bennett, Ark.: Glymph, 3.
 Lake Booneville, Ark.: Glymph, 1.
 Lake deposits, Basin, Range prov.: Blackwelder, 14.
 Lake Harris, Ala.: Eargle, 1.
 Lake Mendota, Wis.: Williams, F. T., 2.
 Lake Purdy, Ala.: Eargle, 2.
 Lake Sapulpa, Okla.: Glymph, 2.
 Lake Spavinaw, Okla.: Kesler, 2.
 Lake Taneycomo, Mo.: Kesler, 3.
 Length, geol. period. Gillette, 4.
 Lime deposition, Tortugas, Fla.: Gee, 1, 3.
 Lime-secreting algae: Howe, M. A. 2; Kindle, 25.
 Limestone precipitation by submarine volcanic action: Kania, 1.
 Littoral drift: Hennebique, 1.
 Louisiana: Fisk, 2; Howe, 18; Jones, V. H., 2; Krumbein, 12, 22; Russell, R. J., 16, 26; Steinmayer, 4; Winston, 1.
 Magnetism, Atlantic Ocean sediments: McNish, 2, 3.
 Maine, calcareous beach: Raymond, 9.

Sedimentation—Continued.

- Manganese in sediments: Hewitt, 7.
 Exchangeable, river and ocean muds: Murata, 2.
 Marine sediments, sedimentation: Becking, 1; Stetson, 5; Trask, 1, 34, 43; Vaughan, 9, 18.
 Marine unconformities and congloms.: Twenhofel, 20.
 Marl, formation: Kindle, E. M., 2.
 Maryland, Burnt Mills Reservoir: Barnes, F. F., 5.
 Greenbelt Lake: Barnes, F. F., 6.
 Massachusetts, Mass. Bay: Hough, J. L., 1; Stetson, 9; Trowbridge, 7.
 Meadow sod under beaches: Richards, H. G., 3.
 Mechanical analysis of sediments: Gripenberg, 1; Krumbein, 1; Otto, 5; Spieker, 12; Trask, 5.
 Mechanical composition: Wentworth, 2, 15.
 Mexico: Krynine, 1; Revelle, 4.
 Michigan: Bay, J. W., 1; Bergquist, 6; Evans, 13, 17; Hough, 3.
 Microbiology and marine lms.: Field, 8.
 Microorganisms, role in sediments: Thiel, 6.
 Mineral analysis of sediments: Pettijohn, 16.
 Minisink Valley Pleist. deltas: Happ, 4.
 Mississippi River: Elliott, D. O., 1; Krumbein, 23; Russell, P. G., 7; Vogel, 1.
 Delta: Russell, R. J. 16, 26; Trowbridge, A. C., 3.
 Sedimentary load: Russell, R. D., 16.
 Moissanite in sediments: Edelmann, 1.
 Montana, Baker Reservoir: Jones, V. H., 5.
 Mud crack experiments: Kindle, 35.
 Nebraska, Wellfleet Reservoir: Jones, V. H., 7.
 Nevada, Great Basin lake sediments: Shrock, 8.
 New River, Va.-W. Va.: Brown, C. B., 2.
 Niagara Gorge, N. Y.: Alling, 9.
 Nomogram for settling velocity of spheres: Rouse, H., 1.
 North America, Pacific NW., ocean sediments: Utterback, C. L., 1.
 North Carolina: Alexander, A. E., 1; Connaughton, 2, 3; Tyler, S. A., 2.
 Ocean movements affecting: Fleming, R. H., 1.
 Oceanography and submarine geology: Sverdrup, 1.
 Ohio: Mitchell, 7; Pettijohn, 3, 4.
 Ohio River flood deposits: Mansfield, G. R., 25.
 Ontario, Lake Erie: Kindle, 20.
 Oolites: Davidson, S. C., 1; Swartzlow, 4.
 Oregon, Great Basin lake sediments: Shrock, 8.

Sedimentation—Continued.

- Organic content, recent sediments: Trask, 10, 33, 42.
- Organic structures in sediments: Galliher, 6.
- Oriskany ss.: Stow, 11.
- Ouachita Mts., Ark.-Okla.: Keyes, 469.
- Pacific island sediments: Wentworth, 9.
- Packing, differential, and bedding: Keller, 12.
- Passage, turbid water through Lake Mead, Ariz.-Nev.: Grover, 1.
- Pebbles, orientation in sed. deposition: Krumbein, 25.
- Periodicity, epeirogenic movements: Born, A., 1.
- Petrology, marine sediments Mid-Atlantic Coast: Cohee, 1.
- Phase sampling of sediments: Apfel, 4.
- Phases of, Gulf area: Steinmayer, 1.
- Phosphate: Mansfield, G. R., 9.
- Physiography, sedimentation, and oil geology: Rich., 17-a.
- Physics, application: Van Orstrand, 4.
- Porosity and permeability: Graton, 8.
- Precipitation, calcium carbonate in lakes: Williams, F. T., 1.
- Principles of: Twenhofel, 33.
- Profile, buried valleys, Ohio, Tenn., Cumberland Rivers: Rhoades, 1.
- Quartz sand, rounded, off New-England: Stetson, 7.
- Radium content, ocean bottom sediments: Piggot, 3.
- Pacific Ocean, water, sediments: Evans, R. D., 5.
- Rate, continuity, of deposition: Twenhofel, 30.
- Recent marine sediments: Trask, 15.
- Recent sediment studies: Twenhofel, 36.
- Red beds, W.: Krynine, 9.
- Relation of faulting to: Longwell, 25.
- Rio Grande, silt carried: Flock, 1.
- Rip currents: Shepard, 29.
- River gravel: Campbell, M. R., 3.
- Rivers, sed. characteristics: Straub, 1.
- Rock bottom area, Massachusetts Bay: Hough, J. L., 1.
- Rock fans, pediments: Rich, 19.
- Rocky Mts., Great Plains, cycles: Lugn, 8, 9, 10.
- Salinity changes, Chesapeake Bay: Wells, R. C., 2.
- Sand bodies, location of: Rich, 29.
- Sand, floating, makes swash marks: Evans, 14.
- Sand grains, character: Ries, 7.
- Sands, Mississippi River: Russell, R. D., 10, 13.
- Scavengers, marine, sedimentational effect: Dapples, 2.
- Sea-bottom samples, Cabot Strait: Kindle, 13.

Sedimentation—Continued.

- Sediment diversion, branching channels: Matthes, G. H., 2.
- Sedimentary data presentation: Krumbein, 24.
- Sedimentary environments: Anderson, G. E., 3.
- Sedimentary fragments, classn., bibliography: Williams, L., 2.
- Sedimentary particles, shape, bibliography: Russell, R. D., 11.
- Sedimentary petrography: Thiel, 15.
- Sediments.
- Ancient, study of: Poor, 8.
- Continental shelves: Shepard, 6; Thiel, 5.
- Deep-sea, magnitude: Twenhofel, 2.
- Floating on fresh water: Evans, 12.
- Marine, salinity-calcium carbonate relation: Trask, 34.
- Organic content: Trask, 10, 21, 22, 33, 42.
- Pipette analysis: Rittenhouse, 6.
- Seasonal, ann. accumulation: Thiesmeyer, 5.
- Siliceous, notes, 1934-35: Tarr, 20.
- Size frequency distrib.: Krumbein, 6, 9, 11.
- United States continental shelf: Stetson, 17, 19.
- X-ray analysis: Mehmel, 1.
- Sediments and exponential curves: Krumbein, 14.
- Sedimentation analysis, factors: Galliher, 10.
- Settling velocities, sand, gravel, silt: Rubey, 8.
- Silt problem: Stevens, J. C., 1.
- Silt studies: Bryan, 11.
- Silting.
- Colorado River: Fortier, 1.
- Lake Austin, Tex.: Taylor, T. U., 1.
- Reservoirs: Brown, C. B., 4; Eakin, 5; Poor, 5; Taylor, T. U., 2.
- Rivers: Bryan, 6.
- Size distrib., heavy minerals in ss.: Rubey, 9.
- Size frequency distrib.: Krumbein, 6, 9, 11, 21; Wentworth, 41.
- Soil Conservation Service studies: Brown, C. B., 5.
- Soil, cost in rock and time: Twenhofel, 37.
- Solids, settling velocity: Wadell, 6.
- Transportation in open channels: U. S. Bur. Reclamation, 1.
- Sorting, in swash and backwash: Evans, 18.
- River sediments: Straub, 5.
- Source, beach sands, Long Is., N. J.: Colony, 3.
- South Canadian River, N. Mex.-Tex.: Sidwell, 6.
- South Dakota: Connaughton, 1; Glymph, 6.
- Spring pits: Quirke, 6.

Sedimentation—Continued.

- Sporangites, Dev., redeposited in Lake Michigan: Hough, J. L., 2.
- Stanford Univ. studies: Blackwelder, 42.
- Stream dynamics: Lane, E. W., 1.
- Streams, load-carrying, energy balance: Knapp, R. T., 1.
- Structure and creep: Stearn, 10.
- Structures in sediments: McKee, 12.
- Studies in: Brown, C. B., 5, 6.
- Sulfur cycle in: Galliher, 8.
- Recent sediments: Trask, 3.
- Terminology.
- Coarse sediments: Wentworth, 32.
- Fine-grained mech.: Twenhofel, 25.
- Medium-grained: Allen, 16.
- Siliceous sediments: Tarr, 27.
- Texas: Albritton, 9; Gebb, 1; Glymph, 5; Reed, E. L., Jr., 1; Richards, 22; Shuler, 3; Sidwell, 3.
- Thermal overflow, thallophytes, rock building: Setchell, 1.
- Transportation.
- Bed-load by streams: O'Brien, M. P., 1.
- Debris by streams, and turbulence: Leighly, 2.
- Detritus by moving water: Hjulström, 1.
- Marine sediments: Raymond, 7.
- Silt by streams: O'Brien, M. P., 2.
- Travertine-forming organism: Howe, M. A., 1.
- Treatise on: Twenhofel, 7.
- Trinidad, sed. volcanism: Kugler, 1.
- Tropics, humid: Krynlze, 4.
- Types of sediments: Twenhofel, 18.
- Turbulence and debris-transp. by streams: Leighly, 2.
- United States, E. continental shelf: Stetson, 17, 19.
- Utah, Great Salt Lake: Eardley, 11; Hansen, G. H., 4.
- Varved clays, deposition, alteration: Burwash, 10.
- Varved sediments: Anteys, 5; Bradley, 17; Burwash, 10; Collet, 2; MacClintock, 9.
- Pleistocene lake, Neb.-N. Dak.: MacClintock, 9.
- Varves, non-glacial: Bradley, 17.
- Virginia: Barnes, F. F., 4; Brown, C. B., 7; Stow, 2, 13; Wells, R. C., 12.
- Volume, shape, position, rock fragments in openwork gravel: Wadell, 9.
- Washington, Wilson Creek: Hough, 5.
- Water transp., sand clastics: Miller, E. B., 1.
- Wave tank study: Evans, 19.
- Wisconsin: Conger, 3; Krumbein, 16; Twenhofel, 10, 24, 34, 38.
- Wyoming: Parsons, W. H., 3.
- Sedimentation, relation to faulting: Longwell, 25.
- Sedimentation, rec. of environment: Fenton, 13.
- Sedimentation study, field sampling: Otto, 4.
- Sediments, continental shelf, mid-Atlantic States: Shepard, 22.
- Sediments, deep-sea, magnitude: Twenhofel, 2.
- Seismic depth calculations: Beers, 1.
- Seismic-electric prosp.: Belluigi, 2.
- Seismic explor., difficult areas: Cunningham, G. M., 3.
- Seismic mapping, geol. structures: Barton, 3.
- Seismic methods applied to submarine geology: De Golyer, 4.
- Seismic prosp.: Helland, 4; Pirson, 3.
- Seismic prosp. by reflection: Pirson, 3.
- Seismic reflections, characteristics: Marr, 1.
- Seismic study, Lehigh Valley lms., Pa.: Ewing, 7.
- Seismograph measurements on ocean floor: Ewing, 11.
- Seismologic work of Dr. Jover: Giraud, 1.
- Seismology. See also Earthquakes; Geophysical prospecting.
- Accelerometer: Wenner, 2.
- Advances in: Heck, 45-a.
- Advisory com. rept. Day, 1, 2, 3.
- Aerial mapping by refraction shooting: Gardner, L. W., 1.
- Alaska, microseisms: Bradford, 6; Heck, 35.
- Analysis, seismic profiles: Roman, 4.
- Blasting inv.: Slichter, 5-a.
- Bibliography: Hodgson, E. A., 1, 2.
- Calculation, ground motion, from seismograms: Wilson, H. A., 1.
- California: Byerly, 28, 44, 48; Gutenberg, 13; Leyboldt, 1; Stoneley, 1; Ulrich, F. P., 1, 2; Wood, H. O., 12.
- Comparative seismology studies: Willis, 9.
- Comparative studies, earthquakes: Willis, 7.
- Compressibility, rocks, glasses, high temperatures: Birch, F., 2.
- Continental, suboceanic travel-times and seismic waves: Landsberg, 11.
- Cuba: Jover y Anido, 1.
- Deductions, deep-focus earthquakes: De Lury, 23.
- Deep earthquakes: Brunner, 1.
- Deepfocus earthquakes: Blake, A., 3; Gutenberg, 21, 27; Lynch, 3, 8; Macelwane, 23; McMurtry, 1; Slichter, 4, 6; Sohon, 3; Stechschulte, 2, 3.
- Deepfocus seismograms: Sohon, 3.
- Depth calculations, seismic: Beers, 1.
- Depth changes: Gutenberg, 36.
- Depths of strata, seismograph determination: Harris, S., 1.
- Determination, earthquake epicenters: Hodgson, 6.

Seismology—Continued.

- Discontinuities, earth mantle: Gutenberg, 4.
 Dispersion, first seismic waves: Sommer, 1.
 Earth, crust: Adams, L. H., 8; Gutenberg, 11, 22, 24; Macelwane, 15.
 Interior: Heck, 46; Macelwane, 27.
 Layered, vibrations: Slichter, 5.
 Earth core theory: Lynch, 6.
 Earth physics: Fleming, J. A., 1.
 Earth structure: Hodgson, 7, 18.
 Earth vibrations from quarry-blasting: Thoenen, 3.
 Earth waves, travel times: Ewing, 4.
 Earthquake, deep, 5/26/32: Brunner, 3.
 Eureka, Calif., 6/6/32: Stoneley, 1.
 June 24, 1935: Blum, 1.
 Earthquake belts and submarine topography: Heck, 36, 44.
 Earthquake body waves: Macelwane, 9.
 Earthquakes.
 America, NE., July-Dec., 1937: Leet, 14.
 April 1935-March 1936: Eickelberg, 3.
 Characteristics: Brunner, 5.
 Coastal Plain, N. Am.: Heck, 42-a.
 Deep-focus: Blake, A., 2; Gutenberg, 21, 27; Landsberg, 2; Lynch, 3, 8; Macelwane, 23; McMurtry, 1; Slichter, 4, 6; Sohn, 3; Stechschulte, 2, 3.
 Deep- and shallow-focus: Landsberg, 2.
 Diurnal periodicity: Davison, C., 2.
 Dynamic causes: Brunner, 6.
 Field inv.: Wood, H. O., 9.
 First motion: Byerly, 1.
 Forces on dams: Morris, S. B., 1.
 Forecasting: Keyes, 165.
 Geologic significance: Leith, A., 2; Thom, 20.
 Hawaiian, travel times: Jones, A. E., 6.
 Investigations: Gilmore, M. H., 1.
 Magnitude scale, instrumental: Richter, C. F., 2.
 Notes on: Seismol. Soc., 2.
 Origin, genetic system: Landsberg, 4.
 Pacific Coast, 1769-1928: Townley, 1.
 Periodicity: Bayley, 9.
 Prediction: Heck, 43.
 Recorded in artesian wells: Leggette, 3.
 Records, intermediate, far: Byerly, 15.
 Waves: Macelwane, 10, 11, 12; Reid, H. F., 3; Warne, 1.
 Earthquakes and moon angles: Stetson, H. T., 2.
 Earthquakes and moon phases: Stetson, H. T., 1.
 Earthquakes and submarine geology: Heck, 36.
 Earthquakes and W. mtn. area: Heck, 41.
 Elastic waves velocity, granite, norite: Leet, 5.

Seismology—Continued.

- Epicenter determinations: Bodle, 1; Hodgson, J. H., 1; Neumann, 8; Westland, 1.
 Epicenter work: Bodle, 3.
 Fault-noise indications of earthquakes: Patterson, W. D., 1.
 Field inv., earthquakes: Wood, H. O., 9.
 First-order leveling: Rappleye, 2.
 Focal depth from macroseismic data: Blake, 5; Neuberger, 1.
 Focal points, SKS: Gutenberg, 32.
 Formula for weathering correction: Rutherford, H. M., 3.
 General: Eickelberg, 2; Freeman, J. R., 1; Heck, N. H., 4, 32; Leet, 7-a; Longwell, 32; Lovering, 27; Lynch, J. J., 1, 4; Macelwane, 20; Patton, R. S., 1; Richter, C. F., 3; Sanchez, 11; Seeburger, 2.
 Geodynamics: Jeffreys, 5; Macelwane, 18.
 Geologic phenomena, 1916: Plá, 1.
 Geologic-seismologic frontier: Macelwane, 19.
 Greenland: Brockamp, 1.
 Ground motion measurement: Blake, 4; Bryan, A. B., 1; Gardner, D. H., 1; Wenner, 5.
 Hawaii earthquakes: Jaggard, 7; Jones, A. E., 2, 7, 9; Waesche, 1.
 Horizontal pendulum: Romberg, 1.
 Investigations, W. mtn. areas: Heck, 40.
 Jesuit Seismol. Assoc. rept.: Macelwane, 17.
 Kilauea eruption, 1931-32: Jones, A. E., 5.
 Library of seismology: Hodgson, 5.
 List, world seismol. stations: McComb, 2.
 Location, epicenters, 1926-27: Doxsee, 1.
 Massachusetts, long-period disturbances: Langguth, 1.
 Mercalli scale: Wood, H. O., 4.
 Mexico, Bay of Apulco, earthquakes: Sanchez, 2.
 Microbarograph uses: Macelwane, 25.
 Microseisms: Bradford, 4, 7; Chert, 1; Gutenberg, 3, 19; Sohn, 2.
 Bibliography: Bradford, 7.
 Mid-Atlantic Ridge: Heck, 44.
 Missouri: Heinrich, 2, 4; Macelwane, 16; Robertson, F., 2.
 Modern seismology: Scrase, 1.
 Montana, 1933-36; Heck, 38.
 Moon, effect on earthquakes, S. Calif.: Allen, V. T., 5.
 Montserrat: Powell, C. F., 1.
 Volcanic-seismic crisis, 1933-37: Perret, 6, 7.
 Motion, compressional phase, deep-focus: Sharpe, J. A., 1.
 New England studies: Leet, 7, 10, 11; Linehan, 1; Slichter, 7.

Seismology—Continued.

- New Madrid area, Mo.: Macelwane, 16.
 New York, tilting: Delaney, 2.
 Ocean basins, structure by: Gutenberg, 23.
 Ocean basins and seismology: Heck, 12.
 Ohio: Westland, 7.
 P' and earth's core: Gutenberg, 30.
 Pacific Basin area: Carder, 1; Gutenberg, 35; Heck, 19; Jeffreys, 4; Neumann, F., 3.
 Panama Canal Zone: Kirkpatrick, 1.
 Pennsylvania: Landsberg, 9.
 Periodicities, criteria for: Blake, 7.
 Practical: Leet, 15.
 Progress in America: Day, 3; Heck, 21, 34.
 United States Coast and Geod. Survey: Heck, 25.
 Propagation of waves, computation: Muskat, 5.
 Elastic, in lms.: Ewing, 5.
 Quarry blasting experts.: Ewing, 3; Thoenen, 4.
 Rayleigh-wave records: Leet, 1.
 Recent levels.: Heck, 8.
 Recording earthquake motions: Blake, A., 1; Heck, 10, 20.
 Reduction of seismograms, shaking-table experts.: Dyk, 1.
 Reflection seismograms, interpretation: Rutherford, H. M., 1.
 Reflection seismology: Hollister, J. C., 1; Westby, 1.
 Reflection waves: Westland, 6.
 Regional variation in travel times: Gutenberg, 26.
 Relation to hydrology: Heck, 16.
 Report, Advisory comm.: Day, 1, 2, 3.
 Review of 1932: Heck, 17.
 Roots of mts. or continents: Macelwane, 22.
 Scales of intensity: Davison, C., 1; McAdie, 1.
 Salt dome prosp.: Peters, J. W., 1.
 Seismeter inv., Montserrat: Perret, 6.
 Seismic activity and megashear zones: Keith, B. A., 3.
 Seismic geography: Byerly, 18.
 Seismic propagation paths: Ewing, W. M., 2.
 Seismic prosp.: Macelwane, 24.
 Seismic surface waves: Gutenberg, 2.
 Seismic wave paths: Houston, C. E., 1.
 Seismic waves: Dix, 2; Gutenberg, 12.
 Seismicity of U. S.: Heck, 13.
 Seismograms, near earthquakes, interpretation: Byerly, 14.
 Seismograph: Anderson, J. A., 1; Benioff, 2, 4; Gebhardt, 1; MacComb, 3; Macelwane, 26; Rutherford, H. M., 7; Slichter, 3.
 Seismographic methods, crustal structure determination: Gutenberg, 7.
 Seismographic problems: Macelwane, 1.

Seismology—Continued.

- Seismologic inv., U. S., 1927-29: Heck, N. H., 3.
 Seismological rept.: Neumann, F., 2.
 Seismological Soc. America, Eastern sec., Washington mtg., 1930: Seismol. Soc. Am., 1.
 Seismometer: Irland, 1; MacComb, 1; Slichter, 2; Wenner, 3.
 Seismometry: Sohon, 1.
 Seismoscope: Jaggard, 41.
 Sierra Nevada in light of isostasy: Byerly, 38.
 Status, Canada: Hodgson, 10.
 North America: Heck, 26.
 Strong-motion measurements: Blake, A., 3; Heck, 28.
 Structure from seismograms: Kelly, P. C., 1.
 Study of blasting, sou. Calif.: Wood, H. O., 2.
 Surface waves generated by earthquakes: Leet, 2.
 S-wave analysis: Neumann, 4.
 Telesismic recording, Iowa: Seeburger, 1.
 Theoretical, geodynamics: Hubbert, 9.
 Tilt-compensation seismometer: MacComb, H. E., 1.
 Tiltmeter, recording: Eller, W. H., 1.
 Time-distance curves: Byerly, 6.
 Time, in crustal studies: Stetson, H. T., 2-a.
 Torsion-pendulum analyser: Neumann, 13.
 Trace amplitudes, reduction: Byerly, 17.
 Travel-time curves: Brunner, 2; Neumann, 11.
 Travel-time tables, for earthquakes: Joliat, 1.
 Near earthquakes: Joliat, 2.
 Shear waves in granitic layer: Birch, 3.
 United States: Heck, N. H., 5.
 Velocity, elastic waves in rocks: Gutenberg, 16.
 Variation in earth model: Birch, 4-a.
 Vertical seismograph: Benioff, 1.
 Washington, Puget Sound Basin: Bradford, D. C., 2.
 Wave transmission in rocks: Adams, L. H., 2.
 Studies: Wenner, 4.
 Waves, earthquake, surface reflected: Hodgson, 8.
 Long period, epicentral areas: Neumann, 12.
 Reflected energy and amplitude: Cloud, R. T., 1.
 Seismic, earth's core: Gutenberg, 28.
 Well gage as seismograph: Blanchard, F. B., 1; Byerly, 21.
 West Indies, island arcs: Heck, 15.
 Work of Jesuits in U. S.: Macelwane, 14.
 World distrib., earthquake centers, seismic sea waves: Heck, 22.
 Seismometry: Sohon, 1.

- Seleniferous soils shown by plants: Beath, 4.
- Selenite.
- Criterion of effective wind scour: Bryan, 25.
- Not certain indicator of wind effect:
- Lang, W. T. B., 3.
- Ohio: Birkheimer, 1.
- Selenium.
- Canada: Collins, 12.
- Cretaceous in plants, Wyo.: Beath, 2.
- Seleniferous soils shown by plants:
- Beath, 4.
- South Dakota: Moxon, 1, 2; Pugsley, 1.
- Wyoming, toxic soils and lants: Beath, 1.
- Selenium in rocks, soils, plants: Moxon, 1, 2.
- Seneca Lake "guns": Fairchild, 14; Ingalls, 1.
- Serendibite, Calif.: Richmond, G. M., 1.
- Serpentine.
- Hydrothermal alteration: Wells, F. G., 1.
- Minerals: Selfridge, 1.
- Pennsylvania: Miller, B. L., 15.
- Quebec: Osborne, 29.
- Wyoming: Beckwith, 5.
- Serpentinization: Bain, 11; Chawner, 1; Dresser, 5; Hess, H. H., 5, 6.
- Shale.
- Alberta: Worcester, W. G., 2.
- California: Schenck, 7; Wilson, R. R., 1.
- Canada, east: McMahon, 1.
- Compaction, gravitational: Hedberg, 1.
- Georgia: Smith, R. W., 1, 2.
- Heaving, Gulf Coast, Tex.-La.: Halbouty, 10.
- Iowa: Wood, L. W., 7.
- Kansas: Gordon, G. H., 1; Pierce, 9.
- New Brunswick: Fréchet, 1.
- New York: Mencher, 2; Ruedemann, 27.
- North Carolina: Greaves-Walker, 1, 2; Murray, 6.
- Ohio: Lamborn, 4.
- Oklahoma: Hickock, 1; Sheerar, 1; Wilson, C. W., Jr., 13.
- Origin, road uses: Runner, D. G., 7.
- Pennsylvania: Leighton, H., 3, 6; Willard, 54.
- Prince Edward Is.: Fréchet, 2.
- South Carolina: Bryson, 8.
- South Dakota: Schwartz, 15.
- Tennessee: Whitlatch, 19, 20.
- United States, southeast: Lloyd, S. J., 1.
- Vermont: Doll, 2.
- Virginia: Furcron, 9.
- Washington: Goodspeed, 18.
- West Virginia: U. S. Comm., 1.
- Shape sorting of sand by wind: MacCarthy, 14.
- Shearing.
- Experiment: Boos, C. M., 2; Bridgman, 1.
- Kansas megashear zones: Keith, B. A., 2.
- Ontario: Laird, 10.
- Sheetfloods and streamfloods: Davis, 29.
- Shoal Lake area, Ontario: Greer, L., 1.
- Shoestring sands, offshore bars: Dalrymple, 2.
- Shonia Lake area, Ontario: Laird, H. C., 2.
- Shonkin Sag laccolith: Osborne, 11.
- Shorelines. See also Beaches; Changes of level; Glacial lakes; Terraces.
- Atlantic, Gulf Coasts: Johnson, D. W., 2-a, 14, 33-b.
- Bay bars: Brown, C. W., 6.
- British Columbia: Peacock, 8.
- California: Bode, 8; Cambell, E. W. C., 2; Macar, 4; Putnam, W. C., 2; Shepard, 20, 54.
- Classification, marine: Howard, A. D., 9.
- Connecticut: Sharp, H. S., 1, 5.
- Cuba, east: Palmer, R. H., 5.
- District of Columbia: Cloud, P. E., Jr., 3.
- Florida: Cooke, C. W., 24; Leverett, 10.
- General: Johnson, D. W., 17.
- Greenland, SE.: Taning, 1.
- Hawaii: Jones, A. E., 1; Stearns, 16, 17, 22; Wentworth, 45.
- Kansas: Garlough, 2.
- Kentucky: Wesley, 2.
- Labrador: Odell, 4, 6.
- Lagoon deposits: Lucke, 3.
- Lake Chicago, glacial lake: Ball, J. E., 18-a.
- Lake Superior area: Leverett, 2.
- Lakes, artificial, shore processes: Evans, O. F., 11.
- Louisiana: Howe, 18.
- Maine: Goldthwait, R. P., 1; Sharp, H. S., 5.
- Marine, revised classn.: Lucke, 9; Shepard, 36, 51; Smith, P. A., 2.
- Maryland: Scheid, 1.
- Massachusetts: Chute, 1; Macar, 2; Nichols, 8; Schalk, 1.
- Mexico: Kellum, 7.
- Michigan: Evans, 13; Pringle, 1.
- Minnesota, The Dalles: Swanson, R. W., 1.
- New England: Chapman, V. J., 1.
- New Jersey: Lucke, 2, 4; Richards, 7.
- New Mexico, Lake San Augustin: Powers, 13.
- New York: Howard, A. D., 12.
- North Carolina: Prouty, 20.
- Nova Scotia: Rousseau, 3.
- Offshore bars, changes of sea level: Price, 22.
- Ontario: Kindle, 20, 34; Stanley, 4, 5, 7.
- Oregon: Barr, 2; Smith, W. D., 5, 6.
- Pennsylvania: Willard, 24.
- Pensacola, deformation: Leverett, 10.
- Petroleum accumulations: Rich, 26.
- Pleistocene, changes of sea level: Cooke, C. W., 10.
- Tentative ages: Cooke, C. W., 15.
- Polar elevation and last ice age: Hills, G. F. S., 2.
- Quebec: Butler, J. W., 4; Evans, 18.

Shorelines—Continued.

- Rhode Island : Brown, C. W., 7; Nichols, 8-a, 14.
 South Carolina : Taber, 18.
 Structure, original, beaches, bars, dunes : Thompson, W. O., 6.
 Terraces, U. S. and Hawaii : Howard, A. D., 7.
 Texas : Cooper, H. H., 2; Meyer, W. G., 1.
 Texas-Louisiana, Gulf Coast oil fields : Weinzler, J. F., 3.
 Post-Recent plains and shore lines : Barton, 44.
 Tidal inlets, evolution : Hitchcock, C. B., 1.
 Virginia : Monroe, 10.
 Wind-deposition shore lines : Bryan, 41.
- Shortite, Wyo. : Fahey, 1.
 Sial, origin : Beckner, 3.
 Siderite, Tex. : Rolshausen, 1.
 Siegenite, Mo. : Gleason, 3.
 Sienna, Ga. : Kesler, 4.
 Sierra Nevada, in light of isostasy : Byerly, 38.
 Tectonic patterns : Locke, 8.
 Sierra problem : Locke, 7.
- Silica. See also Quartz; Sand.
 California : Burchfiel, 1.
 Chert and flint : Gunnell, E. M., 6.
 Illinois : Parmelee, C. W., 2.
 Nova Scotia : Goranson, E. A., 1.
 Quebec : Cole, L. H., 7.
 South Dakota : Schwartz, 15.
 Volatile transport : Greig, 3; Terzaghi, R. A. D., 2.
- Silicates.
 Alteration and synthesis : Morey, G. W., 2.
 Constitution and classn. : Berman, 8.
 Rock-forming : Bowen, 14.
 Structure : Gruner, 10.
 Water systems and osmotic pressure : Goranson, 5, 6, 7.
- Silicoflagellate? Rocella, Calif. : Hanna, G. D., 13.
- Sillimanite : A. I. M. E., 2.
- Sills.
 Alaska : Reed, J. C., 15; Smith, P. S., 12.
 California : Andrews, P., 2.
 Colorado : Jahns, 1.
 Minnesota : Schwartz, 29; Swanson, R. W., 1.
 Montana : Gibson, 4; Wolff, 6.
 Northwest Territories : Fournival, 5.
- Silt, transportation by streams : O'Brien, M. P., 2.
- Silurian. See also paleontology, Silurian.
 For Lower Silurian see Ordovician.
 Alabama : Johnston, W. D., Jr., 6; Jones, 16.
 Alaska : Buddington, 1; Kirk, 4; Mertie, 1, 4, 10, 14, 16; Smith, P. S., 3, 12.

Silurian—Continued.

- Alberta : Allan, 20; Jake, 2; Sproule, 4.
 Appalachian oil and gas fields : Ashley, 28.
 Appalachian Plateau and Mississippi Valley : Butts, 12.
 Appalachians, central : Swartz, C. K., 1.
 Arctic America : Downes, 1; Foerste, 5; Freuchen, 1; Kindle, 40; Mathiasen, 2; Telchert, 12; Weeks, L. J., 5.
 Arizona : Keyes, 188, 462.
 Arkansas : Croneis, 2; Kansas G. Soc., 6; McKnight, 2; Miser, 1.
 Bradford field, Pa.-N. Y. : Fettke, 9, 11.
 California : Averill, 7; Hazzard, 7; Hopper, 3; Jenkins, 12.
 Canada : Alcock, 13; Freuchen, 1; Goodman, 4; Hume, 34; Kindle, 40; Telchert, 12; Weeks, L. J., 5.
 Cincinnati arch devel. : McFarlan, 21.
 Clays, fire, U. S. : Chelkowsky, 1.
 Colorado, Front Range : Brainerd, 3; Lovering, 4.
 Connecticut : Cook, T. A., 1.
 Correlation, Ky.-Ohio-Ind. : McFarlan, 18.
 Distribution, thickness : Ver Wiebe, 6.
 East N. Y., west New England : Longwell, 14.
 Gaspé Peninsula : Alcock, 4; Kindle, C. H., 3.
 Georgia, g. map : Georgia G. S., 1.
 Greenland : Benthams, 2; Büttler, 3; Koch, L., 2, 6; Oepik, A. A., 1; Telchert, 14.
 Guidebook, Pa. Geol. Conf., 1938 : Bevan, 34.
 Idaho : Mansfield, G. R., 2; Ross, C. P., 21, 31; Umpleby, 1.
 Illinois : Ball, 22; Bell, 28; Bretz, 10; Cady, 8; Fisher, 16; Kansas G. Soc., 12; Nichols, H. W., 2; Savage, 8; Taylor, D. O., 1; Wanless, 1; Weller, 24, 25.
 Illinois Basin : Weller, 25.
 Illinois-Missouri sec. : Kansas G. Soc. 12.
 Indiana : Breeze, 2; Cumings, 3; Foerste, 24; Huddle, 1; Logan, 8; Priddy, 1.
 Iowa : Keyes, 141, 142; Scobey, 1.
 Kansas : Hall, R. H., 3; Johnston, L. A., 1; Koester, 2; Ockerman, 3; Osborn, W. G., 2; Ver Wiebe, 16; Wilhelm, C. J., 1.
 Kentucky : Foerste, 14, 24; Knapp, T. S., 1; McFarlan, 16, 20; Souder, 1; Twenhofel, 4; Wesley, 1, 3.
 Lowlands, S.-cent. and Ouachita provs. : Ruedemann, P., 3.
 Maine : Chadwick, 33; Fisher, L. W., 11; Keith, A., 5; Philbrick, 1.
 Manitoba : Wickenden, 11.
 Maryland : Stose, 11; Swartz, F. M., 8.
 Mexico : King, R. E., 6; Santillán, 15, 16.
 Michigan : Cumings, 6; Hake, 6; Newcombe, 3, 7, 9, 12; Zavolco, 5.
 Mississippi Basin : Ball, 11.

Silurian—Continued.

- Mississippi Valley: Ball, 21; Bastin, 20; Kansas G. Soc., 8; Workman, 6, 7.
- Missouri: Ball, J. R., 1, 2, 20; Condra, 12; Dunn, 8; Gleason, 2; Grohskopf, 3; Kansas G. Soc., 12; McQueen, 10.
- Missouri-Illinois sec.: Kansas G. Soc., 12.
- Montana: Bevan, 3.
- Nebraska: Condra, 12, 14, 18, 19; Lugin, 4; Reed, E. C., 1.
- Nevada: Ferguson, 5; Westgate, 6.
- New Brunswick: Caley, 2; Hayes, 7.
- Newfoundland: Bain, 18; Espenshade, 1; Heyl, 1, 2, 4; Jewell, 2; Schuchert, 28; Snelgrove, 5; Twenhofel, 29, 40.
- New Hampshire: Billings, 5, 7, 10, 13.
- New Mexico: Dunham, 3; Harley, 1; Keyes, 462; Lasky, 12; Schmitt, 10; Spencer, A. C., 1; Talmage, 7; Winchester, 3.
- New York: Berkey, 13; Chadwick, 4, 15, 25; Fettke, 3, 9, 11; Goldring, 11; Hartnagel, 3; Newland, 9, 20; Payne, T. G., 1; Rodgers, 5; Ruedemann, 7; Sanford, J. T., 3, 5, 6, 8; Schuchert, 22; Smith, B., 4; Strzygowski, 2; Torrey, P. D., 5, 8; Torrey, R. H., 1.
- Niagaran, Michigan Basin: Cumings, 2.
- North America, Cordillera and Caribbean area: Waters, 13.
- Paleogeographic maps: Vokes, 11.
- Paleozoic: Waterschoot van der Gracht, 15.
- Reefs: Lecompte, 1.
- Structures: Schuchert, 57.
- Northwest Territories: Cameron, 5; Jolliffe, F. J., 3.
- Nova Scotia: Bell, W. A., 1; Cox, E. J., 1.
- Ohio: Bucher, 10; Chappars, 3; Cumings, 2; Foerste, 6, 24; Gustafson, J. D., 1; Harper, J. L., 1; Jones, V. E., 3; Lamborn, 3, 4; Priddy, 1; Rogers, J. K., 2; Stout, 18; Ver Steeg, 23.
- Oklahoma: Atchison, 1; Boyd, W. B., 1; Brandenthaler, 1; Cram, 2; Decker, 6; Hendricks, 10; Hoffman, M. G., 1; Hyatt, 1; Ireland, 4; Maxwell, R. A., 1; Melton, 4; Millison, 1; Rau, 1; Teis, 1; Wrather, 1.
- Ontario: Cumings, 7; Dyer, 6; Harkness, 5; Laird, 6; Shaw, E. W., 2; Williams, M. Y., 14.
- Ordovician-Silurian uncon., Pa.: Stose, 5.
- Oregon: Oregon Dept. Geology, 1.
- Osgood fm., foraminiferal correl.: Dunn, 12.
- Ozark Mts. area: Schottenlober, 2.
- Pennsylvania: Ashley, 8; Berkey, 12; Butts, 10, 13; Chadwick, 12; Cleaves, 1, 5; Detrick, 2; Fettke, 2, 9, 11; Foose, 1; Fraser, 15; Lohman, S. W., 4; Miller, B. L., 4, 7, 13, 15; Moyer, 1; Richardson, G. B., 4; Rogers, R. D., Jr., 1; Stose, 11; Swartz, C. K., 3; Swartz, F. M., 6,

Silurian—Continued.

Pennsylvania—Continued.

- 7, 8, 10; Ward, F., 5; Willard, 49, 50, 53, 55, 56, 57, 59, 60.
- Post-Keweenawan, age by helium: Urry, 8.
- Quebec: Burton, F. R., 1; Clark, T. H., 4, 11; Crickmay, G. W., 2; Jones, I. W., 2, 3, 4, 7, 8, 12, 13, 14; Laverdière, 4; McGerrige, 3, 9; Northrop, 8, 10; Parks, 3.
- Restorations, geol. landscapes: Reid, G. A., 1.
- Rocky Mts. area: Bartram, 10; Warren, P. S., 1.
- Shawangunk conglom., N. Y.: Swartz, C. K., 2.
- Southern Appalachian area: Butts, 3.
- Southwestern U. S.: Effinger, 4.
- Tennessee: Ball, 23; Bassler, 8; Born, 4, 5, 10; Foerste, 24; Jewell, 1; Piper, 3; Prouty, C. E., 1; Prouty, W. F., 9, 15; Theis, 4; Wilson, C. W., Jr., 7.
- Tennessee-Illinois-Missouri correls.: Ball, 23.
- Texas: Arick, 2; Keyes, 462; Lowman, 2; Sellards, 28, 36, 38.
- United States, E.-cent.: Ballard, 1.
- Utah: Nolan, 3, 6.
- Virginia: Bates, R. L., 1, 4; Bevan, 9; Butts, 5, 14; Cady, R. C., 4; Cooper, B. N., 7; Powell, S. B., 1; Richardson, W. E., 1; Stose, 13; Woodward, 8, 11, 13.
- West Virginia: Lafferty, 1; McCue, 1; Martens, 12; Price, P. H., 1, 8-a, 14, 17; Reeves, F., 5; Reger, 9.
- Wisconsin: Bates, R. E., 4; Behre, 14; Burpee, 1; Karges, 1; Shrock, 14, 17.
- Wisconsin-Illinois lead-zinc dist.: Behre, 14.

Silver.

- Alaska: Buddington, 2; Capps, 10; Mertie, 15, 18, 18; Moffit, 3, 8, 10.
- Arizona: Butler, 17, 18, 21; Fowler, 14; Galbreath, F. W., 34, 1; Hernon, 1; Kuhn, 1; Lausen, 4; Peterson, N. P., 1; Rasor, 2; Reber, 1; Rubly, 1; Short, 6; Tenney, 6; Warren, H. V., 2; Wilson, E. D., 5; Anonymous, 179.
- Boulder Dam area minerals: Lee, 7.
- British Columbia: Armstrong, J. E., 1; Cairnes, 12, 13, 14, 15; Delmage, 6; Gunning, 1, 7; Hanson, 1, 4, 11; Hedley, M. S., 2; Horwood, 5; Kerr, F. A., 18, 20; Kitch, H. E., 2, 3, 4; Lay, 4; O'Grady, 1; Rice, 6; Sargent, 1, 2; Schofield, 2; Warren, H. V., 6, 10.
- California: Johnston, W. D., 14; Kelley, 8, 10; Lewis, W. S., 5; Murphy, F. M., 2; Sampson, R. J., 4; Schroter, 1; Shannon, 2; Tucker, W. B., 2; Van Amringe, 10; Webb, R. W., 3.

Silver—Continued.

- Canada: Collins, 12; Furnival, 1; Kidd, D. F., 2; Spence, 9; Wilson, M. E., 20.
- Canadian Shield: Wilson, M. E., 20.
- Chalcocite-stromeyerite-argentite relations: Schwartz, 14.
- Colorado: Behre, 16, 32; Burbank, W. S., 3, 4; Chapman, E. P., 2; Cross, C. W., 2; Dyrenforth, 1; Eckel, E. B., 5, 8; Fischer, R. P., 1; Goddard, E. N., 2, 3; Larsen, E. S., 2; Loughlin, 11, 12; Lovering, 15, 17, 20; Moehlman, 6; Rohlfing, 1; Sandberg, 3; Singewald, Q. D., 11; Vanderwilt, 11; Wahlstrom, 3, 4.
- Columbia River Basin, Wash.-Oregon: Landes, H., 1.
- Comstock Lode, Nev.: Knochenbauer, 1.
- Distribution in base-metal ores: Lasky, 9; Warren, H. V., 7.
- Economic relations: Merrill, G. P., 1.
- Epithermal precious-metal deposits: Nolan, 4.
- Idaho: Anderson, A. L., 1, 3, 23; Capps, 14; Dickey, F. H., 1; McConnel, 1; Ross, C. P., 4, 15, 17, 22, 31; Shenon, 17, 18; Umpleby, 1; Warren, H. V., 5.
- Lake Superior area: Nishio, 2.
- Manitoba: Brownell, G. M., 2.
- Mesothermal deposits: McKnight, 1.
- Mexico: Bastin, 13; Bonillas, 3; Donald, R. T., 1; Fletcher, A. R., 1; Flores, 9; Gonzáles, J., 1; Hullin, 5; Imlay, 10; Krieger, 6, 7; Landenberger, 1; Ramos, R. R., 2; Riley, L. B., 1; Santillán, 14; Schmitt, H., 2; Stewart, W. O., 3; Wandke, 2; Warren, H. V., 4; Wisser, 2.
- Minerals, polished, light effect on: Stephens, M. M., 1.
- Minnesota: Grout, 9.
- Missouri: Gleason, 3; Tolman, 8.
- Montana: Dickey, F. H., 2; Gilbert, F. C., 1; Lorain, 1; Pardee, 4; Sahlinen, 4; Schafer, 1; Shenon, 2, 12, 15; Spiroff, 3.
- Nevada: Callaghan, 7, 8, 13; Cameron, E. N., 2; Campbell, D. F., 1; Ferguson, H. G., 1, 8; Gianella, 9; Hewett, 4; Jenney, 1; Knochenauer, 1; Merritt, C. A., 2; Nolan, 2, 8, 8, 9; Schrader, 6; Vanderburg, 3, 4; Westgate, 6.
- Newfoundland: Heyl, 2.
- New Mexico: Dunham, 4; Harley, 1; Krieger, 7; Lasky, 12, 14, 18.
- Nickel-cobalt-native silver ore type: Bastin, 18.
- North America, Cordillera and Caribbean areas: Waters, 13.
- North Carolina: Bryson, 7-a; Hornbeck, 1.

Silver—Continued.

- Northwest Territories: Furnival, 5; Jolliffe, A. W., 1; Kidd, 3, 5, 7; Ryan, J. P., 1; Spence, 10, 13; Thomson, J. Ellis, 12.
- Nova Scotia: Cox, E. J., 1.
- Ontario: Bastin, 8; Bateman, J. D., 3; Boydell, H. C., 2; Campbell, A. D., 1; Dadson, 3, 4; Graham, A. R., 6; Hurst, 1; Langford, 4; Moore, E. S., 15; Moorhouse, 1, 3; Phemister, 3; Tanton, 1; Thomson, J. Ellis, 11.
- Ore deposits: Butler, G. M., 4.
- Oregon: Callaghan, 10; Goodspeed, 7, 8; Smith, W. D., 11.
- Quebec: Bell, L. V., 14, 16; Dresser, 6; Faessler, 22; Hawley, 10; Jones, I. W., 15; Norman, 9.
- South Dakota: Connolly, 3; Tullis, 6.
- Stromeyerite: Schwartz, 14.
- Succession of minerals, temperatures of fm.: Lindgren, 15.
- Sulfide minerals, identification: Gaudin, 4.
- Sylvanite, krennerite, calaverite structures: Tunell, 12.
- Texas: Ross, 28; Schoffelmayer, 1.
- United States, sed. deposits, SW.: Fischer, R. P., 2; Koerberlin, 3.
- Utah: Andrews, W. B., 1; Bryan, G. G., 1; Gilluly, 5; Green, J., 1; Hahn, 1; Johnson, E. S., 1; Nolan, 6; Warren, H. V., 3.
- Wyoming: Abbott, L. V., 1; Parsons, W. H., 1.
- Yukon: Bostock, 10, 12; Lees, E. J., 2; Werneck, 1.
- Sink holes.
- Colorado: Dane, 5; Johnson, J. H., 13.
- General: Henderson, J., 7.
- Georgia: Griffin, R. H., 1.
- Illinois: Bonnell, 1.
- Indiana: Malott, 5, 11.
- Kansas: Gordon, G. H., 2; Landes, 11; Malott, 5.
- Karst valleys, Ky.-Ind.: Malott, 11.
- Kentucky: Jillson, 1.
- Michigan: Poindexter, 3.
- Missouri: Tarr, 24.
- New Mexico: Melton, 13.
- Northwest Territories: Soper, J. D., 1.
- Ozark region: Buehler, 10.
- Pennsylvania: Willard, 53.
- Structural control, form and distrib.: Swinnerton, A. A., 3.
- Tennessee: Laurence, 2; Stockdale, 8.
- Texas: Blakemore, E., 1.
- Virginia: Holden, 11; Woodward, 13.
- 16th Internat. Geol. Cong., U. S., 1933: Schumacher, 1.
- Size frequency distrib., calculations: Krumbein, 9, 11; Wentworth, 41.
- Sediments: Krumbein, 21.
- Skelton devel.: Gregory, 25.
- Skwenta area, Alaska: Capps, 1.

Slate.

- Alaska: Capps, 12.
 California: Bradley, W. W., 7.
 Greenland: Moos, von, 2.
 Industrial minerals and rocks: A. I. M. E., 2.
 Maine: Philbrick, 1.
 Michigan: Dutton, 5.
 Newfoundland: Cooper, J. R., 2.
 New York: Larrabee, 1.
 North Carolina: Alexander, A. E., 1.
 Northwest Territories: Riley, 4.
 Nova Scotia: Messervey, 7.
 Oklahoma: Hickock, 1.
 Ontario: Pettijohn, 8.
 Pennsylvania: Behre, 9; Miller, B. L., 13, 15.
 Tennessee: Amick, 1.
 TVA area: Spain, 4.
 Vermont: Jacobs, 2; Larrabee, 1; Richardson, C. H., 7.
 Virginia: Furcron, 9; Thiesmeyer, 4, 7.
 X-ray analysis: Anderson, H. V., 1.

Slickensides: Morse, W. C., 3.

Slides. See Landslides.

Slotted templet to show crustal movement: Eardley, 13.

Slump scarps: Finch, R. H., 7.

Smith-Ellis oil field, Tex.: Storm, W., 1.

Smithsonite, N. Mex.: Schaller, 25.

Snake River downwarp: Kirkham, 10.

Snowslide erosion and striations: Dyson, 1, 2; Wells, J. R., 1.

Soapstone.

- Alabama: Jones, 16.
 Industrial minerals and rocks: A. I. M. E., 2.
 Vermont: Bain, 10.
 Virginia: Bevan, 9; Burfoot, 1, 1-a; Furcron, 4; Ryan, C. W., 1.
 Washington: Wilson, H., 3.

Societies. See Associations.

Sodium, Calif.: Gayle, 5; Melhase, 17.

Soil mapping in geol. interpretation: Edmunds, 1.

Soil materials: Ekblaw, 10.

Soils.

- Erosion: Miller, M. F., 1.
 Formation in tropics: Senstius, 1.
 General: Nichols, H. W., 1.
 Hawaii: Hinds, 5.
 Kansas: Moore, R. C., 13.
 North Carolina: Cobb, W. B., 1.
 Ohio: Westgate, 5.
 Origin: Smith, J. E., 8.
 Podsol soils. Quebec: McKibbin, 1.
 Quebec: McKibbin, 1.
 Soil science: Brown, P. E., 1.
 Varying properties: Ekblaw, 10.
 White clays, Ohio: Westgate, 5.
 Wisconsin: Kellogg, C. E., 1; Whitson, 1, 3, 4.

Solid flow in rocks: Washburne, 6.

Solifluction.

- Canada: Nichols, D. A., 2.
 Importance: Ekblaw, W. E., 1.

Solubility affected by pressure: Gibson, R. E., 2.

Solution, Tenn. River channel holes: Money-maker, 8.

Solution channels, South Br. Potomac, W. Va.: Fridley, 6.

Solution flow direction and mineral fm.: Newhouse, 16.

Somerset-Windber folio 224, Pa.: Richardson, G. B., 3.

Source book in geology: Reed, 35.

South Carolina.

Areas described.

- Coastal Plain: Cooke, C. W., 17.
 Gaffney quad.: Keith, Ar., 2.
 King's Mt. quad.: Frink, 1; Keith, Arthur, 2.
 Santee-Cooper dam: Taber, 18.

Economic geology.

- Ceramic raw products: Bryson, 8.
 Clays, white: Adams, G. I., 5.
 Gold: Linneman, 1; Pardee, 8; Anonymous, 89.
 Granite: Kesler, 1.
 Natural gas poss.: Postley, 4.
 Petroleum poss.: Postley, 4.
 Phosphate: Mansfield, G. R., 1; Watkins, J. Henry, 1.

Historical geology.

- Canal, intracoastal: Glenn, 4.
 Coastal Plain: Cooke, C. W., 17; McCarthy, 10; Mansfield, W. C., 15.
 Deep wells, Coastal Plain: Mansfield, W. C., 15.
 Horry clay: Cooke, C. W., 20.
 King's Mtn. area: Frink, 1; Keith, Arthur, 2.
 Pamlico fm.: Cooke, C. W., 20.
 Santee-Cooper dam: Taber, 14, 18.

Mineralogy.

- Ceramic raw products: Bryson, 8.
 Cherokee Springs meteorite: Perry, S. H., 1, 2.
 Clays, white: Adams, G. I., 5.
 Meteorite, Cherokee Springs: Perry, S. H., 1, 2.
 Pyroxmangite: Henderson, E. P., 11.
 Topaz-replacement body, Brower mine: Glass, 6, 10; Pardee, 10.
 Triassic: Berry, E. Willard, 18.

Paleontology.

- Archaeoceti: Kellogg, 9.
 Epitonium: Johnson, C. W., 1.
 Eucrassatelli: MacNeill, 4.
 Faunas, Horry clay: Cooke, C. W., 20.
 Pamlico fm.: Cooke, C. W., 20; Richards, 14.
 Foraminifera: Cushman, 1, 23, 26.
 Invertebrata, Cret.: Prouty, 6.

South Carolina—Continued.

Paleontology—Continued.

- Mollusca: Mansfield, W. C., 16; Palmer, K. E. H. V., 2.
 Noetinae: MacNeill, 7.
 Pectinidae: Rowland, H. I., 1; Tucker, 7, 8.
 Turrids: Harris, G. D., 4.
 Uvigerina: Cushman, 1.

Petrology.

- King's Mtn. area: Frink, 1.
 Topaz-replacement body, Brewer mine: Glass, 6, 10; Pardee, 10.

Physical geology.

- Beach sands: Martens, 8.
 Carolina Bays, origin: Frink, 2; Prouty, 24, 25.
 Depth of rock weathering: Taber, 17.
 Fulgurites, Cret.: Petty, 5.
 Granite, injection processes: Kesler, 1.
 Weather pits: Smith, L. L., 6, 7.
 King's Mtn. area: Frink, 1.
 Pedestal rocks: Petty, 3.
 Santee-Cooper dam area: Taber, 18.
 Solution depressions, Coastal Plain: Smith, L. L., 2.
 Weather pits in granite: Smith, L. L., 6, 7.

Physiographic geology.

- Artesian waters and Carolina bays: Johnson, 39.
 Carolina bays: Cooke, C. W., 21-a; Frink, 1; McCarthy, 11, 13; Melton, 10, 26, 26-a; Prouty, 12, 14, 18, 21, 24, 25, 26; Watson, F. G., Jr., 1.
 Coastal Plain: Cooke, C. W., 17; MacCarthy, 7, 8.
 Dial bays, origin: Prouty, 14.
 Erosion: Fuller, G. I., 2; Ireland, 5.
 Gully erosion: Ireland, 5.
 Iron meteorites and Carolina bays: Wylie, 5.
 Meteor craters: Prouty, 8.
 Meteorite scars (?) : Cooke, C. W., 13; Johnson, 38; Melton, 10.
 Meteors and Carolina bays: MacCarthy, 11.
 Sand craters, possible significance: Macqueen, 1.

Underground water.

- Artesian waters and Carolina bays: Johnson, 39.
 Coastal Plain: Cooke, C. W., 17.
 Ground water, chemical character: Foster, M. D., 1.
 Santee-Cooper dam: Taber, 18.

South Dakota.

- Big Badlands: O'Harra, 5.
 State geologist's rept.: Rothrock, 3.
 Silification of shale, Mogul mine: Schwartz, 15.

Areas described.

- Black Hills: Connolly, 3.
 Cascade anticline: Rothrock, E. P., 4.
 Fairburn structure, Custer Co.: Rothrock, E. P., 2.

South Dakota—Continued.

Areas described—Continued.

- Isabel-Firesteel coal area: Searight, 2.
 Mount Rushmore: Connolly, 5.

Economic geology.

- Bentonite: O'Harra, 5.
 Black Hills: Connolly, 3, 7; Gardner, E. D., 2; Gustafson, J. K., 1; Johnson, A. I., 1, 2; McLaughlin, D. H., 3, 7; O'Harra, 3, 6; Schwartz, 4, 22; Simmons, J. E., 1; Tullis, 5, 6; Wright, L. B., 1, 3, 4.

Chalk: Rothrock, 6.

Coal: O'Harra, 3; Searight, 1, 2, 4.

Geophysical explor.: Wilson, J. H., 2.

Gold: Anderson, D. L. M., 1; Connolly, 1, 7; Gustafson, J. K., 1; O'Harra, 9; Wright, L. B., 3, 4.

Grant Co.: Rothrock, 10.

Gravel: Rothrock, 7.

Harding Co.: Rothrock, 16.

Homestake gold fm.: Gustafson, J. K., 1.

Homestake mine: McLaughlin, D. H., 8, 7; Simmons, J. E., 1; Wright, L. B., 1.

Iron sulfides, Black Hills: Schwartz, 22.

Lithium ores: Chambers, 1; Hess, F. L., 15.

Logs of deep wells: Rothrock, 14.

Manganese: Anonymous, 6.

Mineral production: Rothrock, E. P., 1, 18.

Mineral resources: O'Harra, 1.

Missouri Valley: Gries, J. P., 1.

Paragenesis, iron sulfides, Black Hills: Schwartz, 22.

Pegmatites: Hess, F. L., 14; Johnson, A. I., 1; S. Dak. Plann. Bd., 2; Stobbe, 1.

Perkins Co.: Searight, 3.

Placer gold: Anderson, D. L. M., 1.

Pierre gas field: Wing, 2.

Rocky Mtn. area: Uren, 2.

Sand: Rothrock, 7.

Selenium: Pugsley, 1.

Spodumene: Schwartz, 4.

Stoneville coal area: Searight, 4.

Tantalum: Johnson, A. I., 2.

Tin: Cummings, J. B., 1; Gardner, E. D., 2.

Tungsten: Cummings, J. B., 2.

Historical geology.

Artesian conditions, W.-cent.: Rothrock, 15.

Badlands, color records: Germann, J. C., 1.

Big Badlands: Clark, J., 3.

Black Hills: Chamberlin, 10; Cloos, 9; Dillé, 2; Friedman, 1; Kansas G. Soc., 2; Runner, J. J., 5, 8; Taylor, G. L., 3; Thompson, M. L., 4; Tullis, 5; Wright, L. B., 3.

Black Hills-Big Horn-Beartooth area, gravity anomalies: Chamberlin, 10.

Cedar Creek anticline: Dobbin, 11.

Chadron fm.: Clark, J., 3.

South Dakota—Continued.

Historical geology—Continued.

- Chilson anticline: Rothrock, 5.
 Crepicephalus horizon, Deadwood fm.: Meyerhoff, 8.
 Day Co.: Rothrock, 13.
 Deadwood fm.: Furnish, 2.
 Fox Hills-Lance contact: Dobbin, 4.
 General: Searight, 1.
 Geologic map: Kirby, M. E., 1.
 Gold deposition, Black Hills: Wright, L. B., 3.
 Grant Co.: Rothrock, 10.
 Harding Co.: Rothrock, 16.
 Lake Kampeska area: Rothrock, 8.
 Lance-Fort Union correl.: Andrews, D. A., 3.
 Log wildcat well, Pennington Co.: Littlefield, 1.
 Microfossiliferous Cret. sec.: Cushman, 19.
 Minnelusa, Black Hills: Dillé, 2.
 Mississippian-Pennsylvanian contact: Meyerhoff, 11.
 Missouri Valley: Gries, J. P., 1.
 Nemo dist.: Runner, J. J., 5.
 Niobrara fm.: Loetterle, 1.
 Ordovician fossils, Deadwood fm.: Furnish, 2.
 Pegmatites, Tinton: Hess, F. L., 14.
 Pennsylvanian, Black Hills: Thompson, M. L., 4.
 Perkins Co.: Searight, 3.
 Pierre fm.: Searight, 5.
 Pierre gas field: Wing, 2.
 Potter Co.: Russell, W. L., 6.
 Pre-Cambrian: Cloos, 9; Runner, J. J., 5; Taylor, G. L., 3.
 Rocky Mtn. area: Uren, 2.
 Selenium deposits: Pugsley, 1.
 Stoneville coal area: Searight, 4.
 Tungsten mines: Cummings, J. B., 2.
 Uraninites and age determination: Khlopin, 1.

Mineralogy.

- Bennet Co. meteorite: O'Harra, 9.
 Beryl: Lincoln, 1.
 Black Hills: Johnson, A. I., 1, 2;
 O'Harra, 7; Overman, 1; Runner, J. J., 6; Schwartz, 22; Tullis, 6, 7;
 Ulke, 2; Wayland, R. G., 1.
 Cesium biotite, Custer Co.: Hess, F. L., 5.
 Cumingtonite: Wayland, R. G., 1.
 Iron sulfides, paragenesis: Schwartz, 22.
 Lithium: Hess, F. L., 15.
 Minerals of pegmatites: Connolly, J. P., 1; Johnson, A. I., 1.
 Morinite: Runner, J. J., 6.
 Paragenesis, iron sulfides: Schwartz, 22.
 Pegmatites: Apssouri, 1; Connolly, 4; Hess, F. L., 14; Johnson, A. I., 1; Runner, J. J., 6; S. Dak. Plann. Bd., 2; Stobbe, 1; Tullis, 7.
 Sand-calcite crystals: Connolly, 4.
 Selenium: Moxon, 1, 2; Pugsley, 1.

South Dakota—Continued.

Mineralogy—Continued.

- Tantalum: Johnson, A. I., 2.
 Tin: Gardner, E. D., 2.
 Tourmaline: Buerger, 25.

Paleontology.

- Alligators: Barbour, T., 1; Mook, 4.
 Allognathosuchus: Patterson, B., 1.
 Aves, Miocene: Miller, Alden, H., 8, 9.
 Badlands: Bump, J. D., 1, 2.
 Bathornis: Wetmore, 41.
 Black Hills floras: McIntosh, A. C., 1.
 Buteo: Wetmore, 30.
 Calianassa: Rathbun, 4.
 Camels: Bump, J. D., 3; Gregory, J. T., 3.
 Carnivora, Miocene: Loomis, 4.
 Cats, sabre-tooth: Jepsen, 6.
 Cephalopoda: Miller, 35.
 Chadron fm.: Clark, J., 3.
 Collecting fossils: Martin, H., 1.
 Collections, School of Mines Mus.: Bump, 4.
 Coprolite: Stovall, 8.
 Crepicephalus horizon, Deadwood fm.: Meyerhoff, 8.
 Cupressinoxylon: Lutz, 1.
 Deadwood fm. faunas: Meyerhoff, 8, 12, 15.
 Dinosauria: Anderson, S. M., 1; Bump, 6; Wieland, 3.
 Tracks: Anderson, S. M., 1.
 Dogs, phylogeny: Loomis, 10.
 Entelodonts: Loomis, 5.
 Floras.
 Colgate mbr., Fox Hills: Brown, 23.
 Harding Co., lower Lance: Berry, 44.
 Foraminifera: Anderson, H. W., 1.
 Fossil Cycad Nat. Monument: Wieland, 23; Anonymous, 109.
 Fusulinids: Thompson, M. L., 4.
 Geomyid rodents: Wood, A. E., 14.
 Hoplophoneus: Wood, H. E., 2d, 1.
 Leptomeryx: Hernon, 1.
 Mammalia: Richardson, G. H., 1; Scott, W. B., 3.
 Merycoidodonts: Phleger, 10.
 Mesobippus: Schlaikjer, 1, 2.
 Metamydon: Wood, H. E., 2d, 13.
 Microfauna, Sully mbr., Pierre fm.: Searight, 6.
 Microfossiliferous Upper Cret. sect.: Applin, 1.
 Micropaleontology, Niobrara fm.: Loetterle, 1.
 Nannaotragulus: Loomis, 7.
 Ordovician fossils, Deadwood fm.: Furnish, 2.
 Oreodon unborn twins: Hernon, 2.
 Oreadont skeletons: Loomis, 8.
 Ostracoda: Harper, M. F., 1; Roth, 12.
 Pinoxylon: Read, C. B., 4.
 Pliauchenta: Gregory, J. T., 1.
 Rhinoceroses: Wood, H. E., 2d, 2.
 Rodentia: Wood, A. E., 17.
 Schaubeumys: Wood, A. E., 6.

South Dakota—Continued.

Paleontology—Continued.

- Sinclairella : Jepsen, 7.
- Stylomys : Case, 22.
- Tertiary alligators : Barbour, T., 1.
- Titanotheres : Osborn, H. F., 1.
- Turtle skulls and jaws : Martin, H., 2.
- Vertebrata : Gregory, J. T., 2-a.
- Collecting : Gilmore, 11.
- Vultures : Compton, 5.

Petrology.

- Alteration, spodumene to kaolinite, Etta mine : Schwartz, G. M., 2.
- Chadron fm. : Clark, J., 3.
- Contact metamorphism by lithium pegmatites : Hirschi, 4.
- Granites, pre-Camb. : Taylor, G. L., 3.
- Iron sulfides, paragenesis : Schwartz, 22.
- Metamorphosed calcareous concretions : Runner, J. J., 3.
- Paragenesis, iron sulfides : Schwartz, 22.
- Pegmatites : Apsouri, 1 ; Hess, F. L., 14 ; Stobbe, 1 ; Tullis, 7.
- Pre-Cambrian granites : Taylor, G. L., 3.

Physical geology.

- Bear Lodge Mts. : Meyerhoff, 21.
- Black Hills : Gardner, E. D., 2 ; Meyerhoff, 21 ; Tullis, 5 ; Work, 2.
- Caves.
- Nameless Cave, Black Hills : Friedman, 1.
- Rushmore Cave, Black Hills : Eloe, 1.
- Stage Barn Caverns, Black Hills : Stoll, 1.
- Wind Cave, Black Hills : Freeland, 1.
- Concretions, iron-manganese : Hewett, 3.
- Cycles of erosion, Black Hills : Work, 2.
- Day Co. : Rothrock, 13.
- Harding Co. : Rothrock, 16.
- Harney Peak granite, inclusions, foliation : Balk, 4.
- Iron-manganese carbonate concretions : Hewett, 3.
- Iron sulfides, paragenesis : Schwartz, 22.
- Isostasy, Black Hills : Lawson, 3.
- Paragenesis, iron sulfides : Schwartz, 22.
- Rock weathering : Goldich, 2.

Physiographic geology.

- Black Hills Cenozoic history : Fillman, 1.
- Black Hills erosion cycles : Work, 2.
- Crow Creek area : Rothrock, 11.
- Great Plains soil drifting : Leighton, 29.
- Missouri Valley : Gries, J. P., 1.
- Varved sediments : MacClintock, 7.

Underground water.

- Artesian conditions : Robinson, T. W., Jr., 2 ; Rothrock, 15 ; S. Dak. Plann. Bd., 1.
- Artesian-head decline : Robinson, T. W., Jr., 1.
- Day Co. : Rothrock, 13.
- Dakota ss. water : Meinzer, 3.
- Drought, 1934, effect on rivers : Sayre, 5.
- Fort Thompson area : Rothrock, 9.
- Ground-water fluctuations : Rothrock, 17.
- Harding Co. : Rothrock, 16.

South Dakota—Continued.

Underground water—Continued.

- Huron water supply : Rothrock, 12.
- Solution, caves : Eloe, 1 ; Freeland, 1 ; Friedman, 1 ; Stoll, 1.
- Thermal springs, Black Hills : Work, 1.
- Spectography in mineralogy : Wright, T. A., 1.
- Sphalerite.
- Alabama : Andrews, T. G., 1.
- Illinois : Payne, J. N., 2.
- Missouri : Gleason, 3 ; Smith, W. S. T., 2.
- Multiple twins : Palache, 17.
- Sphene, California : Webb, 13.
- Canada : Prince, 1.
- Spherulites : Colony, 4.
- Oregon : Wilkinson, 1, 3.
- Spillite and basalt : Fairbairn, 3.
- Spodumene : Blank, E. W., 2.
- Black Hills, S. Dak. : Schwartz, 4 ; Tullis, 7.
- Spongiae.
- Arctic Canada, Ord., Sil. : Teichert, 12.
- Arizona, Toroweap, Kaibab fms. : McKee, 11.
- Armstrongia cf. Titusvillia : Caster, 13.
- Calcsponge, Tex. : Wells, J. W., 6.
- Cincinnati : Shideler, 12.
- Cliona, N. J. : Fenton, 24.
- Cyathospongiae, Camb. : Okulitch, 2.
- Illinois : Cronels, 46 ; Weller, 10, 13.
- Indiana : Weller, 10, 13.
- Iowa, boring : Fenton, 23.
- Mexico City fossil bed : Díaz Lozano, 3.
- New York-Pa. embayment : Caster, 13.
- Ohio, Cincinnati fauna : Bucher, 21.
- Tetractinellid : Bucher, 1.
- Paleoecology : DeLaubenfels, 1.
- Paleozoic, Carnegie Mus. : Eller, 6.
- Penn.-York embayment : Caster, 12.
- Pleosporgia for Cyathospongia : Okulitch, 8.
- Pseudohydnoceras, N. Y. : Reimann, 7.
- Quebec, Sil. : Parks, 5.
- Spicules, siliceous, Ill., Ind. : Weller, 10.
- Stromatoporoids : Twitchell, 1.
- Tennessee : Howell, 31.
- Texas : King, R. H., 1, 4.
- Trinidad : Thomas, H. D., 2.
- Utah : McKee, 11.
- Wisconsin, monactinellid : Howell, 21.
- Wyoming : Branson, C. C., 14.
- Zittellella, Vt. : Howell, 38-a.
- Spontaneous rock expansion : Bain, G. W., 3, 20-b.
- Spores in coal : Schopf, 3.
- Spotting specimens for catalogue nos. : Warthin, 12.
- Sprint pits, sedimentation phenomena : Quirke, 6.
- Springs. See also Hot Springs ; Thermal waters ; Underground waters.
- Arizona, Indian Hot Springs : Knechtel, 3.

Springs—Continued.

- California: Blake, A. H., 1; Finch, R. H., 3; Reiche, 1.
 Colorado: Blackmer, 1; Robinson, T. W., Jr., 4.
 Costa Rica: Schaufelberger, 6, 8.
 Florida: Cooke, C. W., 24; Stringfield, 7.
 Georgia, Warm Springs quad.: Hewett, 13.
 Ground water: Tolman, C. F., 4.
 Guatemala: Deger, 2.
 History of ideas on origin of: Baker, M. N., 1.
 Idaho: Ross, C. P., 31; Stearns, 19, 27; Waring, 5.
 Mexico: Hernández, 3.
 Michigan, Big Spring: Poindexter, 2.
 Mississippi: Foster, V. M., 2, 5.
 Montserrat, West Indies: MacGregor, 2.
 Nebraska: Condra, 19.
 New Mexico: Brown, R. H., 1; Morgan, A. M., 1; Theils, 12.
 New York: Baudisch, 1, 2; Ruedemann, 43; Whitnall, 3.
 Northwest Territories: Soper, J. D., 1.
 Ohio: Swinnerton, A. A., 4.
 Oregon: Van Orstrand, 12; Waring, 5.
 Pennsylvania: Stone, 22; Anonymous, 112.
 Radioactivity of, Va., W. Va.: Hootman, 2.
 Texas: Plummer, 29.
 Utah: Callaghan, 14; Gegory, H. E., 4.
 Vermont: Chapman, R. W., 5.
 Virginia: Bevan, 25, 26; Cederstrom, 2; Collins, W. D., 1; Hootman, 2; Stow, 9; Woodward, 13.
 West Virginia: Hootman, 2; Price, P. H., 8-a, 9, 17.
 Wyoming: Bradley, W. H., 11; Stearns, N. D., 1.
 Yellowstone Nat. Pk.: Allen, E. T., 6-a; Bauer, C. M., 6; Behre, 20; Day, 7.
 Stage of evolution: Schenck, 30.
 Staining drill cuttings for differentiation: Keller, 7.
 Staining for rock analysis: Keith, M. L., 1.
 Stalactites and stalagmites.
 Growth of: Ellis, R. W., 3; Fisher, L. W., 7; Johnston, W. D., Jr., 2; Richards, G., 1; Ver Steeg, 10.
 Helictites, Va.: Holden, 13.
 Maine: Fisher, L. W., 7.
 Massachusetts: Quinn, W. D., 1.
 Mud stalagmites: Malott, 6.
 Oregon: Dake, 13.
 West Virginia: Bayles, 1.

Statistical methods applied to paleontology: Keen, 6.

Stephens oil field, Ark.: Spooner, 2.

Stilpnomelane, Mich.: Ayres, 2.

Stocks.

- British Columbia: Campbell, C. D., 6; Kerr, F. A., 21.

Stocks—Continued.

- California: Kelley, 10.
 Colorado: Knopf, 11; Smith, Ward, C., 1; Switzer, 4.
 Mexico: Woodford, 6.
 Montana: Gibson, 5; Wolff, 6.
 Nevada: Burgess, J. A., 1.
 New Hampshire: Williams, C. R., 2.
 Quebec: Faessler, 18; Longley, 4; Osborne, 29.
 Washington: Felts, 4.
 Stoke's formula, gravity anomalies: Lambert, 6.
 Stone. See also Building stone.
 California: Simpson, E. C., 1.
 Industrial minerals and rocks: A. I. M. E., 2.
 Industries: Bowles, O., 3.
 Mississippi: Morse, 6.
 Resistivity explor. for: Kurtenacker, 2.
 Strain ellipsoid: Leith, A., 3.
 Stratigraphic geology. See Historical geology.
 Stratigraphic vs. structural prosp.: Rosaire, 14.
 Stratigraphic terms, accuracy: Schenck, 23, 29.
 Stratigraphy vs. structure, Rocky Mts.: Heaton, 4.
 Straw-Manitou Lakes, Ontario: Thompson, James E., 5.
 Stream capture.
 Appalachians, drainage evolution: Thompson, H. D., 2.
 Arizona, Cameron dist.: Reiche, 3.
 Colorado, Dakota hogback: Schoewe, 4.
 Methods: Crosby, 12, 14.
 Montana: Rich, 29-a.
 New Mexico: Bryan, 35.
 New York: Cressey, 1; Thompson, H. D., 1.
 North Carolina: Norburn, 2; Wright, F. J., 2.
 Ohio River Valley: Leverett, 26.
 Tennessee, Gap Creek: Cullison, 3.
 Texas: Stenzel, 17.
 Virginia, Nat. Bridge: Woodward, 12.
 West Virginia, S. Br. Potomac: Fridley, 6.
 Wyoming, Big Horn Basin: Mackin, 7.
 Stream deflection due to earth's rotation: Glock, 11.
 Streams and their significance: Johnson, D. W., 19.
 Strength of the earth: Daly, 14.
 Strength of rocks under pressure: Griggs, 2.
 Strike and dip, graphic solution: Nettleton, 1.
 Strike and pitch, intersecting fms.: Weir, 1.
 Stromeyerite: Schwartz, 14.
 Stromatoporoiden.
 Devonian: Cronels, 27; Parks, 12.
 Illinois, reefs: Fenton, C. L., 11.
 Indiana: Shrock, 12.
 Kansas: Newell, 3.

Stromatoporoidea—Continued.

- Michigan : Fenton, M. A., 4.
- Oklahoma : Newell, 3.
- Ontario : Shaw, E. W., 2.
- Quebec : Parks, 5, 11.
- Reefs : Fenton, C. L., 11; Fenton, M. A., 1, 4.
- Structure and relationship : Twitchell, 1.
- Systematic position : Parks, 11.

Strontium.

- Arizona : Moore, B. N., 7.
- California : Moore, B. N., 7.
- General : Santmyers, 1.
- Industrial minerals and rocks : A. I. M. E., 2.
- Missouri : McQueen, 8.

Structural bearings and time determinations : Burwash, 5.

Structural behavior of igneous rocks : Barton, 47.

Structural contouring : Ley, 1.

Structural crystallography : Rogers, 12.

Structural features crossing North Atlantic : Baker, H. B., 3.

Structural features, unsoundness of certain types of rocks : Morris, M., 1.

Structural geology. See Physical geology.

Structural materials. See Building stone; Clay, etc.

Structural measurements data, field work : Chapman, C. A., 2.

Structure, beaches, bars, dunes : Thompson, W. O., 6.

Continents and ocean basins : Field, 20.

Meteoritic irons : Derge, 1.

Study and teaching. See also Educational. American colleges, geol. field courses : Patton, 4.

Appalachians, folded, map study : Itter, 2.

Classification, sed., metam. rocks : Van Tuyl, 19.

Earth science courses : Moses, 2.

Exhibits in geology, importance : McGill, 14.

Field work in geology : Arnold, H. J., 1; Gwynne, 7; Mitchell, 8; Patton, 4, 9.

Geologic field courses in American colleges : Patton, 4.

Geologic instruction, lab. equipment : Cronels, 19.

Geology at Northwestern : Dapples, 5.

Geology by airplane : Tieje, 1.

Geology course, general : Hell, 1.

Introductory : Schroeder, 1.

Geology, historical, teaching : Ver Wiebe, 13.

Geology exhibits, Chicago Museum : Shepherd, 5; Woodford, 5.

Geology for the layman : MacLean, 1.

Geology lab. instruction : Giles, 8; Mitchell, 9.

Study and teaching—Continued.

Geology study values : Wooster, 4.

Geomorph, geologic structure model : Meyer, A. H., 2.

Geomorphology, teaching of : Melton, 30.

Geophysics and geology : Hubbert, 11.

Geophysics vs. geology : Landsberg, 7.

How to study geology : Neumann, F. R., 1.

Igneous rock texture demonstration : Hoover, W. F., 2.

Introductory geology : Schroeder, 1.

Laboratory exercises in general geology : Giles, 8.

Meteoritics, college courses in : Leonard, F. C., 5.

Mineralogy technique at Harvard : Graton, 11.

Models of crystals : Smith, H. T. U., 9.

Paleogeography : Graham, A., 3-a.

Paleontology and Montana : Sloss, 1.

Petroleum and natural gas production : Stephens, 4.

Physiographic provs., topog. maps : Whitcomb, 12.

Problem method of instruction : Collins, R. F., 2.

Protractor to show structure : Postel, 3.

Required course in geology : Swinnerton, A. A., 5.

Study of geology, by airplane : Tieje, 1. Values : Wooster, 4.

Talking motion pictures in geology : Cronels, 25.

Topographic maps, use in teaching physiography : Whitcomb, 9.

Undergraduate preparation for geologist : Shuler, 1.

Why geology : Willard, 43.

Stylolites.

General : Stockdale, 3, 11.

Illinois : Frye, 3.

Indiana : Shaub, 14.

Missouri : Bastin, 5.

New York : Shaub, 14.

Tennessee : Stockdale, 9.

Texas : Stockdale, 9.

West Virginia : Price, P. H., 6.

Subgenus as taxonomic category : Schenck, 31.

Submarine canyons and valleys.

Atlantic coast, U. S. : Bucher, 20; Smith, P. A. 3; Stetson, 16; Veatch, A. C., 2.

Atlantic Coastal Plain, geophysical data on : Miller, B. L., 10.

Bathymetric compilation off Calif. coast : Shepard, 33.

British Columbia : Williams, M. Y., 15.

California coast : Shepard, 18, 27, 28, 42, 45, 46, 47, 49, 59.

Sediments in canyons : Cohee, 4.

Changes attending ice age : Lombard, 1.

Currents, sea bottom : Revelle, 5.

Daly's hypothesis of origin : Shepard, 30.

Submarine canyons and valleys—Continued.

- Depth changes at heads: Shepard, 57.
 Distribution and longitudinal profiles: Shepard, 48.
 Fossils in deep-sea cores: Henbest, 12.
 General: Shepard, 8, 9, 10, 12, 15, 16, 18, 19, 26, 27, 28; Smith, P. A., 1; Stetson, 15.
 Georges Banks: Stetson, 13.
 Hudson: Shepard, 32.
 MacInac Straits Valley: Stanley, 8.
 Mock valleys: Davis, 23.
 Newfoundland Banks: Gregory, J. W., 3.
 New York City area: Strzygowski, 2.
 North America, age of: Shepard, 58.
 Ocean level, Cenozoic: Fretz, 1.
 Oceanography and submarine geology: Sverdrup, 1.
 Oregon coast: Smith, W. D., 6.
 Origin: Daly, 15; Hess, H. H., 9; Hitchcock, C. B., 2; Johnson, 40, 44; Lambert, 8; Shepard, 28, 50.
 Polar elevation and last ice age: Hills, G. F. S., 2.
 Salt domes related to Mississippi submarine trough: Shepard, 37.
 Shifting bottoms, canyon heads: Shepard, 38.
 Submarine canyons and changes of sea level: Shepard, 26; Treasher, 4.
 Submerged river valleys: Hess, H. H., 2, 3.
 Continental slopes: Hess, H. H., 8; Treasher, 4.
 Suspension currents and mud slides: Stetson, 14.
 United States, Atlantic Coast: Bucher, 20; Smith, P. A., 3; Stetson, 16; Veatch, A. C., 2.
 Submarine canyons and changes of sea level: Shepard, 26.
 Submarine geology: Bigelow, H. B., 1.
 Submarine gorge, origin: Anonymous, 36.
 Subsidence. See also Changes of level.
 California, Santa Clara Valley: Stohs-net, 1.
 Hawaii, Puna shoreline: Jones, A. E., 1.
 Louisiana, cheniers: Russell, R. J., 11.
 Salt marshes and coastal stability: Goldthwait, J. W., 1.
 Texas, Sour Lake: Sellards, 5.
 Subsidence and ground movement, factors in: Crane, 1.
 Subterranean water. See Underground water.
 Suggestions to authors: Lane, B. H., 1; Snider, 8.
 Sulfides, solubility to 400° C.: Verhoogen, 3.
 Sulfur.
 Boulder Dam area: Lee, 7.
 British Columbia: Richmond, A. M., 2.
 California: Anderson, C. A., 6; Raymond, L. C., 1.
 Comstock Lode, Nev.: Milton, 4.

Sulfur—Continued.

- Industrial minerals and rocks: A. I. M. E., 2.
 Louisiana: Howe, 26; Moresi, 1; O'Donnell, 1; Anonymous, 10.
 Mexico: Barrera, 3.
 Montserrat, West Indies: MacGregor, 2.
 Newfoundland: Snelgrove, 8.
 New York: Roedder, 1.
 Polymorphs: Morse, H. W., 2.
 Sources: Ridgway, R. H., 2.
 Texas: Baker, C. L., 17; Bartoň, 33; Marx, 1; Anonymous, 10.
 Utah: Beutner, 1; Thompson, R. B., 1.
 Washington: Fowler, C. S., 1.
 Sumpter quad., Oreg.: Hewett, 5.
 Sun symbol markings, lms., ss.: Lang, W. T. B., 5.
 Superposition, interpretation: Roman, 5.
 Surface and ground-water plann.: Drane, 1.
 Surveys. See also History.
 Activities, State geological surveys: Bevan, 22; Branner, 12, 13.
 Aerial photo.: Jackson, K. B., 1.
 Alabama G. S., repts. and pubs.: Jones, W. B., 6, 10, 12.
 Alaska, aerial photography: Smith, P. S., 8.
 Alberta G. S. repts.: Allan, 5, 7, 14, 15, 16, 17.
 Arkansas G. S. repts.: Branner, 9, 14, 16, 20.
 British Columbia, ann. repts.: Walker, J. F., 7.
 Bureau of Mines Exper. Sta., U. S., serv. to surveys: Finch, J. W., 8.
 California, Geol. Br. repts.: Jenkins, 4, 7.
 California, State Mineralogist's repts.: Bradley, W. W., 3, 4, 6, 8, 10, 11.
 Canada G. S. repts.: Collins, W. H., 1; Lynch, F. C. C., 1; McLeish, 1; Sawa, 1; Williams, M. Y., 16.
 Colorado G. S.: Butler, 6, 11.
 Connecticut G. S., 13-17 bienn. repts.: Britton, W. E., 1, 2, 3, 4.
 Education, geol., and public surveys: Butler, 13; Short, 4.
 Florida G. S. repts.: Gunter, 1, 7, 7-a, 9.
 Functions of State Geol. Surveys: Ashley, 16; Leighton, M. M., 18.
 General: Dott, 12.
 Geodetic surveys: Bowie, 15, 24.
 Georgia Div. Geology rept., 1935-36: Smith, R. W., 8.
 Government surveys and mining industry: Sales, 2.
 Idaho Bur. Mines rept.: Finch, J. W., 5.
 Illinois State G. S.: Bain, H. F., 1; Cheney, 4; DeWolf, 1; Leighton, M. M., 7, 21.
 Indiana, Div. Geology repts.: Esarey, 2; Logan, W. N., 1.
 Kentucky, State Geologist adm. repts.: Jillson, 6, 7, 26.

Surveys—Continued.

Kentucky—Continued.

- Origin, Geol. Survey: Payne, H. M., 2;
Townsend, J. W., 1.
Louisiana G. S., repts.: Howe, 28;
Moresi, 2, 4; Shaw, J. A., 1.
History of: Howe, H. V., 5.
Massachusetts: Currier, 11.
Mexico, ann. repts.: González, E. M.,
2; Santillán, 8.
Michigan G. S., history: Martin, H.
M., 2.
Mineral industry, devel.: Loughlin, 10.
Mississippi State Geologist's bienn.
repts.: Lowe, E. N., 1; Morse, 5.
Missouri State Geologist's repts.: Bueh-
ler, 1, 2, 4, 5, 8, 9.
Montana, Bur. Mines and Geology:
Anonymous, 80.
National and local magnetic surveys:
Heck, 39.
Newfoundland, Geologist's rept. 1929:
Baker, H. A., 1.
Geological Survey revived: Snelgrove,
7.
North Carolina, Div. Mineral Res. rept.:
Bryson, 1.
Ohio, radio transmission survey: Higy, 1.
Oklahoma G. S.: Cooper, C. L., 1.
Biennial rept., 1935-36: Dott, 9.
Oregon G. S., 1st. bienn., 1937-38:
Strayer, 1.
Pennsylvania G. S.: Ashley, 22; Logue,
1; Stone, 19; Anonymous, 91.
Establishment: Mendenhall, 9.
Topographic and Geologic Survey,
1919-30: Ashley, 2.
Public works activities and services,
U. S. G. S.: Mansfield, W. C., 10;
Sears, J. D., 2.
Science Advisory Bd. rept. on U. S. G. S.,
1934: Leith, 9.
Service: Bain, 12.
South Dakota State Geologist's repts.:
Rothrock, E. P., 3.
State geol. surveys: Moore, 43.
State and nat. geol. surveys: Leighton,
11.
State res. survey, model: Leighton, 23.
Territorial surveys, data in Wash., D. C.:
Fryxell, 8.
Texas, Big Bend area: Crimmins, 1.
Texas G. S. activities: Sellards, 9.
Division of Nat. Res.: Schoch, 1.
United States G. S., ann. repts.: Menden-
hall, 3; Smith, G. O., 1.
History, activities: Boero, 1.
Section of Geophysics: Lee, 10.
Water Res. Br.: Follansbee, 2.
Value of: Roberts, H. M., 1.
To nonmining community: Agar, W.
A., 1; Agar, W. M., 11.
Vermont State Geologist's 21st rept.,
1937-38: Jacobs, 2.
Washington G. S. bienn. repts.: Culver,
2, 3, 5, 7, 13.
History: Glover, 7.

Surveys—Continued.

- Wisconsin State G. S., bienn. repts., 15th-
17th: Wis. G. S., 1.
Biennial repts., 18th-21st: Bean, 3.
State geol. surveys: Bean, 2.
Wyoming State Geologist's repts.: Mar-
zel, 1, 2.
Surveying from the air, scope and limits:
Miller, O. M., 1.
Suspension currents and mud slides: Stetson,
14.
Suzorite, British Columbia: Campbell, C. D.,
6.
Syenite.
New Hampshire: Quinn, 3.
Ontario: Davis, N. B., 1; Quirk, 13.
Tables for mineral determination: Eakle, 3.
Tables of formations. See Geologic forma-
tions, tables.
Taconian orogeny: Schuchert, 11.
Taconic Olenellus fauna: Keyes, 268.
Taconic quad., Mass.-Vt.-N. Y.: Prindle, 1.
Taenite: Buddhue, 32.
Takilma-Waldo and Blue Creek dists.: Shenon,
6.
Taku River dist., British Columbia: Kerr,
F. A., 3.
Talc.
British Columbia: Cairnes, 15.
California: Burchfiel, 1.
Georgia: Crickmay, G. W., 18.
Industrial minerals and rocks: A. I. M.
E., 2.
North Carolina: Bryson, 7-a; Greaves-
Walker, 2; Money-maker, 4; Stuckey,
7, 10.
Ontario: Wilson, M. E., 7.
Pennsylvania: Miller, B. L., 15.
Quebec: Archambault, 1.
South Carolina: Bryson, 8.
Vermont: Bain, 10.
Virginia: Burfoot, 1, 1-a.
Washington: Merten, 1; Willson, H., 3.
Talking pictures in geology: Cronis, 25.
Talus, Front Range, Colo.: Ives, 12.
Tantalum, S. Dak.: Johnson, A. I., 2.
Teaching. See Education; Study and teach-
ing.
Technique. See also Mineralogy; Paleon-
tology; Petrology.
Abrasives, grading: Vanderwilt, 1.
Accessory stage for microscope: Lamar,
2.
Acetic acid to get insoluble residues: St.
Clair, D. W., 1.
Acid treatment of rocks: Anonymous, 28.
Aerial mapping: Eliel, 1, 2; Gardner,
L. W., 1; Talley, 1.
Aerial photog. equipment, devel.: Meyer,
W. H., Jr., 1, 2; Patton, R. S., 2.
Aerial photog. surveys: Jackson, K. B., 1.
Aerial photogs. in geol. mapping: Eng-
lish, W. A., 2.
Aerial photogs., geol. interpretation:
Nouhuys, 1.

Technique—Continued.

- Aerial photography: Kerr, R. C., 1.
Improvements: Bruce, H. T., 1.
Aerial recon. and contour mapping: Ellef, 2, 3.
Alidade and plane table in geol. surveys: Mather, 27.
Ammonium chloride sublimate apparatus: Cooper, C. L., 8.
Ammonoids, Paleozoic, drawing sutures: Elias, 20.
Amphiboles, accuracy of chem. analyses: Larsen, 20.
Analysis, mech., of sediments: Krumbein, 10.
Anisotropism, metallic minerals: Sampson, E., 1.
Appalachians, folded, map study: Itter, 2.
Apparatus, precision determination of lattice constants: Buerger, 23.
For reproducing ammonite suture lines: Lupher, A. W., 1.
Applying reagents under microscope: Osborne, 8.
Auto planetabing method of mapping: Meyer, A. H., 1.
Bentonites, correl. by mech. analysis: Dorrell, 2.
Biaxial crystals, model: Rogers, 13.
Biaxial minerals: Lane, J. H., Jr., 1.
Birefringence determination of minerals: Emmons, R. C., 10.
Block diags.: Ives, 8.
For mining geology: Johnston, W. D., 12, 15; Nolan, 10.
Blowpipe analysis: Kelley, 7.
Bomb for hydrothermal experiments: Morey, G. W., 3.
Bottom sampling apparatus: Hough, 6.
Bottom-hole pressure: Wright, H. F., 1.
Brunton compass attachment for measuring magnetic intensity: Wilson, J. H., 1.
Bubbles, removal from old thin secs.: Keller, 5.
Calaverite, Colo., etch tests: Short, 5.
California, spectrographic exam. of quartz: Kennard, T. G., 2.
Canada, aerial surveying: Peters, F. H., 1.
Canada balsam, quick drying: Coombs, H., 1.
Cartography for mining geology: Schmitt, 4.
Cell to determine crystal-grains refractive indices: Saylor, 1.
Cellophane as slide cover: Tester, 8.
Centrifuge tube for heavy-mineral separation: Taylor, G. L., 2.
Chalcocite types, carbon arc identifying: Stephens, 3.
Clastic rocks, pressure-chamber disaggregation: Taylor, G. L., 1.
Clay minerals: Grim, 3.
Cleaning micro. fossils: Tolmachoff, 2.
Clerici's solution, restandardizing: Hawkins, H. H., 1.

Technique—Continued.

- Clinometer rule: Williams, T. B., 1.
Coal, preparing thin secs.: Thiessen, 10.
Collecting fossils: Martin, H., 1.
Color charts: Behre, 5.
Conodonts, preparing: Gunnell, F. H., 5.
Construction of geol. model: Gould, D. B., 1.
Contouring ore bodies: Conolly, H. J. C., 1.
Contouring the subsurface: Banks, W. G., 1.
Copper sulfides, identifying: Gaudin, 6.
Core analyses, interpretation: Hornkol, 1.
Core analysis: Pyle, 3.
Core drill, large, for geol. explor.: Moneymaker, 6.
Cores from ocean bottom, apparatus: Piggot, 6, 8; Varney, 1; Anonymous, 114.
Examination, Calif.: Barbat, 1.
Cores, orientation: Johnson, C. H., 8; Roberts, D. C., 2; Vacquier, 1.
Sidewall sampling: Leonardon, 5.
Correlation, by gamma-ray well logging: Howell, L. G., 1.
By insoluble residues, Cambro-Ord. lms., Lehigh Valley: Hills, J. M., 1.
Spectrographic, oil-well waters: Hasler, M. F., 1.
Subsurface method, Calif.: Rankin, W. D., 1.
Subsurface paleontologic, Gulf Coast: Kornfeld, M. M., 1.
Criteria, marine, nonmarine sediments: Crowley, A. J., 2.
Cross-section, plotting, measurements: Wentworth, 7.
Crystalline rocks, Md., interpretation: Cloos, 14.
Crystals.
Atomic arrangement: Buerger, 28.
Drawings: Schaller, 28.
Space-group determination: Donnay, 19.
Structure models: Buerger, 14; Gruner, 11.
Datum for magnetometer mapping: Farnham, F. C., 2.
Depth calculations, seismic: Beers, 1.
Depth finding, magnetic triangulation: Stearn, 5.
Descriptions of new species, methods: Schenk, 2.
Determinations.
Densities and porosities: Brankstone, 1.
Mean sea level: Marmer, 1.
Quantitative, detrital quartz and feldspar: Russell, P. G., 6.
True dip in pits, graphic method: Rich, 23; Weisbord, 2.
Detrital grains, handling, determination: Partridge, 1.
Device for holding: Howard, A. D., 3.

Technique—Continued.

- Diamond drill cores, interpretation :
Wisser, 1, 3.
- Diatomaceous earth, preparation : Shropshire, 1.
- Dielectric separation of mineral grains :
Berg, G. A., 1.
- Dip construction, Rich simplification :
Woolnough, 2.
- Dip determination graphically : Rich, 4.
- Dip-needle surveys, interpretation :
Brant, A. A., 1.
- Dip of beds, determination : Johnson, C. H., 3.
- Dip problems, simplified determination :
Fisher, D. J., 11.
- Dip reflections on faults, Gulf Coast :
Campbell, F. F., 2.
- Dip shooting calculation method : Pirson, 7.
- Directional radio ore instruments for geophys. prosp. : Rose, R. B., 2.
- Dispersion, fine-grained sediments for mech. analysis : Krumbein, 4.
- Double variation apparatus : Emmons, R. C., 6 ; Fisher, D. J., 2.
- Drill cuttings, coll., interpretation : Richards, J. T., 1.
- Microscopic exam. : Lukert, 1.
- Drill holes, explor. : Leonardon, 6.
- Ear ossicles in fossil crania, preservation : Evans, T. H., 1.
- Earthquake accelerometers, tests : McComb, 4.
- Earthquake inv. : Gilmore, M. H., 1.
- Earth-resistivity, interpretations : Rosenzweig, 1 ; Watson, R. J., 4.
- Eclipse plate for petrog. microscope :
Lang, W. T. B., 8.
- Electric counter for thin-sec. analysis :
Hurlbut, 9.
- Electrical logging : Gillingham, W. J., 1.
- Electrical prosp. : West, S. S., 1.
- Instruments : Bruckshaw, 1.
- Etch figure inv. with optically active solvents : Honess, 5.
- Etch figures, interpretation : Wherry, 5.
- Etch tests, calaverite, krennerite, sylvanite, Colo. : Short, 5.
- Etching, Illinois coal, chrome-sulfuric acid : McCabe, W. S., 1.
- Etching and preserving, metallic meteorites : Nininger, 36.
- Exploration for oil fields : Howard, W. V., 8.
- Explosives for geophys. prosp. : Loving, 1.
- Exposure determination, photomicrography : Henbest, 5.
- Fabric criteria for ripple marks : Ingerson, 8.
- Fabricated diagrs. : Ives, 10.
- Factor in mech. analysis, fine-grained sediments : Galliber, 7.

Technique—Continued.

- Feldspar twins, determination : Emmons, R. C., 12.
- Feldspathoids, staining method : Shand, 4.
- Field photography for geologists :
Thwaites, 9.
- Flow lines, planes, in plastic masses :
Fraser, D. M., 3.
- Fluorescent lamp : Anonymous, 159.
- Folds, 3-dimensional, graphic treatment :
Eardley, 10.
- Foraminifera.
- Camera lucida drawings : Richards, G. S., 1.
- Concentration : Carson, 1.
- Handling and picking : Birch, D. C., 1.
- Making prints of : Bakx, 1.
- Making thin secs. : Tolman, F., 1.
- Recovery by flotation : Anonymous, 81.
- Sorting stage : Ellis, B. F., 2.
- Formations, chem. composition, effect on acidizing wells : Love, W. W., 1.
- Fossils, handling in field and laboratory :
Allen, J. E., 3 ; Camp, 9.
- Making thin secs. : Murata, 1.
- Plants, transfer study method : Darrah, 21.
- Serial sectioning apparatus : Zdansky, 1.
- Small, cleaning method : McNair, 6.
- Friable material, thin secs. : Hite, 2.
- Gas prosp. method : Sokolov, 1.
- Gem-stone material, identification : Howell, D. H., 1.
- Genera, method of comparison : Phleger, 8.
- Geologic age calculations : Keevil, 5.
- Geologic instruction, lab. equipment : Cronels, 19.
- Geologic interpretation from well cuttings : Whiteside, 1.
- Geologic mapping from air : Desjardins, 2.
- Geologic structure determination : Kelly, P. C., 1.
- Geology and geophysics, structure determination : Longwell, 28-a.
- Geophysical data, interpretation : Blau, 3.
- Geophysical delineation of structure :
Kelly, 22.
- Geophysical explor. : Eby, 13.
- Geophysical interpretations : Blackburn, M. S., 1.
- Geophysical inv., Atlantic Coastal Plain :
Ewing, 10 ; Rust, W. M., Jr., 1.
- Geophysical prosp. : Eby, 7, 9 ; Hare, 1 ; Joyce, 1 ; Klipsch, 1 ; Landsberg, 15 ; Lee, 8 ; Rose, 3, 4 ; Stubbe, 1 ; Wantland, 4.
- Apparatus, testing : Hare, 1.
- Magnetometer : Joyce, 1 ; Wantland, 4.
- Multiple recording : Klipsch, 1.
- Sonoragraph : Rieber, 8 ; Sawdon, 2 ; Uren, 1.

Technique—Continued.

Magnetometer—Continued.

- Water search: Lee, 8.
 Geosonograph explor.: Rieber, 8; Sawdon, 2; Uren, 1.
 Gold prosp.: Jacy, 1.
 Field test: Douglas, 7, 8.
 Ores, micr. study: Haycock, 4.
 Placers, handling: Fansett, 3.
 Goniometer, 2E: Quirke, 14.
 Gradiometer, magnetic: Roman, 3.
 Grains, transfer from one liquid to another: Calkins, 2.
 Gravimeter, design, operation: Bryan, A. B., 2; Mott-Smith, L. M., 1.
 Gravity instruments for rapid measurement: Hoskinson, 2; Peterson, R. S., 1.
 Gravity separation: Emmons, R. C., 5.
 Gravity surveys, West Indies: Ewing, 13.
 Grids to determine nonopaque minerals: Donnay, 14.
 Ground motion measurement by reflection recording: Gardner, D. H., 1.
 Heavy liquids, equipment for reclaiming: Cohee, 2.
 Heavy minerals, comparison: Rittenhouse, 7.
 Separation: Brown, I. C., 1.
 Horizon slope calculation, reflection prosp.: Pentz, 1.
 Hotchkiss superdip magnetometer: Stearn, 3, 6.
 Hyrax, synthetic resin for mounting: Cameron, E. M., 1; Hanna, G. D., 14, 15.
 Ideal immersion liquids: Buerger, 7.
 Identification of minerals by staining: Head, 2.
 Igneous rock texture demonstration: Hoover, W. F., 2.
 Illuminator, critical microscopy: Uber, 1.
 Vertical, for mineral photography: Legge, 1.
 Illustrating fossils: Hanna, 15.
 Geologic articles: Hooker, 1.
 Imbedding fossils in paraffine for cleaning: Cooper, G. A., 12.
 Impregnation, porous material for study: Waldo, 3.
 Immersion liquids: Buerger, M. J., 7; Buerger, N. W., 3; West, C. D., 1.
 Indices, refraction, measurements: Quirke, 20.
 Index liquids, standardization: Glass, J. J., 2.
 Individual explor., substrata deposits: Rose, R. B., 1.
 Insoluble-residue method, econ. application: McQueen, 9.
 Isopach contouring, faulted fms.: Atwater, 6.
 Jamin effect in oil production: Wright, R., 1.
 Kilauea, Hawaii, crack measurement and tilt: Waesche, 2.

Technique—Continued.

- Land surfaces, average-slope determination: Wentworth, 6.
 Long shots with alidade: Hillis, 1.
 Lucite mounting medium, uses: Bell, J. F., 3; Shrock, 16.
 Magnetic, elec. anomalies, delineation: Gilchrist, 4.
 Magnetic separation, rocks and minerals: Ryan, C. W., 2.
 Magnetic susceptibility measurement: Wantland, 2.
 Making structure models: Gordon, S. G., 2.
 Making thin secs. of fossils: Murata, 1.
 Mapping oil pools: Sanders, T. P., 1.
 Maps, new mounting method: Mackin, 6.
 Marking rocks, minerals, fossils: Hubbard, 11.
 Measuring temperatures in deep wells: Van Orstrand, 2.
 Measuring in reflected polarized light: Zeiler, 1.
 Measuring refractive index: Von Schlichten, 1.
 Measurement, shapes of rock particles: Tester, 4.
 Measurements in block diagrs.: Ives, 11.
 Mechanical analyses for dynamic interpretation: Spieker, 12.
 Mechanical analysis, sediments: Gripenberg, 1; Krumbein, 1, 2; Otto, 5; Rittenhouse, 1; Spieker, 12; Toltman, C. F., 1; Trask, 5.
 Sand, for correl. purposes: Gardescu, 1.
 Metals, field tests for: Fansett, 1, 2.
 Meteorites, slicing and polishing: Ingalls, 2.
 Methods in petroleum geology: Tickell, 2.
 Methods of prosp.: Helland, 23.
 Methods, studying fluctuations: Wenzel, 6.
 Microbarograph, electromagnetic, uses: Macelwane, 25.
 Microdetermination of minerals: Blank, 7.
 Hardness determination: Blank, 6.
 Streak of minerals: Blank, 5.
 Microfaunal tech., Paleozoic rocks: Dunn, 13.
 Microfossils, marcasitized, pyritized, handling: Borger, 1.
 Sorting apparatus: Franke, A., 1.
 Microhardness of minerals, Mohs scale: Hodge, H. C., 1.
 Micromounts: Wills, 1.
 Microscope, inverted metallographic: O'Neill, J. P., 1.
 Polarizing, use of: Fox, W. A., 1.
 Universally movable tube: Sueno, 1.
 Microscopic determination, or minerals: Short, 3.
 Quartz and untwinned oligoclase-andesine: Dodge, T. A., 2.

Technique—Continued.

- Mineral grains, mounting on slides: Smith, H. T. U., 11.
- Specific gravity determination: Jahns, 3.
- Mineralography at Harvard: Graton, 11.
- Minerals, biaxial, determination axial angles: Smith, H. T. U., 3.
- Determination by specific gravity: Berman, 10; Kerr, P. F., 15.
- Powdered, separation: Rosenholtz, 2.
- Reflectivity and color measurements: Parrish, W., 1.
- Refractive indices by immersion method: Slawson, 7.
- Removal of iron oxide coatings: Drosdoff, 1.
- Specific gravity determination: Berman, 10.
- Models, nuclear crystal structure: Fisher, D. J., 12.
- Mollusca, index method for comparing fanules: Schenck, 25.
- Mountain structure, lab. studies: Mitchell, R. H., 4.
- Mounting medium: Galliher, 1.
- Mounting polished surfaces in bakelite: Fuller, H. C., 1; Krieger, 4.
- Multiple grinding, thin sec. chips: Wentworth, 34.
- Multiple seismometers, use of: McDermott, 4.
- Nitrocellulose sec., fossils, rocks: Fenton, M. A., 7.
- Nomogram for apparent dip: Johnson, C. H., 1.
- Nomogram for settling velocity of spheres: Rouse, H., 1.
- Nonopaque minerals, determinative grids for: Donnay, 18.
- Oil sands, correl. by fluorescence: Melhase, 10.
- Current resistivity: Jakosky, 8.
- Gulf Coast, characteristics: Halbouty, 5.
- Physical analysis: Nutting, 3.
- Opaque minerals, determination: Farnham, C. M., 1.
- Optical analysis of immersion methods: Saylor, 2.
- Optical instruments for mineralogists: MacNelly, 1.
- Ore bodies, magnetic, depth determination: Keys, 3.
- Ore minerals, micr. study of: Schwartz, 26.
- Ore research microscope: Haycock, 5.
- Orientation, accurate, thin sec.: Ingerson, 3.
- Orientation, minerals in rocks: Pabst, 2, 4.
- Ostracoda, photography of: Swain, 1.
- Ovals of revolution for anisotropic media: Quirke, 23.
- Paleobotanical microtechnique: Noé, 11.
- Peel method: Darrah, 10.

Technique—Continued.

- Paleographic wall maps: Patton, L. T., 3.
- Paleontology, coll. methods: Schuchert, 51.
- Methods: Reed, 28.
- Pebbles, axes measurements: Krumbein, 26.
- Sphericity determination: Pettijohn, 10.
- Peel method, paleobotany: Darrah, 10.
- Pendulums, astatized, for gravity measurements: Ising, 1.
- Percentage representation, heavy mineral frequencies: Dryden, 2.
- Permeability, reservoir rocks, measurement: Hassler, G. L., 1.
- Perspective block diagrs.: Secrist, 3.
- Petrofabric analysis: Ingerson, 6.
- Petrofabric diagrs., preparation, interpretation: Haff, 3; Winchell, H., 1.
- Petrographic methods: Milton, 1.
- Soil labs.: Fry, 1.
- Petrographic microscope: Emmons, R. C., 2.
- Petroleum, core testing: Hillis, 3; Landsberg, 10.
- Determination of, in cores: Hillis, 3.
- Discovery, transient and soil analysis: Steinmann, 1.
- Early explor.: Goodrich, 3.
- Evaluation by index of refraction: Hedberg, 3.
- Exploration by soil analysis: Hoffman, 6.
- Methods for finding: Bignell, 3.
- Permeability measurements: Clough, 1.
- Prospecting: DeGolyer, 13.
- Source beds, means of recognition: Trask, 32.
- Phase sampling of sediments: Apfel, 4.
- Photographic slide mount for microscope: Plummer, H. J., 1.
- Photographing walls of boreholes: Kelly, 21.
- Photography for mineralogist: Stephens, M. M., 2.
- Photography in radioactivity: Wilkins, 1.
- Photography of petrog. thin sec.: Crook, W. J., 1.
- Physiography, new presentation: Atwood, W. W., Jr., 8, 9.
- Piprine as immersion medium: Martens, 5.
- Plagioclase determination: Emmons, R. C., 8; Ho, 1.
- Plane of projection, shift in gnomonic projection: Wright, F. E., 3.
- Plane-polarized light, micr. work: Osborne, 13.
- Plants, fossil, collecting, preserving: Sanborn, 4.
- Polarizing vertical illuminator: Osborne, 9.

Technique—Continued.

- Polaroid for photographing large thin secs.: Shaub, 7.
 Polished thin secs., ore and rock: Grondijs, 1.
 Polishing apparatus for ore minerals: Murdoch, 8.
 Pollen analysis: Cain, 1.
 Pollen, fossil, separation from peat: Geisler, 1.
 Porosity, oil sands, determination: Tallafarro, D. B., Jr., 1.
 Porosity and saturation studies: Barnes, K. B., 1.
 Portable thin section machine: Flagler, 1.
 Portraying coal-field structure: MacKay, 7.
 Pre-Cambrian determination, Lake Superior: Tyler, 4.
 Precious metal elements, microchem. tests for in ores: Fraser, H. J., 6.
 Preparation, clay samples for elutriation: Postel, A. W., 1.
 Paleobotanical secs, by peel method: Graham, R., 1.
 Paleontologic illus.: Reeside, 8.
 Projection diags.: Wright, F. E., 1.
 Rocks and minerals: Reberholt, 1.
 Preservation, fragile specimens: Toothaker, 1.
 Projection, diags., preparation: Wright, F. E., 1.
 Dip angle on profile sec.: Foley, 6;
 Herold, S. C., 3.
 Direct, optic figs.: Quirke, 18.
 Protractor: Fisher, 19.
 Propagation of seismic waves, computation: Muskat, 5.
 Prospecting, geochem. methods: Pirson, 10.
 Protractor to show structure: Postel, 3.
 Psilomelane and manganite, identification: Cooke, S. R. B., 1.
 Quantitative micr. analysis: Thompson, J. Ellis, 3, 5.
 Quantitative micr. methods: Alling, 7;
 Thackwell, 1.
 Quartz content, indust. dusts: Hulin, 10.
 Quartz spectrograph, study of opaque minerals: Haycock, 2.
 Quartz wedge substitute, polarizing microscope: West, C. D., 2.
 Radioactivity measurements: Landsberg, 13.
 Ray filter for photographer: Blackwelder, 21.
 Recent sediments, studies: Twenhofel, 36.
 Recovery, Paleozoic arenaceous Foraminifera: Secrist, 1.
 Reflection, longitudinal wave pulses: Muskat, 6.
 Patterns, complex, and geol. source: Rieber, 9.
 Seismic instruments: Helland, 20.
 Seismograph: McDermott, 2.

Technique—Continued.

- Refractive index determination method: Emmons, R. C., 3.
 Refractive index liquids: Rogers, 10.
 Refractometer, high index: Emmons, R. C., 7.
 Relief map, new type: Troxell, 7.
 Reservoir-sedimentation studies: Eakin, 4.
 Residues, insoluble, strat. guide: McQueen, 4.
 Resin, high index for mounting: Alexander, J. A., 1; Keller, 3.
 Resistivity determination: Roman, 1.
 Resolution of combined effects: Elkins, 1.
 Road-material survey methods: Runner, D. G., 1.
 Rock analysis method: Goldman, F. H., 1.
 Rock, porous, impregnation for thin secs.: Huene, R. von, 1.
 Rock quality, petrog. study: Runner, 15.
 Rock sampling for chem. analysis: Grout, 8.
 Rock saw: Vanderwilt, 7.
 Rock saw, improved: Vanderwilt: Emigh, 1.
 Rock slicing machine: Shaub, 5.
 Rotary type, sample splitter: Wentworth, 26.
 Rubber casts, molds, of fossils: Fischer, A., 1.
 Salt dome prosp.: Peters, J. W., 1.
 Sample splitter, Jones, improvements: Otto, 3.
 Sample washer for microfossils: Driver, 1.
 Sampling, heavy minerals: Cogen, 1;
 Otto, G. H., 1, 2.
 Incoherent sands for porosity study: Fraser, H. J., 3.
 Minerals in polished secs.: Haycock, 1.
 Sand, mech. analysis: Emery, K. O., 1.
 Scale models for geol. structure study: Hubbert, 10.
 Scientific illus.: Ridgway, 1.
 Sectioning for micr. exam.: Ragatz, 1.
 Sections, polished, making, mounting, filing: Shaub, 6.
 Oriented, small single crystals: Buerger, 18.
 Sedimentary data presentation: Krumbein, 24.
 Sedimentary lab., portable: Henson, 1.
 Sedimentary rocks, correl. by radioactivity: Landsberg, 14.
 Sedimentation study, field sampling: Otto, 4.
 Sediments, analysis by heavy liquids, centrifuges: Berg, E. L., 1.
 Ancient, study of: Poor, 8.
 Argillaceous: Bray, R. H., 1.
 Indurated, thin sec. mech. analysis: Krumbein, 7.
 Mineral analysis: Pettijohn, 16.
 Pipette analysis: Rittenhouse, 6.
 Sampling: Krumbein, 5.

Technique—Continued.

Sediments—Continued.

- X-ray analysis: Mehmehl, 1.
 Seismeter inv., Montserrat: Perret, 6.
 Seismic depth calculations: Beers, 1.
 Seismic prosp.: Adler, 3; Gabriel, 8; Tracy, 1.
 Seismic reflections, interpretation: Marr, 1.
 Seismograph, prosp. instrument: Benioff, 2, 4; Gebhardt, 1; McComb, 3; Macelwane, 26; Nomann, 1; Rutherford, H. M., 7; Slichter, 3.
 Field operations: Ittner, 1.
 Theory problems: Blake, 6.
 Seismographing for oil: McKinney, 1.
 Seismological Lab., Pasadena, Calif.: Benioff, 3.
 Seismometer: Delaney, 4; Irland, 1; McComb, 1; Slichter, 2; Wenner, 3.
 Seismoscope: Jaggard, 41.
 Selective stains in paleontology: Henbest, L. G., 2.
 Selenium, microchem. tests for: Evans, M. H., 1.
 Sensitivity to tilt, seismographic: Delaney, 1.
 Serial sectioning of fossils: Simpson, 23.
 Shale, bituminous, carbon, hydrogen determination: Hoots, 5.
 Shapometer for measuring pebbles: Tester, 5.
 Silicate structures, atomic packing models: Dorris, 1.
 Silver sulfides, identification: Gaudin, 4.
 Size frequency distrib.: Krumbein, 7, 9, 21; Wentworth, 30.
 Slotted templet to show crustal movement: Eardley, 13.
 Soil surveying for oil: Stormont, 1.
 Sorting river sediments: Straub, 5.
 Source beds of petroleum, discovery: Trask, 36, 38.
 Specific gravity, determination: Landes, 3; Meen, 2.
 Scale: Roedder, 2.
 Spectrograph: Stow, 5.
 In mineralogy: Wright, T. A., 1.
 Spectrographic analysis, apparatus, Use, 1.
 Galenas, sphalerites, pyrites: Clausen, 1.
 Identification of minerals: Lee, O. I., 2.
 Spores in coal, study method: Darrah, 14.
 Spotting specimens for catalogue nos.: Warthin, 12.
 Staining methods: Gabriel, A., 1.
 Drill cuttings for differentiation: Keller, 7.
 Minerals: Gaudin, 1, 2.
 Rock analysis: Keith, M. L., 1.
 Stannous oxide, etching reagent for iron ores: Hickok, 1.
 Stereoscopic crystal drawing: Fisher, 14.

Technique—Continued.

- Strata, thickness between dips: Ickes, 1.
 Stratigraphic prosp., soilane, eltran: Rosaire, 12.
 Strike and dip, graphic solution: Kitson, H. W., 1; Nettleton, 1.
 Structural measurements data, field work: Chapman, C. A., 2.
 Study of shark teeth: Carroll, 1.
 Submarine observations: Fox, L. S., 2.
 Submarine surveying: Rude, 1.
 Subsurface contouring: Lauer, 1.
 Sulfide minerals, identification: Gaudin, 3.
 Table for polishing ores: Hatton, 1.
 Temperature measurements: Deussen, 10.
 Terrain representation: Cooke, H. L., 1.
 Testing minerals by spectroscope: Cutting, 1.
 Texas, East Basin, source beds indication: Trask, 31.
 Textures, film study: Appel, 1.
 Thin sec. mineralogy: Rogers, 11.
 Thin sections: Head, 1; Murray-Hughes, 1.
 Accurate orientation: Ingerson, 3.
 Component measurement by planimeter: Marsh, 2.
 Crystal color determination: Huene, R., von, 2.
 Polished: Dounay, 2.
 Oriented, preparation: McNair, 6.
 Weathered rock: Anonymous, 40.
 Three-layer resistivity problems, interpretation: Wetzel, 1.
 Tiltmeter, recording: Eller, W. H., 1.
 Tilts, 2, stereographic projection: Fisher, 18.
 Time chart, pipette analysis: Krumbein, 8.
 Tin sulfides and compounds, identification: Gaudin, 5.
 Torsion balance data, interpretation: Klaus, 1.
 Torsion balance terrain corrections: Ku, 1.
 Torsion gravity meter: Wright, F. E., 6.
 Transients in electrical prosp.: Hawley, P. F., 1.
 Tray for micr. exam. opaque objects: Cullison, 2.
 Universal stage, for microfossils: Schenk, 1.
 Modified: Emmons, R. C., 4.
 U-stage axial angle apparatus: Fisher, 15.
 Varved clays: Rittenhouse, 2.
 Velocity determinations by reflection profiles: Green, C. H., 1.
 Vertical seismograph: Benioff, 1.
 Volume determination by mercury: Gealy, 1.
 Washing sediments: Stow, 4.
 Well cores, exam. and rept. on: McGlamery, 5.

Technique—Continued.

Well cores, exam., etc.—Continued.

Laboratory orientation by magnetic polarity: Lynton, 2, 3.

X-ray crystal analysis and petroleum geology: Reynolds, D. H., 1.

X-ray, identification of ore minerals: Waldo, 1.

In mineralogy: Peacock, 18.

Method for estimating quartz: Clark, G. L., 2.

Method to distinguish space groups, hexagonal system: Barnes, W. H., 1.

Powder camera: Buerger, 12.

Tectonic map, U. S., proposed: Longwell, 20.

Tectonic relations, N. Am.-Europe: Stille, 3.

Teeplite, Calif.: Gale, W. A., 1.

Tektites, origin theories: Buddhue, 12.

Teleconnection, geochronology and hist. time: De Geer, E. H., 1.

Tellurides, Colo., Magnolia dist.: Wilkerson, 4, 5.

Tellurium, Canada.

Tellurides: Thomson, J. Ellis, 17.

Timiskaming subprov.: Collins, 12.

Tellurobismuthite, redefinition: Frondel, 17.

Temperature gradients in oil wells: Van Orstrand, 7.

Temperature measurements, cementation control and correl.: Deussen, 10.

Temperature of meteorites: Watson, F. G., Jr., 5.

Tennessee.

Areas described.

Hardin County: Jewell, 1.

North-central: Piper, 3.

Reelfoot Lake: Glenn, 2.

Economic geology.

Appalachian oil and gas fields: Ashley, 28.

Barite: Laurence, 3; Penhallegon, 1; Whitlatch, 17.

Bauxite: Whitlatch, 12.

Bentonite and metabentonite: Davis, F. A. W., 1.

Ceramic materials: Whitlatch, 19, 20.

Clay Co.: Born, 11.

Clays: Collins, R. E. L., 1; Eckel, E. C., 6; Mansfield, G. R., 21; Roberts, J. K., 2; Spain, 2; Whitlatch, 7, 9, 10, 16.

Brown iron ores: Born, K. E., 1; Burchard, 8.

Copper, Ducktown dist.: Kendall, 1; McNaughton, 1; Ross, C. S., 23.

Iron ores, brown: Born, K. E., 1; Burchard, 8.

Limestone: Whitlatch, 13.

Manganese: Rankin, H. S., 1; Whitlatch, 14.

Marble: Hall, G. M., 3; Prouty, 4; Oder, 3; Walls, 1.

Tennessee—Continued.

Economic geology—Continued.

Metabentonites: Caldwell, R., 1; Davis,

F. A. W., 1; Laurence, 1.

Mineral resources: Born, 5; U. S. G. S., 4.

Molding sand: Whitlatch, 15.

Natural gas: Bailey, W. F., 3; Born, 7;

Jenny, 12; Pond, W. F., 3; St.

Clair, S., 1.

Petroleum: Bailey, W. F., 1; Born, 7;

Jenny, 12; Pond, W. F., 3; Roberts,

J. K., 1; St. Clair, S., 1.

Phosphates: Cayeux, 1; Mansfield, G. R.,

1; Smith, R. W., 3; Spain, 6.

Pyrite in Holston marble: Hall, G. M., 3.

Sand: Born, 9; Whitlatch, 15.

Slates: Amick, 1.

Structure in oil fields: Lusk, 1.

Structure of marble deposits: Prouty, 4.

Tennessee River Basin, min. res.: U. S.

G. S., 4.

Tinsley's Bottom oil field: Roberts, J. K., 1.

Tripoli deposits: Spain, 1, 5; Whitlatch, 11.

Zinc ores: Currier, 3; Newman, M. H., 2; Ulrich, 8.

Historical geology.

Appalachian coal fields: Wanless, 16-a.

Black River group: Wilson, C. W., Jr., 17.

Black shale ser.: Pohl, 9.

Cambrian, restricted, S. Appalachians: Resser, 21.

Central Basin: Bassler, 8.

Chattanooga black shales: Keyes, 444.

Chattanooga shale: Klepser, 2; Swartz, J. H., 2.

Clay Co.: Born, 11.

Cretaceous: Born, 4.

Curdsville lms. zone, Hermitage fm.: Wilson, C. W., Jr., 18-a.

Dam sites, Tennessee River, etc.: Wentworth, 3.

Devonian: Peoples, 1; Pohl, 6, 7; Swartz, J. H., 1, 3.

Devonian-Mississippian boundary: Swartz, J. H., 1, 3.

Fenster, Johnson Co.: Laurence, 4.

Flynn Creek disturbance: Wilson, C. W., Jr., 12.

Forked Deer Creek area: Hall, G. M., 7.

Fort Payne chert: Wilson, C. W., Jr., 16.

General: Born, 5; Kansas G. Soc., 8.

Geologic cross sec.: Hazzard, R. T., 1.

Geologic map: Pond, W. F., 2.

Great Smoky fm.: Money maker, 5.

Hermitage fm.: Wilson, C. W., Jr., 20.

Howell structure, Lincoln Co.: Born, 10. Kimmswick, Giles Co.: Born, 6.

Knox dolomite: Oder, 4.

Middle Tenn.: Bailey, W. F., 2.

Morris dam site: Berkeley, 17.

Mississippian Pohl, 5.

Nashville dome: Mehl, 2; Wilson, C. W., Jr., 7, 10.

Tennessee—Continued.

Historical geology—Continued.

- Pennsylvanian : Wanless, 17.
 Porters Creek fm. : Whitlatch, 8.
 Richmond group : Slideler, 6.
 Ridgetop shale : Wilson, C. W., Jr., 8.
 Rome (Watauga) fm. : Woodward, H. P., 4.
 Silurian : Ball, 21, 23 : Foerste, 24 ; Prouty, 9, 15.
 Correlations : Ball, 23 ; Foerste, 24.
 Slates : Amick, 1.
 South-central Tenn. : Theis, 4.
 Southern Appalachians : Butts, 4 ; Crickmay, G. W., 16.
 Talladega ser. : Crickmay, G. W., 16.
 Tripoli deposits, west : Spain, 1.
 Tuscaloosa fm. : Born, 3.
 Wells Creek Basin : Bucher, 6.
 Western Tenn. : Wells, F. G., 5.

Mineralogy.

- Barite : Laurence, 3.
 Bentonite : Davis, F. A., 1.
 Ducktown Basin minerals : Blakemore, 1.
 Magnetite : Hall, G. M., 8.
 Metabentonites : Caldwell, R., 1 ; Davis, F. A. W., 1 ; Laurence, 1.
 Mico peridotite : Hall, G. M., 9.
 Tennessee V. A. area : Eckel, E. C., 3.
 Thaumassite : Schaller, 26.

Paleontology.

- Ant. Eoponera : Carpenter, F. M., 1.
 Brachiopoda : Ulrich, 25.
 Cambrian, restricted : Resser, 21.
 Cave fossils, Pleist. : Cahn, 4.
 Cephalopoda : Ulrich, 24.
 Cercidiphyllum : Brown, 24.
 Coleoptera : Wickham, 1.
 Crinoidea : Bassler, 10.
 Flora, Pleist. : Berry, 49.
 Foraminifera : Berry, E. Willard, 1 ; Cushman, 1, 15.
 Graptolites : Ruedemann, 39.
 Heisteria : Berry, 59.
 Oligorhynchia : Cooper, 16.
 Opercula : Oder, 2.
 Ostracoda : Wilson, C. W., Jr., 8.
 Paleocyclidae : Bassler, 25.
 Paleozoic fossils, cent. basin : Bassler, 19.
 Spongiae : Howell, 31.
 Spores, Pennington coal : Berry, E. Willard, 14.
 Telephidae : Ulrich, E. O., 4.
 Turtle : Whitlatch, 6.
 Valvulinidae : Cushman, 29.
 Verneulinidae : Cushman, 29.
 Virgulinidae : Cushman, 29.

Petrology.

- Clay : Eckel, E. C., 6.
 Clay Co. : Born, 11.
 Great Smoky fm. : Moneymaker, 5.
 Tuscaloosa fm. : Born, 3.

Tennessee—Continued.

Physical geology.

- Caves : Moneymaker, 1 ; Pohl, 8, 10.
 Cavities, deep solution : Moneymaker, 3.
 Cumberland thrust block : Rich, 16.
 Earthquake, 1-30-37 : Robertson, F., 3.
 Fenster, Johnson Co. : Laurence, 4.
 Flynn Creek disturbance : Wilson, C. W., Jr., 12.
 Fort Payne chert : Wilson, C. W., Jr., 16.
 Great Smoky thrust fault : Wilson, C. W., Jr., 12.
 Howell structure : Born, 10.
 Ripple marks, Sil. : Prouty, C. E., 1.
 Sink holes : Swinnerton, A. A., 3.
 Stream piracy, Gap Creek : Cullison, 3.
 Stylolites : Stockdale, 9.
 Sweetwater area : Laurence, 3.
 Tennessee River channel : Moneymaker, 8.

Physiographic geology.

- Clay Co. : Born, 11.
 Lakes : Tenn. State Plann. Commission, 1.
 Montlake, a sink hole : Stockdale, 8.
 Sink holes, Cumberland Plateau : Laurence, 2.
 South-cent. Tenn. : Theis, 4.
 Webb Mtn. cloudburst erosion, 1938 : Moneymaker, 7.

Underground water.

- Artesian water, Memphis : Wells, F. G., 2.
 Ground water : Pond, W. F., 1 ; Theis, 4.
 North-central Tenn. : Piper, 3.
 Western Tenn. : Wells, F. G., 5.

Terminology of coarse sediments : Wentworth, 32.

Terraces. See also Beaches ; Changes of level ; Glacial lakes ; Shore lines.

- Ages, tentative, Pleist. : Cooke, C. W., 15.
 Alberta : Bird, J., 1 ; Warren, 22.
 Algonquin-Nipissing hiatus, Great Lakes : Stanley, 10.
 Appalachians, S. : Wright, F. J., 7.
 Arizona : Blackwelder, 36 ; Longwell, 23 ; Smith, G. E. P., 2, 3.
 Atlantic coastline, N. Am. : Johnson, D. W., 2-a, 33-b.
 Barbados, coral rock : Trechmann, 10.
 British Columbia : Flint, 14 ; Hedley, M. S., 2.
 California : Buwalda, 16 ; Eckis, 1 ; Glendinning, 1 ; Kelley, 5 ; Kemnitz, 1 ; Macar, 4 ; Putnam, W. C., 2, 5 ; Rode, 2 ; Shepard, 55 ; Smith, W. S. T., 1 ; Wheeler, G., 4.
 Canada, E. Arctic : Nichols, D. A., 3.
 Coastal, southeast U. S. : Cooke, C. W., 6.
 Colorado : Behre, 12 ; Blackwelder, 39 ; Powers, W. A., 5 ; Van Tuyl, 11.
 Connecticut : Flint, 7, 8, 15-a ; Hitchcock, C. B., 4 ; Krynine, 8 ; Lougee, 7.

Terraces—Continued.

- Correlation : Allison, 5; Cooke, C. W., 4.
 Cuba : Palmer, R. H., 5.
 Cycles of orogeny and erosion : Baulig, 4.
 Florida : Cooke, C. W., 24; Howard, A. D., 4-a; Leverett, 11.
 General : Johnson, D. W., 16.
 Georgia : Cooke, C. W., 21.
 Greenland : Bentham, 2; Sugden, 1; Vischer, 3.
 Gulf Coast, Pleist. : Price, 20.
 Hawaii : Howard, A. D., 7; Stearns, 16, 22; Wentworth, 27, 45, 47.
 Idaho : Ross, C. P., 22; Shenon, 17.
 Illinois, Chicago area : Bretz, 10.
 Indiana : Fidler, 3.
 Kansas : Hoover, W. F., 1; Smith, H. T. U., 10-a.
 Lake Michigan basin : Evans, O. F., 7.
 Louisiana : Chawner, 3; Fisk, 2, 4, 5, 6; Huner, 1; Russell, R. J., 23, 24.
 Marine, nonglaciaded regions : Antevis, E. V., 1.
 Maryland : Cooke, C. W., 7, 19; Dryden, 11; Knopf, E. F. B., 1; Scheid, 1.
 Massachusetts : Brown, T. C., 3.
 Mexico : Arnold, R., 2.
 Michigan : Bay, J. W., 2; Evans, 17.
 Minisink Valley Pleist. deltas : Happ, 4.
 Minnesota, The Dalles : Swanson, R. W., 1.
 Minnesota River : Dutton, Carl E., 4.
 Mississippi : Foster, V. M., 1, 4.
 Mississippi River : Dutton, Carl E., 4; Robertson, P., 4; Russell, R. J., 28.
 Montana : Andrews, 5; Pierce, 6; Rich, 29-a.
 Nevada : Longwell, 23.
 New Jersey : Kimmel, 2.
 New Mexico : Bryan, 25, 31; Morgan, A. M., 1; Smith, H. T. U., 5.
 North America, Atlantic coastline : Johnson, D. W., 2-a, 33-b.
 North Carolina : McCampbell, 1; Prouty, 20.
 Oahu, Hawaii : Wentworth, 27, 45, 47.
 Oklahoma : Strain, 1.
 Ontario : Stanley, 6.
 Oregon : Allison, 6; Barr, 2; Holdredge, 1.
 Pennsylvania : Butts, 13; Filmer, 2; Hickok, 4; Itter, 1; Mackin, 2, 6-a; Ward, F., 5.
 Pensacola : Leverett, 10, 12.
 Pleistocene seashores : Cooke, C. W., 3.
 Port Huron moraines, correlatives : Taylor, 13.
 Quarternary, Atlantic-Gulf Coastal Plain : Cooke, C. W., 26.
 Quebec : McGerrigle, 8; Northrop, 10.
 River, remnant correl. : St. Clair, D., 1.
 St. Croix River : Dutton, Carl E., 4.
 South Carolina : Cooke, C. W., 17.
 South Dakota : Work, 2.
 Structure, original : Thompson, W. O., 6.

Terraces—Continued.

- Texas : Kelsey, L., 1; Renick, 5; Richards, 22; Sayre, 6; Shuler, 6; Stenzel, 17.
 Thermal spring, extinct, Colo. : Gould, D. B., 4.
 United States : Howard, A. D., 7; Johnson, D. W., 34-a.
 United States and Hawaii : Howard, A. D., 7.
 Utah : Gregory, H. E., 4, 5; Schoff, 2.
 Vermont : Meyerhoff, H. A., 1.
 Virginia : Monroe, 10.
 Washington : Page, B. M., 2; Treasher, 5.
 West Virginia : Fridley, 4; Wilkinson, S. G., 1.
 Wisconsin, Lake Michigan : Ball, J. R., 18-a.
 Wyoming : Johnson, D. W., 33; Mackin, 7.
 Yellowstone Canyon : Howard, A. D., 6.
 Terrace levels and diastrophism : Hubbard, 8.
 Terrain representation : Cooke, H. L., 1.
 Terrestrial magnetism, advances : Anonymous, 35.
 Territorial surveys, data in Washington, D. C. : Fryxell, 8.
 Tertiary. See also Paleontology, Tertiary.
 Alabama : Cooke, C. W., 9, 12, 16; Jones, W. B., 13, 20, 21; Roy, C. J., 4; Shreveport G. Soc., 1.
 Alaska : Buddington, 1; Capps, 1, 2, 3, 6, 9, 10, 12, 13; Knappen, 1; Mertie, 8, 14, 16, 20; Moffit, 1, 10; Smith, P. S., 1, 12; Talliaferro, 5; Tuck, 5, 7; Waring, 2, 6.
 Alberta : Allan, 7; Hake, 2; Hume, 1, 26, 29, 32; MacKay, B. R., 12; Michener, 1; Russell, L. S., 13, 36; Sanderson, J. O. G., 4; Warren, 22; Williams, M. Y., 2; Yarwood, 2.
 Algal reefs, colites, Green River fm. : Bradley, W. H., 3.
 Antillean-Caribbean area : Schuchert, 31.
 Appalachia : Nelson, 6.
 Arctic America : Kindle, 40; Mathiasen, 2; Teichert, 12; Weeks, L. J., 5.
 Arizona : Brown, W. H., 4; Butler, 17, 18, 19, 20, 21; Gilluly, 17, 20; Harrell, 2; Hernon, 1; Knechtel, 4; Lausen, 4; Longwell, 23; Reagan, 5; Reber, 1; Smith, H. T. U., 10; Trischka, 4; Williams, H., 11; Wilson, E. D., 3, 8.
 Arizona and Nevada, Boulder Reservoir floor : Longwell, 23.
 Arkansas : Alexander, A. E., 3; Bramlette, 5; Dane, 1; Rankin, C. L., 1; Shearer, 3; Spooner, 4; Teas, 1; Weeks, W. B., 2.
 Aruba, West Indies : Westermann, 4.
 Atlantic and Gulf Coastal Plain : Cooke, C. W., 25; Stephenson, 24.
 Badlands, color records : Germann, J. C., 1.

Tertiary—Continued.

Barbados, West Indies: Saint, 1; Senn, 1; Trechmann, 10.
 Big Horn Basin, Mont.-Wyo.: Stow, 12.
 Bonaire, West Indies: Pijpers, 4, 6.
 British Columbia: Armstrong, J. E., 1, 2; Bancroft, 1; Cairnes, 5, 17; Cockfield, 14; Dolmage, 6; Gray, J. G., 1; Hanson, 11, 13; Johnston, W. A., 11; Kerr, F. A., 4, 21; Lang, A. H., 1, 6; Mathews, W. H., 1; Rice, 5; Stevenson, L. S., 1; Walker, J. F., 4; Wright, L. B., 5.
 California: Adams, B. C., 1-a; Allen, H. B., 1; Allen, V. T., 2, 22; Andrews, P., 2; Atwill, 2; Averill, 7; Bailey, T. L., 2; Barbat, 2, 6, 7; Bartosh, 3; Bremner, 1, 2; Buwalda, 13; Canfield, 1; Carter, F. B., 1; Clark, B. L., 5, 13, 19, 28; Clements, 3, 6; Condit, D. A., 1; Conkling, 1; Corey, 2; Diepenbrock, 1; Dudley, P. H., 1; Duling, 1; Dusenbury, 1; Eaton, 6, 9, 10; Eckls, 1; Edwards, M. G., 1; Erwin, 4; Fourmarier, 5; Fraser, D. M., 1; Gale, H. S., 4; Galliher, 3; Gester, 2; Glendinning, 1; Goudkoff, 2, 3; Hanna, 8; Henney, 1, 2, 4, 5, 6; Herold, C. L., 3, 4, 5; Hertlein, 11; Hewett, 16; Hill, M. L., 1; Hinds, 14, 18, 33; Hobson, 2; Hoots, 2, 3, 4, 6; Hopper, 2; Howard, P. J., 1; Hulin, 9; Jahns, 4; Jenkins, 8, 12; Johnson, F. A., 1; Keenan, 1; Kemnitz, 1; Kessell, 1; Kirby, J. M., 1; Kleinpell, 6, 7, 8, 9; Livingston, A., Jr., 1; Loel, 1; Luce, J. W., 1; MacGinitie, 6; McMasters, 1, 2; Mead, R. G., 1; Merriam, C. W., 10; Mielenz, 1; Miller, R. H., 1; Miller, W. J., 11, 17; Moody, G. B., 1; Morse, R. B., 1; Mulryan, 1; Noble, E. B., 1; Noble, L. F., 3; Onkesbott, 1; Piper, 16; Porter, W. W., II, 1, 5; Powers, H. A., 7; Pressler, 2; Pultz, 1; Putnam, 5; Rand, W. W., 1; Reck, 2; Reed, R. D., 9, 20, 25, 26, 37; Reiche, 1; Schenck, 15, 22; Shepard, 53; Stegfus, 1; Simpson, E. C., 1; Snedden, 1; Soper, E. K., 2, 3, 4; Stalder, W., 2; Stearns, H. T., 6; Stewart, R. E., 2; Stock, 49; Stockman, 1, 3, 4; Sutherland, J. C., 1; Swartzlow, 5-a; Taff, 1, 3; Tallafarro, 9; Trask, 39; Vallat, 1; Vokes, 2, 12; Von Estorff, 1; White, R. T., 1; Williams, H., 1; Williams, R. N., Jr., 1; Wilson, R. R., 1; Woodring, 6, 10, 11, 12, 14, 17, 20; Anonymous, 60.
 Canada: Teichert, 12; Warren, 20; Weeks, L. J., 5.
 Carriacou, West Indies: Trechmann, 8.
 Claiborne on coastal domes: Weinzierl, 1.
 Clays, fire, in U. S.: Chelikowsky, 1.

Tertiary—Continued.

Colorado: Alf, 1; Barbour, G. B., 1; Behre, 32; Blackmer, 1; Bradley, W. H., 12; Bryan, 36; Burbank, W. S., 2, 3, 4, 12, 16; Butler, 9; Chapman, E. P., 2; Dane, 10; Eckel, E. B., 5; Erdman, 1; Forrester, 1; Goddard, 3, 6; Hancock, 1; Heaton, 1; Hendrickson, V. J., 1; Howland, A. L., 1; Ives, 9; Johnson, J. H., 9, 19, 23, 28; Kansas G. Soc., 11; Knopf, 11; Larsen, E. S., 1, 16; Lavington, 3; Loughlin, 11; Lovering, 4, 5, 17, 20, 22, 26, 30, 45; MacGinitie, 5; Miller, J. C., 1; Nightingale, 1, 3, 4; Parker, B. H., 4; Smith, Ward C., 1; Stark, 8; Upson, J. E., 1; Vanderwilt, 11; Van Tuyl, 4-a, 11, 17, 18; Waldschmidt, 5; Wilkerson, 4, 5.
 Columbia River Basin: Hodge, 25; Landes, H., 1.
 Connecticut: Cook, T. A., 1.
 Correlation, Cockfield-Gosport fms.: Blanpled, 1.
 General: Carpenter, J. T., 1.
 Oligocene, lower, S.-Cent. America-Mexico: Dorr, 2.
 Zones, Miss.-Ala.-Fla.: Gravell, 5.
 Costa Rica: Lohmann, 2.
 Cuba: Bermúdez y Hernández, 10; Herrera y Fritot, 1; Lallicker, 4; Lewis, J. W., 1; MacGillavry, 4; Meinser, 8; Ortega y Ros, 1, 2; Palmer, R. H., 3; Rutten, M. G., 4, 6; Sánchez Roig, 4; Schürmann, 2; Taber, 7, 14; Thiadens, 3, 5; Vermunt, 4.
 Curaçao, West Indies: Molengraaff, G. J. H., 1-a, 2; Rutten, M. G., 1; Vermunt, 1.
 Delaware: Stephenson, L. W., 6.
 District of Columbia: Cloud, P. E., Jr., 3.
 Dominican Republic: Lengweiler, 1.
 Eocene, correl. E. and Gulf Coasts: Gardner, 14.
 Mississippi Embayment: Grinn, 1.
 Oil fields, Tex.-La.: Anonymous, 147.
 Sequence, W. N. Am.: Clark, 21.
 Series, La.-Tex.: Thomas, P., 1.
 Florida: Blanchard, W. G., 1; Campbell, R. B., 3; Cole, 15; Cooke, C. W., 1, 24; Cushman, 22; Mansfield, W. C., 9, 23; Thomas, P., 2.
 Fox Hills-Lance contact: Dobbin, 4.
 Georges Bank, canyons: Stetson, 10.
 Georgia: Cooke, C. W., 21; Griffin, R. H., 1; Munyan, 2.
 Great Basin: Axelrod, 6.
 Greenland: Bentham, 2; Blerther, W., 1; Cleves, 3; Koch, L., 1, 2, 10, 12; Kruger, H. K. E., 2; Maync, 1, 2, 3; Moos, A. von, 1; Noe-Nygaard, 3; Odell, 5; Ravn, 1; Rittman, 1; Teichert, 8, 14; Vischer, 1; Wager, 1, 3, 4; Waldschmidt, 7; Wegmann, 8.

Tertiary—Continued.

- Green River epoch: Bradley, W. H., 2.
 Guadeloupe: Barrabé, 2, 4.
 Guatemala: Termer, 6.
 Gulf Coast: Barton and Sawtelle, 1;
 Halbouty, 10; Houston, G. S., 3;
 Howe, 29; Russell, R. J., 22.
 Hawaii, Is. of Oahu: Stearns, 15.
 Hipparion, Pliocene indicator: Stirton,
 22.
 Idaho: Anderson, A. L., 1, 5, 9, 13, 23;
 Capps, 14; Currier, 4; Kirkham, 4,
 9, 11, 14; Mansfield, G. R., 2; Reed,
 J. C., 14; Ross, C. P., 16, 22, 31;
 Shenon, 16, 17, 18; Stearns, H. T.,
 21, 27; Umpleby, 1.
 Illinois: Kansas G. Soc., 12; Moulton,
 4; Weller, J. M., 24, 25; Weller, S.,
 4.
 Ione fm., Calif.: Allen, V. T., 2.
 Iowa: Keyes, 370.
 Jamaica: Küchler, 1; Trechmann, 2, 9.
 John Day fm., age: Hodge, 10.
 Kansas: Elias, 2, 7, 19; Landes, K. K.,
 2, 28; Moss, 2; Pierce, 9; Rutledge,
 1, 2; Ver Wiebe, 22; Wilhelm, C. J.,
 1; Wing, 1.
 Kentucky: McFarlan, 16; Roberts, 12,
 14; Wesley, 1.
 Lake Uinta, Utah-Colo.: Bradley, 15.
 Lillis fm., Calif.: Hanna, 27.
 Lithology, selected fossiliferous sedi-
 ments: Howard, A. D., 1.
 Louisiana: Alexander, 12; Bauern-
 schmidt, 3; Bornhauser, 1; Chaw-
 ner, 3; Clark, C. C., 1; Cook, C. E.,
 1; Crider, 2; Deussen, 2, 9; Doering,
 1; Ellisor, 7; Fergus, 1; Fisk, 2;
 Gordon, D., 2; Grage, 1; Halbouty,
 3; Howe, H. V., 3, 6, 19, 21; Huner,
 1; Israelsky, 6; Mix, 1; Moody, F.
 H., 1; Ruedemann, P., 3; Shearer,
 H. K., 1; Shreveport G. Soc., 2;
 Taylor, R. E., 3; Teas, 2; Thomas,
 G. D., 1; Todd, J. D., 3; Whitte-
 more, 3; Woodruff, 4.
 Maryland: Cooke, C. W., 7; Darton, 14,
 15; Dryden, 9, 11, 12; Monroe, 6;
 Stephenson, L. W., 6, 23-a.
 Massachusetts: Chute, 1; Woodworth,
 J. B., 2.
 Mexico: Cumming, 3; Díaz, 1; Díaz Lo-
 zano, 4; Donald, R. T., 1; Flores, 5;
 Gibson, J. B., 1; González, J., 1;
 Hisazumi, 1; Imlay, 12; Jones, T. S.,
 1; Kane, 1, 2; Kellum, 10, 13; Kelly,
 W. A., 10; Keyes, 354; King, R. E.,
 5, 6; Morgan, H. J., Jr., 1; Muir, 5;
 Santillán, 5, 15, 16; Singewald, Q.
 D., 8; Staub, 3; Tatam, 1; Thal-
 mann, 7, 9, 10; Villatoro, 2; Vivar,
 3; Watz, 6; Warner, J. L., 1; Wis-
 ser, 2.
 Minnesota: Sardeson, 31, 45.
 Miocene-Pliocene boundary: Maxson, 12.
 Miocene volcanism: Gale, H. S., 2.

Tertiary—Continued.

- Mississippi: Blanpied, 2; Fisk, 8; Fos-
 ter, V. M., 1, 5; George, W. O., 1;
 Grim, 7; Lamar, 4; Lowe, E. N., 2;
 Mellen, F. F., 3; Monroe, 1, 3, 9;
 Morhinvog, 1; Morse, H. N., 1;
 Morse, W. C., 8, 11; Munroe, D. J.,
 2; Shreveport G. Soc., 1, 3.
 Missouri: Farrar, 1, 2; Kansas G. Soc.,
 12.
 Modelo fm., Calif.: Hudson, F. S., 1.
 Montana: Baker, A. A., 4; Bass, 3;
 Collier, 3; Dickey, F. H., 2; Dobbin,
 4; Hall, G. M., 1; Knappen, 2; Lang-
 ton, 1; Lovering, 1; Neely, 2; Park-
 er, F. S., 1, 2; Perry, 14, 15; Pierce,
 6; Renick, 1; Sahinen, 4; Scott,
 H. W., 12; Sharp, 11; Shenon, 15;
 Simpson, 38; Skeels, 1; Stow, 12;
 Thom, 14; Wilson, C. W., Jr., 2,
 11, 15.
 Nebraska: Colbert, 7; Condra, 14; Cook,
 15; Effinger, 1; Johnson, F. W., 2;
 Lugin, 12, 14; Meade, G. E., 1;
 Noble, E. B., 2; Schultz, C. B., 4, 6.
 Nevada: Calkins, 3, 4; Callaghan, 13;
 Cameron, E. N., 2; Campbell, D. F.,
 1; Ferguson, 8; Gianella, 9; Jenney,
 1; Kerr, P. F., 17; Nolan, 8;
 Rott, 1; Sharp, R. P., 4, 5; Stirton,
 8; Thayer, T. P., 3; Vander-
 burg, W. O., 1; Westgate, 6.
 Newfoundland: Twenhofel, 40.
 New Jersey: Kummel, 2; Richards, 8.
 New Mexico: Anderson, C. C., 1; Bryan,
 35, 36; Church, F. S., 1; Dane, 3;
 Denny, C. S., 3; Dunham, 3; Ellis,
 R. W., 7; Hunt, C. B., 1, 2, 4; Just,
 3; Keyes, 305; Lasky, 12, 14, 16;
 McCann, 1; Matthew, 17; Renick,
 3; Schmitt, 10; Smith, H. T. U., 4;
 Smith, J. F., Jr., 2; Spencer, A. C.,
 1; Talmadge, 7; Williams, H., 11;
 Winchester, 3.
 New York: Fairchild, 18; Kaye, C. A., 1;
 Sanford, J. H., 1.
 Nicaragua: Burri, 3, 4.
 North America, copper deposits: But-
 ler, 16.
 Cordillera and Caribbean area:
 Waters, 13.
 Time scale: Wood, H. E., 2d, 16.
 North Carolina: McCampbell, 1; Mur-
 ray, G. E., Jr., 5; Prouty, 20.
 North Dakota: Andrews, D. A., 1, 6.
 Northwest Territories: Williams, M. Y.,
 12.
 Oahu: Stearns, 14.
 Ohio: Desjardins, 1-a.
 Oil fields, distrib. and continental
 spreading: Wade, 1.
 Oil sands, Gulf Coast: Halbouty, 5.
 Oklahoma: Ham, 1; Savage, D. E., 1;
 Stovall, 12.
 Oligocene, Coastal Plain, Tex.-La.: El-
 lisor, 2.

Tertiary—Continued.

- Oligocene-Eocene boundary: Scott, W. B., 10.
 Oligocene-Miocene boundary: Cooke, C. W., 23.
 Ontario: Horwood, 10.
 Oregon: Buwalda, 19; Callaghan, 3, 10; Fuller, 15; Gilluly, 4, 16; Goodspeed, 20; Hodge, 22; Holdredge, 3; Layfield, 1; Mackay, D. K., 1; Merriam, J. C., 10; Moore, B. N., 8; Oregon Dept. Geology, 1; Piper, 4, 14, 17; Renick, 2; Schenck, 9; Smith, W. D., 11; Stearns, 7; Thayer, T. P., 3, 5; Turner, F. E., 1, 3, 5; Weaver, 11; Wells, F. G., 9; Wilkinson, W. D., 4.
 Ozark province: Cozzens, 2.
 Panama: Coryell, 15; MacDonald, D. F., 1; Sapper, 7; Wolff, E. L., von, 2.
 Pectinidae, index fossils, southeast U. S.: Mansfield, W. C., 12.
 Pennsylvania: Itter, 1; Stose, G. W., 21; Watson, E. H., 6; Willard, 55.
 Pleistocene-Pliocene boundary: Cross, R. K., 1.
 Polar elevation and last ice age: Hills, G. F. S., 2.
 Post-Keweenawan, age by helium: Urry, 8.
 Puerto Rico: Meyerhoff, 3, 4, 10.
 Quebec: McGerrigle, 4.
 Restorations, geol. landscapes: Reid, G. A., 1.
 Rhode Island: Woodworth, J. B., 2.
 Rio Grande depression, Colo.-N. Mex.: Bryan, 36.
 Rocky Mts. area: Atwood, W. W., 10, 11; Bartram, 10; Osborn, H. F., 1; Uren, 2.
 Rodessa oil field, Tex.-La.-Ark.: Ivy, 1.
 Sabine uplift: Easton, 6.
 St. Lawrence River history: Gill, 6-a.
 St. Martin, West Indies: Molengraaff, G. A. F., 1.
 Saskatchewan: Fraser, F. J., 6; McLearn, 16; Sternberg, 4; Williams, M. Y., 2; Worcester, W. G., 5.
 Sespe fm., Calif.: Reed, R. D., 1.
 South Carolina: Cooke, C. W., 17; Glen, 4; Taber, 14, 18.
 South Dakota: Connolly, 3; Meyerhoff, 21; Pugsley, 1; Rothrock, 16; Schwartz, 22; Searight, 3, 4; Tullis, 5, 6; Wright, L. B., 3.
 Southwestern U. S.: Effinger, 4.
 Sparta-Wilcox oil field, Tex.-La.: Williams, N., 6.

Tertiary—Continued.

- Tennessee: Born, 4, 5, 11; Wells, F. G., 2; Whitlatch, 8.
 Sands, Quat., High Plains: Huffington, ton, 10; Blackburn, W. C., 1; Bowling, L., 1; Brace, 1; Burford, 1; Chadwick, 1; Cheney, 14; Cooper, H. H., 2; Dalton, 1; Decker, C. L., 2; Denison, A. R., 2; Deussen, 1, 2, 13; Doering, 1; Eby, 8; Eckel, 11; Ellisor, 5; Ferguson, W. B., 1; Fish, L., 1; Frost, J. M., III, 1, 2; Gardner, J. A., 3, 6, 8, 13; Getzendaner, A. E., 1; Getzendaner, F. M., 1; Halbouty, 6, 7, 11; Hamner, 1; Hanna, M. A., 12, 13; Harvey, C. J. C., 1; Heath, 2; Israelsky, 6; Ivy, J. S., 1; Jones, C. T., 1; Jones, R. A., 1, 7, 9; Kidd, G., 1; King, 19; Ley, 4; Leyendecker, 1; Liddle, 3; Lonsdale, 7, 10; McCallum, 1; McCollum, L. F., 1; Maley, 1; Meyer, W. G., 1; Michaux, 1; Patterson, J. M., 2; Plummer, F. B., 12, 14; Post, E. S., 2; Reed, L. C., 12; Renick, 4, 5; Sayre, 4, 6; Sheldon, I. R., 1; Stamey, 1; Stenzel, 13, 16, 17; Todd, J. D., 3; Trenchard, 1; Weeks, A. J., 3; Weeks, A. W., 1; Wendlandt, 1, 2; Woodruff, 4; Wrather, 1; Zavoico, 4, 7.
 Texas and Louisiana Gulf Coast: Deussen, 2.
 Tilt, secondary, problem: Spieker, 11.
 Trinidad: Halse, 1; Illing, 1; Kugler, 4; Lehner, 1; Schmid, 1; Skelton, 1.
 United States, Atlantic Coastal Plain: Meyerhoff, 25-a.
 Volcanic ash: Landes, 27.
 Utah: Baker, A. A., 5; Bradley, W. H., 9-a; Callaghan, 9, 12; Dobbin, 17; Eardley, 2, 12; Fisher, D. J., 7; Gilluly, 5; Gregory, H. E., 1, 4, 6; Hinds, 26; Kay, J. L., 1; Leggette, 2; Nolan, 6; Peterson, O. A., 3; Schoff, 2; Spieker, 2, 4, 7; Thorpe, 14; Williams, H., 11.
 Valentine question: Johnson, F. W., 1; Lugin, 13; Stirton, 24.
 Varved clay, Odgen Valley, Utah: Leggette, 2.
 Varves, duration of Eocene: Bradley, W. H., 4.
 Virginia: Brown, W. R., 2; Cederstrom, 2; Furcron, 9; Mansfield, W. C., 1, 6; Roberts, 15, 16; Stephenson, L. W., 6, 23-a.

Tertiary—Continued.

- Washington: Chappell, 2; Coombs, 3; Culver, 1, 6; Daniels, J., 1; Felts, W. M., 4; Flint, 19; Goodspeed, 12, 15; Hammer, A. A., 1; Hoffman, 3; Houghland, 1; Kirkham, 14; Merriam, J. C., 10; Park, 9; Schuchert, 48; Treasurer, 1, 5; Warren, W., 1; Weaver, 6, 7, 8, 11; Wilson, H., 1.
- West Indies: Rutten, L. M. R., 6, 9; Trechmann, 6.
- Wyoming: Bauer, C. M., 4; Beckwith, 4; Bradley, W. H., 12; Brainerd, 5; Dobbin, 1, 2; Fanshawe, 1; Hares, 2; Horberg, 1; Jepsen, 2, 3, 9, 10; Johnson, G. D., 1; Jones, C. T., 2; Love, J. D., 1, 2, 4, 5, 6; Meyerhoff, 21; Nace, 1, 2; Nightingale, 1, 3; Parson, W. H., 1, 2; Rouse, 3, 6; Schlaikjer, 3; Stevens, E. H., 2; Veatch, 1; Wood, H. E., 2d, 9; Wright, L. B., 3.
- Yellowstone Nat. Park: Howard, A. D., 6.
- Yukon: Bostock, 6, 11; Johnston, J. R., 1, 2; Lees, E. J., 1, 2.
- Testudinata. See Reptilia.
- Tetradymite, Calif.: Webb, R. W., 2.
- Texas.

Bibliography and subject index: Sellards, 28.

Boulders, Haymond fm.: King, P. B., 11.

Erratic boulders, Carb.: King, P. B., 6; Sellards, 17.

Geological observations: Roemer, 1.

Geological Survey activities: Sellards, 9.

Guidebook, Southern Pacific Lines, New Orleans-Los Angeles: Darton, 4.

Lignite in dol.: Bauernschmidt, 1.

Malakoff image: Sellards, 8.

Meteor, 6/23/28: Sellards, 9.

Torsion balance surveys: Barton, 17.

Areas described.

Atacosa Co.: Lonsdale, 7.

Bell Co.: Adkins, 4.

Big Bend area: Schoffelmayer, 1.

Clay Creek salt dome: Heath, 2.

Coastal Plain W. of Brazos River: Deussen, 1.

Frio Co.: Lonsdale, 7.

Glass Mts.: King, P. B., 5.

Grayson Co.: Bullard, 2.

Hemphill Co.: Reed, L. C., 2.

Inspiration Pt., Palo Pinto Co.: Shuler, 4.

Montague Co.: Bullard, 2.

Rio Grande area: Trowbridge, 6.

Stonewall Co.: Patton, L. T., 1.

Western Tex.: Darton, 2.

Wise Co.: Scott, G., 6.

Economic geology.

Accumulation, oil, Stephens Co.: Es-
gen, 1.

Amarillo gas field: Cotner, 2.

Amelia oil field: Hamner, 1.

Anahuac oil and gas field: Leyendeck-
er, 1.

Texas—Continued.

Economic geology—Continued.

Aragonite in salt-dome cap rock: Hanna,
M. A., 11.

Ark-La-Tex oil and gas field: Easton, 8.

Barbers Hill salt dome: Barton, 25;

Halbouty, 11; Judson, 2; Murphy,
P. C., 2.

Baringer Hill pegmatite: Landes, 14.

Barite: Baker, C. L. 12; Barnes, V. E., 7.

Benavides field: Bowles, R. C., 1.

Ben Bolt oil field: Davidson, J. P., 1.

Bend arch dist. gas fields: Kendrick, 2.

Bentonite: Baker, C. L., 11.

Big Bend area: Schoffelmayer, 1.

Big Lake oil pool: Hennen, 1; Sel-
lards, 14.

Big Spring oil fields: Carpenter, C. B., 1.

Bituminous lms., ss., porosity: Utter-
back, D. D., 1.

Bleaching clays: Phillips, D. M., 1.

Boggy Creek salt dome: McLellan, 1;
Storm, L. W., 1.

Bottom-hole pressure, East Texas oil
fields: Foran, 1.

Brenham salt dome: Burford, 1.

Bryson oil field: Bowen, J. P., 1.

Buckeye field: Brucks, 3.

Canyon beds oil production: Adams, H.
H., 1.

Cedar Pt. field: Wilson, J. M., 2.

Cenozoic oil zones: Dalton, 1.

Chalk, McFadden Beach salt dome: Ta-
tum, E. P., Jr., 1.

Chapel Hill pool: Lahee, 18.

Chlorides, rare mercury: Ross, C. P., 29.

Cinnabar: Lonsdale, 2.

Clalborne oil poss.: Owens, 2.

Clay Creek salt dome: Ferguson, W. B.,
1; Goldman, 5; Heath, 1.

Clays: Hagner, 1; Potter, A. D., 1;
Schoch, 1.

Coastal Plain oil fields: Bignel, 1.

Cole field: Short, R. T., 1.

Conroe oil fields: Michaux, 1; Smith,

Eugene R., 1; Williams, L. H., 1;

Williams, N., 1; Zavoico, 4; Anony-
mous, 147.

Correlations by Foraminifera: Nuttall, 5.

Correlations, N.-cent. oil wells: Johnson,
H. L., 1.

Darst Creek oil field: Jones, R. A., 6;

McCallum, 1; Row, 1.

Disseminated oil, Corpus Christi: Price,
W. A., 4.

Driscoll pool: Sheldon, I. R., 1.

Duval Co.: Sayre, 6.

Earth temperatures, N.-cent. Tex.:
Barnes, V. E., 3.

East Texas Basin source beds: Trask,
31.

East Texas oil fields: Cheney, G; Dally,
1; Gugelmeyer, 1; Hudnall, 1;

Levorsen, 3; McFarland, P. W., 2;

Minor, H. E., 8; Moos, A., 40n, 1;

Ralston, 1; Whitehead, 1; Zavoico,

7.

Texas—Continued.

Economic geology—Continued.

- Eastern Tex.: Dally, 2.
 Economic res.: Plummer, 15-a.
 Electrical inv., oil fields: Lagerhjelm, 1.
 Eocene oil fields, Conroe trend: Anonymous, 147.
 Esperson salt dome: Barton, 9; Goldston, W. L., Jr., 1, 2.
 Fairbanks field: Harvey, C. J. C., 1.
 Fault line, NE. Tex.: Hager, D. S., 1.
 Faults, Gulf Coast oil fields: Kornfeld, Joseph A., 2.
 Fox oil field: Getzendaner, A. E., 1.
 Friendswood field: Bell, O. G., 1.
 Fuller's earth: Baker, C. L., 11; Broughton, 1.
 Galena: Baker, C. L., 16.
 Galveston Bay, geophys. prosp.: Singleton, 2.
 Gas fields, NE. Tex.: Ley, 4.
 General: Barton, 40; Bayley, 6; Sellards, 30.
 Geophysical prosp., Galveston Co.: Singleton, 1.
 Gulf Coast, upper: Todd, J. D., 3.
 In Gulf: Williams, N., 3.
 Geophysics, relation to salt dome structure: Eby, J. B., 3, 4.
 Gideon oil well no. 3: Brucks, 2.
 Glass sand: Stenzel, 18.
 Glen Rose gas field: Gordon, D., 1.
 Goethite: Galbraith, 2.
 Gold: Baker, C. L., 14.
 Goldsmith field: Young, A., 2.
 Government Wells dist.: Cooper, H. H., 1; Jones, R. A., 7; Trenchard, 1; Whisenant, 1.
 Granites: Barnes, V. E., 8.
 Graphite: Sellards, 11.
 Gregg Co.: Bredberg, 1.
 Greta oil field: Getzendaner, A. E., 1; Stamey, 1.
 Gulf Coast oil fields: Barton and Sawtelle, 1; Brace, 7; Deussen, 2, 7, 9; Frost, 1, 2; Halbouty, 7, 9, 10; Hayes, E. P., 1; Logan, J., 4, 5; Meyer, W. G., 1; Mills, 2, 5; Rosaire, 9; Teas, 6; Vanderpool, 2; Williams, N., 2, 4.
 Halite: Young, F. S., 1.
 Hardin dome oil field: Brace, 3; Teas, 7.
 Hastings field: Halbouty, 7.
 Heaving shale: Halbouty, 10.
 Gulf Coast: Frost, 1, 2.
 Hellum: Ruedemann, P., 2.
 Hematite: Galbraith, 2.
 Hendrick field: Ackers, 1.
 High Island dome: Halbouty, 2, 4.
 Hilbig oil field: Blackburn, W. C., 1; Smiser, 3.
 Hobbs oil field: Swindell, 1.
 Hockley salt shaft: Teas, 3.
 Hoffman field: Whitaker, 1.
 Hoskins Mound salt dome: Barton, 23; Marx, 1.

Texas—Continued.

Economic geology—Continued.

- Iron ores: Eckel, E. B., 6, 7, 11.
 Jackson and older zones: Cooper, H. H., 3.
 K. M. A. oil field: Dally, 3.
 La Blanca structure: Speed, 1.
 Laredo oil dist.: Cooper, H. H., 2.
 Larremore dist.: Weeks, A. W., 1.
 Leon Co.: Stenzel, 17.
 Little Fry Pan area: Liddle, 2.
 Lulling oil field: Brucks, E. W., 1; Hill, H. B., 1; Jones, R. A., 6.
 McCampbell oil and gas field: Tucker, R., 1.
 McFaddin oil field: Getzendaner, A. E., 1.
 Magnesia marble: Barnes, V. E., 6.
 Magnetic content, susceptibility, sand and bars: Collingwood, 2.
 Magnetic vectors: Jenny, 2.
 Magnolia City oil field: Hammond, 1.
 Means oil field: Denbam, 1.
 Mercedes oil and gas field: Price, W. A., 12.
 Mesozoic oil zones: Dalton, 1.
 Mexia-Talco fault zone: Smith, E. R., 2.
 Microfauna, East Texas field: Quesenberry, 1.
 Flour Bluff oil field: Harris, 10.
 Mid-Continent oil and gas fields: Miser, 9.
 Mineral production, 1882-1933: Sellards, 30.
 Mineral res.: Baker, 22, 23; Getzendaner, F. M., 2, 3, 4; Sellards, 10, 12; Anonymous, 4, 5.
 Mount Sylvan dome: Wendlandt, 2.
 Murala oil field: Schmotzer, 1.
 Natural gas fields: Bingham, D. H., 1; Brace, 1, 5; Bybee, 3, 4, 6; Cotner, 2; Dawson, 1; Eby, J. B., 2; Fuqua, 2; Getzendaner, A. E., 1; Giesey, 1; Gregory, P. P., 1; Halbouty, 8; Imholtz, 1; Lahee, 1; Ley, 4; McFarland, P. W., 1; Maxwell, R. G., 1; Nowlan, 1; Oil and Gas Jour., 1; Plummer, 28; Post, E. S., 1; Price, W. A., 2; Rettger, 4; Tarr, R. S., 1; Teas, 6; Warren, C. A., 1; Wendlandt, 5; Wrather, 1.
 Navarro Crossing field: Wilson, E. B., 1.
 Nigger Creek oil field: Pepperberg, 1.
 Nocona oil field: Billings, M. H., 1.
 North Cowden oil and gas field: Giesey, 1.
 O'Conner oil field: Getzendaner, A. E., 1.
 Oil fields, Archer Co.: Thompson, W. C., 1.
 East Texas: Dallas Pet. Geologists, 1; Plummer, F. B., 8.
 Gulf Coast: Woodruff, E. G., 4.
 Igneous rocks, Coastal Plain: Sellards, 23.
 Northeastern Tex.: Decker, C. L., 2.

Texas—Continued.

Economic geology—Continued.

- Oil and gas fields: Brace, 1; Eby, J. B., 2; Lahee, 1; McFarland, P. W., 1; Panhandle G. Soc., 1; Post, E. S., 1; Price, W. A., 2; Rogatz, 1, 2; Weeks, A. W., 4; Wrather, 1; Anonymous, 11.
- Oil and gas map: Oil and Gas. Jour., 1.
- Oil reservoirs, structural class.: Plummer, 15.
- Oil shale deposits: Plummer, 26.
- Oil structure, Wilbarger Co.: Fuqua, 1.
- Oil-sulfur development, salt dome area: Anonymous, 10.
- Oligocene salt stock erosion: Hanna, M. A., 13.
- Orange oil field: Beckelhymer, 1; Deussen, 8.
- Deussen, 8.
- Ordovician oil production, W. Tex.: Kroenlein, 1.
- Sand Hills structure: Cordry, 2.
- Palo Pinto Co.: Plummer, 17.
- Panhandle oil and gas fields: Panhandle G. Soc., 1; Rogatz, 1, 2; Weeks, A. J., 4.
- Pearsall oil field: Champion, 1.
- Permian Basin: Bentz, 2; DeFord, 4; Smith, H. I., 3; Williams, N., 5.
- Red beds, saline residues: Baker, C. L., 1.
- Structural development and oil accumulation: Willis, R., 2.
- Petroleum: Barton, 11; Brace, 6, 7; DeFord, 4; Judson, 1; Kidd, G., 1, 2; Maucini, 1; Mills, 7; Mossom, 1; Ruiz, 1; Schütte, K. A., 1; Thomas, P., 1; Wendlandt, 4; Young, A., 1.
- Petroleum and natural gas: Bingham, D. H., 1; Brace, 5; Bybee, 3, 4, 6; Dawson, 1; Fuqua, 2; Gregory, P. P., 1; Halbouty, 8; Imholtz, 1; Nowlan, 1; Plummer, 28; Warner, C. A., 1; Wendlandt, 5.
- Since 1543: Plummer, 28; Warner, C. A., 1.
- Petrolia oil field: Kendrick, 1.
- Placedo oil field: Hedley, J. D., 1; Owen, K. D., 1.
- Plymouth oil field: Corning, 1.
- Polyhalite: Cunningham, W. A., 2, 3.
- Possibilities, Tex.-La. shoreline or shoestring fields: Weinzierl, 3.
- Potash: Delacote, 1; Mansfield, G. R., 4, 6, 15, 20; Smith, H. I., 3; Anonymous, 55.
- Producing sands above Jackson: Clayton, 2.
- Prospecting Gulf Coast, marsh, water areas: Flude, 1.
- Quicksilver deposits: Duncan, F., 1; Ross, C. P., 19, 27; Schuette, C. N., 1.
- Raccoon Bend oil field: Teas, 5.
- Refugio oil field: Getsendaner, A. E., 1; Martyn, 1; Maxwell, R. G., 1.

Texas—Continued.

Economic geology—Continued.

- Rock Crossing field: Stilley, 1.
- Rocky Mts. area: Uren, 2.
- Rodessa field: Clark, C. C., 2; Ivy, 1; Mills, 6.
- Sabine uplift: Logan, J., 3.
- Salado halite fm.: Mansfield, G. R., 23.
- Salt: Weigel, 2.
- Overhanging on domes: Judson, 3, 4.
- Salt domes: Clapp, F. G., 4; Sawtelle, 1; Schmidt, C., 1; Sellards, 30.
- Salt Flat oil field: Hedstrom, 1; Hill, H. B., 1; Jones, R. A., 6; McCollum, L. F., 1.
- Salt-type structure: Hughes, U. B., 1.
- Sam Fordyce field: Earl, 1.
- Sarnosa oil field: Jones, R. A., 8.
- Satsuma field: Harvey, C. J. C., 1.
- Saxet oil field: Getzendaner, A. E., 1; Poole, 1; Anonymous, 105.
- Secondary salt-dome materials: Hanna, M. A., 3.
- Segno field: Hanna, M. A., 12.
- Serpentine rocks, cent. Tex.: Plummer, 16.
- Shafter mining dist.: Ross, 28.
- Shore lines, oil and gas: Jones, R. A., 3.
- Siderite, Carlos dome: Rolshausen, 1.
- Smith-Ellis oil field: Storm, W., 1.
- Soil surveying for oil: Stormont, 1.
- Somerset field: Jones, A., 9.
- Source beds, East Texas: Trask, 27.
- Southwest Tex., oil and gas: Anonymous, 11.
- Sparta-Wilcox oil fields: Todd, J. D., 1, 4; Williams, N., 6.
- Spindletop oil field: Barton, 34; Eby, 8.
- Structures, S. Tex. oil fields: Pinkley, 1.
- Sugarland oil field: McCarter, 1.
- Sulfur: Baker, C. L., 17.
- Sulphur Bluff field: Herold, C. L., 2; Thompson, E. G., 1.
- Talco oil field: Mills, 9; Olcott, 1; Wendlandt, 3.
- Temperature measurements, deep wells: Hawtof, 1.
- Terlingua quicksilver dist.: Duncan, F., 1; Ross, 19, 29.
- 35 years of progress: Deussen, 6.
- Tomball oil field: Eby, 5.
- Van oil field: Barton, 41; Liddle, 1, 3.
- Variation, migration, crude oil, Spindletop field: Barton, 31.
- Vicksburg and younger zones: Clayton, 1.
- Vicksburg oil reserves: Post, E. S., 2.
- Volcanic ash: Baker, C. L., 10.
- Westbrook oil field: Edwards, E. C., 1.
- West Columbia oil field: Carlton, D. P., 1.
- Wheat oil pool: Adams, J. E., 7.
- White Pt. oil field: Price, W. A., 3; Anonymous, 104.
- Woodbine sand: Plummer, F. B., 10-a.
- Yates oil field: Adams, J. E., 2; Gester, 1; Hennen, 2.
- Yoast field: Collingwood, 3.

Texas—Continued.

Historical geology.

- Algonkian strata : Darton, 3.
- Amelia oil field : Hamner, 1.
- Anahuac oil field : Halbouty, 6.
- Annona chalk : Thomas, N. L., 6.
- Ark-La-Tex oil and gas field : Leyendecker, 1.
- Atascosa Co. : Lonsdale, 7.
- Austin, Taylor and equivalent fms. : Stephenson, 16.
- Barbers Hill salt dome : Halbouty, 11.
- Barilla Mts. : Jones, C. T., 1.
- Barrier reefs, W. Tex. : Waterschoot van der Gracht, 3.
- Basement rocks in well, Pecos Co. : Jones, E. L., Jr., 1.
- Base of Permian, N.-cent. Tex. : Roth, 10.
- Beaumont fm. : Metcalf, 1; Price, W. A., 10.
- Bend age strata, Sierra Diablo : Arick, 1.
- Bend arch dist. gas fields : Kendrick, 2.
- Bethany lms. : Keyes, 383.
- Big Bend area : Crimmings, 1; Gould, 17; Schoffelmayer, 1.
- Big Lake oil field : Dunbar, 5.
- Big Spring oil field : Carpenter, C. B., 1.
- Bisset conglom. : King, 20.
- Black shale basin, W. Tex. : Cole, T., 1.
- Border region : Hill, 8.
- Brazos-Colorado River sec. : Lee, W., 2.
- Brenham salt dome : Burford, 1.
- Buckeye field : Brucks, 3.
- Bulimina jacksonensis zone : Moree, 1.
- Caballos novaculite, origin : Henbest, 8.
- Cambrian : Sellards, E. H., 1.
- Algal reefs : Deen, A. H., 1.
- Canyon beds : Adams, H. H., 1; Nickell, C. O., 1.
- Capitan lms. : Keyes, 179; Lloyd, E. R., 1.
- Carboniferous, Llano uplift : Plummer, 23.
- Trans-Pecos Tex. : King, P. B., 2; King, R. E., 1.
- Carlos, restricted : Speed, 2.
- Catahoula fm. : Bowling, L., 1; Fish, L., 1.
- Cenozoic history of plains : Baker, C. L., 9.
- Cenozoic oil, zones : Dalton, 1.
- Centerpoint volcanics : Hazzard, R. T., 2.
- Chalk, McFaddin Beach salt dome : Tatum, E. P., 1.
- Chalks, E., Tex. : Thomas, N. L., 3, 7.
- Chazy-Sylvan uncon. : Lowman, 3.
- Chittim anticline : Plummer, F. M., 1.
- Cisco group : Nickell, C. O., 1.
- Claiborne, Brazos River : Renick, B. C., 4.
- Coastal domes : Weinzierl, 1.
- Correlations : Ellisor, 1; Stenzel, 14.
- Eastern Tex. : Wendlandt, 1.
- Foraminiferal zonation, tentative : Israelsky, 6.
- Clay Creek salt dome : Ferguson, W. B., 1.

Texas—Continued.

Historical geology—Continued.

- Coastal SE. Tex. : Barton, 10.
- Colorado-Brazos River secs. : Lee, W., 2.
- Colorado River Valley : Bullard, 3, 4.
- Comanche, pre-Comanche fms. : Hazzard, R. T., 3.
- Comanche title : Keyes, 258.
- Concho arch : Cheney, 7.
- Concho Bluffs : Wilson, J. M., 1.
- Concho Co., Perm. : Kramer, 4.
- Concho divide : Cheney, M. G., 5.
- Conroe Trend oil field : Michaux, 1; Smith, Eugene R., 1; Zavolco, 4; Anonymous, 147.
- Corpus Christi Basin : Price, W. A., 11.
- Correlations, by Foraminifera : Nuttall, 5.
- By graptolites : Decker, 14.
- East Texas : Thomas, N. L., 10.
- Gulf Coast : Deussen, 4, 11, 13.
- Upper Cambrian : Bridge, 7.
- Upper Cretaceous : Keller, B. M., 1.
- County g. maps : Texas Univ., Bur. Econ. Geol., 1.
- Cretaceous, chalks : Thomas, N. L., 3.
- Edwards Plateau : Cartwright, 3.
- General : Alexander, C. I., 1.
- Gulf Coast salt domes : Morrison, T. E., 1.
- Maverick Co. : Vanderpool, 1.
- Trans-Pecos : King, 17.
- Custer fm. : Patton, 8; Roth, 14.
- Darst Creek oil field : McCallum, 1.
- Davis Mtn. area : Albritton, 9; Jones, C. T., 1.
- Deepest well : Sellards, 2.
- Delaware Basin : Lang, W. T. B., 4.
- Deport meteorite : Palache, 16.
- Devonian : Darton, N. H., 1; King, 10.
- Dolomite dikes, Clear Fork fm. : Kramer, 3.
- Double Mtn. ser. : Keyes, 28.
- Duval Co. : Sayre, 6.
- Early Paleozoic seas : Sellards, 15.
- East Texas oil field : Dally, 1; Zavolco, 7.
- Eastern Texas : Decker, C. L., 1; Logan, 1.
- Edwards lms. : Jones, R. A., 2; Livingston, P. P., 1.
- Ellenberger lms., correl. : Dake, C. L., 2.
- El Paso lms. : Kirk, 14.
- Eocene, corrections : Chadwick, G. H., 1.
- Formations, Gonzales, Walker Cos. : Renick, 5.
- Oil fields, Conroe Trend : Anonymous, 147.
- Surface, Laredo-Grande City : Patterson, J. M., 2.
- Erratics, arkoses, Haymond fm. : Baker, C. L., 13.
- Fairbanks field : Harvey, C. J. C., 1.
- Ferguson Crossing dome, restricted : Speed, 3.
- Fisk (Shields) pool : Durward, 1.

Texas—Continued.

Historical geology—Continued.

- Foraminiferal zones, Cret. clays: Albritton, 3.
 Franklin Mts.: Lonsdale, 1.
 Fredericksburg group: Thompson, S. A., 1.
 Fredericksburg-Washita contact: Curry, W. H., Jr., 1.
 Frio clay: Bailey, T. L., 3; Lahee, 5.
 Frio Co.: Lonsdale, 7.
 Frio fm.: Fish, L., 1.
 Fusselmanh lms.: Keyes, 462.
 Gas fields, Tex. embayment: Ley, 4.
 General: Adkins, 8; Bayley, 6; Folger, 4; Kansas G. Soc., 7; Plummer, 14; Sellards, 27, 28; Anonymous, 52-a.
 Geologic criteria, climatic zones: Price, W. A., 13.
 Cross sections: Hazzard, R. T., 1; Thompson, W. C., 2.
 History: Sellards, 28-a.
 Map: Darton, 10.
 Georgetown fm.: Cuyler, 1.
 Glacial time scale: Price, W. A., 15.
 Glass Mts.: King, R. E., 3.
 Goldsmith field: Young, A., 2.
 Government Wells oil field: Jones, R. A., 6; Trenchard, 1.
 Graham fm.: Coryell, 9.
 Greta oil field: Stamey, 1.
 Guadalupe Mts.: Butcher, 2; King, 23, 24, 28.
 Gulf Coast, correls.: Deussen, 4, 11, 13.
 Geosyncline: Barton, 23.
 Oil horizons: Deussen, 2, 9.
 Plain near Harris Co.: Meyer, W. G., 1.
 Hastings field: Halbouty, 7.
 Heaving shale: Frost, 1, 2; Halbouty, 10.
 Hendrick field: Ackers, 1.
 High Island dome: Halbouty, 4.
 Hilbig oil field: Blackburn, W. C., 1.
 Hockley salt shaft: Teas, 3.
 Hoskins Mound salt dome: Marx, 1.
 Houston-Galveston area: Foster, M. D., 2.
 Hueco lms.: Keyes, 278, 414.
 Index fossils: Calaban, 1.
 Interpretation of grain of Texas: Rettger, 2.
 Iron ores, brown: Eckel, 11.
 Jackson group of fms.: Cooper, H. H., 3; Ellisor, 3.
 K. M. A. oil field: Dally, 3.
 Kelsey anticline: Denison, A. R., 2.
 Kelsey dome: Denison, A. R., 1.
 Kincaid fm.: Gardner, J. A., 6.
 Kleberg, Co.: Livingston, P. P., 2.
 Lagarto fm.: Johnson, E. L., 1.
 Laredo fm.: Gardner, 13.
 Larremore area, Caldwell Co.: Weeks, A. W., 1.
 Leon Co.: Stenzel, 17.
 Limestone reefs, Hess, Leonard fms.: King, 14.

Texas—Continued.

Historical geology—Continued.

- Lingual deposit, Woodbine sands: Shuler, 3.
 Lissle fm.: Metcalf, 1; Price, W. A., 10; Weeks, A. W., 2.
 Llano area, pre-Camb.: Stenzel, 9.
 Lower Cretaceous, Tarrant Co.: Hawley, J. B., 1.
 Luling oil field: Hill, H. B., 1.
 McCampbell oil and gas field: Tucker, R., 1.
 Malone fauna, age: Albritton, 2.
 Malone fm.: Keyes, 291.
 Malone Mts.: Albritton, 7, 8.
 Marathon dist.: Hills, J. M., 2; King, 8, 16, 29.
 Marine Pleist.: Richards, 22.
 Medina Co.: Sayre, 4.
 Mesozoic oil zones: Dalton, 1.
 Mid-Continent oil field: Cheney, M. G., 3; Lahee, 8.
 Midland Basin: Page, 4.
 Midway group: Gardner, 8; Plummer, H. J., 5; Scott, G., 7.
 Midway-Wilcox contact: Plummer, H. J., 5.
 Miocene fms.: Renick, 5; Weeks, A. J., 3.
 Montague Co.: Bullard, 2.
 Mount Sylvan dome: Wendlandt, 1, 2.
 Navarro-Taylor contact: Plummer, H. J., 9.
 North-central Tex.: Cheney, M. G., 2.
 Oakville fm.: Fish, L., 1; Johnson, E. L., 1.
 Oil and gas map: Oil and Gas Jour., 1.
 Oligocene: Ellisor, 2.
 Ordovician, Big Lake oil field: Harlton, 4.
 Sand Hill structure: Cordry, 2.
 Ouachita orogeny: Keyes, 480.
 Paleozoics, relation to oil and gas fields: Miser, 9.
 Paleogeography, correl. Perm., W. Tex.: King, 27.
 Paleozoic: Nelson, L. A., 2; Sellards, 36, 38; Skinner, 3.
 Palto Pinto Co.: Plummer, 17.
 Panhandle: Rogatz, 1, 2; Rusk, 1.
 Pearson oil field: Champion, 1.
 Pecan Gap chalk: Ellisor, 4; Spofford, 1.
 Pennsylvanian: Keyte, 1; King, R. H., 4; Lee, W., 1; Moore, R. C., 7; Plummer, F. B., 4; Scott, G., 5; Sellards, 7.
 Permian: Adams, J. E., 4, 7; Baker, C. L., 1, 2; Blanchard, W. G., Jr., 1; Cartwright, 2; Crandall, K. H., 1; DeFord, 4; Keyes, 417; Keyte, 1; King, 12, 30; King, R. E., 2; Kinkeel, 1; Lang, W. T. B., 6; Lee, W., 1; Lewis, F. E., 1; Lloyd, A. M., 1; Mohr, 4; Sellards, 7; Willis, R., 1, 3.
 Permian ammonoid zones, cf. Russia: Miller, 39.

Texas—Continued.

Historical geology—Continued.

- Permian red beds and saline residues :
 Baker, C. L., 1.
 Petroleum: Kidd, G., 1; Thomas, P., 1.
 Petroleum and gas since 1543: Plummer, 28; Warner, C. A., 1.
 Placedo oil field: Owen, K. D., 1.
 Pleistocene fms., Rio Grande area :
 Weeks, A. J., 3.
 Pliocene fms., Rio Grande area: Weeks, A. J., 3.
 Post-Fleming coast surface fms.: Doering, 1.
 Potamides matsoni zone: Ellisor, 5.
 Pratt Well, Webb Co.: Jones, R. A., 1.
 Pre-Cambrian, Llano uplift: Stenzel, 1, 12.
 Trans-Pecos area: Baker, 24.
 Pre-Carboniferous, Big Lake field: Sellards, 24.
 Marathon area: King, P. B., 7.
 Pre-Cretaceous, Balcones fault zone: Sellards, 16.
 Gulf Coastal Plain: Miser, 4.
 Pre-Pennsylvanian, Big Lake field: Lowman, 2.
 Quaternary, Rio Grande delta: Price, 23.
 Raccoon Bend oil field: Teas, 5.
 Red beds, Carb.: Romer, 13.
 Reef barriers theory: Lloyd, E. R., 4.
 Refugio oil and gas field: Martyn, 1.
 Reynosa problem: Baker, C. L., 20; Price, W. A., 5, 7.
 Reynosa fm.: Johnson, E. L., 1; Weeks, A. W., 2.
 Rio Grande area: Getzendorfer, F. M., 1; Price, 23; Weeks, A. J., 3.
 Rock Crossing field: Stilley, 1.
 Rocky Mtn. area: Uren, 2.
 Rodessa field: Clark, C. C., 2; Ivy, J. S., 1.
 Round Rock, Cret.: Sellards, 29.
 Salado fm., Perm. Basin: Lang, W. T. B., 9.
 Salt domes, mechanics: Barton, 23, 33.
 Salt Flat oil field: Hill, H. B., 1; McCollum, L. F., 1.
 Sam Fordyce field: Earl, 1.
 San Miguel fm.: Stephenson, L. W., 6.
 Sand Hills area: Powers, E. H., 4.
 Sands, Quat., High Plains: Huffington, R. M., 1.
 Satsuma field: Harvey, C. J. C., 1.
 Scutella bed, E. Tex.: Stenzel, 2.
 Section, Yates, Pecos Co.-N. Mex.: Bybee, 1.
 Shafter mining dist.: Ross, C. P., 28.
 Shinarump, east extension: Keyes, 279.
 Silurian, Big Lake field: Lowman, 1.
 Van Horn area: King, 10.
 Somerset field: Jones, R. A., 9.
 Somervell Co.: Fiedler, 4.
 Source beds, east Tex.: Trask, 27.

Texas—Continued.

Historical geology—Continued.

- South-north sec., Pecos-Winkler Cos.: Woods, 1.
 South Permian Basin: Cannon, R. L., 1.
 Sparta-Wilcox oil fields: Williams, N., 6.
 Sparta-Wilcox Trend: Todd, J. D., 1.
 Spenolith, Terlingua dist.: Ross, C. P., 30.
 Spindletop oil field: Eby, 8.
 Stone City fm.: Stenzel, 13.
 Structural and econ. geol.: Sellards, 30.
 Structures, E. of Pecos River: Sellards, 30.
 North-cent. Tex.: Cheney, 13.
 South Tex. oil fields: Pinkley, 1.
 Subsurface correl., west Perm. Basin: Cartwright, 1.
 Sugarland oil field: McCarter, 1.
 Talco oil field: Olcott, 1.
 Taylor, Austin, and equivalent fms.: Stephenson, 16.
 Taylor chalk: Reiter, 1.
 Tectonics, Arbuckle, Ouachita Mts.: Gardner, J. H., 3.
 Terlingua quicksilver dist.: Ross, C. P., 27.
 Texas Panhandle: Kansas G. Soc., 3.
 35 years of progress: Deussen, 6.
 Trans-Pecos Texas.
 Early Paleozoic uncon.: Arick, 2.
 Late Paleozoic uncon.: King, 21.
 Permian: King, 18.
 Structural features: King, 19.
 Upper Mississippian: King, 18.
 Travis Peak fm.: Cuyler, 6.
 Triassic: Adams, J. E., 1; Roth, 11.
 Trinity div.: Hill, R. T., 1; Scott, G., 2.
 Turricula gabbii, Eocene index fossil: Stenzel, 16.
 Unconformities: Adkins, 9; Arick, 2; Carsey, J. B., 1; Cheney, 11; Kay, J. A., 1; King, 21; Stenzel, 3.
 University well, Reagan Co.: Sellards, 4.
 Up dip terrace deposits: Weeks, A. W., 2.
 Upland terrace deposits: Weeks, A. W., 2.
 Upper Cretaceous: Stephenson, L. W., 4.
 Uvalde Co.: Sayre, 4.
 Van oil field: Liddle, 3.
 Vicksburg and younger zones, S. Tex.: Clayton, 1.
 Vicksburg oil res.: Post, E. S., 2.
 Volcanic deposits: Elms, 1; Ross, C. S., 1.
 Webb Co.: Lonsdale, 10.
 Weches fm.: Stenzel, 3.
 Wichita Falls dist.: Kay, J. A., 1.
 Wilcox, cent. Tex.: Claypool, 1.
 Wolf Mtn. phacolith: Stenzel, 10.
 Woodbine sand: Plummer, F. B., 10.
 Yates area structure: Adams, J. E., 8.
 Yeager clay: Finch, E. H., 1; Gardner, J. A., 3.
 Yegua delta: Reed, L. C., 1.
 Yegua problem: Stenzel, 15.

Texas—Continued.

Mineralogy.

- Aragonite in salt-dome cap rock: Hanna, M. A., 11.
 Ballinger meteorite: Nininger, H. H., 2.
 Baringer Hill pegmatite: Landes, 14.
 Bartlett meteorite: Bullard, 6.
 Braunite: Hewett, 14.
 Calcite, rose pink: Brock, C. L., 1.
 Capsular silica: Burt, F. A., 2.
 Clays: Hagner, 1.
 Dipyrite: Lonsdale, 1.
 Dust storms near Lubbock: Sidwell, 4.
 Euhedral magnesite crystals: Lonsdale, 3.
 Fuller's earth: Broughton, 1.
 Galena: Baker, C. L., 16; Hanna, M. A., 2, 6.
 Goethite: Galbraith, 2.
 Hauzerite: Hanna, M. A., 1.
 Hematite: Galbraith, 2.
 Kiamichi fm.: Sidwell, 2.
 Meteorite crater near Odessa: Boon, 8.
 Meteorites, north Texas: King, R. H., 2-a.
 Preliminary check list: Monnig, 2.
 Monahans meteorite: Buddhue, 31; Nininger, 59.
 Peck's Spring meteorite: Merrill, G. P., 3.
 Plantersville meteorite: Lonsdale, 11.
 Potash: Schaller, 1, 8.
 Rosebud meteorite: Bullard, 5.
 Salt-dome cap rock minerals: Hanna, M. A., 8.
 Sand storms near Lubbock: Sidwell, 4.
 Selenite crystals, Tert: Broughton, 2.
 Shallowater meteorite: Foshag, 20.
 Sphalerite: Hanna, M. A., 2.
 Terlingua quicksilver dist.: Duncan, F., 1.
 Wolf Mtn. granite minerals: McAdams, 1.

Paleontology.

- Algae of fossil red salt: Tilden, 1.
 Ammobaculoides: Plummer, H. J., 6.
 Ammonites: Adkins, 1, 6, 7; Albritton, 4; Barnes, V. E., 5; Croneis, 34; Elias, 21; Plummer, 22; Schuchert, 47; Scott, G., 1.
 Ammonoids: Miller, A. K., 3, 39, 41-a; Plummer, F. B., 9, 25-a; Smith, J. B., 2.
 Ampelocissites: Berry, E. W., 12.
 Anacardium: Berry, E. W., 11.
 Angiostorhinus: Stovall, 9.
 Annelida: Gardner, 16.
 Archaeocet, Tert.: Kellogg, 9.
 Archidiskodon: Anonymous, 65.
 Arthropoda: Turner, F. E., 6.
 Artifacts and extinct mammals: Sellards, 37, 41.
 Artocarpus: Ball, O. M., 1.
 Atopochara: Peck, 12.
 Aturias: Stenzel, 6, 8.
 Aves, Pleist.: Compton, 1.
 Barroisiceras: Reeside, 11.
 Basslerina: Moore, R. C., 16.

Texas—Continued.

Paleontology—Continued.

- Bend group: Plummer, F. B., 11.
 Big Bend region: Eley, 1.
 Borophagus: Matthew, 6; Stirton, 9; VanderHoof, 10.
 Brachydegma: Dunkle, 2.
 Brachiopoda: Girty, 2, 7; King, R. H., 3.
 Bryozoa: Moore, R. C., 3, 11.
 Burrows and trails: Fenton, 53.
 Buettneria: Case, E. C., 6.
 Bysmachelys: Johnston, C. S., 5.
 Calcispongiae: Wells, J. W., 6.
 Calippus: Johnston, C. S., 7.
 Canidae: Johnston, C. S., 9; VanderHoof, 13.
 Carnivora: Stirton, 27.
 Cephalopoda: Renz, J.; Scott, G., 8; Williams, J. S., 8.
 Ceratobulimina: Plummer, H. J., 10.
 Chalk, McFaddin Beach salt dome: Tatum, E. P., 1.
 Chonetes: King, R. H., 6.
 Claiborne fossils: Cole, W. S., 1; Israel-sky, 6; Weinzierl, 1.
 Coleites: Plummer, H. J., 8.
 Conocardium: Harris, Geo. D., 1.
 Conodonts: Stauffer, 4.
 Conrad's type fossil locs.: Keyes, 309.
 Corals: Heritsch, 3; Vaughan, 22; Wells, J. W., 1, 2.
 Cotylosaurs: Price, L. I., 2.
 Cribratina: Sample, 1.
 Crinoidea: Moore, 44, 45-a.
 Crustacea, decapod: Stenzel, 5, 7.
 Cytherelloidea: Howe, 8.
 Cytherida: Alexander, C. I., 8.
 Cytheropteron: Alexander, C. I., 9; Martin, J. L., 1.
 Daemonehelix: Wood, H. E., 2d, 7.
 Davis Mtn. area: Albritton, 9.
 Decapod crustaceans: Stenzel, 5, 7.
 Diadectes: Romer, 4.
 Dictyoconus and genus Orbitulina: Davies, L. M., 1.
 Dinosaurs: Case, 10.
 Tracks: Shuler, 9.
 Diploschiza: Stephenson, 9.
 Dipnoans: Romer, 10.
 Echinoidea: Adkins, 3; Smiser, 2, 4.
 Edwards lms. fauna: Grubbs, 2.
 Egg, reptilian, Perm.: Romer, 25.
 Elephants: Shuler, 5.
 Epistominoides: Plummer, H. J., 8.
 Equidae: Johnston, C. S., 6; Matthew, 9.
 Englandina: Cockerell, 5.
 Eurylepidoides: Case, 17.
 Exogyra: Stephenson, L. W., 1.
 Faunas: Howard, C. A., 1.
 Cap Mtn. fm.; Camb.: Lochman, 4.
 Custer: Newell, 9.
 Malone Mts.: Albritton, 5.
 Midway: Gardner, J. A., 2, 8.
 Williams Cave: Ayer, 1.
 Fern, Clear Fork lms.: Adams, J. E., 4.
 Fish spine: Moore, R. C., 6.

Texas—Continued.

Paleontology—Continued.

Floras.

- Eocene, Lytel: Kirn, 2.
- Midway: Parks, H. B., 2.
- Stephenville, Cret.: Ball, O. M., 4, 5.
- Tornillo Creek: Dorf, 11.

Folsomoid point by mammoth bones:
Bryan, 40.

Footprints.

- Clear Fork Valley: Moodie, 6.
- Hondo Creek, Bandera Co.: Houston, S. H., Jr., 1.

Red beds: Moodie, 3, 7.

Foraminifera: Albritton, 1, 3; Alexander, C. I., 6; Cushman, 1, 5, 11, 21, 26; Garrett, J. B., Jr., 3, 4; Gravell, 2, 3; Israelsky, 6; Kornfeld, M. M., 3; Milton, 2; Plummer, H. J., 2, 8; Tappan, 1.

Fusulinidae: Barnes, V. S., 5; Bradfield, 2; Cronels, 34; Dunbar, C. O., 3, 5, 15; Henbest, 9, 10; Schuchert, 47; Thomas, N. L., 4; White, M. P., 2.

Gastropoda: Gardner, 16; Girty, 11; Nelson, L. A., 1.

Guadryinella: Plummer, H. J., 3.

General: Whitney, F. L., 1.

Geology: Plummer, 14; Sellards, 27, 28.

Glass Mts.: King, R. E., 3.

Gonoloboceras, revision: Elias, 20.

Guadalupan fauna: Keyes, 405.

Hindeastraea: Hoffmeister, J. E., 1.

Index fossils: Calahan, 1.

Invertebrata, Carb.: Williams, J. S., 11.

Labidosaurus: Olson, E. C., 3.

Leaves, dicotyledonous: Ball, O. M., 3.

Lepidocyclus texana horizon: Gravell, 4.

Linters: Stephenson, 20.

Loxocochocha: Murray, G. E., Jr., 3.

Lysorophus: Olson, 5.

Lyttonia: Huang, 1.

Machaerodus: Burt, W. H., 2.

Madracis: Wells, J. W., 7.

Malone fauna, age: Albritton, 2, 8.

Maloniphyllum: Okulitch, 7.

Mammals, Quat.: Howard, C. A., 2.

Man, early: Pearce, 1.

Marginulina: Cushman, 1; Garrett, J. B., Jr., 2.

Marine Pleist.: Richards, 22.

Megallichthys brain case: Romer, 19.

Microfaunas.

Eocene-Oligocene zones: Harris, 9.

Flour Bluff oil field: Harris, 10.

Fort Worth fm.: Constant, W. L., 1.

Index fossils: Thomas, 12.

Oil well, E. Tex. field: Quesenberry, 1.

Middens, buried, Little Wichita River Basin: Witte, 1.

Midway fauna: Gardner, J. A., 2, 8.

Mollusca: Clarke, W. T., Jr., 2; MacNeill, F. S., 1, 3; Palmer, K. E. H. V., 2.

Mustelids: Gazin, 21.

Myiodon: Johnston, C. S., 4.

Texas—Continued.

Paleontology—Continued.

Nannipus: Johnston, C. S., 8.

Navarro-Taylor contact: Plummer, H. J., 9.

Noetinae: MacNeill, F. S., 7.

Olivellites: Fenton, 48.

Omphalotrochus: Girty, 5.

Orbitulina: Davis, L. M., 1; Lynch, S. A., 1; Silvestri, 1.

Osteoborus: Johnston, C. S., 10, 11; Stirton, 9.

Ostracoda: Alexander, C. I., 1, 10, 11, 13, 14; Coryell, 5, 6, 7; Delo, 1; Hartton, B. H., 1; Howe, 8; Moore, R. C., 4; Sutton, 16.

Ostrea: Harris, 8; Stephenson, L. W., 1.

Ostreidae: Stephenson, L. W., 12.

Paleobotany, Eocene: Ball, O. M., 2.

Palo Pinto Co.: Plummer, 17.

Parafusulina: Dunbar, 11.

Parapavo: Miller, L. H., 19.

Pectinidae: Rowland, H. L., 1.

Pedicellariae: Geis, 3.

Pediomyx: Stirton, 17.

Pelecypod, transposed hinge: Newell, 12.

Pennsylvania: Lee, W., 1.

Permian: Lee, W., 1.

Phytosaurs: Case, 9, 14.

Plant localities: Kirn, 1; Parks, H. B., 1.

Platycrinid columnals: Moore, 47.

Pliohippus: Stirton, 23.

Pseudorthoceraidae: Flower, 9.

Pteranodon: Gilmore, 15.

Radiolaria: Aberdeen, 1.

Reefs, Carb.: Plummer, 25.

Reptilia: Case, 7; Gould, C. N., 7; Mathews, 14; Romer, 22.

Roemer's Paleozoic types, redescription: Bridge, 8.

Rudistids: Adkins, 2; Stephenson, 21.

Sauropod tracks: Bird, R. T., 1.

Seymouria: White, T. E., 1.

Spermatodus: Westoll, 3.

Spongiae: King, R. H., 1, 4.

Stegocephalians: Case, 7, 8.

Synthetoceras: Stirton, 6.

Taylor fm. fauna: Adkins, 1.

Teleoceras: Johnston, C. S., 3.

Textularia: Davis, F. E., 1.

Theromorph: Broom, 1.

Tingia: Darrah, 18.

Tracks, Pliocene: Johnston, C. S., 2.

Tree ferns: Atkinson, W. E., 1.

Trimeorachis: Case, 16.

Trinity beds, land-type fossils: Wieland, 14.

Turricula: Stenzel, 16.

Turrids: Harris, G. D., 4.

Uvigerina: Cushman, 1.

Valvulinidae: Cushman, 29.

Verneulinidae: Cushman, 29.

Vertebrata: Hesse, 16-a; King, 22; Romer, 13; Sellards, 40; Wood, H. E., 2d, 12.

Virgulinidae: Cushman, 29.

Texas—Continued.

Paleontology—Continued.

- Waagenophyllum: Heritsch, 2.
 Wilcox, cent. Tex.: Claypool, 1.
 Xiphactinus: Price, L. L., 1.

Petrology.

- Analcite sh., formamiferal: Milton, 2.
 Anhydrite, Perm. lms.: Adams, J. E., 3.
 Cap-rock, salt domes, study: Barton, 12.
 Catahoula fm.: Bowling, 1.
 Chalk, McFaddin Beach salt dome: Tatum, E. P., 1.
 Clays, ceramic: Schoch, 1.
 Comanchean lms.: Hanna, M. A., 4.
 Concentric patterns in granites: Koppel, 1.
 Concretions, Manning beds: Burt, 8.
 Dolomite in Perm. lms.: Cunningham, W. A., 1.
 Edwards lms.: Grubbs, 2.
 Eocene sands: Lonsdale, 4.
 Glass, natural: Patton, 7.
 Hilbig oil field: Smiser, 3.
 Salt-dome cap rock: Barton, 12.
 Sands, Eocene: Lonsdale, 4.
 Wind-blown, iron-stained: Tanner, W. F., 2.
 Shallowwater meteorite: Foshag, 20.
 Spheres, Georgetown lms.: Thomas, H. D., 1.
 Springs, Llano uplift: Plummer, 29.
 Strawn conglomerates: Bay, H. X., 1.
 Travis Peak fm.: Cuyler, 6.
 Webb Co.: Lonsdale, 10.
 Wolf Mtn. granite: McAdams, 1.

Physical geology.

- Amelia oil field: Hamner, 1.
 Anahuan oil field: Halbouty, 6.
 Austin Chalk cuesta: Blakemore, E. F., Jr., 2.
 Balcones fault zone: Bryan, K., 2; Cuyler, 4; Sellards, 30.
 Bartilla Mts.: Jones, C. T., 1.
 Big Bend Nat. Pk.: Gould, 17.
 Border region: Hill, 8.
 Brazos River area, erosion: Geib, 1.
 Caliche, origin: Baker, C. L., 19; Price, W. A., 6.
 Clay Creek dome: Lahee, 3.
 Colorado River sedimentation: Sidwell, 3.
 Concentric patterns in granites: Koppel, 1.
 Concretions, formative processes: Burt, 7.
 Conglomerates, Penn.: Ban, H. X., 2.
 Conroe oil field: Zavolco, 4.
 Corpus Christi area: Price, 1.
 Deformation, E. of Pecos River: Sellards, 30.
 Dugous Creek overthrust: King, P. B., 1.
 Duval Co.: Sayre, 6.
 Earthquakes.
 April 11, 1934: Sellards, 31.
 June 19, 1936: Sellards, 34.
 Valentine, 8/16/31: Yerly, 20; Sellards, 20.

Texas—Continued.

Physical geology—Continued.

- Earthquakes—Continued.
 Wortham-Mexia: Sellards, 19.
 Earth-temperatures, north-cent. Tex.: Barnes, V. E., 3.
 Edwards Plateau: Cartwright, 3.
 Erosion, flat-bottom stream: Stephenson, 18.
 Faulting: Bell, D. E., 1; Bryan, F., 1; Hager, 1; Kornfield, Joseph A., 2.
 Formative process, concretions: Burt, 7.
 Fractures: Barton, 24; Melton, 17.
 Friendswood field: Bell, O. G., 1.
 Government Wells dist.: Cooper, H. H., 1.
 Gravity survey: Hoskinson, 1.
 Ground subsidence, Sour Lake: Sellards, 5.
 Guadalupe Mts.: King, 28, 30.
 Hastings field: Halbouty, 7.
 Hueco lms.: King, P. B., 4.
 Laredo dist.: Cooper, H. H., 2.
 Leon Co.: Stenzel, 17.
 Llano area: Stenzel, 12.
 Longhorn Cavern: Law, 1.
 Luling oil field: Hill, H. B., 1.
 Malone Mts.: Albritton, 8.
 Marathon region: King, 29.
 Medina Co.: Sayre, 4.
 Mexia-Talco fault zone: Smith, E. R., 2.
 Orange oil field: Backelhymer, 1.
 Ouachita deformation: Russell, W. L., 15.
 Ouachita orogeny: Keyes, 480.
 Overthrusting, Solitario area: Sellards, 22.
 Trans-Pecos Tex.: Baker, C. L., 4.
 Paleozoic folding, trans-Pecos Tex.: King, 13.
 Palo Pinto Co.: Plummer, 17.
 Permian Basin, S.: Kinkel, 1.
 Permian sediments, tectonics, Guadalupe Mts.: King, 30.
 Perno-Carb. orogeny: Waterschoot van der Gracht, 4, 6.
 Red beds, origin: Baker, C. L., 3.
 Refugio oil and gas field: Martyn, 1.
 Ripple marks, Fort Worth area: Scott, G., 3.
 Merkle dolomite: Patton, L. T., 3.
 Rodessa field: Clark, C. C., 2.
 Rough Creek fault and Ouachita deformation: Russell, W. L., 15.
 Salt Flat oil field: Hill, H. B., 1.
 Sam Fordyce field: Earl, 1.
 Sandstone dikes near Rockwall: Kelsey, M., 1.
 Secondary gypsum, Delaware Mts.: Mohr, 1.
 Sediments, South Canadian River: Sidwell, 6.
 Silting, Lake at Austin: Taylor, T. U., 1.
 Reservoirs: Taylor, T. U., 2.
 Sphenolith, Terlingua dist.: Ross, C. P., 30.
 Structures, N.-cent. Tex.: Cheney, 18.

Texas—Continued.

Physical geology—Continued.

- Stylolites: Stockdale, 9.
- Subsidence of salt domes: Sellards, 13.
- Temperature gradients, Perm. Basin.:
Lang, W. T. B., 1, 2.
- Trans-Pecos: Baker, 21.
- Unconformities, Upper Cret.: Stephenson, L. W., 4.
- Uvalde Co.: Sayre, 4.
- Valentine earthquake, 8/16/31: Byerly, 8; Sellards, 20.
- Ventifacts, trans-Pecos: Bryan, 43.
- Volcanoes, Buck Hill quad.: Elms, 1.
- Volcanism, Cret.-Tert., trans-Pecos: Mailey, 1.
- Wolf Mtn. phacolith: Stenzel, 10.
- Wortham-Mexia earthquake: Sellards, 19.

Physiographic geology.

- Austin chalk cuesta: Blakemore, E. F., Jr., 2.
- Big Bend area: Schoffelmayer, 1.
- Border region: Hill, 8.
- Corpus Christi area: Price, W. A., 1, 7.
- Craters formed by air blowers: Price, W. A., 8.
- Deltaic coastal plain: Barton, 7.
- Drainage, S. Tex.: Barton, 24.
- Dunes, muleshoe, Panhandle: Tanner, W. F., 1.
- Sand-grain patterns: Sidwell, 5.
- Duval Co.: Sayre, 6.
- Eastward slope of Texas: Hill, R. T., 6.
- Erratics and arkoses, Haymond fm.: Baker, C. L., 13.
- General: Barton, 40.
- Geologic criteria, climatic zones: Price, W. A., 13.
- Glacial time scale: Price, W. A., 15.
- Glass Mts. drainage: King, P. B., 3.
- Guadalupe Mts: Keyes, 402.
- Hastings field: Halbouty, 7.
- Hurricanes, deltas and resacas: Price, W. A., 14.
- Jackson group, Coastal Plain: Renick, 5.
- Llano Estacado lakes: Patton, 6.
- Lower Rio Grande Valley: Foscue, 1.
- Marathon region: King, 29.
- Marsalis terrace, Trinity River: Kelsey, L., 1.
- Menard "crater" sink hole: Blakemore, E., 1.
- Meteorite craters: Monnig, 1; Spencer, L. J., 2, 4.
- Ector County: Barringer, 1.
- Odessa: Brown, J. D., 8; Nininger, 27.
- Mounds, natural: Melton, 2.
- Soil: Melton, 11, 16.
- Mounds and soil mottling, NE. Tex.: Rich, 15.
- Natural regions: Johnson, E. H., 1.
- Plains and shore lines, post-Recent: Barton, 44.
- Post-Fleming surface fms.: Doering, 1.
- Rio Grande delta: Price, W. A., 18.
- Sands, Quat., High Plains: Huffington, 1.

Texas—Continued.

Physiographic geology—Continued.

- Sedimentation in lakes: Reed, E. L., Jr., 1.
- Shore line, rivers, and springs: Shuler, 8.
- Sierra Madre fault zone: Hill, R. T., 4.
- Sierra Madre Oriente system: Hill, R. T., 7.
- Soil drifting, Great Plains: Leighton, 29.
- Structural features, W.-Tex.: Bybee, 2.
- Tectonics of Southwest: Darton, 13.
- Terraces, Trinity River: Shuler, 6.
- Trans-Pecos: Baker, M. B., 1.
- Travis Peak fm.: Cuyler, 6.
- Atacosa Co.: Lonsdale, 5, 7.
- Corpus Christi Basin: Price, W. A., 11.
- Dimmit Co.: White, W. N., 3.
- Duval Co.: Sayre, 2, 6.
- Edwards lms., San Antonio area: Livingston, P. P., 1.
- Frio Co.: Lonsdale, 5, 7.
- Ground water.
- Coastal Plain: Turner, S. F., 3.
- Galveston area: Foster, M. D., 2; Turner, S. F., 2.
- High Plains: Theis, 3; White, W. N., 5.
- Houston area: Foster, M. D., 2.
- Investigations, El Paso: Sayre, 9.
- Ogallala fm., Llano Estacado: Theis, 5.
- Resources: Turner, S. F., 4.
- Well records: Tex. St. Bd. Water Eng., 1.
- Kleberg Co.: Livingston, P. P., 2; Anonymous, 63.
- Llano Estacado, Ogallala fm.: Theis, 5.
- Medina Co.: Sayre, 4.
- Mineral Wells water supply: Turner, S. F., 1.
- Northeast Tex.: Plummer, F. B., 11.
- Ogallala fm., Llano Estacado: Theis, 5.
- Oil-field waters, N.-cent. Tex.: Barnes, V. E., 2.
- Palo Pinto Co.: Plummer, 17.
- Salt-water bodies, El Paso area: Sayre, 8.
- Serpentine rocks, cent. Tex.: Plummer, 16.
- Shore line, rivers, and springs: Shuler, 8.
- Somervell Co., artesian: Fiedler, 4.
- Springs, Llano uplift: Plummer, 29.
- Structural and economic geol.: Sellards, 30.
- Survey of: Meinzer, 6.
- Uvalde Co.: Sayre, 4.
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- Supplies: Baker, 22.
- Water horizons, W. Tex.: Roberts, H. N., 1.
- Webb Co.: Lonsdale, 6, 10.
- Wells, cent. Tex.: Kramer, 5.
- West Tex. Perm. Basin: Berger, W. R., 1.
- Texas through 250,000,000 years: Barton, 40.
- Testing materials by spectroscope: Cutting, 1.

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 Source book: Mather, 28; Reed, 35.
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 Igneous rocks: Alling, 8; Dake, 14; Johannsen, 2; Quirk, 19.
 Introduction, to geology: Branson, 23; Cronels, 22; De Wolf, 3; Schroeder, 1.

Textbooks—Continued.

- Introduction—Continued.
 To historical geology: Fisher, L. W., 10.
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 Outlines.
 Geology: Longwell, 23-a.
 Historical geology: Schuchert, 12, 39-a.
 Physical geology: Longwell, 19.
 Physiography: Hinds, 1.
 Paleobotany: Darrach, 20, 22.
 Paleontology: Berry, E. W., 3; Zittel, 1.
 Invertebrate: Cronels, 26.
 Methods in: Cronels, 36; Reed, 28.
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 Petrography and petrology: Grout, 6.
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 And natural gas production: Stephens, 4.
 Petrology, structural: Fairbairn, 9; Griggs, D. T., 7.
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 Trask, 41; Tyler, S. A., 7.
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 Seismology, theoretical, geodynamics:
 Hubbert, 9; Macelwane, 18.
 Seismometry: Sohon, 1.
 Structural geology: Nevin, 5; Snider, 7.
 And economic deposits: Gilluly, 14;
 Stark, 14.
 Structural petrology: Fairbairn, 12;
 Knopf, E. F. B., 8, 9.
 Taxonomy, procedure: Croneis, 29.
 Vertebrates: Homer, 6.

Thaumasite, Ducktown dist., Tenn.: Schaller, 26.

Theory of downward secondary enrichment:
 Brown, J. S., 6.

Thermal expansion, typical rocks: Griffith, 2.

Thermal waters and springs. See also Underground water.

Algal agency in travertine deposits:
 Allen, E. T., 4.

Arkansas, Hot Springs: Schlundt, H., 1.
 California, Casa Diablo Springs: Blake, A. H., 1.

Lassen Park: Anderson, C. A., 5;
 Finch, R. H., 3.

Napa Co. volcanic waters: Jaggar, 19.
 Colorado, Steamboat Springs: Blackmer, J., 1.

Decomposition, carbonate minerals:
 Wells, R. C., 9.

Georgia, Warm Springs quad.: Hewett, 13.

Geyser eruptions, nomenclature: Fix, P. F., 1.

Hot Springs problem: Day, 11.

Idaho, Castro quad.: Ross, C. S., 25.

Oregon, Harney Basin: Piper, 17.

McKenzie Valley: Stearns, H. T. 3.

Origin, differentiation, criteria of:
 Allen, E. T., 7.

South Dakota, Black Hills: Work, 1.

Texas, Big Bend area: Schoffelmayer, 1.
 Central, serpentine rocks: Plummer, 16.

Thermal overflow, thallophytes and rock-building: Setchell, W. A., 1.

Thermal springs, devel.: Allen, E. T., 3.
 United States: Stearns, N. D., 4.

Utah, manganese in: Callaghan, 14.

Virginia, hot springs dist.: Bevan, 26;
 Reeves, F., 4.

Volcanoes, geysers, and hot springs:
 Allen, E. T., 6-a.

West Virginia, Greenbrier Co.: Price, P. H., 17.

Thermal waters and springs—Continued.

Yellowstone Nat. Park: Allen, E. T., 2,
 5, 6-a; Bauer, C. M., 5; Day, 7, 8.
 Geysers: Bauer, C. M., 5.

Thin secs., measure of components by planimeter: Marsh, 2.

Thomas Jefferson, paleontologist: Osborn, 37.

Thomsenolite, Greenland: Gordon, S. G., 3.

Thomsonite, Minn.: Hanley, 1, 2.

Thorianite, Pa.: Gehman, 1.

Thorium from pitchblende, Northwest Territories: Merkel, 1.

Thorium-uranium ratios and lead origin:
 Keevil, 3.

Thrusts and thrusting.

Mexico, border area, thrust sheets: Hill, 8.

Oklahoma, scissor faults opposed thrusts: Tomlinson, 8.

Pennsylvania, Honeybrook uplift: Stose, 17.

Texas, Big Bend area: Schoffelmayer, 1.
 Border area, thrust sheets: Hill, 8.

Vermont, northwestern: Schuchert, 43.

Taconic area: Kaiser, E. P., 3.

Wyoming, Big Horn Basin: Chamberlin, 21.

Laramie Basin: Beckwith, 4.

Thunder eggs, Calif.: Patton, J. W., 2.

Thunder Mtn. mining dist., Idaho: Ross, C. P., 16.

Tills.

Illinois, distrib. Wisconsin till: Wascher, 1.

Massachusetts, flora in: Sayles, 9.

Tilt records, Hawaiian Volcano Observatory:
 Jaggar, 3.

Tilt, secondary, problem: Spieker, 11.

Tilting of ground and tides, Chesapeake Bay:
 Merritt, G., 1.

Tilts, two, and stereographic projection:
 Fisher, 18.

Time conceptions in geology: Malott, 4-a.

Time, in crustal studies: Stetson, H. T. 2-a.

Time-scale basis, geologic: Keyes, 495.

Tin.

Alabama: Ellsworth, E. W., 5; Jones, W. B., 13-a.

Alaska: Patty, 1; Waters, A. E., Jr., 1.

British Columbia: Gunning, 7.

California: Dudley, 1; Sampson, R. J., 5.

Colorado: Berman, 9; Nelson, R., 1.

Manitoba: De Lury, J. S., 2; Derry, 2;
 Wright, J. F., 3, 5, 13.

Mexico: MacCoy, F., 1; Santillán, 14.

Mineral pipes and disseminations, ores:
 Weed, 1.

North Carolina: St. Clair, S., 2.

Northwest Territories: Hawley, 13.

Nova Scotia: Davison, E. H., 1, 2; Meservey, 20.

Tin—Continued.

- Ontario: Burwash, 11.
 Puerto Rico: Meyerhoff, 10.
 South Dakota: Cummings, J. B., 1;
 Gardner, E. D., 2; Tullis, 7.
 Succession of minerals, temperatures of
 fm.: Lindgren, 15.
 Sulfide minerals, identification: Gaudin,
 5.
 Supergene cassiterite: Koeberlin, 2;
 Singewald, J. T., Jr., 6.
 Virginia, Irish Creek: Glass, 10.
 Washington: Fernquist, 6.

Titanium.

- Arkansas: Brock, C. L., 2.
 Industrial minerals and rocks: A. I.
 M. E., 2.
 Nevada: Ferguson, 10.
 Ontario: Hurst, 7.
 Quebec: Gillson, 7; Osborne, 21.
 Virginia: Bevan, 9; Hess, F. L., 10;
 Ross, C. S., 19, 26; Ryan, C. W., 3;
 Steidtman, E., 2.

Tonalite, Calif.: Osborn, E. F., 1.

Topaz.

- Colorado: Pearl, 2; Wulff, 1.
 Maine: Palache, 23.
 New Hampshire: Chandler, 1, 2.
 South Carolina: Glass, 6; Pardee, 10.

Topographic mapping from aerial photo.:
 Banks, H. E., 1.

Topographic maps in teaching physiography:
 Whitcomb, 9.

Toreva-block landslide type: Reiche, 2.

Tourmaline.

- Analysis, spectrographic: Warner, T.
 W., Jr., 1.
 British Columbia: Stevenson, 4.
 California: Irving, E. M., 1; Tomp-
 kins, 1.
 Crystallography space group: Barnes, W.
 H., 2.
 General: Kollida, 1; Tompkins, 1; Ward,
 G. W., 1.
 Maine: Morrill, 1.
 Mexico: Flores, 8.
 Muscovite with inclusions of: Frondel,
 11.
 Nevada: Campbell, D. F., 1.
 New York: Butler, S. B., 1.

Tracks and trails.

- Alberta, Camb., Lake Louise area: Fen-
 ton, 51.
 Amphibian, Kans.: Wooster, 3.
 Archaeonassa, Camb., British Columbia:
 Fenton, 49.
 Arizona, Coconino ss.: Brady, 17.
 Invertebrates, Moenkopi ss.: Brady, 9.
 Vertebrates, Moenkopi ss.: Brady, 9.
 Arthropod tracks, Carb., cf. recent scor-
 pions: Brady, 17.
 Artiodactylus tracks: Caster, 14.
 Belt series, northern: Fenton, 54.

Tracks and trails—Continued.

- Birds, mammals, Calif.: Curry, H. D., 2.
 Dinosaur tracks, Connecticut River Val-
 ley: Perry, K. P., 1.
 South Dakota, Cret.: Anderson, S. M.,
 1.
 Texas, Paluxy River: Shuler, 9.
 Footprints, Boulder, Colo.: Toepelmann,
 4.
 Gastropoda, Camb.: Fenton, 17.
 Koupichnium trails: Caster, 15.
 Mammals and birds, Calif.: Curry,
 H. D., 2.
 Micrichnus trails: Caster, 14, 15.
 Nova Scotia, Carb.: Sternberg, 14.
 Oldhamia, supposed: Ruedemann, 38.
 Olivellites, Tex.: Fenton, 48.
 Paramphibius, Pa.: Caster, 9; Anony-
 mous, 69.
 Pennsylvania, Chemung: Willard, 28.
 Sauropod, Tex.: Bird, R. T., 1.
 Texas, Penn.: Fenton, 53.
 Tracks, Pliocene, Tex.: Johnston, C.
 S., 2.

Transportation of debris by streams or mov-
 ing water: Hjulström, 1; Leighly, 2.

Travertine.

- Algal agency in deposition from thermal
 waters: Allen, E. T., 4.
 New York, calcium-carbonate deposits:
 Apfel, 3.
 Organism forming it: Howe, M. A., 2.
 Texas, Llano uplift: Plummer, 29.
 Virginia: Hinkle, 1.
 Lexington: Steidtmann, 4, 5.
 Yellowstone Nat. Park: Allen, E. T., 5.

Tree casts, molds, in lava, Kilauea, Ha-
 waii: Finch, R. H., 5.

Tree-growth indices to past climates: Glock,
 16.

Tree-ring dating for prehistory events: Keyes,
 335.

Tree roots, influence on soil morphology:
 Lutz, 3.

Trend of geology: Allan, 18.

Triangulation of N. Am.: Bowie, 11.

Triassic. See also Paleontology, Triassic.

Aeolian deposits: Branson, 24.

Alaska: Buddington, 1; Capps, 6, 10,
 13; Mertie, 4, 16, 20; Moffit, 1, 8,
 10, 11; Smith, P. S., 3, 12.

Alberta: Allan, 8, 11; MacKay, 8;
 Moore, P. D., 3; Raymond, 4; Tel-
 fer, 1; Warren, P. S., 10.

Antillean-Caribbean area: Schuchert,
 31.

Appalachia: Nelson, 6.

Arctic America: Kindle, 40; Stanton,
 T. W., 1; Weeks, L. J., 5.

Arizona: Brady, 8; Harrell, 2; Holm,
 1; Knechtel, 9; McKee, 7; Roe, H.,
 1; VanderHoof, 5.

Triassic—Continued.

British Columbia: Bancroft, 1; Bostock, 1; Cairnes, 13, 15, 17; Cockfield, 14; De Béthune, 3; Gunning, 6; James, H. T., 1; Kerr, F. A., 18, 21, 22; Kindle, E. D., 2, 3, 4; McLearn, 18, 23; Marshall, I. M., 1; Telfer, 1; Walker, J. F., 1, 4; Williams, M. Y., 4; Wright, L. B., 5.

California: Averill, 1; Dudley, 1; Erwin, 4; Hazzard, 8; Hertlein, 11; Hinds, 14, 18, 33; Hoots, 6; Jenkins, 12; Miller, F. S., 2; Simpson, E. C., 1.

Canada: Alcock, 13; Goodman, 4; Weeks, L. J., 5.

Chinle fm. in Southwest: Camp, 1.

Clays, fire, U. S.: Chelikowsky, 1.

Colorado: Burbank, W. S., 3; Cross, C. W., 2; Eckel, E. B., 5; Erdmann, 1; Kansas G. Soc., 7; Lerke, 1; Lovering, 4, 14; Miller, F. S., 2; Miller, J. C., 1; Mohr, 3; Sanders, C. W., Jr., 2; Van Tuyl, 17, 18; Waldschmidt, 7.

Connecticut: Cook, T. A., 1.

Correlation: Mathews, A. A. L., 6.

Deformation of earth's crust: Moore, 30.

Eastern New York-west New England: Longwell, 14.

Fault-line deflections, warpings: Wheeler, G., 3.

General: Miller, B. L., 10.

Georgia, Warm Springs quad.: Hewett, 13.

Greenland: Bierther, 1; Büttler, 2; Frebold, 13; Koch, L., 2, 5, 10; Mayne, 1, 2; Noe-Nygaard, 3; Rosenkrantz, 3; Schaub, H. P., 1; Stauber, H., 1, 2; Teichert, 8, 14; Vischer, 1, 2.

Idaho: Anderson, A. L., 5; Mansfield, G. R., 2.

Kansas: Elias, 11; Kansas G. Soc., 7; Roth, 11.

King's Mtn. area, N. C.-S. C.: Frink, 1.

Limestones, dol., origin: Knopf, 13.

Lowlands, S.-cent., Ouachita provs.: Ruedemann, P., 3.

Maine: Chadwick, 33.

Maryland: Stose, 11.

Massachusetts: Bain, G. W., 5; Billings, 18; Chute, 1.

Mexico: Gibson, J. B., 1; King, R. E., 5, 6; Müllerried, 16; Muir, 3; Santillan, 16.

Montana: Bevan, 3; Neely, J., 2; Spir-off, 3; Thom, 14; Wilson, C. W., Jr., 2.

Nebraska: Noble, E. B., 2.

Nevada: Cameron, E. N., 2; Campbell, D. F., 1; Gianella, 9; Glock, 1; Hewett, 4; Jenney, 1; Kerr, P. F., 20; Muller, 5, 9, 14.

New Brunswick: Alcock, 18; Hayes, 7.

New England lowland: Longwell, 25, 26; Wheeler, G., 1.

Triassic—Continued.

Newfoundland: Twenhofel, 40.

New Jersey: Moldenke, 1.

New Mexico: Kansas G. Soc., 7; Keyes, 267, 428; Needham, 9; Renick, 3; Talmage, 7; Winchester, 3; Zavolco, 5.

New York: Berkey, 13; Kaye, 1; Strzowski, 2; Wheeler, G., 2.

North America, copper deposits: Butler, 16.

Cordillera-Caribbean area: Waters, 13.

North Carolina: Berry, E. Willard, 16; Brown, C. B., 1; Johnson, W. R., Jr., 1; Murray, 5, 6; Prouty, 3.

Nova Scotia: Bell, W. A., 1; Cox, E. J., 1; Hornor, 1.

Oklahoma: Anderson, G. E., 1; Kansas G. Soc., 7; Roth, 11; Six, 2; Stovall, 12.

Oregon: Buwalda, 19; Goodspeed, 20; Moore, B. N., 8; Oregon Dept. Geology, 1; Schenk, 3.

Pennsylvania: Bascom, 1, 6; Berkey, 12; Fraser, 11; Jonas, A. L., 2; McLaughlin, D. B., 1, 2, 3; Miller, B. L., 4, 7, 13, 15; Stose, G. W., 1, 8, 12, 17, 20, 21; Ward, F., 5; Watson, E. H., 6; Whitcomb, 4; Willard, 49, 55, 58.

Post-Keweenawan age by helium: Urry, 8.

Rio Grande depression, Colo.-N. Mex.: Bryan, 36.

Rocky Mts. area: Bartram, 10; Branson, E. B., 1; Heaton, 3; Reeside, 2; Uren, 2; Warren, P. S., 1.

Selenium in rocks and soils: Beath, 3.

South Carolina: Berry, E. Willard, 18.

South Dakota: Connolly, 3; Rothrock, 15.

Southwest U. S.: Camp, 3; Effinger, 4.

Texas: Adams, J. E., 1; Adkins, 8; Carsey, 1; Kansas G. Soc., 7; King, 20, 29; Patton, L. T., 1; Roth, 11.

Uinta Mts., Utah-Colo.: Forrester, 1.

United States.

Eastern: Prouty, 3.

General: Rath, 15.

Northeastern: Longwell, 28.

Southwestern, ore deposits: Fischer, R. P., 2.

Utah: Baker, 3, 5, 7; Callaghan, 9; Dane, 7; Eardley, 2; Gilly, 1; Green, J., 1; Gregory, H. E., 1, 4, 5, 6; Hinds, 26; Mathews, A. A. L., 4; Nolan, 6; Schoff, 2; Thorpe, 14.

Virginia: Bevan, 15; Brown, C. B., 3; Furcron, 4, 9; Jonas, 3; McGill, 7; Roberts, 26-a; Ward, R. V., 2.

Wyoming: Bartram, 3; Beckwith, 4; Brainerd, 5; Dobbin, 2; Effinger, 2; Fanshawe, 1; Horberg, 1; Johnson, G. D., 1; Jones, C. T., 2; Love, J. D., 1, 6; Thomas, H. D., 6; Veatch, 1; Wilson, C. W., Jr., 18.

Triassic—Continued.

Yukon: Bostock, 6, 11; Cockfield, 4;
Lees, E. J., 1, 2.

Tri-County oil field, Ind.: Esarey, 1.

Tridymite, Montserrat: MacGregor, 2.

Trigoniidae: Crickmay, C. H., 15.

Trilobita. See also Crustacea.

Aglaspis, Wis.: Graham, W. A. P., 5.

Agnostian: Howell, 14, 15, 16, 18.

Agraulos gibbus for A. convexus: Howell, 38.

Akpatok ls., Richmond fm.: Cox, 4.

Alabama, larval stages: Lalicker, 2.

Alberta, nests, feeding burrows: Fenton, 47.

Ampyx, Okla.: Decker, 5.

Anthracolitic, Calif.: Wheeler, H. E., 6.

Appalachians, Camb.: Resser, 20, 21.

Arizona, Toroweap, Kaibab fms.: McKee, 11.

Asaphus, Va.: Curfman, 1.

Brachyaspisid for Brachyaspis: Miller, B. M., 3.

British Columbia, Upper Camb.: Kobayashi, 4.

California, anthracolitic: Wheeler, H. E., 6.

Carboniferous: Wheeler, H. E., 6.

Cambrian: Ulrich, E. O., 5.

Nomenclature: Resser, 12, 14, 17, 22.

Upper Mississippi Valley: Ulrich, E. O., 5.

Canada, Camb., Ord.: Kobayashi, 3.

Carboniferous general: Weller, 26.

Centropleura, Vt.: Howell, 30.

Centropleurinae, classn.: Howell, B. F., 8.

Classification status: Ulrich, E. O., 1.

Color markings: Williams, J. S., 1.

Cordilleran trough, Camb.: Deiss, 9.

Dalmanites, nomenclature: Delo, 6.

Dicranopeltis, Wis.: Mason, C. Y., 1.

Dipleura, Dev., N. Y.: Cooper, 17.

Ditomopyge, Ind.: Weller, 22.

Kansas: Weller, 24.

Pennsylvania: Newell, 2.

Ehmania fauna, Newfoundland: Howell, 39-a.

Elyx, Camb.: Howell, B. F., 7.

Evolution, Carb.: Weller, 27.

Geneva, comparison method: Phleger, 8.

Greenland: Poulsen, 2, 4; Teichert, 11;
Troedsson, 2.

Griffithides, Pennsylvanian.

Arkansas: Wheeler, 7.

Missouri: Williams, J. S., 3.

Habits: Delo, 5; Scheville, 2.

Heliocephalus for Malvernia: Delo, 9.

Homalotus, Pa.: Whitcomb, 1.

Hypoparia, Ark.: Thomas, N. L., 1.

Idaho, Camb.: Resser, 19, 23, 24.

Illinois, Chicago area: Bretz, 10.

Devonian: Cooper, 26; Roy, 6.

Kimmswick lms.: Bradley, J. H., Jr., 2.
Sea balls, Sil.: Cronels, 46.

Indiana, Kentland Ord. area: Shrock, 11,
12.

Trilobita—Continued.

Inglefieldia?, Ala.: Howell, 27.

Isotelus, Okla.: Laudon, 15, 17.

Kansas coal field: Williams, J. S., 12.

Kimmswick lms., Mo., Ill.: Bradley, J. H.,
Jr., 2.

Labrador, Camb., Ord.: Little, 1; Resser, 16.

Larval stages, Ala.: Lalicker, 2.

Lichadacea: Phleger, 5, 6, 7.

Lichadian, revision: Phleger, 4.

Locomotive habits: Delo, 5.

Michigan, Dundee lms.: Bassett, 1.

Minnesota, Shakopee dolomite: Stauffer,
17, 18.

Van Oser beds: Stauffer, 23.

Mississippian, color markings: Williams,
J. S., 1.

Missouri: Bradley, J. H., Jr., 2; Branson, 33, 37; Lochman, 2, 6; Ulrich, 6.

Montana, Camb.: Campbell, 1, 7; Deiss, 11; Kobayashi, 2.

Nevada, Camb.: Kobayashi, 2.

Newfoundland, Camb., Sil.: Howell, 35,
43; Lochman, 5; Resser, 15; Shrock, 15.

New York: Goldring, 11; Ruedemann, R., 1; Sproule, 1.

Nomenclature, Camb.: Resser, 12, 14, 17,
22.

North America, Cambrian transition
faunas: Howell, 41.

Phacopid: Delo, 11, 12.

Ohio, Cincinnati area fauna: Bucher, 21.

Oklahoma, Isotelus: Laudon, 15, 17.

Olenellidae (Mesonacidae), systematic
position: Raw, 1.

Onchaspis, Ord.: Secrist, 5.

Ontario: Caley, 1; Shaw, E. W., 2;
Sproule, 1.

Opisthoparia, Ark.: Thomas, N. L., 1.

Oriskany group, Pa.: Cleaves, 8.

Otarion, N. Y.: Wheeler, H. E., 5.

Ozarkian faunas, Minn.: Powell, L. H., 1.
Paedeumias, Calif.: Crickmay, C. H., 17.
Paradoxides, Mass., New Brunswick:
Howell, 20, 24.

Pennsylvania: Cleaves, 8; Secrist, 4;
Willard, 47, 49, 52, 56, 57, 59.

Phacopid, revision: Delo, 7.

Secondary blinding: Delo, 10.

Phacopinae, Iowa, Okla.: Delo, 8.

Phacops with ventral appendages: Raymond, P. E., 1.

Proparia, Ark.: Thomas, N. L., 2.

Protaspidea: Raymond, 16.

Pterocephalia, genotype: Bridge, 3.

Quebec: Cooper, 23; Laverdière, 2, 6;
Northrop, 10; Twenhofel, 31.

Relation to arachnids: Störmer, 1.

Restorations, Niagara area fossils: Ruedemann, 11.

Revision, Lichadian: Phleger, 4.

Roemer's Paleozoic types, Tex., redescription: Bridge, 8.

Segmentation of trunks: Levereault, 1.

Trilobita—Continued.

- Telephidae: Ulrich, E. O., 4.
 Terataspis, N. Y.: Reimann, 10.
 Texas, Cap Mtn. fauna: Lochman, 4.
 Utah: McKee, 11; Resser, 23, 24.
 Vermont, Cambrian: Howell, B. F., 6, 30;
 Raymond, 19; Resser, 16; Schuchert, 43.
 Ordovician: Raymond, 19; Schuchert, 43.
 West Virginia: Price, G. M., 1.
 Wyoming: Branson, C. C., 14; Miller, B. M., 1.

Trinidad.

Geological conf., 1939: Kugler, 6.

Economic geology.

- Asphalt lake: Corry, 2; Graefe, 1; Vander Weg, 1.
 Correlations by Foraminifera: Nuttall, 5.
 General: Kugler, 2; Lehner, 1.
 Lizard Springs anticline: Skelton, 1.
 Palo Seco oil field: Halse, 1.
 Petroleum: Illing, 1; Sawdon, 3.

Historical geology.

- Ammonites, Jurassic: Hutchison, 2.
 Biche Quarry lms.: Hutchison, 3.
 Correlations by Foraminifera: Nuttall, 5.
 Cretaceous: Gunther, A. E., 1; Hutchison, 1; Jarvis, 1.
 General: Kugler, 2, 6; Lehner, 1.
 Geological conf., 1939: Kugler, 6.
 Lizard Springs anticline: Skelton, 1.
 Northern Range: Trechmann, 7.
 Oil fields: Illing, 1.
 Palo Seco oil field: Halse, 1.
 Soldado Rock: Kugler, 4.
 Tertiary, strat., nomenclature: Schmidt, 1.

Paleontology.

- Acila, Oligocene: Schenck, 21.
 Ammonites: Hutchison, 2; Spath, 5.
 Anthozoa: Gregory, J. W., 2; Thomas, H. D., 2.
 Cypraea: Schilder, 1.
 Echinoids: Jeannot, 1.
 Elephant: Schaub, S., 1.
 Fish, Tert.: Gunther, A. E., 1.
 Fauna, Northern Range: Trechmann, 7.
 Flora, Tert.: Berry, 55, 56.
 Foraminifera: Cushman, 1, 18; Geyn. van de, 1; Vaughan, 38.
 Hamulus, Cret.: Rutsch, 6.
 Helicolepidina: Barker, 1.
 Heteropoda: Rutsch, 3.
 Laevinerinea: Dietrich, 2.
 Lepidocyclus: David, E., 1.
 Marginulina: Cushman, 1.
 Mollusca, Miocene: Vokes, 10.
 Nautiloids, Tert.: Miller, 32.
 Noetinae, Tert.: MacNeil, 7.
 Ophioderma: Berry, C. T., 5.
 Pteropoda: Rutsch, 3.
 Rudistids: Hodson, F., 1; Rutsch, 2.
 Sabina: Bouwman, 1.

Trinidad—Continued.

Paleontology—Continued.

- Soldado Rock, Eocene: Kugler, 4;
 Rutsch, 5.
 Sphenodiscus: Rutsch, 6.
 Spongiae: Thomas, H. D., 2.
 Suggrunda: Hoffmeister, W. S., 1.
 Terebratulina: Rutsch, 5.

Petrology.

Soldado Rock, Eocene: Kugler, 4.

Physical geology.

- General: Kugler, 4; Lehner, 1.
 Los Bajos fault: Wilson, C. C., 1.
 Mudflows, Tert.: Mürky, 1.
 Mud volcano off coast: Weeks, W. G., 1.
 Oil fields: Illing, 1.
 Sedimentary volcanism: Kugler, 1.

Underground water.

Chemical inv.: Parker, J. S., 1.

Tripoli.

- Industrial minerals and rocks: A. I. M. E., 2.
 Mississippi: Spain, 5; Vestal, 2.
 Oklahoma: Beach, 1; Ham, 2.
 Tennessee: Spain, 5; Whitlatch, 11, 20.
 United States, SE.: Lloyd, S. G., 1.

Tri-State lead-zinc dist.: Kansas G. Soc., 10; Sales, 1.

Tuff, Hawaiian Is.: Palmer, H. S., 8; Wentworth, 44.

Tularosa Valley scarps, N. Mex.: Talmage, 5.
 Tungsten.

- Couder Dam area: Lee, 7.
 British Columbia: Walker, 11.
 California: Gianella, 14.
 Colorado: Goddard, 3; Ives, 3; Loomis, F. B., Jr., 1; Lovering, 20; Marmaduke, 1; Wilkerson, 4, 5.
 Idaho: Anderson, A. L., 1; Bell, R. N., 3; Dickey, F. H., 1.
 Missouri: Singewald, J. T., Jr., 3; Tolman, 8.
 Nevada: Jenney, 1; Kerr, P. F., 9, 14, 17, 20.
 Northwest Territories: Hawley, 13.
 Nova Scotia: Messervey, 14.
 Quebec: Faessler, 17.
 South Dakota: Connolly, 3; Cummings, 2; Tullis, 6.
 Western States: Lovering, 13.
 Turkey Mtn. lime pools, Okla.: Ruedemann, P., 1.

Turquoise.

- Arizona: Crawford, W. P., 2.
 Genuine and imitation: Kollida, 2.
 Nevada: Vandenburg, 3, 4.

Turtles. See Reptilia.

Type specimens, Cincinnati Univ. cat.: Chappars, 2.

Ubehebe craters, Calif.: Engeln, von, 5.

Unconformities.

- Alabama, Tenn. Valley: Jones, 16.
 Alberta: Helland, 19; Sanderson, 4;
 Warren, 21.

Unconformities—Continued.

- Algonquin-Nipissing, Great Lakes: Stanley, 10.
 Allegheny fm., Pa.: Sherrill, 3.
 Arizona: Butler, 17, 21; McKee, 11; Peterson, N. P., 1; Trischka, 4; Wilson, E. D., 8.
 Belt ser., northern: Fenton, 54.
 British Columbia, Cranbrook: Rice, 4.
 California: Church, 6; Hazzard, 7; Henny, 5, 6; Moody, G. B., 2; Piper, 16; Taliaferro, 13.
 Cambrian-Algonkian, west N. Am.: Hinds, 20.
 Canada, interior plains: Kindle, 40.
 Canadian Shield: Wilson, M. E., 20.
 Chazy-Sylvan, Tex.: Lowman, 3.
 Colorado: Bassett, 3; Green, T. H., 1; Johnson, J. H., 7; Lovering, 14; Vanderbilt, 11; Van Tuyl, 18.
 Contact, Greenwood-Platteville fms.: Elder, 1.
 Gogebic iron dist.: Atwater, 5.
 Greenland: Benthams, 2; Vischer, 2; Wegmann, 7, 9.
 Hawaii, Kohala Mts.: Stearns, 30.
 Illinois, S. W.: Weller, S., 3.
 Iowa: Cline, L. M., 3; Keyes, C. R., 1.
 Jurassic, N. Am.: Crickmay, C. H., 21.
 Kentucky: McFarlan, 17; Stouder, 1.
 Keweenaw-Upper Cambrian, Mississippi Valley: Atwater, 2.
 Louisiana, Lisbon oil field: Grage, 1.
 Marine, and conglomerates: Twenhofel, 20.
 Maryland, gneiss domes: Broedel, 1.
 Michigan: Atwater, 5; Newcombe, 4.
 Minnesota: Graham, W. A. P., 6, 7; Stark, 16.
 Montana: Deiss, 4, 11; Sahinen, 4.
 Nevada: Gianella, 9; Muller, 14; Sharp, R. P., 4, 5.
 New England lowland: Wheeler, G., 1.
 Newfoundland: Twenhofel, 40.
 New Mexico: Smith, J. F., Jr., 2.
 New York: Balk, 11; Schuchert, 22; Smith, B., 2.
 Ohio, Lima dist.: Ver Wiebe, 2.
 Oklahoma: Brandenthaler, 1; Brown, O. E., 1; Decker, 24; Edson, 3; Evans, N., 2; Schoff, 4.
 Ontario, Ashigami Lake: Fairbairn, 15.
 Oregon, Baker Quad.: Gilluly, 16.
 Oriskany ss.: Stow, 11.
 Pennsylvania: Bascom, 6; Moyer, 1; Stose, 3; Willard, 50, 60.
 Permian fms.: Dott, 11.
 Quebec: McGerrigle, 8; MacKenzie, 4.
 Silicified shell fragments as indicators of: Howell, J. V., 2.
 Solution, Oneota dol., Minn.: Graham, W. A. P., 6.
 Texas: Adkins, 9; Albritton, 8, 9; Arlick, 2; Baker, 24; Carsey, 1; Cheney, 11; Jones, C. T., 1; Kay, J. A., 1; King, 21; Rusk, 1; Stenzel, 12, 17.
 United States, E.-cent.: Ballard, 1.

Unconformities—Continued.

- Utah: Gregory, H. E., 5; McKee, 11.
 Vermont, Camb.: Howell, 45.
 Virginia: Bates, R. L., 1; Cooper, B. N., 1, 3, 6, 7.
 Wisconsin: Atwater, 5.
 Wyoming: Buddhue, 29; Hares, 7; Horberg, 1; Love, 6.

Underground streams.

- Indiana, Lost River: Malott, 5.
 Sinking Creek: Bates, R. E., 1.

Underground water, general. For areal see names of States; See also Geysers; Mineral water; Springs; Thermal water.

- Absorption-transportation report: Lee, C. H., 2.
 Arizona, Gila River, San Simon Creek Valley: Knechtel, 6.

Artesian water.

- Levels and pressure: Meinzer, 29.
 Pressure, origin: Russell, W. L., 5; Terzaghi, C., 2.
 Supply control: Meinzer, 12.
 United States: Meinzer, 29.
 Bibliography: Sayre, 3.
 California inv.: Piper, 8.
 Cavern development: Malott, 9.
 Chloride brine concentration: Russell, W. L., 9.

Coastal Plain: Meinzer, 15.

Cone of depression in ground water: Theis, 8.

- Connecticut Valley: Crosby, 8.
 Control of ground water: Gardner, W., 1.
 Correlation, oil-well waters: Hasler, M. F., 1.

Dakota ss. water: Meinzer, 3.

Deep-well salinity: Fiedler, 3.

Direct accretions from rainfall: Harding, S. T., 1.

Divining rod: Gregory, J. W., 1.

Drainage wells: Lewis, M. R., 1.

Drought-area conditions: Meinzer, 13.
 Droughts, 1930-34, effect on: Hoyt, J. C., 1.

Earthquakes, distant, effect on well level: Blanchard, F. B., 2.

Equation, flow into artesian well: Theis, 2.

Erosion, accelerated, effects: Lowdermilk, 3.

Estimating ground-water supplies: Meinzer, 7.

Fluctuations of level: Cady, R. C., 1; Thompson, 14.

Fluctuations, meteorological: Taylor, G. H., 1.

Fluids, homogeneous, flow through porous media: Fetteke, 13; Krumbeln, 20; Muskat, 3.

General: Bagg, 2; Fabrega, 1; Imbeaux, 1; Thompson, 10; Tolman, C. F., 1.

Geophysical interpretation, ground-water levels: Meinzer, 9.

Underground water—Continued.

- Geophysical methods, value in studying ground water: Meinzer, 24.
- Geophysical prosp. for: Königsberger, 1.
- Geyser basins and ig. emanations: Allen, E. T., 6.
- Geysers: Allen, E. T., 1-a.
- Ground water.
 - Determination by resistivity: Jones, B. E., 4.
 - Determining geol. structure: Soper, E. K., 1.
 - Flow: Hubbert, 13.
 - General: Bader, 1; Krumbein, 19; Meinzer, 26; Tolman, C. F., 4.
 - Hydrology, history, devel.: Meinzer, 10.
 - Hydrology and oceanography: Thompson, 13.
 - Idiosyncracies: Gerber, 1.
 - Legal control of use: Thompson, 18.
 - Midwest drought area: Meinzer, 14.
 - Oil fields: Lahee, 14.
 - Problems and elec. resistivity: Tatam, 1.
 - Recharge, S. High Plains: Theis, 6.
- Ground water and contamination: Fiedler, 5.
- Ground water and oil production: Lahee, 19.
- Gulf Coastal Plain: Minor, H. E., 2.
- Hawaii, Kau. dist.: Friedlaender, I., 3; Stearns, H. T., 5.
- History, ideas on origin of: Baker, M. N., 1.
- Hot Springs problem: Day, 11.
- Hydrology, ground water: Meinzer, 10; Thompson, 13.
- Limestone terranes: Swinnerton, 10.
- Index to analyses: Collins, W. D., 2.
- Infiltration, role in hydrologic cycle: Horton, 1.
- Isocon map, Ord. waters: Dott, 1.
- Kansas: Elias, 19; Wilhelm, C. J., 1.
- Land subsidence, causes: Harris, F. R., 1; Meinzer, 23.
- McGee, W. J., work on ground-water levels: Meinzer, 19.
- Magmatic and meteoric: Lindgren, 12.
- Manganese, solution, transport, precipitation: Savage, W. S., 2.
- Maximum levels: Horton, 2.
- Methods of studying fluctuations: Wenzel, 6.
- Mississippi, artesian: Foster, V. M., 2.
- Mojave Desert: Thompson, D. G., 1.
- Montana: Perry, E. S., 2.
- Movements: Meinzer, 21.
- New England: Bryan, 28, 34; Crosby, 7.
- New Mexico, inv.: Piper, 8.
- New York: Suter, 1, 2, 3; Whitnall, 3.
- North Dakota: Abbott, G. A., 2.
- Observation wells, need for: Meinzer, 17.
- Oil-field waters: Trask, 14; Washburne, 4.

Underground water—Continued.

- Oil-and-gas-bearing fms.: Coffin, 2.
- Oregon, inv.: Piper, 8.
- Origin, artesian pressure: Thompson, D. G., 2.
- Oxides, manganese, and ground-water circulation: Hewett, 11.
- Peat lands, resources, Pacific Coast: Dachnowski-Stokes, 3.
- Permeability with low hydraulic gradient: Meinzer, 11.
- Petroleum, accumulation by salt-water table: Gardner, J. H., 4.
- Radioactivity, natural waters: Hootman, 1.
- Reports of Committee: Thompson, 10.
- Resources, U. S.: Nat. Res. Bd., 1.
- Rio Grande depression, Colo.-N. Mex.: Bryan, 36.
- Seepage, by gravity: Muskat, 1.
- Effluent: Meinzer, 20.
- Solubility, granite magmas: Goranson, R. W., 2.
- Southeastern U. S., ground-water problems: Thompson, D. G., 4.
- Storage, natural stream channel: Horton, 3.
- Stream flow relation: Harrold, 1.
- Sulphate reduction, oil-well waters: Bastin, 1; Ginter, 1, 8.
- Surface and ground-water plann.: Drane, 1.
- Thermal springs, criteria of origin, differentiation: Allen, E. T., 7.
- Underground water level and drought: Ver Steeg, 12.
- United States, general: Meinzer, 18; U. S. Nat. Res. Comm., 1.
- Ground water problems: Thompson, D. G., 4.
- Resources: Schwartz, 1.
- Volcanoes, geysers, hot springs: Day, 10.
- Water analyses, geol. significance: Lane, 7.
- Water index, underground and run-off: Saville, 1.
- Water levels, wells and test holes, interpretation: Lee, C. H., 1.
- Water prosp. with geophys. methods: Heiland, 21.
- Water retention: Piper, 10.
- Water supply: Meinzer, 25.
- Well characteristics: Code, 1.
- Wells, observation, methods manual: Leggett, 4.
- Work of: Reimann, 6.
- Undertow: Evans, 15.
- Ungulata. See Mammalia.
- Uniformitarianism and inductive logic: Baker, H. B., 5.
- United States.
 - General: Baulig, 2.
 - Territorial surveys, data in Wash., D. C.: Fryxell, 8.

United States—Continued.

Economic geology.

- Clays, refractory : Greaves-Walker, 4.
 Coals, classn. : Fieldner, 7.
 Copper : Fischer, R. P., 2; Koeberlin, 3.
 Cordilleran-Caribbean area : Waters, 13.
 Geology and oil field devel. : Miser, 19.
 Natural gas : Ver Wiebe, 19.
 Nonmetallics, SE. : Lloyd, S. J., 1.
 Outcrops, ore shoots : Schmitt, 11.
 Petroleum : Haynes, W. P., 1; Ver Wiebe, 19, 21.
 Volcanic ash, distrib. : Landes, 27.

Historical geology.

- Basin areas, NE. : Lockett, 4.
 Carboniferous, NW. : Williams, J. S., 10.
 Caribbean : Waters, 13.
 Cordilleran area : Waters, 13.
 Correlations.
 East and Gulf Coast, Eocene : Gardner, 14.
 Regional, west U. S. : Billingsley, P. R., 6.
 Geologic names lexicon : Wilmarth, 2.
 Mississippian, Lower, E.-cent. : Stockdale, 12.
 Orogeny, pre-Camb., western : Hinds, 29.
 Permian, Northwest : Williams, J. S., 10.
 Southwest : Waterschoot van der Gracht, 16.
 Rocky Mts. area : Bartram, 10.
 Stratigraphy, structural history, E.-cent. : Ballard, N., 1.
 Tectonic map : Longwell, 35, 37.
 Territorial surveys, data in Washington, D. C. : Fryxell, 8.
 Triassic period : Roth, 15.

Mineralogy.

- Clays, refractory : Greaves-Walker, 4.
 Glauconite, Mississippi embayment : Vanderpool, 1-a.
 Igneous rocks, heavy minerals : Sandell, 1.
 Meteorites, western : Webb, R. W., 1.
 Outcrops of ore shoots : Schmitt, 11.

Paleontology.

- Faunal sequences, late Camb. : Howell, 36.
 Fusulinids, Carb., Perm., Midcontinent : James, B. L., 1.
 Pectinidae, Tert. : Tucker-Rowland, 1.
 Venericardia planicosta group, Gulf prov. : Gardner, 14.

Petrology.

- Mississippian, Lower, E.-cent. : Stockdale, 12.
 Outcrops of ore shoots : Schmitt, 11.

Physical geology.

- Atlantic Coastal Plain, Tert. planation : Meyerhoff, 25-a.
 Caribbean-Cordilleran areas : Waters, 13.
 Cordilleran-Caribbean areas : Waters, 13.
 Earthquake history : Heck, 42.
 Heights and ruggedness, Hawaii and U. S. : Palmer, H. S., 6.

United States—Continued.

Physical geology—Continued.

- Isostasy : Tsuboi, 1.
 Mass movement, soil and rock : Sharpe, 5.
 Nashville-Ozark complementary domes : Wilson, C. W., Jr., 19.
 Orogeny, pre-Camb., western : Hinds, 29.
 Rocky Mts., Tert. : Atwood, W. W., 11.
 Soil erosion, southeast U. S. : Morris, F. G., 1.
 Tectonic map : Longwell, 35.
 Tertiary marine planation, Atlantic : Meyerhoff, 25-a.

Physiographic geology.

- Atlantic submarine valleys : Smith, P. A., 3; Veatch, 2.
 Deserts : Pickwell, 1.
 Dust-storms, 1937 : Martin, R. J., 5.
 Eastern U. S. : Thwaites, 11; Ver Steeg, 30.
 General : Powers, W. E., 12.
 Glaciers, western : Matthes, 31.
 Rocky Mts. : Atwood, W. W., 9, 11.
 Sand, gravel, glacial deposits : Runner, 13.
 Sediments, continental shelf : Stetson, 17, 19.
 Stratigraphy, structural history, E.-cent. : Ballard, N., 1.
 Submarine topography, E. coast : Bucher, 20.
 Terraces : Howard, A. D., 7; Johnson, D. W., 34-a.

Underground water.

- Ground water : Meinzer, 27.
 Thermal springs : Stearns, N. D., 4.
 Water levels, artesian pressure in wells : Meinzer, 22.

United States Bureau of Mines : Finch, J. W., 7.

Upper Silurian. See Silurian.

Urania oil field, La. : Schneider, G. W., 1.

Uraninite.

- Age determination by : Khlopin, 1.
 Connecticut : Ingerson, 5.
 New Hampshire : Shaub, 13.
 New York : Kerr, P. F., 13.

Uranium. See also Carnotite.

- Crystallography of oxides : Palache, 26.
 Crytolite analysis : Muench, 1.
 Dakeite, Wyo. : Larsen, 17, 18.
 General : Lane, 23.
 Mexico : Krieger, 3.
 New Hampshire : Shaub, 8.
 New York : Kerr, P. F., 13.
 Northwest Territories : Jolliffe, A. W., 1; Knight, C. W., 1; Palache, 19.
 Ontario : Alter, 2.
 Paragenesis, N. H. pegmatite : Shaub, 8.
 United States, SW., sed. deposits : Fischer, R. P., 2; Koeberlin, 3.

Utah.

- General : Hintze, 1.
 Geologic processes and human activities : Schneider, 3.

Utah—Continued.

Areas described.

- Capitol Reef area: Gregory, H. E., 5.
- Deep Creek Reservation: Reagan, 3.
- Fairfield quad.: Gilluly, 5.
- Kaiparowits region: Gregory, H. E., 1.
- Moab Dist.: Baker, A. A., 3.
- Monument Valley-Navajo Mtn. area: Baker, A. A., 7.
- Salt Valley anticline: Dane, 7.
- San Juan country: Gregory, H. E., 4.
- San Rafael swell: Gilluly, 1.
- Stockton quad.: Gilluly, 5.
- Wasatch Plateau coal field: Spicker, 4.

Economic geology.

- Alunite: Callaghan, 9.
- Basin-Range faulting influence: Farmin, 1.
- Bituminous ss., Vernal: Spicker, 2.
- Book Cliffs coal field: Fisher, D. J., 7.
- Boulder Dam area: Hewitt, 12.
- Carbon dioxide accumulations: Miller, J. C., 2.
- Coal, Wasatch Plateau field: Spicker, 4.
- Colorado Plateau area: Gregory, H. E., 2.
- Colorado Plateau, ore deposits: Butler, B. S., 3.
- Copper: Boutwell, 2; Gilluly, 11; Park, 3.
- Diatomaceous earth: Wimber, 1.
- Fairfield quad.: Gilluly, 5.
- Fuller's earth: Crawford, A. L., 4.
- Gastropoda, oil from: Schneider, 7.
- Gilsonite: Bristol, 1.
- Gold Hill dist.: Nolan, 6; Singewald, J. T., Jr., 12.
- Gold placers, evaluation method: Crawford, 7.
- Iron: Wells, F. G., 10.
- Lead: Bryan, G. G., 1; Sminnov, 1.
- Manganese: Callaghan, 11.
- Mercur-Manning mining dist.: Andrews, W. B., 1.
- Mining geol., Tintic area: Billingsley, P. R., 1.
- Monument Valley-Navajo Mtn. Dist.: Baker, A. A., 7.
- Natural gas fields: Kirkham, 14; Winchester, 4.
- Occurrence of ore deposits: Porter, C. A., 2.
- Paradox Basin: Prommel, 1.
- Park City mining area: Green, J., 1.
- Petroleum: Bignel, 2; Dobbin, 15; Eardley, 6; Schneider, 4.
- And gas possibilities, Great Salt Lake Basin: Eardley, 6.
- Phosphate: Williams, J. Stewart, 2.
- Potash: Mansfield, G. R., 11.
- Quicksilver: Crawford, A. L., 2.
- Rocky Mtn. area: Uren, 2.
- St. George dist.: Dobbin, 17.
- Salt: Thomas, O. D., 1.
- Salt Lake area: Boutwell, 1.

Utah—Continued.

Economic geology—Continued.

- San Juan country: Gregory, H. E., 4.
- San Juan oil field: Miser, 14.
- Silver: Bryan, G. G., 1; Hahn, 1; Johnson, E. S., 1; Warren, H. V., 3.
- Sodium sulfate beds: Martin, Gail, 1.
- Stockton quad.: Gilluly, 5.
- Sulfur: Thompson, R. B., 1.
- Tushar Mts.: Beutner, 1.
- Utah Copper Min. Co.: McEuen, 1.
- You Bet area: Chaney, 21.
- Zinc dist.: Sminnov, 1.

Historical geology.

- Abajo Mts. structure: Thorpe, 14.
- Alunite deposits: Callaghan, 9.
- Archean? metaquartzites: Crawford, 12.
- Asphalt Ridge: Tolmachoff, 3.
- Basin Ranges: Becker, H., 4.
- Beltian deposits: Hinds, 21.
- Bingham dist.: Boutwell, 2.
- Book Cliffs coal field: Fisher, D. J., 7.
- Brazier fm.: Gunnel, F. H., 6.
- Cambrian, Cordilleran trough: Deiss, 10.
- Glacial fms.: Blackwelder, 45.
- Sections near Morgan: Redden, 1.
- Capitol Reef area: Gregory, H. E., 5.
- Cedar Hills: Schoff, 2.
- Climate, Green River epoch: Bradley, W. H., 2.
- Colorado Plateau area: Gregory, H. E., 2.
- Correlations, Tert. fms.: Carpenter, J. T., 1.
- Cretaceous and Eocene: Spicker, 7.
- Fusulinide in zoning: Bissell, 3.
- Glacial fms., ancient: Blackwelder, 25.
- Gold Hill dist.: Nolan, 3, 6.
- Goshen Mts.: Eaton, H. N., 1.
- Grand Canyon prov.: Ohern, 1.
- Grand Co.: U. S. G. S., 1.
- Great Salt Lake Basin: Eardley, 6.
- Green River epoch, varves, climate: Bradley, W. H., 2.
- Green River fm.: Bradley, W. H., 8.
- Green River Valley: Reeside, 5.
- Iron deposits, Bull Valley, Iron Springs: Wells, F. G., 10.
- Jurassic fms., correls.: Baker, A. A., 6.
- Kaibab fm.: McKee, 11.
- Lake Uinta, Eocene: Bradley, 15.
- Manti-Salina area: Spicker, 3.
- Mesozoic, Wasatch Mts.: Mathews, A. A. L., 4.
- And early Tert.: Hinds, 26.
- Mississippian-Pennsylvanian contact, Wasatch Mts.: Bissell, 1.
- Monument Valley-Navajo Mtn. area: Baker, A. A., 7; U. S. G. S., 2.
- Moscow silver mine: Johnson, E. S., 1.
- Natural gas fields: Kirkham, 14.
- Paradox Basin and fm.: Baker, A. A., 4; Prommel, 1.
- Park City area: Green, J., 1; Williams, J. Stewart, 1.
- Pennsylvanian, Wasatch Mts.: Bissell, 2.

Utah—Continued.

Historical geology—Continued.

- Permian: Baker, A. A., 1, 8.
 Petroleum Reserve No. 7: Dobbin, 15.
 Phosphoria fm.: Branson, C. C., 1.
 Pre-Cambrian: Blackwelder, 38.
 Pre-Mesozoic, Wasatch Mts.: Mathews, A. A. L., 7.
 Proterozoic: Eardley, 14; Hintze, 2.
 Proterozoic-Paleozoic contact: Hintze, 2.
 Rocky Mtn. area: Uren, 2.
 St. George dist.: Dobbin, 17.
 Salt Lake area: Boutwell, 1.
 Salt Valley anticline: Dane, 7.
 San Juan country: Gregory, H. E., 4; U. S. G. S., 1.
 Sedimentary beds, E. Utah: Smith, A. L., 1.
 Spence shale: Resser, 23.
 Structure, S. E.; Baker, A. A., 5.
 Southwest: Dobbin, 16.
 Thrust, cent. Wasatch Mts.: Mathews, A. A. L., 5.
 Tintic dist.: Farmin, 2; Park, 3.
 Toroweap fm.: McKee, 11.
 Tushar Mts.: Beutner, 1.
 Uinta Basin: Clark, J., 4-a; Kay, J. L., 1.
 Paleogeography: Stagner, W. L., 1.
 Uinta fm.: Peterson, O. A., 3.
 Uinta Mts.: Bradley, 14; Forrester, 1; Powers, W. E., 11; Spieker, 9.
 Uncompahgren deposits: Hinds, 21.
 Utah Lake sediments: Hansen, G. H., 4.
 Varved clays: Bradley, W. H., 2; Leggette, 2.
 Varves and climate, Green River epoch: Bradley, W. H., 2.
 Volcanic sequence, Marysville: Callaghan, 12.
 Wasatch area: Schneider, H., 1.
 Wasatch-Great Basin area: Eardley, 12.
 Wasatch fm.: Spieker, 5.
 Wasatch Mts.: Eardley, 2, 3; Schneider, H., 1.
 Zion Nat. Park: Gregory, H. E., 6.

Mineralogy.

- Adamite: Staples, L. W., 3.
 Aluminum-phosphate-sulfate: Schaller, 27.
 Alunite deposits: Callaghan, 9.
 Ammoniojarosite: Shannon, 1.
 Arsenopyrite: Stringham, 2.
 Austinite: Brendler, 1; Staples, L. W., 2.
 And brickerite identical: Brendler, 1.
 Bixbyite: Montgomery, A., 1; Pabst, 14.
 Brickerite identical with austinite: Brendler, 1.
 Caledonite: Palache, 39.
 Celestite: Shannon, 1.
 Chalcantinite: Rordell, 1.
 Clifton dist.: McGrath, 1.
 Corvusite: Henderson, E. P., 5.
 Crandallite: Larsen, 5.
 Duchesne meteorite: Nininger, H. H., 1.
 Epsomite: Shannon, 1.
 Feldspars replacing fossils: Stringham, 1.

Utah—Continued.

Mineralogy—Continued.

- Gypsum: Stringham, 2.
 Lead: Bryan, G. G., 1; Sminnov, 1.
 Manganese: Callaghan, 11, 14.
 Mercur-Manning mining dists.: Andrews, W. B., 1.
 Minerals, phosphate nodules: Larsen, 6.
 Opalized spherules: Alexander, A. E., 8.
 Overite: Larsen, E. S., 3d, 1.
 Palligorskite: Shannon, 1.
 Pseudobrookite: Palache, 22, 31.
 Ptilolite: Schaller, 10.
 Rilandite: Henderson, E. P., 5.
 Salina meteorite: Perry, S. H., 6.
 Salt: Adams, T. C., 2; Thomas, O. D., 1.
 Sanidine crystals: Stringham, 3.
 Sapphires: Crawford, 13.
 Scordite: Foshag, 4.
 Sediments, Great Salt Lake: Adams, T. C., 2; Eardley, 11.
 Silver: Bryan, G. G., 1; Hahn, 1.
 Spadaite: Schaller, 5.
 Sulvanite: Schempp, 1.
 Thomas Range: Montgomery, A., 2.
 Topaz: Montgomery, A., 1.
 Topaz Mtn.: Palache, 21, 22.
 Tschermigite: Shannon, 1.
 Utah Copper Min. Co.: McEuen, 1.
 Zinc: Sminnov, 1.

Paleontology.

- Agriochoerids (Diplobunops): Peterson, 6.
 Algae, Juras.: Johnson, J. H., 18.
 American camel, recent: Romer, A. S., 2.
 Anosteirid: Clark, J., 2.
 Aptaelurus, creodont: Scott, W. B., 6, 8.
 Apatosaurus, osteology: Gilmore, 16.
 Barroisiceras: Reeside, 11.
 Blastoids, Brazier fm.: Peck, R. E., 2.
 Brachiopoda: Gunnell, F. H., 6.
 Cephalopoda, Trias.: Mathews, A. A. L., 1.
 Coal: Thiessen, 9.
 Creodonts: Scott, W. B., 6, 7, 8.
 Crustacean, merostome: Resser, 6.
 Diatomaceous, marl: Hasler, J. W., 1.
 Dinosaurs: Gilmore, 20, 22.
 Diplodocus: Gilmore, 9.
 Elephas: Hansen, G. H., 2.
 Eonessa: Wetmore, 45.
 Exogyra: Reeside, 4.
 Fish: Branson, E. B., 8, 10, 12; Tanner, V. M., 1.
 Fusulinids in zoning: Bissell, 3, 4.
 Gastropoda, oil from: Schneider, 7.
 Gold Hill dist.: Nolan, 6.
 Graptolites: Clark, T. H., 3.
 Green River microfossils: Bradley, W. H., 8.
 Insecta, collecting: Carpenter, 22.
 Kaibab fm.: McKee, 11.
 Lagomorpha: Burke, 2.
 Mammalia: Burke, 8; Gazin, 24, 25, 26; Peterson, 8.
 Mammoths: Blackwelder, 46.
 Mesonychids: Peterson, 5.

Utah—Continued.

Paleontology—Continued.

- Miacis: Clark, J., 7.
 Microfossils, Green River fm.: Bradley, W. H., 8.
 Mollusca: Berry, E. G., 1; Chamberlain, R. V., 2; Henderson, J., 3.
 Mosses, fossil: Flowers, 1.
 Musk-oxen: Stokes, 1.
 Mytonolagus: Burke, 4.
 Obolus, Camb.: Resser, 6.
 Oligocene Vertebrata: Peterson, 7.
 Pseudocreodi: Denison, R. H., 1.
 Ptarmigania fauna: Resser, 24.
 Pterophyllum: Berry, 26.
 Rodents, Eocene: Burke, 3, 7.
 Sciuravus: Burke, 10.
 Seminotus cf. gigas: Hesse, 8.
 Spence sh. fauna: Resser, 23.
 Stagnicola: Chamberlain, R. V., 1.
 Teleodus: Peterson, 4.
 Tempskya, Cret. fern: Read, 10.
 Titanotheres: Peterson, 9.
 Trilobita: Deiss, 9.
 Torowear fm.: McKee, 11.
 Trees, fossil: Pulver, 1.
 Turtle, Oligocene: Clark, J., 7.
 Vertebrates, Oligocene: Peterson, 7.
 You Bet area: Chaney, 21.

Petrology.

- Abajo Mts.: Thorpe, 13.
 Algal lms., Wasatch conglomer.: Eardley, 1.
 Arsenopyrite: Stringham, 2.
 Capitol Reef area: Gregory, H. E., 5.
 Coal, Sunnyside: Thiessen, 9.
 Feldspar in granodiorite: Crawford, 6.
 Gypsum: Stringham, 2.
 Limestone, algal, Wasatch conglomer.: Eardley, 1.
 Oölites, Green River fm.: Schoff, 1.
 Rex chert: Keller, 13.
 San Juan country: Gregory, H. E., 4.
 Sediments, Great Salt Lake: Eardley, 11.
 Volcanic sequence, Marysville area: Callaghan, 12.

Physical geology.

- Abajo Mts.: Thorpe, 14.
 Algal reefs, oölites, Green River fm.: Bradley, W. H., 3.
 Alta stock: Grout, 20.
 Alkalite, Green River fm.: Bradley, 1.
 Book Cliffs coal field: Fisher, D. J., 7.
 Capitol Reef area: Gregory, H. E., 5.
 Cedar Hills: Schoff, 2.
 Dikes, pebble: Farmin, 2.
 Drum Mts.: Callaghan, 11.
 Earthquakes: Carlston, G. M., 1.
 Hansel Valley, 3/12/34; Walter, H. G., 2.
 March 24, 1934; Shenon, 13.
 Erosion, Bryce Canyon: Pack, 1.
 Control, Salina Canyon: Okeson, 1.
 Epicycles: Bailey, R. W., 3.
 Floods: Bailey, R. W., 2.
 Floods and erosion: Bailey, R. W., 2.
 Gold Hill dist.: Singewald, J. T., Jr., 12.

Utah—Continued.

Physical geology—Continued.

- Great Salt Lake oölites: Mathews, A. A. L., 3.
 Hansel Valley earthquakes, 3/12/34: Walter, H. G., 2.
 Henry Mts. intrusions: Hunt, 5.
 Impressions, ice crystals, Lake Bonneville beds: Mark, 1.
 Intrusions, Henry Mts.: Hunt, 5.
 Land subsidence, Great Salt Lake area: Adams, T. C., 1.
 Manti-Salina area: Spieker, 3.
 Monument Valley-Navajo Mtn. area: Baker, H. B., 1.
 Oölites, Great Salt Lake: Matthews, A. A. L., 3.
 Orogeny, cent. Utah: Spieker, 6.
 Pebble dikes: Farmin, 2.
 Pediments, Henry Mts.: Hunt, 8.
 Red beds: Krynine, 9.
 Rocky Mts., middle: Chamberlin, 19.
 St. George dist.: Dobbin, 17.
 San Juan country: Gregory, H. E., 4.
 Structure, SE.: Baker, A. A., 5.
 Southwest: Dobbin, 16.
 Uinta Mts.: Forrester, 1.
 Torrential floods, 1930: Utah Spec. Flood Commission, 1.
 Tusher Mts.: Beutner, 1.
 Uinta Mts.: Forrester, 1; Lawson, 3; de Lyndon, 1; Spieker, 9.
 Utah Copper Mining Co.: McEuen, K., 1.
 Volcanoes, Pliocene: Williams, H., 11.
 Volcanic sequence, Marysville area: Callaghan, 12.
 Volcanism near Salt Lake City: Schneider, H., 2.
 Wasatch fault: Schneider, 6.
 Wasatch-Great Basin area: Eardley, 12.
 Wasatch Mts.: Eardley, 4.
 Zion Nat. Park: Gregory, H. E., 6.

Physiographic geology.

- Book Cliffs, rocks fans, pediments: Rich, 19.
 Boulder Mtn. glacial geology: Gould, L. M., 1.
 Cambrian glacial fms.: Blackwelder, 8, 45.
 Capitol Reef area: Gregory, H. E., 5.
 Cedar Hills: Schoff, 2.
 Colorado River Pleist. terraces: Blackwelder, 39.
 Drainage integrations: Gilluly, 2.
 Glaciation, Pleist.: Blackwelder, 35.
 Wasatch Plateau: Spieker, 10.
 Goshen Mts.: Eaton, H. N., 1.
 Logan quad. glaciation: Young, J. L., 1.
 Long Ridge-West Mtn. structure: Eaton, H. N., 2.
 Marysville Canyon: Eardley, 5.
 Meteor craters, Spanish Fork Canyon: Schneider, 5.
 Monument, Valley-Navajo Mtn. area: Baker, A. A., 7.
 Ogden Valley: Leggette, 11.
 Physiographic types: Buss, W. R., 1.

Utah—Continued.

Physiographic geology—Continued.

- Pleistocene glaciation: Blackwelder, 35.
 Rainbow Bridge: O'Connell, D. T., 3.
 San Juan country: Gregory, H. E., 4.
 Sediments, Great Salt Lake: Eardley, 11.
 Tooele-Rush Valleys: Gilluly, 3.
 Tushar Mts.: Beutner, 1.
 Uinta Mts.: Bradley, W. H., 9-a, 14;
 Mackin, 9; Powers, W. E., 11.
 Wasatch Mts.: Eardley, 3, 4.
 West Mtn.: Eaton, H. N., 2.
 Zion Nat. Park: Gregory, H. E., 6.

Underground water.

- Artesian water, levels, wells: Taylor, G. H., 6.
 Ogden supply: Leggette, 7, 11.
 Earthquakes, effect on ground-water levels: Taylor, G. H., 3.
 Escalante Valley: White, W. N., 2.
 Fluctuations in levels: Taylor, G. H., 4.
 Ground water: Taylor, 5.
 Relieves drought emergency: Taylor, G. H., 2.
 Manganese in thermal springs: Callaghan, 14.
 Ogden Valley: Leggette, 7, 11.
 Recharge possibilities: Redden, 2.
 Salt Lake City area: Leggette, 1.
 San Juan country: Gregory, H. E., 4.
 Seepage, ground water: Jennings, D. S., 1.
 Thermal springs near Wasatch fault: Talmage, 1.
 Water from wells: Waring, 4.

Valdez Creek mining dist., Alaska: Ross, C. P., 10.

Valleys.

- Asymmetrical, Kansas: Bass, 1.
 California, "Lost Valley": Matthes, 16.
 Eastern: Davis, W. M., 6.
 Glacial trough, continental shelves: Shepard, F. P., 3.
 Greenland, east: Poser, 2.
 Kansas, asymmetrical: Bass, 1.
 Rift, geomorphic aspect: Johnson, D. W., 7.
 Submarine: Shepard, 8, 9, 12, 15, 16.
 Mock valleys: Davis, 23.
 Western: Davis, 6.

Vanadium.

- Arizona: Peterson, N. P., 1.
 British Columbia, Quadra Is.: Ellsworth, 7.
 Colorado: Henderson, E. P., 9.
 United States, SW., sed. deposits: Fischer, R. P., 2; Koeberlin, 3.

Varves.

- Bibliography of nonglacial: Bradley, 17.
 Clays, deposition, alteration: Burwash, 10.
 Wisconsin: Ellsworth, E. W., 1.
 Climate and weather cycles: Gillette, 9.
 Coincidence, climate and sea level cycles: Gillette, 5.

Varves—Continued.

- Connecticut: Lougee, 7.
 Cycle indicators: Gillette, 8.
 Dating poss., fossil mammal-artifact locs.: MacClintock, 8.
 Formation: Collet, 2.
 Geologic rhythms: Wanless, 15.
 Glacial marine waters, Mass.: Hyyppä, 1.
 Lake, Pleist., Nebr.-N. Dak.: MacClintock, 9.
 Long range correl.: Coleman, 2.
 Massachusetts, glacial marine: Hyyppä, 1.
 Nebraska, Pleist.: Lugin, 15; MacClintock, 9.
 New Hampshire: Lougee, 9.
 Nonglacial marine: Bradley, W. H., 9.
 North America, NE.: Antevs, 27.
 Ontario: Satterly, 2, 3; Stanley, 6.
 Seasonal, ann. accumulations: Thiesmeyer, 5.
 Virginia, Fauquier Co. slates: Thiesmeyer, 7.
 Veatchite, Calif.: Murdock, 9; Switzer, 1.
 Vegetation, indicator of geol. fms.: Cuyler, 5.
 Veins.
 Mexico, Alamo dist.: Moehlman, 4.
 Northwest Territories, Great Bear Lake: Furnival, 2.
 Ontario, Porcupine dist.: Reid, J. A., 3.
 Velocity of sound vs. temperature in rocks and glasses: Ide, 4.
 Ventifacts.
 Colorado, fossil: Schoewe, 17.
 Kansas, Pleist.: Smith, H. T. U., 7.
 Massachusetts, Cape Cod: Thiesmeyer, 6.
 New Mexico: Needham, 7.
 United States, locs.: Wentworth, 29.
 Ventura Ave. oil field, Calif.: Hertel, 1.
 Vermes. See also Invertebrates (general).
 Arizona, Toroweap, Kaibab fm.: McKee, 11.
 California, serpulid: Howell, 28.
 Coprolites, Ind.: Shrock, 6.
 General: Croneis, 21.
 Georges Banks: Stephenson, 13.
 Idaho, Spencer sh.: Resser, 23.
 Illinois: Croneis, 33, 46; Roy, S. K., 4.
 Kansas coal field: Williams, J. S., 12.
 New York, Cobourg fm.: Sproule, 1.
 Nova Scotia: Stephenson, 13.
 Ontario: Caley, 1; Sproule, 1.
 Pennsylvania: Miller, B. L., 14; Willard, 59.
 Plankton, Paleozoic: Ruedemann, 24.
 Quebec: Laverdière, 6.
 Scolithus, Pa.: Cloud, P. E., Jr., 1; Miller, B. L., 14.
 Sea balls, Sil., Ill.: Croneis, 46.
 Teredo boring, petrified wood; N. Y.: Fox, J. T., 1.
 Oregon: Lazell, 2; Wharton, 2.
 Texas, Malone Mts.: Albritton, 8.
 Utah, Toroweap, Kaibab fms.: McKee, 11.

Vermes—Continued.

Worm impression on Camb. trilobite:
Ruedemann, 37.

Vermiculite.

Georgia: Hunter, C. E., 2; Prindle, 17.
Montana: Kregel, 2; Pardee, J. T., 2.
North Carolina: Davis, F. A. W., 1;
Hunter, C. E., 2.

Vermont.

State geologist, 21st report, 1937-39:
Jacobs, 2.

Areas described.

East Mtn.: Foyles, 3.
Grafton area: Richardson, C. H., 4.
Rockingham area: Richardson, C. H., 4.
Springfield area: Richardson, C. H., 3.

Economic geology.

Asbestos: Bain, G. W., 6, 10; Bowles, O., 4; Keith, S. B., 1.
Bennington kaolins, origin: Burt, F. A., 1.
Calcite marble, origin: Bain, G. W., 7.
Chrysotile asbestos: Bain, G. W., 6; Keith, S. B., 1.
Clays: Burt, F. A., 1.
Copper ores: Buerger, N. W., 4.
Guilford Co.: Richardson, C. H., 7.
Halifax Co.: Richardson, C. H., 7.
Limonite: Newland, 13.
Marble: Bain, G. W., 7, 20-a; Longwell, 14; Perkins, G. H., 6.
Mineral res.: Jacobs, 2; Perkins, G. H., 2, 5.
Ocher deposits: Burt, 4.
Slates, colored: Larrabee, D. M., 1.
Soapstone: Bain, 10.
Talc: Bain, 10.
Vernon Co.: Richardson, C. H., 7.

Historical geology.

Athens-Brookline-Westminster area:
Richardson, C. H., 5.
Baltimore-Cavendish-Chester-Reading area: Richardson, C. H., 2.
Bennington area: Burt, F. A., 1.
Black Mtn. leucogranodiorite: Church, M. S., 1.
Bridgewater Tp.: Perry, E. L., 1.
Cambrian: Howell, 13, 30, 44, 45; Resser, 18; Schuchert, 27, 34, 43.
Centroleura Camb. fauna: Howell, 30.
Champlain Valley: Rodgers, 2.
Clay Pt. area: Doll, 2.
Correlation, west-cent.: Foyles, 3.
Ferrisburg: Foyles, 1.
General: Jacobs, 2.
Green Mts.: Jacobs, 3.
Mallett-Winooski fms. contact: Howell, 12.
Marble belt: Bain, G. W., 7; Longwell, 14.
Mount Monadnock: Wolff, J. E., 1, 2.
Northwestern Vt.: Keith, A., 4.
Oak Hill ser.: Booth, 1.
Ordovician: Dale, T. N., 1; Raymond, 19; Schuchert, 27, 34, 43.

Vermont—Continued.

Historical geology—Continued.

Paradoxides beds: Howell, B. F., 1.
Putney area: Richardson, G. B., 3.
Rugg Brook fm.: Howell, 32.
Slates, colored: Larrabee, 1.
Taconic quad.: Prindle, 1.
13th Lake quad.: Krieger, M. H., 1.
Trilobita and Ostracoda, Camb., Ord.:
Raymond, 19.
Vernon Co.: Richardson, C. H., 7.
Winooski-Mallett fms. contact: Howell, 12.

Mineralogy.

Copper ores: Buerger, N. W., 4.
Feldspar zoning: Mulholland, 1.
Gearsutite: Henderson, E. P., 1.
General: Jacobs, 2.
Green Mtn. area: Jacobs, 3.
Lazulite: Palache, 7.
Limonites: Newland, 13.
Minerals of Vt.: Perkins, G. H., 4.
Plutonites: Maynard, J. E., 3.
Stauroilite: Currier, 1.

Paleontology.

Agnostian Trilobita, Camb.: Howell, 16.
Appalachians, Olenellus zone fauna: Resser, 20.
Bovicornellum: Howell, 1.
Cambrian faunas: Howell, B. F., 6, 30; Raymond, 17; Resser, 20; Schuchert, 34, 43.
Centroleura Camb. fauna: Howell, 30.
Cephalopoda: Ulrich, 24.
Champlain Sea fauna: Howell, 19, 29.
Graptolites: Gordon, C. E., 1.
Guilford Co.: Richardson, C. H., 7.
Halifax Co.: Richardson, C. H., 7.
Highgate Falls fauna: Kindle, C. H., 4.
Ordovician faunas: Raymond, 19; Schuchert, 34, 43.
Ostracoda: Raymond, 19.
Paradoxides fauna: Howell, B. F., 1.
Plants, Pleist.: Hollick, 6.
Trilobita: Howell, B. F., 6; Raymond, 19; Resser, 16.
Vernon Co.: Richardson, C. H., 7.
Zittellella, Ord.: Howell, 38-a.

Petrology.

Baltimore area: Richardson, C. H., 2.
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Black Mtn. leucogranodiorite: Church, M. S., 1.
Bostonite: Ailing, 1.
Cavendish area: Richardson, C. H., 2.
Chester area: Richardson, C. H., 2.
Clay Pt. area: Doll, 2.
Compressed mica like graptolites: Foyles, 4.
Concretions, Champlain fm.: Tarr, 18.
Conglomerate, Irasburg: Richardson, C. H., 1.
Copper ores, Orange Co.: Buerger, 4.
East Mtn.: Foyles, 3.
Felsite dikes: Balk, 12.

Vermont—Continued.

Petrology—Continued.

- General: Jacobs, 2.
 Green Mtn. area: Jacobs, 3.
 Guilford Co.: Richardson, C. H., 7.
 Halifax Co.: Richardson, C. H., 7.
 Limestone, crystalline: Bain, 15.
 Limonites: Newland, 13.
 Mica, compressed: Foyles, 4.
 Mount Monadnock: Wolff, J. E., 1, 2.
 Plutonites: Maynard, J. E., 2, 3.
 Reading area: Richardson, C. H., 2.
 Rocks of Vt.: Perkins, G. H., 1.
 Serpentinization, ultrabasics: Bain, 17.
 Slates, colored: Larrabee, 1.
 13th Lake quad.: Krieger, M. H., 1.
 Vernon Co.: Richardson, C. H., 7.

Physical geology.

- Ascutney Mtn., cauldron subsidence: Chapman, R. W., 6.
 Black Mtn. leucogranodiorite: Church, M. S., 1.
 Cauldron subsidence, Ascutney Mt.: Chapman, R. W., 6.
 Champlain Valley: Rodgers, 2.
 Clay Pt. area: Doll, 2.
 Erosion, flood: Eggleston, 1; Jacobs, 1.
 Faulting, Lake Champlain area: Quinn, A. W., 1.
 Flood erosion: Eggleston, 1; Jacobs, 1.
 Flowage folding: Bain, G. W., 4.
 Folding, flowage: Bain, G. W., 4.
 General, Jacobs, 2.
 Green Mts. area: Jacobs, 3.
 Lake Champlain area, faulting: Quinn, A. W., 1.
 Northwest Vt.: Schuchert, 43.
 Rutland area, metamorphism: Foyles, 5.
 Serpentine-country rocks contact-metamorphism: Phillips, A. H., 3.
 Serpentinization ultrabasics: Bain, 17.
 Slates, colored: Larrabee, 1.
 Synclinorium, Middlebury: Cady, W. M., 1.
 Taconic area, thrusting: Kaiser, E. P., 3.
 13th Lake quad.: Krieger, M. H., 1.

Physiographic geology.

- Altitude areas: Perkins, H. F., 1.
 Black River Valley: Crosby, 6.
 Champlain Valley: Chapman, D. H., 1.
 Drainage changes: Eggleston, 1.
 Erosional land forms: Meyerhoff, 1.
 General: Jacobs, 2; Perkins, H. F., 1.
 Glacial lakes, Stowe Valleys: Bigelow, E. L., 1.
 Green Mts. area: Jacobs, 3.
 Ice stagnation, Pleist.: Burt, 6.
 Penepains: Jacobs, 4; Pond, A. M., 1.
 Pleistocene ice stagnation: Burt, 6.
 Pothole, Burnt Rock Mtn.: Doll, 1.
 Stowe Valleys glacial lakes: Bigelow, E. L., 1.
 Taconic Mts., penepain: Pond, A. M., 1.
 13th Lake quad.: Krieger, M. H., 1.

Vermont—Continued.

Underground water.

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Vertebrata (general). See also Amphibia, Aves, etc.

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 American Indian discoveries, vertebrate fossils: Kindle, 25.
 Arizona, Paradise fm.: Hernon, 3.
 Artiodactylus tracks: Caster, 14, 15.
 Artiodactyla, Nebr.: Cook, 14.
 Astraspis, Colo.: Bryant, 8.
 Bridger Basin, Wyo.: Gilmore, 7.
 California: Clements, 7; Gazin, 1; Jahns, 4; Kleinpell, 8; Stock, 33.
 Chordata, probable origin: Mathews, 16.
 Clovis area, N. Mex.: Stock, 55.
 Collecting fossils: Sternberg, G. F., 1.
 Colorado, South Park: Stark, 13.
 Dental symbols, revision: Riggs, 5.
 Eleutherocercus, mounted skeleton: Riggs, 4.
 Environment, early: Romer, 12.
 Eriptychius, Colo.: Bryant, 8.
 Eurypterid influence, vertebrate history: Romer, 8.
 Eusthenopteron vertebral column: Gregory, 30.
 Evolution: Evans, F. G., 1; Romer, 5, 18.
 Factors of extinction: Tapp, 1.
 Fauna, Mezquital Valley, Mex.: Müllerried, 34.
 Florida: Gut, 1; Simpson, G. G., 9.
 Fossils, fragmentary, classn.: Croneis, 35, 40.
 Handling, field and lab.: Camp, 9.
 Greenland: Nielsen, E., 2.
 Illinois: Galbraith, 1; Smith, C. R., 3.
 Indiana: Moodie, 1.
 Kansas: Hibbard, 9; Smith, H. T. U., 6.
 Kentucky, Big Bone Lick: Smith, F. J., 1.
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 Micrichnus tracks: Caster, 14, 15.
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 New York: Moodie, 13.
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 Catalogue: Hay, 4.

Vertebrata—Continued.

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 VanderHoof, 12.
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 Paramphibius tracks, Pa. : Anonymous, 69.
 Pennsylvania : Leighton, H., 6 ; Willard, 59.
 Pennsylvanian : Moodie, 9.
 Permian : Camp, 7 ; King, 22.
 Phylogeny : Hamlett, 1.
 Plates of fossils : Osborn, 22.
 Relation to sed. environment : Matthew, 12.
 Relative growth, vertebrate phylogeny :
 Phleger, 1, 2.
 Scaumenella, Quebec : Graham-Smith, 1.
 Skulls, evolution : Gregory, 17, 20.
 Snake Creek fauna, Nebr. : Matthew, 1.
 South Dakota : Bump, J. D., 1, 2 ; Gregory, J. T., 2-a.
 Tertiary : Needham, 5 ; Wood, H. E., 2d, 12.
 Tetrapoda, U. S. : Burke, 5.
 Texas : Hesse, 16-a ; Romer, 13 ; Sel-
 lards, 40 ; Wood, H. E., 2d, 12.
 Textbook of paleontology : Zittel, 1.
 Tracks and trails : Caster, 14, 15 ; Til-
 ton, 9 ; Anonymous, 69.
 Vertebrate paleontologists : Osborn, 5.
 West Virginia : Tilton, 9 ; Whipple, 3.
 Wyoming : Troxell, E. L., 2.
- Vesuvianite.**
 New Hampshire : Stewart, G. W., 1.
 Northwest Territories : Meen, 9.
- Virgil oil field, Kans. : Beekly, 1.**
- Virginia.**
 Contouring the subsurface : Banks, W. G., 1.
 Geological Survey field work : Bevan, 8.
 Gravity determinations, SE. : Swick, 2.
 History of geol., topog. mapping : Rob-
 erts, 27.
 Review of geol. literature : Roberts, 11.
 Rogers, Wm. Barton, contribs. : Bevan, 20 ; Roberts, 24.
 Soil classn. : Obenshain, S. S., 1, 2.
- Areas described.**
 Brunswick Co. : Pegau, 5.
 Draper Mtn. area : Cooper, B. N., 8.
 Goochland Co. : Brown, C. B., 3.
 Hot Springs dist. : Bevan, 12.
 James River iron-marble belt : Furcron, 4.
 Little North Mtn. : Butts, 14.
 Lower York-James Pen. : Roberts, 17.
 Powell Valley : Bates, R. L., 4.
 Roanoke area : Woodward, 8.
 Russell Co. : Woodward, 13.
 Warrenton quad : Furcron, 1.
 York-James Pen. : Roberts, 15, 17.

Virginia—Continued.

Economic geology.

- Apatite-ilmenite deposits : Ryan, C. W., 3.
 Atlantic Coastal Plain oil and gas poss. :
 Postley, 4.
 Austinville mine, ore zoning : Brown, W. H., 3.
 Barite : Edmundson, 1, 2, 4.
 Bentonite : Bates, R. L., 3 ; Rosenkrans, 1, 4.
 Coal : McGill, 7.
 Copper : Ross, C. S., 23.
 Cyauite : Taber, 15.
 Diatomite : Roberts, 20.
 Draper Mtn. area : Cooper, B. N., 7.
 Gold : Bevan, 11 ; Grace, 6 ; Green, F. M., 3 ; McGill, 4, 6, 8, 9 ; Park, 6 ; Ulke, 6 ; Anonymous, 89.
 Goochland Co. : Brown, C. B., 3.
 Granites : Steidtmann, 2.
 Graphite : Cline, J. H., 1.
 Gravel : Wentworth, 4.
 Greensand : Roberts, 20.
 Greenstone : Hughes, H. H., 2.
 History, min. industry : Boyle, R. S., 2.
 Ilmenite-apatite deposits : Ryan, C. W., 3.
 Iron : Holden, 7.
 Iron-marble James River belt : Furcron, 4.
 James River iron-marble belt : Furcron, 4.
 Kyanite : Watkins, Joel H., 1.
 Lead : Currier, 2.
 Manganese : Holden, 7 ; Rankin, H. S., 1.
 Marble : Furcron, 4 ; Mathews, A. A. L., 9.
 Mineral res. : Bevan, 4, 14, 28, 29, 31, 33 ; McGill, 12.
 Mineral zoning, Trias. : Newhouse, 8.
 Natural gas well, Scott Co. : McGill, 15.
 Northern Va. : Bevan, 9.
 Oil and gas explor. : McGill, 2.
 Oil shale : Holden, 12-a.
 Pegmatites : Pegau, 4.
 Piedmont, Richmond area : Pegau, 11.
 Powell Valley : Bates, R. L., 4.
 Price fm., Draper Mtn. : Cooper, B. N., 2.
 Prospecting for oil and gas : McGill, 13.
 Russell Co. : Woodward, 13.
 Rutile deposits : Ross, C. S., 16.
 Sand, Coastal Plain : Wentworth, 4.
 Silicified bog deposits : Goldman, 3.
 Slates, varved : Thiesemeyer, 4.
 Soapstone : Burfoot, 1-a ; Ryan, C. W., 1.
 Sulfide deposits : Ross, C. S., 21.
 Talc : Burfoot, 1, 1-a.
 Tin : Glass, 10.
 Titanium : Steidtmann, E., 1.
 Warrenton quad : Furcron, 9.
 Zinc : Currier, 2, 3.
- Historical geology.*
 Algonkin of Blue Ridge : Holden, R. J., 1.
 Allantite, age : Marble, J. P., 1.
 Amherst Co. : Moore, C. H., Jr., 3.
 Appalachian coal field : Wanless, 16-a.

Virginia—Continued.

Historical geology—Continued.

- Appalachian revolution: Holden, R. J., 4.
 Appalachian Valley: Bevan, 17; Butts, 5, 6; McGill, 3.
 Bentonite deposits: Rosenkrans, 1, 4.
 Big A Mtn. area: Bates, R. L., 1.
 Blue Ridge: Nelson, 5; Stose, 6, 13.
 Borings, Richmond Basin: Bevan, 5.
 Brallier sh.: Butts, 9.
 Calvert fm.: Brown, W. R., 2.
 Cambrian, Draper Mtn.: Cooper, B. N., 8.
 Restricted, Appalachians: Resser, 21.
 Carter's Bridge area: Moore, F. H., 1.
 Catalogue, geol. fms.: Roberts, 26.
 Topographic geol. maps: Roberts, 28.
 Charlottesville area: Nelson, 4.
 Chattanooga sb.: Swartz, J. H., 2.
 Chesapeake Bay area: Stephenson, L. W., 6.
 Chesapeake Miocene Basin: Mansfield, W. C., 1.
 Cleavage, Moccasin of Lowville fm.: Rowland, R. A., 1.
 Coastal Plain, S.: Cederstrom, 2.
 Cobbles, Pleist.: Sniffen, 1.
 Cockeysville marble belt: Furcron, 1.
 Conglomerate near Fincastle: Campbell, H. D., 3.
 Deep wells, Atlantic Coastal Plain: Mansfield, W. C., 15.
 Devonian: Powell, S. B., 1; Richardson, W. E., 1; Swartz, J. H., 1, 3.
 Devonian-Missn. boundary: Swartz, J. H., 1, 3.
 Diabase dikes, Lexington: Campbell, H. D., 4.
 Dolomite facies, Lower Camb.: Stose, 19.
 Draper Mtn. area: Cooper, B. N., 7.
 Eocene fms.: Gildersleeve, 1.
 Geologic fms., cat.: Roberts, 26.
 Geologic maps, cat.: Roberts, 28.
 Geologic maps, features: Nelson, W. A., 1.
 Geophysical research in Va.: Thom, 21.
 Giles Co.: Mathews, A. A. L., 8, 10.
 Gold deposits, Piedmont: Park, 6.
 Granites: Pegau, 7; Sutherland, M. G., 1.
 Gravity inv.: Woollard, 6.
 Guidebook, Pa. Geologists' Conf., 1938: Bevan, 34.
 Washington, D. C., to Shenandoah Nat. Park: Trager, E. A., 3.
 Harrisonburg area: Butts, 7.
 Heiderberg group: Swartz, F. M., 1, 2, 3.
 Hollins area: Butts, 3.
 James River iron-marble belt: Furcron, 4.
 Kyanite belt: Jonas, 3.
 Lava flow, Camb.: Furcron, 4.
 Little North Mtn.: Butts, 14; Edmundson, 6-a.
 Loudon fm.: Furcron, 2.
 Maccready ser., Broad Ford, Saltville: Reger, 6.
 Marion area: Cooper, B. N., 1.
 Metamorphic belt: Jonas, 5.
 Miocene fms.: Mansfield, W. C., 6.

Virginia—Continued.

Historical geology—Continued.

- Miocene sedimentation: Mansfield, W. C., 1.
 New River area: Mathews, 15.
 Northern Va.: Bevan, 9; Cady, R. C., 5.
 Ordovician altered volcanics, and clays: Kay, G. M., 15.
 Oriskany manganese, origin: Holden, 3.
 Overturned syncline, Blue Ridge: Campbell, H. D., 1.
 Patuxent ss.: Roberts, 23.
 Paleozoic cherts: Woodward, H. P., 7.
 Paleozoic fms.: Bevan, 18.
 Pegmatites: Pegau, 1, 4, 8.
 Pennsylvanian correls., coal fields: Wanless, 16.
 Piedmont: Bevan, 37; Pegau, 11.
 Post-Cambrian conglomer.: Hitchcock, M. R., 3.
 Powell Valley: Bates, R. L., 4.
 Pre-Cambrian, Camb. rocks: Stose, 20-a.
 Pre-Camb. relations, SW. Va.: Jonas, 14.
 Pre-Cambrian rocks, Paleozoic deformation: Stose, A. J., 1.
 Price fm., Draper Mtn.: Cooper, B. N., 2.
 Pyrite-gold belt: Va. G. S., 1.
 Richmond area: Bevan, 21.
 Rockfish conglom.: Nelson, W. A., 8.
 Rome fm.: Butts, 11; Woodward, H. P., 4.
 Russell County: Woodward, H. P., 13.
 Salem area: Barlow, 1.
 Sandstone, ridge-making: Edmundson, 7.
 Shenandoah Nat. Park: Bevan, 37-a; Furcron, 3.
 Shenandoah Valley: Bevan, 27; Cady, R. C., 4.
 Silurian: Powell, S. B., 1; Richardson, W. E., 1.
 Southern Appalachians: Butts, 4.
 Southwestern Mtn.: Manning, 1.
 State Parks, geology: Bevan, 30.
 Structural pattern: Bevan, 15, 24.
 Tertiary marine: Stephenson, 23-a.
 Tertiary units, Coastal Plain: Roberts, 16.
 Topographic maps, cat.: Roberts, 28.
 Triassic: Roberts, 26-a.
 Twelve O'Clock Knob-Poor Mt. area: Sears, C. E., Jr., 3.
 Unconformities, Ord.: Cooper, B. N., 6.
 Volcanics, S. Appalachians: Jonas, 10.
 Warm Springs anticline: Edmundson, 6.
 Warrenton quad.: Furcron, 9.
 Zinc-lead area, SW. Va.: Currier, 2.

Mineralogy.

- Amelia pegmatite dikes: Glass, J. J., 1.
 Amherst County: Moore, C. H., Jr., 3.
 Authigenic tourmaline: Stow, 6.
 Barite: Edmundson, 2, 4.
 Bentonite: Bates, R. L., 3.
 Coal, Dev.: Edmundson, 5.
 Diabase: Pegau, 9.
 Epidote in granite: Stedtmann, E., 3.
 Feldspar crystals: Benn, 1.

Virginia—Continued.

Mineralogy—Continued.

- Gearksutite: Henderson, E. P., 1.
 General: Pegau, 6.
 Glauconite disintegration: Gildersleeve, 2.
 Gold mining near Wash., D. C.: Ulke, 9.
 Goochland Co.: Brown, C. B., 3.
 Gypsum crystals, Eocene: Gildersleeve, 2.
 Heavy minerals, Cambrian ss.: Smith, N. C., 3.
 Devonian ss.: Johnson, James H., 2.
 Paleozoic fms.: Johnson, James H., 1.
 Shenandoah Valley: Smith, W. C., 1.
 Silurian ss.: Johnson, James H., 2.
 Intrusives, Blue Ridge: Steidtmann, 7.
 Iso-orthoclase, Luray: Barth, 8.
 Lavas, Blue Ridge: Steidtmann, 7.
 Marbles: Kessler, 1, 2.
 Mineral contrib. to Confederacy: Boyle, R. S., 3.
 Minerals: Ulke, 3.
 Minerals, Coastal Plain terraces: Gunnell E. M., 1.
 Mines and quarries near Wash., D. C.: Ulke, 4.
 Olivine diabase: Rickard, 1.
 Pegmatites: Glass, J. J., 1, 4; Pegau, 2.
 Phenacite: Hough, F. H., 1; Pough, 3; Thibault, 3.
 Powell Valley: Bates, R. L., 4.
 Quarry minerals, Patrick Co.: Holden, 9.
 Quartz crystals, Shenandoah Valley: Oder, 1.
 Russell County: Woodward, 13.
 Scorodite: Morgan, A. L., 1.
 Shell-casts, fluorescent, phosphorescent: Barclay, 1.
 Siderite meteorite, Staunton: Lauterbach, 1.
 Staurolites: Herbert, 1; Moore, C. H., Jr., 2; Roberts, 21.
 Stilbite: Bloomer, 1.
 Sulfur, amorphous: McGill, 5.
 Tin: Glass, 10.
 Titanium: Hess, F. L., 10; Ross, C. S., 19, 26.
 Vein quartz pseudomorphs: Thiesmeyer, 1, 2.
 Vivianite: Gildersleeve, 3.
 Warrenton quad.: Furcron, 9.
 Wavellite: Artz, 1.
 Zinnwaldite: Glass, 3.
- Paleontology*.
 Amyda, Eocene: Lynn 1.
 Appalachians, Olenellus zone fauna: Resser, 20.
 Arachnid, Carb.: Ewing, H. E., 1.
 Asapus, trilobite: Curfman, 1.
 Big A Mtn. area: Bates, R. L., 1.
 Blastoida: Glass, F. W., 1.
 Bog-iron deposits: White, C. D., 7.
 Buchanan mines coal: Fieldner, 8.
 Cambrian, restricted, Appalachians: Resser, 2.
 Cambrian trilobites: Campbell, H. D., 2.

Virginia—Continued.

Paleontology—Continued.

- Coals: Fieldner, 8.
 Fauna, Pleist. Pamlico: Richards, 14.
 Ficus, Eocene: Berry, 53.
 Flora, Pocono: Jongmans, 7.
 Foraminifera, Miocene: Cushman, 23.
 Fossil pollen, Dismal Swamp: Cocke, 2.
 Gastropoda: Twardy, 1.
 Helderberg group: Swartz, F. M., 2.
 Hemicyclites, Ord.: Cullison, 6.
 Lagenospermum: Arnold, 33.
 Mamalia, Pleist.: Clark, A. H., 2.
 Marion area: Cooper, B. N., 1.
 Mastodon: Hitchcock, M. R., 2.
 Narrows sec. fauna: Hubbard, 3.
 Noetinae, Tert.: MacNeil, 7.
 Paleocyclidae, rugose corals: Bassler, 25.
 Peat, Dismal Swamp: Cocke, 2.
 Pectens, climate indicators: Davenport, 1.
 Pectinidae: Rowland, H. I., 1; Tucker, 8.
 Pelecypoda, Yorktown: McGavock, 3.
 Peritresius: Berry, C. T., 6.
 Phylodus: Gildersleeve, 6.
 Pinus, Eocene: Berry, 46.
 Plants, Missn.: Brown, W. R., 1.
 Pleistocene fossils, Westmoreland Co.: Berry, 61.
 Powell Valley: Bates, R. L., 4.
 Protocanites: Miller, A. K., 23.
 Protolepidodendron: Berry, 39.
 Prunus, Miocene: Berry, 54.
 Reefs, Austinville: Resser, 13.
 Septaria, Romney sh.: Allen, R. M., 1.
 Shell-casts, fluorescent, phosphorescent: Barclay, 1.
 Snake, Eocene: Lynn, 2.
 Syllomus, Miocene: Berry, C. T., 10.
 Telephidae: Ulrich, E. O., 4.
 Trilobita: Campbell, H. D., 2; Curfman, 1.
 Vertebrata: Gildersleeve, 5.
 Walnut, Miocene: Berry, 48.
 Wood, silicified: Lewis, I. F., 1.
 Yorktown pelecypods: McGavock, 3.
- Petrology*.
 Athens conglomer.: Stow, 10.
 Banner, Indiana no. 4, Beckely coals: Fieldner, 11.
 Buchanan mines coal: Fieldner, 8.
 Blue Ridge hematite: Sears, C. E., Jr., 2.
 Charlottesville area: Nelson, 4.
 Coals: Fieldner, 8, 11.
 Cobbles, Pleist.: Sniffen, 1.
 Diabases: Pegau, 8.
 Fauquier Co. plutonic rocks: Thiesmeyer, 5-a.
 Granites: Bloomer, 2; Pegau, 10; Steidtmann, 9.
 Granodiorite, hypersthene: Jonas, 7.
 Heavy minerals, James River: Stow, 13.
 Hydrothermal metamorphism: Hess, H. H., 4.
 Igneous rocks, Valley of Va.: Dennis, W. C., 1.

Virginia—Continued.

Petrology—Continued.

- Intrusives, Blue Ridge: Steidtmann, 7.
 Joints, cleavage, sed. rocks: Lammers, 1.
 Lavas, Blue Ridge: Steidtmann, 7.
 Marble: Kessler, J., 1.
 Metamorphism, hydrothermal: Hess, H., 4.
 Olivine diabase: Rickard, 1.
 Oriskany ss.: Stow, 3.
 Pegmatites: Pegau, 1, 3.
 Perthites, origin: Kearfott, 1.
 Petersburg granite: Bloomer, 2; Pegau, 10.
 Phenacite: Pough, 5.
 Potomac River sediments: Hoffman, J., 1.
 Powell Valley: Bates, R. L., 4.
 Septaria, Romney sh.: Allen, R. M., 1.
 Silicification, Paleozoic: Goldman, 4.
 Slates, varved: Thiesmeyer, 4, 7.
 Staurolite belts: Moore, C. H., Jr., 2.
 Varved slates: Thiesmeyer, 4, 7.
 Warrenton quad.: Furcron, 9.

Physical geology.

- Atlantic Coastal Plain: Ewing, 10.
 Barite deposits, origin: Edmundson, 4.
 Big A Mtn. area: Bates, R. L., 1.
 Blue Ridge gaps, structural control: Nelson, 5.
 Cambrian, Draper Mtn.: Cooper, B. N., 8.
 Caverns of Va.: Bevan, 6; McGill, 1, 3, 10; Steidtmann, 8.
 Charlottesville area: Nelson, 4.
 Cleavage, Moccasin of Lowville fm.: Rowland, R. A., 1.
 Valley sed. rocks: Lammers, 3.
 Coastal erosion: Bevan, 13.
 Coastal Plain: Cederstrom, 2.
 Concretions, calcareous: Stow, 1.
 Cumberland thrust block: Rich, 16.
 Devonian fold, Botebourt Co.: Holden, 2.
 Draper Mtn. area: Cooper, B. N., 7.
 Duality, Pulaski fault: Cooper, B. N., 4.
 Eagle Rock, Pulaski overthrust: Woodward, 11.
 Fault, Pulaski, duality: Cooper, B. N., 4.
 Fauquier Co., plutonic rocks: Thiesmeyer, 6-a.
 Granite, Air Point: Jonas, 6.
 Granodiorite: Jonas, 6.
 Intrusives, Blue Ridge: Steidtmann, 7.
 Jointing, prismatic, Trias.: Ward, R. V., 2.
 Joints, cleavage, sed. rocks: Lammers, 1.
 Landslide, Cherry Hill: Ladd, G. E., 1.
 Lava flow, Camb.: Furcron, 5.
 Lavas, Blue Ridge: Steidtmann, 7.
 Little North Mtn.: Butts, 14.
 Marion area: Cooper, B. N., 1.
 Metamorphic belt, Appalachians: Jonas, 1.
 Natural Bridge, Natural Tunnel: Woodward, 12.
 New River area: Mathews, 15.
 North River turbidity: English, J. R., 1.

Virginia—Continued.

Physical geology—Continued.

- Oriskany iron, manganese, origin: Holden, 7.
 Petersburg granite: Blomer, 2.
 Powell Valley: Bates, R. L., 4.
 Pre-Cambrian rocks, Paleozoic deformation: Stose, A. J., 1.
 Russell Co.: Woodward, 13.
 Salem block, Pulaski overthrust: Woodward, 10.
 Scenery, origin: Bevan, 25.
 Sediments, Chincoteague Bay: Wells, R. C., 12.
 James River: Stow, 2.
 Shenandoah Nat. Park: Bevan, 37-a.
 Silicification, fault surface: Holden, R. J., 5.
 Paleozoic: Goldman, M. I., 4.
 Southwestern Mtn.: Manning, 1.
 Stalactite-stalagmite column fracture: Wherry, 2.
 Structural pattern: Bevan, 24.
 Thrust fault from west, Appalachians: Nelson, W. A., 2.
 Thrust faults, Roanoke area: Woodward, H. P., 2.
 Travertine: Hinkle, 1; Steidtmann, 4, 5.
 Twelve O'clock Knob-Poor Mtn. area: Sears, C. E., Jr., 3.
 Unconformities: Cooper, B. N., 3, 6.
 Warrenton quad.: Furcron, 9.
 Water depositing travertine: Hinkle, 1.
 Zinc-lead dist.: Currier, 2.
- Physiographic geology.*
 Catocin belt geomorphology: Ver Steeg, 32.
 Coastal erosion: Bevan, 16.
 Cumberland Gap: Rich, 12.
 Drainage changes, Roanoke-James Rivers: Wright, F. J., 6.
 Draper Mtn. area: Cooper, B. N., 7.
 Erosion: Fuller, G. L., 2.
 Gravel Plateau, Northern Neck: Campbell, M. R., 10.
 Little North Mtn.: Butts, 14.
 Mountain Lake: Holden, 11; Sharp, H. S., 7, 8.
 Natural Bridge and area: Malott, 3; Moore, C. H., Jr., 1; Reeds, 1; Woodward, 12; Wright, F. J., 8, 9.
 Natural Tunnel: Woodward, 12.
 Natural divisions: Roberts, 19.
 Pleistocene shoreline features: Monroe, 10.
 Powell Valley: Bates, R. L., 4.
 Russell Co.: Woodward, 13.
 Scenery, origin: Bevan, 25.
 Shenandoah Valley: Bevan, 27.
 Structural pattern: Bevan, 15.
 Warm Springs anticline: Edmundson, 6.
 Warrenton quad.: Furcron, 9.
 York River sedimentation: Brown, C. B., 7.
 Zinc-lead area, SW. Va.: Currier, 2.

Virginia—Continued.

Underground water.

- Artesian water: Cederstrom, 1; Anonymous, 166.
 Caves, solution, mech. erosion processes: Steldtmann, 8.
 Coastal Plain: Cederstrom, 2.
 Fluctuations, water-level in wells: Cady, R. C., 1.
 Goochland Co.: Brown, C. B., 3.
 Ground water, Charlottesville: McGill, 16.
 Chemical character, Atlantic Coastal Plain: Foster, M. D., 1.
 Northern Va.: Cady, R. C., 2, 3, 5.
 Shenandoah Valley: Cady, R. C., 4.
 Honeycomb structure below river beds: Mathews, 13.
 Hot Springs dist.: Bevan, 26.
 Radioactivity, famous springs: Hootman, 2.
 Russell Co.: Woodward, 13.
 Shenandoah Valley ground water: Cady, R. C., 4.
 Spring, ebb and flow, near Fairfield: Stow, 9.
 Springs: Collins, W. D., 1.
 Thermal springs: Reeves, 4.
 Water resources: Dirzulaites, 1.
 Waters and humidity, cave near Lexington: Steldtmann, 6.
 Warrenton quad.: Furcron, 9.
 Yellow Sulphur Spring water: Sears, C. E., Jr., 1.
- Virginia's mineral contribution to Confederacy: Boyle, R. S., 3.
 Viscosity of lava: Nichols, 11.
 Vitreous, refractive indices: Quirke, 15.
 Vivianite, Nev.: Gianella, 15.
 Volcanic ash.
 Alberta, Cret.: Sanderson, 1.
 Appalachian Valley, Ord.: Kay, G. M., 15.
 Climate, effect on: Humphreys, 1.
 Correlation uses: Keyes, 181.
 Iowa, Ord.: Allen, V. T., 7.
 Kansas: Knight, G. L., 1; Landes, 24.
 Minnesota: Allen, V. T., 1.
 Missouri: Allen, V. T., 7.
 Mowry sh., origin: Rubey, W. W., 2.
 North Carolina slate belt: Stuckey, 3.
 Oklahoma: Ham, 1; Harper, H. J., 1.
 Ontario, bentonite: Maddox, 4.
 Ordovician: Allen, V. T., 1, 7; Kay, G. M., 15.
 Pennsylvania: Bonine, 2; Galpin, 1.
 South Dakota: Connolly, 3.
 Texas: Baker, C. L., 10; Jones, R. A. 7.
 United States, distrib.: Landes, 27.
 West Virginia: Galpin, 1.
 Wisconsin: Allen, V. T., 7.
- Volcanic domes: Williams, H., 5.
 Volcanic necks, N. Mex.: Hunt, 4.

Volcanism. See also Volcanoes; Volcanic ash.

- Alaska: Capps, 10, 13; Mertie, 13; Zies, 1.
 Valley of Ten Thousand Smokes: Zies, 1.
 Appalachia: Nelson, 6.
 Appalachians, S.: Jonas, 10.
 Arizona, Boulder Reservoir floor: Longwell, 23.
 San Francisco Mts. cones and flows: Colton, 8.
 Arkansas, Magnet Cove: Ross, C. S., 29.
 Basaltic lava flows: Jones, A. E., 8.
 Boron, volcanologic compounds: Schaller, 22.
 British Columbia, Eagle-McDame area: Hanson, 13.
 Hudson Bay Mtn.: Kerr, F. A., 20.
 California, Burnt Lava Flow: Finch, R. H., 9.
 Medicine Lake Highland: Anderson, C. A., 8.
 Mono Craters: Putnam, 4.
 Mono Lake area: Gilbert, C. M., 1.
 Pinnacles Nat. Monument: Andrews, P., 2; Herold, C. L., 5.
 Ritter area, Sierra Nevada: Erwin, 4.
 Santa Catalina Is.: Knopf, E. C., 1.
 California and Baja Calif.: Woodford, 8.
 Carbon minerals: Buddhue, 26.
 Central America: Sonder, 1; Wolff, F. L. von, 1.
 Colorado, Cripple Creek dist.: Loughlin, 11.
 Cripple Creek volcano: Loughlin, 7.
 Independence Pass dist.: Burbank, 13.
 San Juan area: Cross, C. W., 2; Larsen, 16.
 Columbia River Basin, Wash.-Oreg.: Barr, 1; Hodge, 25; Landes, H., 1.
 Connecticut, spatter-cone in trap sheet: Foye, 7.
 Cuba, Camaguey Prov.: MacGillavry, 4.
 Explosive, SE. Mo.: Rust, G. W., 2.
 Gases in rocks, related problems: Shepherd, E. S., 1.
 General: Brodsbaug, 1; Burbank, 14; Sanchez, 11.
 Geologic history, relation to: Whitney, D. J., 1.
 Geyser basins and ig. emanations: Allen, E. T., 6.
 Graded swelling and shrinking of volcanoes: Jaggard, 4.
 Greenland: Backlund, 7, 8; Rittman, 1; Wegmann, 10.
 Hawaiian Islands: Doorninck, van, 2; Hinds, 4; Jaggard, 4, 5, 14, 17, 27, 31; Sterns, 24; Wentworth, 43, 44; Wolff, F. R. von, 1.
 Idaho, Craters of the Moon: Shepherd, 7, 9.
 Lava Creek Vents: Anderson, 22.
 Snake River plains: Stearns, 21.
 Soda Springs valley: Stearns, 20.

Volcanism—Continued.

Idaho—Continued.

Welded rhyolite tuffs: Mansfield, G. R., 17.

Igneous rocks, structural behavior: Balk, 13.

Kentucky, Jephtha Knob: Wheeler, G., 5.

Magnetism: Ellis, R. W., 5.

Manitoba, Herb Lake area: Stockwell, 9.

Maryland, Cecil Co. complex: Marshall, J., 1.

Metachosin volcanics, Wash.-Oreg.: Weaver, 11.

Mexico, Baja Calif.: Woodford, 8.

Karst topography and lava caves: Wittich, 3.

Pachuca silver dist.: Wisser, 2.

Sierra de Cruillas: Imlay, 3.

Tepezala, vein deposits: Wandke, 2.

Miocene: Gale, H. S., 2.

Missouri, explosive type: Rust, G. W., 2; Tolman, 14.

Montana, Beartooth Mts.: Stow, 14.

Highwood Mts.: Larsen, 15.

Montserrat, West Indies: MacGregor, 2.

Nevada, Comstock Lode area: Gianella, 9.

High Cascades types: Thayer, 3.

Silver City area: Gianella, 9.

Silver Dike area: Kerr, P. F., 17.

New Brunswick, St. John area: Hayes, 7.

Newfoundland, Conception Bay: Vhay, 1.

Hare Bay area: Cooper, J. R., 2.

New Mexico, Doña Ana Co.: Dunham, 3.

Grooved lava: Nichols, 7.

McCartys basalt flow: Nichols, 12.

Magdalena dist.: Koschmann, 1.

Organ Mts.: Dunham, 3.

Mount Taylor field: Hunt, C. B., 2, 4.

Nicaragua, fumaroles: Schönberg, 1.

Quaternary: Burri, 4.

Tertiary: Burri, 4.

North America: Wolff, F. L. von, 1.

Western, Perm.: Wheeler, 13.

North Carolina, pre-Camb., Piedmont: Stuckey, 11.

Oklahoma: Ham, 1.

Ontario, Porcupine area: Hurst, 11.

Oregon, Baker quad.: Gilluly, 16.

Basalt and latite: Fuller, 14.

Bend fissure eruptions: Nichols, 9-a.

Cascade Mts.: Thayer, T. P., 2, 3.

Cascade Plateau: Hodge, 22.

Crater Lake: Allen, J. E., 1; Moore, B. N., 4; Rostel, E. A., 1.

Harney Basin: Piper, 14.

John Day area: Rowland, 19.

Lava Cast Forest: Anonymous, 177.

Northeastern: Oregon Dept. Geology, 1.

Willamette Valley: Hodge, 26.

Puerto Rico: Meyerhoff, 4.

Quebec, Bigniba area: Auger, 1.

Cadillac belt: Gunning, 13.

Chibougamau-Waswanipi dist.: Norman, 9.

Josselin-Delestre area: Bannerman, 4.

Keewatin volcanics: Wilson, M. E., 22.

Volcanism—Continued.

Quebec—Continued.

Lake Etchemin area: Tolman, 12.

Launay Tp.: Ross, S. H., 1.

Rainfalls with eruptions: Finch, R. H., 2.

Rocky Mtn. area: Atwood, W. W., 10.

Sedimentary volcanism: Kugler, 3.

Submarine: Kania, 2.

Surface manifestations of: Zies, 7.

Texas, trans-Pecos, extrusive: Maley, 1.

Trinidad, sedimentary: Kugler, 1.

And diatomaceous sediments, relations; Tallafiero, 9.

Washington: Culver, 6.

Mt. Adams area: Fowler, C. S., 1.

Mt. Rainier Nat. Park: Coombs, 3.

Southern Cascades: Treasher, 1.

West Indies: Wolff, F. L. von, 1.

Wyoming, Absaroka volcanics: Rouse, 4, 5, 6.

Hart Mtn. thrust sheets: Bucher, 12.

Sunlight area: Parsons, W. H., 1, 2.

Teton Pass area: Horberg, 1.

Yellowstone lavas, flow units: Howard, A. D., 5.

Yellowstone Nat. Park: Allen, E. T., 5.

Grand Canyon: Howard, A. D., 6.

Lava cliffs: Brouwer, 1.

Rhyolite structure: Brouwer, 2.

Tuffs, other deposits: Fenner, 16.

Yukon, Carmacks dist.: Bostock, 6.

Volcanism vs. vulcanism: Shepherd, 8.

Volcanoes. See also Volcanoes, extinct;

Volcanism; Volcanic ash.

Active, and volcanic peaks: McGavock, 2.

Activity and causes: Sapper, 3.

Aerial photographs of eruptions: Jaggar, 5.

Alaska.

Akutan Volcano: Finch, 12.

Alaska Pen.: Capps, 9; McGavock, 1.

Aleutian Is.: Capps, 9.

Aniakchak Volcano: Knappen, 3.

Bogoslof Volcano: Jaggar, 8; Lukens, 1.

Falling Mtn.: Fenner, 17.

General: Smith, P. S., 12.

Mount Katmai: Chaney, 32-a; Fenner, 4, 16; Okimura, 1.

Mount Mageik: Fenner, 4.

Shishaldin Volcano: Finch, 10.

Arizona, bombs from cinder cones: Brady, 18.

Asthenolith theory: Willis, 16.

Caldera formation: Williams, H., 13.

California.

Cascade Range: Jaggar, 27.

Cinder Cone, tree ring calendar, volcanic flows: Finch, 13.

Clear Lake area: Anderson, C. A., 6.

Diamond Peak: Finch, R. H., 6.

Lassen Volcanic Nat. Park: Farmer, 1; Finch, R. H., 1; Hanna, H. C., 1;

Holmes, A., 4; Jaggar, 17; Jones,

A. E., 8; Keathley, 1; Reck, 2;

Williams, H., 2, 4.

Mount Shasta: Williams, H., 6, 8.

Volcanoes—Continued.

- Central America: Jaggar, 22; Müllerried, 30; Sonder, 1; Sorre, 1; Wolff, F. L., von, 1.
- Cones, development: Jaggar, 42.
- Costa Rica: Schaufelberger, 7.
- Active volcanoes: Jaggar, 21.
- Reventazon Valley: Lohmann, 1.
- Talamanca Mts.: Lohmann, 1.
- General: Brodshaug, 1; Heck, 37; Jaggar, 1; Leet, 6.
- Guadeloupe, West Indies: Barrabé, 7.
- Guatemala: Sapper, 4.
- Atitlán Volcano: Reck, 3.
- Fuego Volcano: Reck, 3; Westermann, R., 1.
- Highland area: Atwood, W. W., 5.
- Santa Maria: Jaggar, 23; Reck, 3; Sapper, 1; Termer, 2, 5; Zies, 3, 5.
- Hawaii: Buckingham, 1; Hinds, 10; Jaggar, 2; Stearns, H. T., 1; Vis-Norton, 1; Wolff, F. L. von, 1.
- Aa and pahoehoe lavas: Chang, 1.
- Ash formations: Wentworth, 44.
- Halemaumau lava, 1924-31: Powers, H. A., 3.
- Hilo, protection from lava flows: Jaggar, 39.
- Hualalai: Powers, H. A., 4.
- Kau dist.: Friedlaender, I., 3.
- Kilauea: Ballard, S. S., 1; Coulter, J. W., 1; Doorninck, van, 1; Finch, R. H., 5; Jaggar, 4, 6, 9, 15, 16, 32, 38; Jones, A. E., 4, 5, 8; Waesche, 2, 4, 6; Wilson, R. M., 1.
- Lava domes: Jaggar, 28.
- Lava stalactites, stalagmites, toes, squeeze-ups: Jaggar, 20.
- Mauna Loa: Alexander, W. D., 1; Hodgkins, 1; Jaggar, 26, 33, 35, 36, 37, 40, 43; Jones, A. E., 4; Stearns, H. T., 25; Wingate, 2.
- Oahu: Stearns, H. T., 28; Stearns, N. D., 2.
- Volcanic cycles and sun spots: Jaggar, 13, 14.
- Volcanic eruptions, 1911-31: Jaggar, 12.
- Volcano study: Jaggar, 30.
- History of study of: Day, 9.
- Idaho, Craters of the Moon: Lee, C. A., 2.
- Martinique, Mt. Pelée: Arsandaux, 1, 2, 3, 4; Barrabé, 7; Jansen, 1; MacGregory, 2; Perret, 1, 2, 3, 4, 5; Reeds, 9; Romer, M., 1; Shepherd, 6; Trechmann, 11.
- Mechanism: Jaggar, 11.
- Mexico: Sorre, 1.
- El Chicón: Müllerried, 12, 19, 26.
- Collima: Friedlaender, I., 1; Waltz, 5; Zehle, 1.
- Guadalajara Prov.: Díaz, 1.
- Orizaba: Friedlaender, I., 1.
- Pinacates area: Ives, 2.
- Tequila: Friedlaender, 1.
- Volcanic mtn. axis: Sánchez, 6.

Volcanoes—Continued.

- Montserrat: Lenox-Conyngham, 1, 2; MacGregory, 2; Perret, 7.
- National Parks: Waesche, 3.
- Nicaragua, Quat., Tert.: Burri, 4.
- North America: Wolff, F. L. von, 1.
- Active and recently extinct: Chang, 1.
- Oregon: Hodge, 15.
- Mount Hood: Phillips, K. N., 1.
- Rock-structure, ancient volcanoes: Hunt, 7.
- St. Vincent, Soufrière: Jaggar, 25.
- Salvador: Sapper, 4.
- Izalco: Sapper, 2.
- San Miguel: Fermer, 1; Sapper, 2; Termer, 3.
- Trinidad: Lehner, 1.
- Volcanic activity, surface manifestations: Zies, 7.
- Volcanic cones, structural devel.: Jaggar, 42.
- Volcanic products: Powers, H. A., 5.
- Volcano Letter: Jaggar, 2.
- Volcanology: Adams, L. H., 6; Friedlaender, I., 2; Jaggar, 31.
- Wasatch Plateau coal field, Utah: Spieker, 4.
- Washington.
- Mount Adams area: Fowler, C. S., 1.
- Mount St. Helens: Verhoogen, 1.
- West Indies: Barrabé, 7; Jaggar, 34; Lenox-Coyningham, 1; Wolff, F. L. von, 1.
- Volcanoes, active, and volcanic peaks: McGavock, 2.
- Volcanoes, extinct.
- Alaska, St. Paul volcanic island: Jaggar, 18.
- Antilean-Caribbean area: Groeber, 1; Schuchert, 31.
- Arizona.
- Ajo quad.: Gilluly, 17.
- San Francisco Mtn. cones and flows: Colton, 8.
- Sunset Crater lava stream: Colton, 3, 5; Francken, 1.
- Zuni volcanic crater: Keyes, 284.
- Atlantic-Caribbean area: Groeber, 1.
- British Columbia.
- Eagle-McDame area: Hanson, 13.
- Garibaldi Lake area: Mathews, W. H., 1.
- Caldera formation: Williams, H., 13.
- California.
- Clear Lake area: Anderson, C. A., 6.
- Lassen Volcanic Nat. Park: Reck, 2.
- Glass Mtn.: Anderson, C. A., 4; Powers, H. A., 2.
- Lava Beds Nat. Monument: Swartzlow, 5-a.
- Medicine Lake Highlands: Anderson, C. A., 10.
- Mono Craters: Mayo, 12; Putnam, 4.
- Mono Lake area: Gilbert, C. M., 1.
- Mount Thielsen: Williams, H., 7.
- Salton domes: Kelley, 5; Rogers, 15.
- Tuscan fm.: Anderson, C. A., 3.

Volcanoes—Continued.

- Canada : Hanson, 10.
 Caribbean area : Groeber, 1; Schuchert, 31.
 Central America : Müllerried, 30; Sonder, 1.
 Colorado.
 Cripple Creek : Carstarphen, 1; Kohnowski, 1; Koschmann, 5; Loughlin, 11.
 Eagle Co. : Landon, 5.
 Silverton caldera : Burbank, 18.
 Specimen Mtn. : Conn, 1.
 Columbia River Gorge, Wash. : Barr, 1.
 Cuba, Santa Clara : Herrera y Fritot, 2.
 Gulf Coastal Plain, Cret. : Miser, 17.
 Hawaii.
 Island of Molokai, caldera : Stearns, 23.
 Kauai Island : Clark, W. O., 1.
 Kaula Island : Palmer, H. S., 8.
 Lehua Island : Palmer, H. S., 8.
 Mauna Kea : Gregory, H. E., 3; Wentworth, 33.
 Ulupau Head, Oahu : Wentworth, 47.
 Idaho, Craters of the Moon : Lee, C. A., 2.
 Snake River plain : Stearns, 21.
 Joints, curved, columnar, in volcanic rocks : Hunt, C. B., 6.
 Lesser Antilles : Barrabé, 7.
 Louisiana, NE. : Easton, 3.
 Mexico : Coleman, 8.
 El Bernal de Horcasitas : Heim, 1.
 New Mexico.
 Mount Taylor volcanic field : Hunt, 4.
 Valles Volcano : Ross, C. S., 30.
 North America, active and recently extinct : Chang, 1.
 Oregon.
 Crater Lake : Atwood, W. W., Jr., 11; Kettner, R., 1; Waesche, 5; Williams, H., 12, 14.
 Mount Mazama : Atwood, W. W., Jr., 6; Smith, W. D., 9; Treasurer, 7.
 Newberry Volcano : Williams, H., 9.
 Panama, Los Santos Prov. : MacDonald, D. F., 1.
 Pleistocene : Sapper, 6.
 Saba, West Indies : Molengraaff, G. A. F., 1.
 St. Eustatius, West Indies : Molengraaff, G. A. F., 1.
 St. Lucia, West Indies, Pitons : Trechmann, 7-a.
 Tennessee, Flynn Creek : Wilson, C. W., Jr., 12.
 Trinidad : Lechner, 1.
 Utah, Salt Lake City : Schneider, H., 2.
 Sulfur deposits : Thompson, R. B., 1.
 Vermont, Ascutey Mtn. : Chapman, R. W., 6.
 Washington.
 Columbia River Gorge : Barr, 1.
 Mt. Baker : Coombs, 5, 6.
 Mt. Rainier : Coombs, 3, 6.
 Wyoming, Absaroka volcanic : Rouse, 6.
 Sunlight area : Parsons, W. H., 1, 2.

Volcanoes, geysers, and volcanic peaks : McGavock, 2.

Volcanology : Adams, L. H., 6; Friedlaender, I., 2; Jaggard, 31.

Volume relations in open-space replacements : Anderson, G. E., 2.

Washington.

- Bibliography, Inland Empire : Kirkham, 3.
 Biennial rept. : Culver, 2, 3, 5, 7, 13.
 General : Macready, 2.
 Geology-geography, interrelations : Freeman, O. W., 5.
 Topographic mapping, status : Glover, 2.

Areas described.

- Ariel dam site : Williams, I. A., 2.
 Eastern Wash. : Kirkham, 1.
 Leavenworth area : Page, B. M., 2.
 Mount Ranier Nat. Park : Coombs, 3.
 Pasco quad. : Culver, 1.
 Prosser quad. : Culver, 1.
 Seattle area : Seeger, 1.

Economic geology.

- Asbestos : Bowles, O., 4.
 Bibliography : Bennett, W. A. G., 2.
 Clays : Hodge, 24; Tullis, 1, 2; Wilson, H., 1.
 Coal : Ash, 1; Daniels, J., 1.
 Columbia River Basin : Landes, H., 1.
 Copper : Pardee, 7.
 Diatomite : Mulryan, 2.
 Dolomite : Park, 9.
 General : Waters, 5.
 Gneisses and ore fms. : Richarz, 6.
 Gold : Pardee, J. T., 1.
 Iron : Hodge, 16.
 Jasperoid : Park, 9.
 Kaolin : Wilson, H., 1.
 Limestones : Hodge, 24.
 Magnesia ores : Hodge, 24.
 Magnesite : Culver, 14.
 Manganese : Hodge, 21; Park, 10.
 Mineral res. : Glover, 3; Anonymous, 74.
 Mount Adams area : Fowler, C. S., 1.
 Natural gas : Glover, 1, 5; Hammer, A. A., 1; Kirkham, 14.
 Nonmetallic min. res. : Glover, 4.
 Petroleum poss. : Glover, 1, 5; Weaver, 10.
 Platinum : Pardee, J. T., 1.
 Quicksilver : Schuette, C. N., 1.
 Rattlesnake oil and gas field : Culver, 11; Hammer, A. A., 1.
 Sands : Wilson, H., 2.
 Silica : Hodge, 24.
 Soapstone : Wilson, H., 3.
 Talc : Merten, 1; Wilson, H., 3.
 Tin : Fernquist, 6.
 Zinc-lead ores : Hayes, D. J., 1.

Historical geology.

- Age of till on Palouse soil : Krynine, 6.
 Ariel dam site : Williams, I. A., 2.
 Astoria fm. : Etherington, 2.
 Bald Butte Ridge : Hoffman, M. G., 2.
 Bibliography : Bennett, W. A. G., 2.
 Blakeley fm. : Weaver, 9.

Washington—Continued.

Historical geology—Continued.

- Cascade Mts.: Crickmay, C. H., 10;
Goodspeed, 6; Treasher, 1; Warren,
W., 1.
Cheney-Palouse scablands: Flint, 20.
Columbia River Basin: Barr, 1; Hodge,
25; Landes, H., 1.
Columbia River lavas, structure: Hoff-
man, 4.
Correlation, Tert. fms.: Carpenter, J.
T. 1.
Cowlitz fm.: Weaver, 8.
Dalles fm.: Buwalda, 6.
Eocene lavas: Weaver, C. E., 2.
Eocene ss.: Houghland, 2.
Geologic history: Waters, 5.
Geologic map: Culver, 4, 6.
Geology-geography, interrelations: Free-
man, O. W., 5.
Ginkgo Miocene forests: Back, 4.
Grand Coulee dam site: Berkey, 18; Ir-
win, W. H., 1.
Gries Ranch horizon and fauna: Effinger,
5.
Hammar Bluff fm.: Glover, 6.
Keechelus andesites: Coombs, H. A., 2,
3.
Late Cenozoic, SE. Wash.: Flint, 19.
Leavenworth area: Page, B. M., 2.
Limestones: Hodge, 24.
Magnesia ores: Hodge, 24.
Magnesite: Culver, 14.
Mascall fm.: Merriam, J. C., 10.
Metaline dist.: Park, 9.
Metamorphic ser., NE. Wash.: Branson,
C. C., 2.
Moses Coulee area: Hoffman, 3.
Mount Adams area: Fowler, C. S., 1.
Mount Rainier Nat. Park: Coombs, 3.
Natapoc fm.: Houghland, 1.
Natural gas fields: Glover, 1, 5; Ham-
mer, A. A., 1; Kirkham, 14.
Northeastern Wash.: Treasher, 5.
Olympic Peninsula: Weaver, 6.
Pleistocene correl., Pacific Coast: Allison,
7.
Pleistocene drift border, E. Wash.: Flint,
18.
Puget Sound area: Hansen, H. P., 2.
Rattlesnake oil and gas field: Culver, 11.
Ringgold fm.: Culver, 10.
St. Helens mining dist.: Houghland, 3.
Satsop fm.: Buwalda, 2.
Satsop gravels: Treasher, 8.
Seattle area: LaMotte, 1.
Silica deposits: Hodge, 24.
Silver Star Mtn. area: Felts, 4.
Tertiary: Schuchert, 48.
Chehallis Valley: Etherington, 1.
North Leavenworth: Parrott, 1.
West Wash.: Weaver, 7.
Wahluke Pleist. sediments: Beck, 5.
Wenatchee-Chelan erosion surfaces: Wa-
ters, 11.
Willamette Valley and Cascade Mts.:
Thayer, T. P., 1.

Washington—Continued.

Mineralogy.

- Agates, blue: Clinesmith, 1.
Basalt minerals: Fernquist, 4.
Bibliography: Bennett, W. A. G., 2.
Cinnabar: Ott, 1.
Coprolites probably pseudomorphs: Ma-
jor, 1.
Fluorescent minerals: Dake, 9.
Gem stones: Fernquist, 2.
Inesite: Glass, 9.
Jadeite: Anonymous, 188.
Magnesite: Culver, 14.
Manganese: Park, 10.
Meteorite: Nininger, 60; Pruett, 2, 14;
Wimmer, 1.
Nephrite: Anonymous, 188.
Opal: Fernquist, 1.
Quartz-diopside-garnet veins: Goodspeed,
5.
Stilbite: Chappell, 1.
Strontium: Landes, K. K., 1.
Washougal meteorite: Nininger, 60; Pru-
ett, 2, 14.
Willamette meteorite: Wimmer, 1.

Paleontology.

- Acila: Schenck, 27.
Amygdalus: Berry, E. W., 13.
Archeocyathids: Bennett, W. A. G., 1.
Astoria fm.: Etherington, 2.
Aturia, Cephalopoda: Schenck, 5.
Bibliography: Bennett, W. A. G., 2.
Blakeley type fauna: Tegland, 4.
Bog, paleoecology: Hansen, H. P., 6.
Camels, Tert., Quat.: Beck, 9.
Cephalopoda, Aturia: Schenck, 5.
Cercidiphyllum: Brown, 24.
Cercis, Miocene: Berry, 24.
Douglas Canyon flora: Hoffman, A. D., 2.
East Wash.: Anonymous, 94.
Faunas, Gries Ranch: Effinger, 5, 7.
Type Blakeley: Tegland, 4.
Floras, Douglas Canyon: Hoffman, A. D.,
2.
Grand Coulee: Berry, 28, 60.
Latah flora: Berry, E. W., 17.
Miocene: Beck, 4, 7; Berry, E. W., 19,
28; Brown, R. W., 14; LaMotte, 3;
Martin, V. D., 1.
Tertiary: Beck, G. F., 1, 14.
Upper Cretaceous: LaMotte, 12.
Foraminifera: Beck, R. S., 1; Frizzell,
4, 10.
Forests, fossil: Beck, 4, 7, 13; Dake, 18;
Martin, V. D., 1.
Fruits, seeds, leaves, Miocene: Brown,
R. W., 8.
Galeodea, Gastropoda: Tegland, 2, 3.
Ginkgo: Beck, G. F., 2, 4, 7, 13; Martin,
V. D., 1.
Forest, Petrified: Beck, 13; Dake, 18.
Gordonia: Berry, 20.
Gries Ranch fauna: Effinger, 5, 7.
Insects: Carpenter, 6.
Gall impression: Hoffman, A. D., 1.
Leaves, fruits, seeds, Miocene: Brown,
R. W., 8.

Washington—Continued.

Paleontology—Continued.

- Lumbricaria : Fenton, 34.
 Mammalia : Brode, 1.
 Metamorphic ser., NE. Wash. : Branson, C. C., 2.
 Miocene floras : Berry, E. W., 19.
 Miocene leaves, fruits, seeds : Brown, R. W., 8.
 Mollusca : Hanna, 35; Henderson, J., 1.
 Operculina : Durham, 1.
 Orbitoids : Berthiaume, 3.
 Palms, Eocene : Anonymous, 120.
 Paphia : Frizzell, 1.
 Pitaria : Tegland, 1.
 Platanus stipules : Berry, 37.
 Pollen, Gibraltar bog : Truman, 1.
 Pollen analysis, peat bog : Hansen, H. P., 4.
 Postglacial forests and climates : Hansen, H. P., 2.
 Priscacara : Hesse, 12.
 Rhino mold, Blue Lake : Beck, 12.
 Rodentia : Thorpe, 15.
 Schizothaerus : Henderson, J., 4.
 Spruce, Miocene : Beck, 6, 10.
 Tertiary floras : Beck, G. F., 1, 14.
 Wood, Tert. : Anonymous, 98.
 Yakima basalts with fossils : Beck, 3.

Petrology.

- Age of till on Palouse soil : Krynine, 6.
 Bald Butte Ridge : Hoffman, M. G., 2.
 Basaltic glass, Columbia River area : Fuller, R. E., 6.
 Basaltic lava, Columbia River area : Fuller, R. E., 3.
 Batholiths : Campbell, C. D., 3; Waters, 12, 14.
 Breccias : Goodspeed, 12, 16; Waters, 12.
 Calcite-bearing diabase : Goodspeed, 3.
 Cemas Land sill : Chappell, 1.
 Chelan batholith breccias : Waters, 12.
 Colville batholith : Campbell, C. D., 3; Waters, 14.
 Cornucopia porphyry dike : Goodspeed, 1.
 Dolomite : Park, 9.
 General : Culver, 6.
 Grand Coulee Dam foundation : Irwin, W. H., 1.
 Hypersthene, monoclinic : Verhoogen, 2.
 Jasperoid : Park, 9.
 Keechelus lava flows : Felts, 3.
 Migmatites : Campbell, C. D., 2.
 Mt. Baker : Coombs, 5.
 Mt. Rainier Nat. Park : Coombs, 3; Goodspeed, 15.
 Mt. St. Helens, Recent volcano : Verhoogen, 1.
 Nepheline rocks : Campbell, C. D., 5.
 Plagioclase porphyroblasts : Goodspeed, 14.
 Silver Star Mtn. area : Felts, 4.
 Swakane gneiss : Waters, A. C., 4.
 Wenatche-Chelan dist. : Waters, A. C., 2.
 Xenoliths with flake graphite : Newcomb, 1.

Washington—Continued.

Physical geology.

- Aqueous chilling, basaltic lavas : Fuller, R. E., 3.
 Basalt, surface markings : Freeman, O. W., 6.
 Cascade Mts., acid intrusive : Felts, 2.
 Connected with Coast Range, British Columbia : Crickmay, C. H., 10.
 Chelan batholith breccias : Waters, 12.
 Clastic dikes : Jenkins, 1.
 Columbia River Basin : Barr, 1; Hodge, 25; Lanes, H., 1.
 Columbia River lavas : Fuller, 10.
 Columbia River, Miocene course : Chappell, 2.
 Colville batholith : Campbell, C. D., 3; Waters, 14.
 Fault, active, Cascade Mts. : Waters, 6.
 Fumaroles near Bonneville : Holdredge, 2.
 General : Culver, 6.
 Geology-geography, interrelations : Freeman, O. W., 5.
 Gneisses, ore fms., Cascades : Richarz, 6.
 Grand Coulee Dam foundations : Irwin, W. H., 1.
 Keechelus lava flows : Felts, 3.
 Late Cenozoic, SE. Wash. : Flint, 19.
 Mechosin volcanics : Weaver, 11.
 Mt. Adams area : Fowler, C. S., 1.
 Mt. Baker : Coombs, 5, 6.
 Mt. Rainier Nat. Park : Coombs, 3, 6.
 Mt. St. Helens, Recent volcano : Verhoogen, 1.
 Olympic Pen. : Reagan, 2.
 Porosity, vectorial permeability, resistance to erosion : Landon, 3.
 Puget Sound Basin, seismic history : Bradford, D. C., 2.
 Shale, metasomatism transition : Goodspeed, 18.
 Silver Star Mtn. area : Felts, 4.
 Snake River Canyon : Freeman, O. W., 8.
 State-Line earthquake, 7/15/36 : Brown, B. H., 1.
 Tolt River earthquake, 7/17/32 : Bradford, D. C., 1.
 Transverse folding, Cascade Mts. : Waters, 9.
 Volcanoes, Cascades : Jaggar, 27.
 National Parks : Waesche, 3.
 Wematche-Chelan area erosion surfaces : Waters, 11.
 Willamette Valley and Cascades : Thayer, T. F., 1.
 Xenoliths with flake graphite, colville batholith : Newcomb, 1.
- Physiographic geology.*
 Asymmetrical Palouse hill profiles : Newcomb, 2.
 Canyons, soil, cultivation : Thomson, J. P., 2.
 Cascades, S. : Treasher, 1.
 Channeled scabland : Bretz, 6.

Washington—Continued.

Physiographic geology—Continued.

- Cheney-Palouse scablands, origin: Flint, 20; Treasher, 9.
- Columbia River, ancient: Hodge, 9; Randolph, 11.
- Basin: Landes, H., 1.
- Course, Miocene: Chappell, 2.
- Drowned forests in gorge: Lawrence, D. B., 1, 2.
- Gorge: Buwalda, 7.
- Lake Chelan: Waters, 7.
- Lower: Hodge, 9, 25.
- Cowlitz Glacier, Mt. Ranier: Richards, C. P., 2.
- Drift, deglaciation, E. Wash.: Flint, 17.
- Forests, drowned, Columbia River Gorge: Lawrence, D. B., 1, 2.
- General: Culver, 6.
- Geology-geography, interrelations: Freeman, O. W., 5.
- Glacial channels: Freeman, O. W., 4.
- Glacial till: Field, R. F., 1.
- Glaciation, Wenatchee-Chelan dist.: Chappell, 8.
- Glaciers, from airplane: Richards, C. P., 1.
- Recession, Mt. Ranier Nat. Park: Brockman, 1.
- Grand Coulee: Bretz, 5; Fernquist, 7; Flint, 23; Keyes, 242; McMacken, 1, 3.
- Grand Coulee Dam area: Flint, 23.
- Ground subsidence, Bellingham: Frederickson, 1.
- Lake Missoula and Spokane flood: Bretz, J. H., 2.
- Late-Cenozoic, SE. Wash.: Flint, 19.
- Leavenworth area: Page, B. M., 2.
- Moses Coulee area: Hoffman, 3.
- Mounds, Columbia River Plateau: Waters, A. C., 1.
- Origin: Melton, 16.
- Tenino area: Anonymous, 135.
- Mt. Ranier, geomorphology: Coombs, H. A., 1.
- Glaciers: Matthes, F. E., 1.
- National Park: Coombs, 3.
- Nisqually Glacier receding: Talman, 3.
- Volcanic sequence: Coombs, H. A., 1.
- Northeast Wash.: Treasher, 5.
- Okanogan lobe, Cordilleran ice sheet stagnation: Freeman, O. W., 3.
- Okanogan region, glaciation: Flint, 11, 12.
- Palouse Hills: Kirkham, 8.
- Palouse problem: Culver, 9.
- Palouse topog., stream history: Thomson, J. P., 1.
- Periglacial phenomena, Puget Sound: Eakin, 1.
- Pleistocene drift border, E. Wash.: Flint, 18.
- Puget glacial lobe, E. margin: Mackin, 10.

Washington—Continued.

Physiographic geology—Continued.

- Puget Sound area: Eakin, 1; Hansen, H. P., 2.
- Scabland mounds: Freeman, O. W., 1.
- Scablands, Columbia Plateau: Flint, 21.
- Origin: Hodge, 14; Howard, A. D., 10.
- Seattle area: Seeger, 1.
- Silver Star Mtn. area: Felts, 4.
- Snake River Canyon: Freeman, O. W., 8.
- Spokane flood: Allison, 3.
- Spokane River, drainage changes: McMacken, 2.
- Valley deposits, E. of channeled scablands: Bretz, J. H., 1.
- West: Bretz, J. H., 4.
- Varved clay sec., Puget Sound area: Mackin, 8.
- Vashon stage glaciation, Skyomish River valley: Cary, 1.
- Wenatchee-Chelan erosion surfaces: Waters, 11.
- Western Wash.: Coombs, 4.
- Wilson Creek area: Hough, 5.
- Yakima Valley: Buwalda, 11.
- And channeled scablands: Bretz, J. H., 3.
- Underground water.*
- Walla Walla Basin: Piper, 11.
- Water resources: Tyler, R. G., 1.
- Waswanipi Lake area, Quebec: Lang, A. H., 4.
- Water content of magmas: Gilluly, 19.
- Water gaps.
- Pennsylvania: Meyerhoff, 18.
- Kittatinny Mtn. gaps: Willard, 53.
- Peneplains: Meyerhoff, 7.
- Virginia, Warm Springs Valley: Bevan, 25.
- Water in geol. processes: Morey, G. W., 4.
- Water in pore-space of oil reservoirs: Lewis, J. A., 1.
- Water, prosp. for by elec. resistivity: Wood, F. C., 1.
- Water table.
- Nevada, Newlands area: Scofield, 1.
- South Dakota, artesian: Robinson, T. W., Jr., 2.
- Water, underground. See Underground water.
- Waterfalls. See Falls.
- Water-insoluble residues, La. salt plugs: Taylor, R. E., 1.
- Waters, magmatic, meteoritic: Lindgren, 12.
- Wavellite, Va.: Artz, 1.
- Waves, seismic, refraction and reflection: Dix, 2.
- Weathering.
- California, granite exfoliation, Sierra Nevada: Matthes, 26.
- Cavernous rock surfaces of desert: Blackwelder, 9.

Weathering—Continued.

- Cavernous, in arid regions: Blackwelder, 7.
 Changes, chem., mineralog., in rocks: Goldich, 2.
 Clay shales: Hind, 1.
 Colorado, Flagstaff Mtn. granite: Reno, 1.
 Front Range granite: Boos, 11, 13.
 Fountain, pre-Fountain rocks, contact: Thompson, W. O., 3.
 Pre-Cambrian contact: Reno, 2.
 Crude oil metamorphisms: Ginter, 4.
 Cycle: Krumbein, 18.
 Cycles, orogeny and erosion: Baulig, 4.
 Exfoliation of rocks, fatigue factor: Griggs, 5.
 Feldspars, exsers.: Norton, F. H., 1.
 Flint flakes and artifacts: Smith, L. P., 1.
 Formula for correction: Rutherford, H. M., 3.
 Geologic notes for mtn. climbers: Erwin, 5.
 Geologic time indicated by: Ashley, 29.
 Geomorphic processes, high altitudes: Bryan, 24.
 Georgia, Cartersville dist.: Kesler, 4.
 Glacial boulders, migrating, Tetons: Fryxell, 5.
 Glacial tables, fm., Tetons: Fryxell, 3.
 Greenland, corrosion by wind-blown snow: Teichert, 15.
 Hawaii, lavas: Hinds, 5.
 Marine bench-forming processes: Wentworth, 45.
 Rock weathering: Palmer, H. S., 4.
 Ice, agent of: Grawe, 3.
 Illinois, loess: Grim, 9.
 Pennsylvanian underclays: Grim, 17.
 Insolation hypothesis: Blackwelder, 32; De Terra, 2; Jeffreys, 3.
 Iowa State Capitol bldg. ss.: Gwynne, 5.
 Kansas, Monument Rocks: Robertson, G. M., 5.
 Rock City: Schoewe, 14; Ward, H. K., 1.
 Limestone, and plant assoc., San Francisco area: Kelly, J. W., 1.
 Massachusetts, Medford diabase: Billings, 6; Lane, 18; Wolf, Arthur, 1.
 Meteorites, loss of nickel by: Nininger, 52.
 New Hampshire, weathered rock in and under drift: Goldthwait, J. W., 6.
 New Jersey till: MacClintock, 12-a.
 New York, Catskill facies: Mencher, 2.
 Waterfalls, protruding crest lines: Conant, 3.
 Pedestal rocks: Petty, 3.
 Appalachian Piedmont: Crickmay, G. W., 13.
 Pennsylvania, Ticklish Rock: Anonymous, 196.

Weathering—Continued.

- Profiles, reference early man: Leighton, 26.
 Rock foliation: Fairbairn, 7.
 Rocks: Runner, 14.
 Sandstone, Iowa State Capitol bldg.: Gwynne, 5.
 Soil, cost in rock and time: Twenhöfel, 39.
 Formation in Tropics: Senstius, 1.
 Soils, origin: Smith, J. E., 8.
 South Carolina, depth of: Taber, 17.
 Piedmont granite: Smith, L. L., 6, 7.
 Spontaneous rock expansion: Bain, 20-b.
 Talus above timber in Rock Mts.: Behre, 11.
 Varved clays, deposition, alteration: Burwash, 10.
 Wisconsin, pre-Camb. rocks: Gwynne, 1.
 Weberite, Greenland: Bøggvad, 4.
 Wegener theory, proof or disproof: Huene, von, 2.
 Well cores, lab. orientation: Lynton, 2, 3.
 Well records. See Borings.
 West Columbia oil field salt domes, Tex.: Carlton, D. P., 1.
 West Indies (general). See also names of Islands.
 Bibliography: Reed, 31; Rutten, 8.
 General: Meyerhoff, 10; Schuchert, 31; Sorre, 1; Willis, 10.
 Marine geology: Field, 6; Hacquaert, 2.
Areas described.
 Aruba, Lesser Antilles: Westermann, 4.
 Barbados, uplift: Trechmann, 5.
 Bermuda geology: Swinnerton, A. C., 3.
 Bonaire, Danish W. I.: Pijpers, 6.
Economic geology.
 Copper: Ross, C. P., 24.
 Curaçao: Molengraaff, G. J. H., 1.
 Phosphate, Cayman Is.: Matley, 1.
Historical geology.
 Age, quartzite, granodiorite rocks: Rutten, 9.
 Andros Is.: Field, R. M., 3.
 Antilles, structure: Rutten, L. M. R., 6.
 Aruba: Westermann, J. H., 1, 2, 3, 4.
 Barbados, basement: Matley, 3.
 Bonaire: Pijpers, 3, 4, 5.
 Brimstone Hill, St. Kitts: Earle, 1; Trechmann, 3, 4.
 Caribbean Sea shores: Rutten, L. M. R., 6.
 Carricou: Trechmann, 8.
 Central America, land and sea connections: Rutten, L. M. R., 5.
 Curaçao: Molengraaff, G. J. H., 1-a, 3.
 Geological names lexicon: Wilmarth, 2.
 Guadeloupe: Barrabé, 7.
 Land and sea connection with Central America: Rutten, L. M. R., 5.
 Martinique: Barrabé, 7.
 Montserrat: MacGregor, 2.

West Indies—Continued.

Historical geology—Continued.

- Saba : Molengraaff, G. A. F., 1.
 St. Eustatius : Molengraaff, G. A. F., 1.
 St. Kitts : Earle, 1; Trechmann, 3, 4.
 St. Martin : Molengraaff, G. A. F., 1.
 Tectonic position : Rutten, L. M. R., 7.
 Tobago, Tert., Quat. : Trechmann, 6.

Paleontology.

- Acila : Schenck, 27.
 Amblyrhiza, St. Martin : Schreuder, 1.
 Carriacou : Trechmann, 8.
 Catalogue of fossils, Dutch West Indies :
 Rutten, L. M. R., 1.
 Chlamydoselachus, Trinity Is. : Leriche,
 1.
 Coral rock, Barbados : Trechmann, 5.
 Curaçao : Molengraaff, G. J. H., 1-a.
 Cypraea : Schilder, 1.
 Fauna, Greater Antilles, origin : Darling-
 ton, 2.
 Fish, Tert. : Leriche, 2.
 Mammalia : Torre, C., de la, 1.
 Nonionidae : Cushman, 38.
 Pectinidae : Rowland, H. I., 1.
 Reef corals, Cenozoic, evolution : Gerth,
 1.
 Uvigerina : Cushman, 1.

Petrology.

- Age, quartzdioritic, granodioritic rocks :
 Rutten, 9.
 Aruba : Westermann, J. H., 1.
 Bonaire : Pijpers, 2.
 Curaçao : Molengraaff, G. J. H., 1, 1-a, 2.
 Monserrat : MacGregor, 2.
 Saba : Molengraaff, G. A. F., 1.
 St. Eustatius : Molengraaff, G. A. F., 1.
 St. Kitts : Westoll, 1.
 St. Martin : Molengraaff, G. A. F., 1.

Physical geology.

- Antilles, structure : Rutten, L. M. R., 6.
 Aruba : Westermann, J. H., 1.
 Bonaire : Pijpers, 2.
 Curaçao : Molengraaff, G. J. H., 1-a, 2.
 Gravity anomalies : Bowle, 16.
 And island arc : Hess, H. H., 12.
 Guadeloupe : Barrabé, 7.
 Lesser Antilles : Hess, H. H., 10.
 Martinique : Barrabé, 7.
 Montserrat : MacGregor, 2.
 Orogeny, volcanoes, volcanism : Wolff,
 E. L. von, 1.
 St. Lucia, Pitons : Trechmann, 7-a.
 Seismology and the island arcs : Heck,
 15.
 Tectonic position : Rutten, L. M. R., 7.
 Volcanoes, active : Jagger, 34; Lenox-
 Conyngham, 1.

Physiographic geology.

- Bartlett Trough : Hess, H. H., 2; Taber,
 10.
 General : Hess, H. H., 1.
 Gravity anomalies and island arcs :
 Hess, H. H., 12.
 Guadeloupe : Barrabé, 7.

West Indies—Continued.

Physiographic geology—Continued.

- Lesser Antilles : Hess, H. H., 10.
 Martinique : Barrabé, 7.
 Montserrat : MacGregor, 1.

Underground water.

- Curaçao : Molengraaff, G. H., 1-a.
 Montserrat : MacGregor, 1.

West Virginia.

- University, Dept. Geology, history : Til-
 ton, 1.

Areas described.

- Greenbrier Co. : Price, P. H., 17.
 Pocahontas Co. : Price, P. H., 1.
 Randolph Co. : Reger, 3.

Economic geology.

- Alma coal bed : Fieldner, 6.
 Anticlinal theory devel. : Price, P. H., 16.
 Appalachian oil and gas fields : Ashley,
 28.
 Cabin Creek oil field : Wasson, T., 1.
 Clays, Pleist. : Tilton, 7.
 Coal : Eavenson, 1, 3; Fieldner, 5;
 Krebs, 1; Maxwell, C. W., 1; Mor-
 ris, L. M., 1; Tucker, R. C., 1.
 Coal measures, vertical sec. : Tucker,
 R. C., 1.
 Copley oil pool : Reger, 1.
 Corniferous sand : Martens, 9.
 Deep-well records : Tucker, R. C., 2.
 Devonian sh. drilling : Bennett, J., 1.
 Drilling, Kanawha Co. : Billingsley,
 J. E., 4.
 Fire clay horizons : Galpin, 3.
 General : Price, P. H., 8-a; Read, W. F.,
 4.
 Greenbrier Co. : Price, P. H., 17.
 Iron : McKinley, 7.
 Limestones : McCue, 1.
 Liverpool oil and gas pool : Heck, E. T., 1.
 Manganese : Reeves, R., 5.
 Mechanics of correl., oil-gas sands : Sis-
 ler, 5.
 Mineral composition of sands : King,
 B. F., 1.
 Mineral resources : Sisler, 3.
 Monongahela Valley : U. S. Comm., 1, 2.
 Natural gas : Billingsley, J. E., 1; Heck,
 E. T., 1; Lafferty, 1; Price, P. H.,
 11, 13, 16; Reger, 10; Sisler, 5, 9.
 Oriskany group : Price, P. H., 12, 13;
 Stephenson, E. E., 1.
 Oriskany oil and gas : Bennett, J., 1;
 Billingsley, J. E., 2; Hamilton, 3;
 Lafferty, 1, 2, 3; Martens, 9; Price,
 P. H., 12, 13.
 Oriskany sand : Bennett, J., 1; Billings-
 ley, J. E., 2; Lafferty, 2, 3.
 Petroleum : Ashley, 28; Billingsley, J. E.,
 1; Davis, R. E., 1; Hamilton, 3;
 Heck, E. T., 1; Lafferty, 1, 2;
 Reger, 1; Sisler, 5; Wasson, T., 1.
 Pittsburgh coal bed : Eavenson, 3.
 Pottsville ser. : Heck, E. T., 4.

West Virginia—Continued.

Economic geology—Continued.

- Pulpstone: Smith, W. L., 1.
- Salt brines: Price, P. H., 10.
- Synclinal oil fields: Davis, R. E., 1.

Historical geology.

- Baltimore & Ohio routes: Grimsley, 1.
- Cambrian, restricted: Resser, 21.
- Conemaugh: Galpin, 2.
- Cross secs.: Billingsley, J. E., 3; Krebs, 2.
- Deeper horizons, oil and gas: Lafferty, 1.
- Deep well rec.: Martens, 12; Tucker, R. C., 2.

Devonian, lms.: Reger, 9.

Tygart Valley: Tilton, 3.

Dunkard ser.: Core, 1.

Eastern W. Va.: Reeves, F., 5.

Fire clay horizons: Galpin, 3.

General: Price, P. H., 8-a, 11, 14; Read, W. F., 4.

Geologic column: Tilton, 5.

Geologic map: Stose, 9.

Greenbrier Co.: Price, P. H., 17.

Guidebook, Pa. Geologists' Conf., 1938; Bevan, 34.

Helderberg group: Swartz, F. M., 2.

Limestones: McCue, 1.

Monongahela ser.: Reger, 2.

Morgantown to Cascade: Tilton, 2.

Ogleby Park: Tilton, 6.

Oriskany: Lafferty, 2, 3; Price, P. H., 13; Stephenson, E. E., 1.

Pennsylvanian, coal-field correl.: Wanless, 16.

Cycles: Reger, 4.

Volcanic ash: Galpin, 1.

Pottsville correls.: Heck, E. T., 2, 4.

Southern Appalachians: Butts, 4.

Stratigraphy: Martens, 14.

Mineralogy.

Deep-well sec.: Martens, 12.

General: Price, P. H., 14.

Greenbrier Co.: Price, P. H., 17.

Salt brines: Price, P. H., 10.

Sandstones: Martens, 6.

Paleontology.

Alma coal bed: Fieldner, 6.

Cambrian, restricted, S. Appalachians: Resser, 21.

Coal: Fieldner, 5.

Cryphiocrinus: Kirk, E., 3.

Delocrinus: Burke, 1.

Devonian marine faunas: Tilton, 3.

Elephas: Wells, D., 1.

Faunas, Dev. marine: Tilton, 3.

Flora, Carb.: Jongmans, 5.

Greene fm.: Haight, 1.

Footprints, Perm.: Happ, 2; Tilton, 9.

Greenbrier Co.: Price, P. H., 17.

Greene fm. flora: Haight, 1.

Helderberg group: Swartz, F. M., 2.

Mammalia: Brooks, A. B., 1.

Neuropteris: Jongmans, 6; Williams, L., 1.

Oglebay Park: Tilton, 6.

West Virginia—Continued.

Paleontology—Continued.

Ostracoda: Coryell, 18; Holland, W. C., 1.

Randolph Co.: Tilton, 8.

Reptilia: Whipple, 2.

Splint coal, opaque material: Thiessen, 8.

Tetrapoda: Burke, 5.

Trilobita: Price, A., 1.

Vertebrata, Dunkard fm.: Whipple, 3.

Tracks: Tilton, 9.

Petrology.

Coals: Fieldner, 11.

Corniferous sands: Martens, 9, 11.

Deepwell secs.: Martens, 12.

Opal stalactites in ss.: Bayles, 1.

Oriskany sands: Martens, 9, 11.

Oriskany ss.: Stow, 3, 11.

Potomac River sediments: Hoffman, J., 1.

Quicksands, Monongahela Valley: Wilkinson, S. G., 1.

Physical geology.

Clay dikes, Redstone coal: Price, P. H., 5.

Coal, load metamorphism: Heck, E. T., 5.

Cone-in-cone in coal: Price, P. H., 7.

Devonian folding, Allegheny Plateau: Sherrill, 4.

Erratic boulders in Sewell coal: Price, P. H., 3.

Folding, Allegheny Plateau: Sherrill, 4.

General: Price, P. H., 8-a.

Green Bank Basin: Fridley, 4.

Greenbrier Co.: Price, P. H., 17.

Ice action, Teays Valley: Petty, 2.

Longitudinal velocities, Carb. rocks: Leet, 17.

Striated pebbles, Teays Valley: Petty, 1.

Stylolites in ss.: Price, P. H., 6.

Physiographic geology.

Cheat River, drainage diversions: Fridley, 3.

Clays, river: Tilton, 4.

Decker Creek, drainage changes: Nolting, 1.

Drainage changes: Fridley, 3, 6; Happ, 1; Nolting, 1.

Drainage history, northwest: Happ, 1.

Erosion surface, west: Cole, 11.

Erosional devel., west: Fridley, 7.

Evolution, Ohio River: Fowke, 2.

General: Price, P. H., 8-a.

Glacial deposits: Tilton, 4.

Green Bank Basin: Fridley, 4.

Greenbrier Co.: Price, P. H., 17.

Ice action, Teays Valley: Petty, 4.

Local base levels: Lucke, 12.

Ohio River evolution: Fowke, 2.

Potomac, South Branch, drainage changes: Fridley, 6.

River clays: Tilton, 4.

Solution and stream piracy: Fridley, 6.

Stream piracy: Fridley, 6.

Teays Valley, ice action: Petty, 4.

West Virginia—Continued.

Physiographic geology—Continued.

Tygart River course: Maxwell, C. W., 2.

Underground water.

Greenbrier Co.: Price, P. H., 17.

Radioactivity, famous springs, Hootman, 2.

Solution and stream piracy: Fridley, 6.

Springs: Price, P. H., 9.

Water resources: Galpin, 4.

Westbrook oil field, Tex.: Edwards, E. C., 1.

Weston Pass mining dist., Colo.: Behre, 6.

Whitewater gold belt, British Columbia: Kerr, F. A., 11.

Wilcox, use of term: Gould, 11.

Willow Creek dist., Alaska: Ray, J. C., 5.

Wind and water gaps.

Appalachians: Thompson, H. D., 2; Ver Steeg, 4.

Drainage evolution: Thompson, H. D., 2.

Erosion surfaces: Ver Steeg, 18, 22.

Pennsylvania: Meyerhoff, 13.

Delaware Water Gap: Willard, 50.

Kittatinny Mtn. gaps: Willard, 53.

Peneplains: Meyerhoff, 7.

Systems: Meyerhoff, 13.

Wind work.

Abrasion: Powers, W. E., 8.

Southwest U. S.: Blackwelder, 4.

Aeolian deposits: Branson, 24; Kay, G. F., 17.

Alaska, loess: Tuck, 10.

Muck-silt origin: Tuck, 11.

Arizona, bajada placers: Werber, 37.

Coconino ss.: Reiche, 4.

California, Garnet Hills: Stock, 75.

Mojave Desert yardangs: Blackwelder, 33.

Salinas Valley volcanic tuffs: Herold, C. L., 4.

Shore-line deposition by wind: Shepard, 54.

Canyons, headward elongation: Melton, 18, 21.

Central Plains area: Van Royen, 2.

Colorado, fossil ventifacts: Schoewe, 17.

Deflation lowering of playas: Blackwelder, 20.

Desert denudation: Keyes, 137.

Dunes.

Greenland, sand: Belknap, 2.

Kansas: Smith, H. T. U., 1, 2.

Cycles of sand dunes: Smith, H. T. U., 12.

Parabolic, wind-rift, longitudinal: Melton, 19.

Texas, High Plains: Huffington, 1.

Wind-sorted sands: Cobb, C., 1; McCarthy, 14.

Dust-bowl area: Anonymous, 102.

Reclamation: Keyes, 489.

Dust clouds, falls, and storms.

Alabama, 11/13/33: Poor, 3.

Wind work—Continued.

Dust clouds, falls, and storms—Cont.

Baton Rouge, La., 4/12/34: Russell, R. J., 8.

Buffalo, N. Y., 11/13/33: Alexander, A. E., 2, 4, 5.

December 15–16, 1933: Page, L. R. 1.

Great Plains: Hoyde, 1; Keyes, 254;

Leighton, 29; Miller, E. R., 1, 2.

June, 1936: Kohler, 1.

November 13, 1933: Watson, E. H., 4.

November 1933–May 1934: Mattice, 1.

Oklahoma, 1935: Murphy, H. F., 1.

Ontario, sand fall: Lloyd, H., 1.

Texas: Sidwell, 4.

United States, 1936–38; Martin, R. J., 1, 2, 4, 5, 6.

Southwest: Boon, 1.

Southwestern plains: Choun, 1.

Washington, D. C., 5/11/34: Hand, 1.

Great Plains, geol.: Keyes, 223.

Greenland, corrosion by wind-blown snow: Teichert, 15.

Kansas, loess: Frye, 4.

Rock City concretions: Ward, H. K., 1.

Sand dune cycles: Smith, H. T. U., 12.

Soil erosion by wind: Throckmorton, 2.

Ventifacts, Pleist.: Smith, H. T. U., 7.

Loess, rate of deposition: Keyes, 189.

Loveland, aeolian: Kay, G. F., 17.

Peorian, aeolian: Kay, G. F., 17.

Loveland loess, aeolian: Kay, G. F., 17.

Lowering of playas by deflation: Blackwelder, 20.

Massachusetts, wind-faceted pebbles: Matthes, 19.

Michigan, Grand Sable dunes: Bergquist, 7.

Manistee moraine: Dow, 1.

Manistique area: Bergquist, 8.

Tahquamenon area: Bergquist, 8.

Nebraska: Condra, 11.

Pleistocene: Lugin, 15.

New Mexico, gypsum dunes: Keyes, 339;

Potter, F. C., 2.

Ventifact localities: Needham, 7.

New York, Long Is. offshore bar: Howard, A. D., 12.

North America, glacial aeolian action: Cailleux, 1.

Oklahoma, dust deposition, 1935: Murphy, H. F., 1.

Pebbles, wind-faceted: Bryan, 12, 43;

Schoewe, 10, 17.

Pennsylvania, Kittatinny Mtn. gaps: Willard, 53.

Peorian aeolian loess: Kay, G. F., 17.

Puerto Rico, Pepino Hills asymmetry: Thorp, J., 1.

Ripple marks, aeolian antidune phase: Willard, 37.

Sand-blasts, effects, Sierra Nevada: Blackwelder, 8.

Sand fall, Ontario: Lloyd, H., 1.

Sand, transported by wind: O'Brien, 4.

Shape-sorting of sand grains by wind: MacCarthy, 14.

Wind work—Continued.

- Selenite, criterion of wind action: Bryan, 25; Schoewe, 7.
 Not certain indicator of wind effect: Lang, W. T. B., 3.
 Soil drifting, Great Plains: Leighton, 29.
 Texas, High Plains sand dunes: Hufington, 1.
 Hurricanes, work of: Price, W. A., 14.
 Iron-stained wind-blown sands: Tanner, W. F., 2.
 Sand and dust storms: Sidwell, 4.
 Wind-polished rocks: Bryan, 43.
 United States, dust storms: Boon, 1; Choun, 1; Martin, R. J., 1, 2, 4, 5, 6.
 Ventifacts: Bryan, 12, 43; Schoewe, 10, 17.
 Colorado: Schoewe, 17.
 Kansas: Smith, H. T. U., 7.
 Localities: Needham, 7; Wentworth, 29.
 New Mexico: Needham, 7.
 Washington, SE., Cenozoic: Flint, 19.
 Wind as sorting agent: McCarthy, 14.
 Wind-deposition shore lines: Bryan, 41.
 Wind erosion: Brodshaug, 2.
 Wind-faceted pebbles: Schoewe, 10.
 Wind transportation effect on mineral grains: Marshland, 1.
 Wind worn stones: Bryan, 12.

Wisconsin.

- 18th, 19th, 20th, 21st bienn. repts.: Bean 3.
 Geological Survey: Wisconsin G. S., 1.
 Profiles of soil types: Kellogg, C. E., 1.
 Soil surveys.
 Bayfield Co.: Whitson, 1.
 Green Co.: Whitson, 3.
 Green Lake Co.: Whitson, 2.
 Monroe Co.: Whitson, 5.
 Pierce Co.: Whitson, 4.

Areas described.

- Door County: Bagg, 1.

Economic geology.

- Field work, Huronian, Keweenaw areas: Bean, 1.
 Gogebic iron dist.: Aldrich, H. R., 1; Atwater, 3, 5.
 Green sands, Camb.: Twenhofel, 21.
 Iron: Aldrich, H. R., 9; Atwater, 3, 5; Dickey, R. M., 4; Gruner, 8, 28; Hawley, 9; Johnson, H., 1; Lake Superior Iron Ore Assoc., 1; Leith, C. K., 2; Merrill, J. A., 1; Royce, 2, 5.
 Lake Superior iron dist.: Gruner, 8, 28; Hotchkiss, 4; Lake Superior Iron Ore Assoc., 1; Leith, C. K., 2, 10; Merrill, J. A., 1; Royce, 2, 5.
 Lead-zinc dist.: Behre, 14, 23, 24, 25, 27, 30; Leith, 5; Scott, E. R., 1.
 Manganese, Montreal iron mine: Dickey, R. M., 4.
 Mayville iron ore: Hawley, 9.
 Mineral lands, north: Hotchkiss, W. O., 1.

Wisconsin—Continued.

Economic geology—Continued.

- Neda oolitic iron ores: Johnson, H., 1.
 Oxidation, deep: Moore, E. S., 21.
 Sulfide ores, origin: Emmons, W. H., 1.
 Weathering, pre-Camb. rocks: Gwynne, 1.

Historical geology.

- Baraboo area: Raasch, 4; Stark, J. T., 3; Thwaites, 6; Wanenmacher, 2.
 Beloit lms.: Keyes, 348.
 Bioherms, Sil.: Shrock, 14.
 Buried pre-Camb.: Thwaites, F. T., 2.
 Cambrian: Bridge, 7; Twenhofel, 12, 19.
 Formation names, Upper Miss. Valley: Sardeson, 32.
 Upper, correls.: Bridge, 7.
 Contact, Glenwood-Platteville, fms.: Elder, 1.
 Correlation, Dev.: Pohl, 2.
 Lower Paleozoics, by graptolites: Decker, 3.
 Upper Cambrian: Bridge, 7.
 Decorah fm., isopach map: Ball, 13.
 Devonian: Pohl, 1, 2, 3, 11; Raasch, 2; Stainbrook, M. A., 1.
 Dresbach fm.: Peterson, E., 1.
 Isopach map: Edwards, I., 2.
 Franconia fm., isopach map: Edwards, I., 2.
 Galena dolomite: Kay, G. M., 14.
 Galena fm., isopach map: Ball, 13.
 General: Folger, 4; Kansas G. Soc., 8; Trowbridge, 15; Twenhofel, 15.
 Glenwood sh. affinities: Sardeson, 20.
 Glover Buff, Marquette Co.: Ekern, 1.
 Gogebic iron dist.: Aldrich, H. R., 1; Atwater, 3, 5.
 Iron ores, Lake Superior area: Lake Superior Iron Ore Assoc., 1.
 Isopach maps: Ball, 13; Edwards, I., 2.
 Jordan ss.: Sardeson, 14.
 Kickapoo area: Bates, R. E., 4.
 Lake Superior area: Leith, 10.
 Lake Superior iron ranges: Royce, 2, 5.
 Lead-zinc dist.: Behre, 14, 27.
 Magnesian lms.: Keyes, 241.
 Mineral lands, north: Hotchkiss, W. O., 1.
 Mississippi Valley: Atwater, 4; Kay, G. M., 13; Keyes, 192; Powers, E. H., 2, 3; Sutton, 11; Trowbridge, 8, 9; Workman, 7.
 Mohawkian relations: Bays, 1.
 New Richmond ss.: Needham, 3.
 Norwalk-Jordan-Madison ss. question: Ulrich, 27.
 Ordovician altered volcanic material: Allen, V. T., 7.
 Green Bay-Lake Winnebago area: Jones, J. A., 1.
 Upper Mississippi Valley: Kay, G. M., 13.
 Platteville fm.: Bays, 2.
 Isopach map: Ball, 13.
 Pleistocene, NE.: Thwaites, 10.

Wisconsin—Continued.

Historical geology—Continued.

Prairie du Chien beds: Powers, E. H., 2, 3.

Pre-Cambrian Baraboo dist., water-laid tuff: Stark, J. T., 3.

Lake Superior area: Becker, H., 2.

St. Croix River: Clement, 1.

Shakopee fm.: Sardeson, 22.

Silurian: Shrock, 9.

Trempealeau fm., isopach map: Edwards, I., 2.

Trout Lake area: Fries, 1.

Upper Mississippi Valley: Atwater, 4; Kay, G. M., 13; Keyes, 192; Powers, E. H., 2, 3; Sutton, 11; Trowbridge, 8, 9; Workman, 7.

Washington ls.: Shrock, 17.

Willow dol.: Keyes, 192.

Wisconsin glacial title: Keyes, 229.

Mineralogy.

Heavy minerals, St. Peter ss.: Tyler, 3.
Lead-zinc dist.: Behre, 14, 23, 24, 25, 27, 30.

Manganese in Montreal iron mine: Dickey, R. M., 4.

Mayville iron ore: Beaven, 1; Hawley, 9.

Zircon crystals in pegmatite: Wilcox, R. E., 2.

Paleontology.

Aglaspis: Graham, W. A. P., 5.

Apostle ls. flora: Wilson, L. R., 2.

Baraboo area, Paleozoic: Raasch, 4; Wannenmacher, 2.

Bioherms: Shrock, 14.

Bison with artifacts: Cooper, C. L., 10.

Bogs, pollen analysis: Hansen, H. P., 1.

Cephalopoda: Foerste, 9, 18.

Conodonts: Furnish, 3.

Diatoms, Crystal Lake sediments: Conger, 3.

Dicranopeltis: Mason, C. Y., 1.

Flora, Nipissing, Apostle ls.: Wilson, L. R., 2.

Foraminifera: Ruedemann, 46.

Forests, postglacial, migration: Voss, 2; Wilson, L. R., 4.

Gastropoda: Ball, 16.

Graptolitoidea: Decker, 21; Ruedemann, 19.

Merostomata: Raasch, 1.

Microfossil succession, lake bog: Galloway, E. F., 1; Wilson, L. R., 6.

Mollusca: Baker, 14.

Mosses: Cheney, L. S., 1, 2.

Nipissing flora: Wilson, L. R., 2.

Ordovician, Green Bay-Lake Winnebago area: Jones, J. A., 1.

Ostracoda: Kay, G. M., 20-a.

Pelecypoda: Pohl, 3.

Postglacial vegetation: Fuller, G. D., 1; Hansen, H. P., 5; Wilson, L. R., 7.

Rafinesquina: Kay, G. M., 1.

Sponges: Howell, 21.

Starfish: Jones, J. A., 2.

Stromatotrypa to Pachydietya: Sardeson, 37.

Wisconsin—Continued.

Paleontology—Continued.

Trilobita: Ulrich, 5.

Zitteloceras: McKelvey, 1.

Petrology.

Dresbach ss. heavy minerals: Wilgus, 1.

Gogebic iron dist.: Atwater, 5.

Heavy minerals.

Baraboo Range: Becker, H., 1.

Dresbach ss.: Wilgus, 1.

Franconia ss.: Pentland, 1.

Mazomanie ss.: Pentland, 1.

St. Peter ss.: Tyler, 3.

Igneous rocks, Baraboo dist.: Stark, J. T., 4.

Insoluble residues.

Mendota dolomite: Wilcox, R. E., 1.

Oneota dolomite: Drindak, 1.

Sedimentary rocks: Shrock, 7.

Silurian: Karges, 1.

Silurian dolomites, correl.: Burpee, 1.

Trempealeau fm.: Hougén, 1.

Jordan ss.: Ockerman, 1.

Madison ss.: Ockerman, 1.

Mayville iron ore: Hawley, 9.

Minerals of ig. rocks: Wang, 1.

Pitting, Niagara lms.: Kowalke, 1.

St. Peter ss.: Thiel, 9.

Sediments, Devils Lake: Twenhofel, 38.

Lake Monona: Twenhofel, 24.

Shape, glacial cobbles: Wentworth, 39.

Zircon, crystals in pegmatite: Wilcox, R. E., 2.

Physical geology.

Abrasion, wind: Powers, W. E., 8.

Beach pebble abrasion. transp.: Landon, 1.

Gogebic iron dist.: Atwater, 5.

Glover Bluff structure: Ekern, 1.

Lake Mendota sediments: Twenhofel, 10; Williams, F. T., 2.

Lead-zinc dist.: Behre, 27, 30.

Pitting, Niagara lms.: Kowalke, 1.

Recent stream incision: Thwaites, A. M., 1.

Shore recession: Ball, J. R., 5.

Van Hise Rock: Shepherd, G. F., 1.

Weathering, pre-Camb. rocks: Gwynne, 1.

Physiographic geology.

Ancient lake: Aldrich, H. R., 3.

Baraboo dist.: Smith, G.-H., 1; Thwaites, 6.

Beaches, Little Sister Bay: Krumbein, 16.

Correlation, erosion surfaces: Johnson, 36.

Crystal Lake sediments: Twenhofel, 34.

Cuesta vs. peneplain, driftless area: Martin, L., 4.

Driftless area: Bates, R. E., 2; Hansen, H. P., 5; Martin, L., 4.

Kickapoo area: Bates, R. E., 4.

Lake Superior region: Merrill, J. A., 1.

Moraines, shore lines: Leverett, 2.

Peneplains, driftless area: Bates, R. E., 2.

Physical geography: Martin, L., 1.

Shape, glacial cobbles: Wentworth, 39.

Trout Lake area: Fries, 1.

Wisconsin—Continued.

Physiographic geology—Continued.

- Two Creeks forest bed: Wilson, L. R., 1, 3.
 Varved clays: Ellsworth, E. W., 1, 2.
 Vilas Co., glacial geol.: Thwaites, F. T., 1.
 Washington Island: Shrock, 17.
 Wave erosion, Lake Michigan: Ball, J. R., 18-a.

Underground water.

- Ground water: Wisconsin Univ., 1.
 Trout Lake area: Fries, 1.
 Zones of mineralization: Thwaites, 7.

Wolframite. See also Tungsten.

- Greenland: Gordon, S. G., 3.
 New Brunswick: Poitevin, 3.

Wollastonite, Calif.: Melhase, 12.

Wyoming.

- Saline lake deposits: Bradford, C. E., 2.
 State geologist's rept.: Marzel, 1, 2.

Areas described.

- Absaroka Range: Love, 6.
 Alcova area: Beckwith, 2.
 Laramie Mts.: Fowler, K. S., 1.
 Naval Petroleum Reserve No. 3: Thom, 7.
 Red Desert: Nace, 2.
 Rock Creek oil field: Dobbin, 2.
 Sheep Mtn. area: Bradford, C. E., 1.
 Teapot Dome oil field: Thom, 7.
 Uinta Co.: Veatch, 1.
 Whisky Gap area: Neely, 1.
 Wind River Basin: Bauer, C. M., 3.

Economic geology.

- Anticlines near Hiawatha gas field: Bradley, W. H., 12.
 Asbestos: Beckwith, 5.
 Baxter Basin gas fields: Nightingale, 2.
 Bentonite: Heathman, 1.
 Big Horn Basin, oil fields: Field, R. M., 4.
 Natural gas fields: Emery, W. B., 3.
 Big Medicine Bow oil field: Schoenfelt, 1.
 Billy Creek gas field: Boyer, 1.
 Carbon Basin: Dobbin, 1.
 Coal fields: Dobbin, 6.
 Chromite: Beckwith, 5.
 Deep drilling results: Bartram, 4.
 Elk Basin oil and gas field: Bartram, 1.
 Frannie oil field: Lupton, 1.
 Garland anticline: Dobbin, 13.
 Gold, Black Hills: Wright, L. B., 3, 4.
 Grass Creek dome: Harrison, T. S., 1.
 Hanna Basin: Dobbin, 1.
 Hiawatha gas fields: Nightingale, 3.
 Iron-ore, Carbon Co.: Lovering, 2.
 Kyanite: Beckwith, 1.
 Lance Creek oil and gas field: Brainerd, 5; Emery, W. B., 1.
 Lost Soldier gas fields: Irwin, J. S., 1; Tillotson, 1.
 Map, oil and gas fields: Richardson, G. B., 1.
 Medicine Bow oil field: McCanne, 1.
 Mineral res.: Dietz, C. S., 1, 2.
 Natural gas: Krampert, 2.
 Oil-producing ss., lms.: Bartram, 5.
 Oil and gas fields: Krampert, 1, 2.

Wyoming—Continued.

Economic geology—Continued.

- Ore deposits, relation to stratigraphy, structure, ig. activity: Burbank, 8.
 Sunlight mining area: Parsons, W. H., 1.
 Osage oil field: Dobbin, 14.
 Petroleum, Rocky Mts. area: Brainerd, 6.
 Petroleum and gas: Krampert, 1, 2.
 Phosphate: Mansfield, G. R., 1, 10.
 Platinum group, Centennial dist.: Coulter, C. C., 2.
 Porosity, Sundance sand: Nichols, H. D., 1.
 Rock Creek oil field: Dobbin, 2.
 Rock River oil field: Emery, W. B., 2.
 Rock Springs coal field: Swann, 1.
 Rocky Mts. area: Uren, 2.
 Rocky Mts. area oil and gas fields: Coffin, 3.
 Saline deposits, Downey Lakes: Knight, S. H., 10.
 Rock Creek Lakes: Knight, S. H., 10.
 Salt Creek oil field: Beck, E., 1.
 South Pass-Atlantic City area: Abbott, 1.
 Sundance fm.: Neely, 4.
 Teapot Dome oil field: Clapp, F. G., 1; Lewis, J. O., 2; Thom, 7.
 Uinta Co.: Veatch, 1.
 Vermilion Creek oil field: Nightingale, 1.

Historical geology.

- Absaroka volcanics: Jepsen, 10; Love, J. D., 2, 6; Rouse, 4, 6.
 Age, Wind River structures: Love, 5.
 Alcova Dam site: Bradley, W. H., 11.
 Anticlines near Hiawatha gas field: Bradley, W. H., 12.
 Arlington uncon.: Hares, 7.
 Asbestos and chromite deposits: Beckwith, 5.
 Badlands, color rec.: Germann, 1.
 Baxter Basin gas fields: Nightingale, 2.
 Beartooth-Big Horn area: Bucher, 11, 13.
 Beartooth-Bighorn-Black Hills gravity anomalies: Chamberlin, 10.
 Beartooth Butte: Dorf, 2, 5.
 Beartooth Mts. front: Hughes, R. V., 2.
 Beartooth Mts. uplift: Thom, 16.
 Bighorn Basin: Jepsen, 2; Stow, 12.
 Natural gas field: Emery, W. B., 3.
 Bighorn Basin-Yellowstone Valley area: Thom, 23; Anonymous, 117.
 Bighorn fm. correl.: Miller, A. K., 2.
 Bighorn-Beartooth-Black Hills gravity anomalies: Chamberlin, 10.
 Black Hills: Kansas G. Soc., 2; O'Harra, 7.
 Black Hills-Beartooth-Bighorn gravity anomalies: Chamberlin, 10.
 Cambian: Deiss, 10; Meyerhoff, 24; Miller, B. M., 2; Resser, 1.
 Carbon Basin: Dobbin, 1.
 Carboniferous: Branson, C. C., 13, 17.
 Casper fm.: Knight, S. H., 2; Miller, 30.
 Cherokee fm.: Roth, 7.

Wyoming—Continued.

Historical geology—Continued.

Cloverly conglomerate: Lammers, 4.
 Colorado geosyncline: Harris, G. W., 1.
 Cretaceous: Dobbin, 7; Harris, G. W., 1; Knight, S. H., 12; Nace, 1; Schuchert, 44.

Deer Creek intrusives: Rouse, J. T., 2.
 Devil's Tower Nat. Monument: Effinger, 2.

Dinwoody fm.: Thomas, H. D., 6; Walter, H. G., 1.

Embar fm.: Thomas, H. D., 4.

Eocene, Wind River Basin: Wood, H. E., 2d, 9.

Erosion interval, Beaver Divide: Wood, H. E., 2d, 4.

Five Springs Creek area: Wilson, C. W., Jr., 3.

Fountain fm.: Knight, S. H., 2.

Fox Hills fm.: Dorf, 10.

Fox Hills-Lance contact: Dobbin, 4.

Frontier-Niobrara contact: Thomas, H. D., 8.

Fossiliferous, Black Hills: Thompson, M. L., 4.

Garland anticline: Dobbin, 13.

Gold deposits, Black Hills: Wright, L. B., 3.

Goshute Hole, area: Schlaikjer, 3.

Green River Valley: Reeside, 6.

Hanna Basin: Dobbin, 1.

Hartville uplift: Kansas G. Soc., 2.

Heart Mtn. overthrust: Laurence, 1.

Heart Mtn. overthrust, Yellowstone Park volcanics, age: Hares, 1.

Hiawatha gas fields: Nightingale, 3.

Jelm fm.: Branson, 25.

Jurassic: Branson, 25; Crickmay, 26.

Jurassic-Triassic contact: Branson, E. B., 5.

Kennedy Peak klippe: Neely, 3.

Lance Creek oil and gas field: Brainerd, 5.

Laramie Basin: Beckwith, 3, 4; Knight, S. H., 1, 9.

Logan Mtn. and Heart Mtn. overthrust: Laurence, 1.

Lost Soldier gas fields: Tillotson, 1.

Lower Medicine Bow fm.: Dorf, 10.

Marmaton fm.: Roth, 7.

Medicine Bow fm.: Dorf, 10.

Mid-Phosphoria unconformity: Thomas, H. D., 2.

Minnelusa fm.: Brady, F. H., 1.

Osage oil field: Dobbin, 14.

Owl Creek Mts.: Love, J. D., 1.

Paleocene: Jepsen, 3, 9.

Park Co.: Jepsen, 2.

Pennsylvanian: Branson, C. C., 15, 18.

Permian: Thomas, H. D., 1.

Permo-Penn. sec., Hartville sec.: Condra, 13.

Phosphoria fm.: Branson, C. C., 1; Thomas, H. D., 6.

Popo Agate fm.: Branson, E. B., 35.

Wyoming—Continued.

Historical geology—Continued.

Porosity, Sundance sand: Nichols, H. D., 1.

Pre-Cambrian: Blackwelder, 38; Clos, 9.

Quadrant fm.: Scott, H. W., 8.

Red Desert: Nace, 2.

Rocky Mtn. area: Uren, 2.

Sacajawea fm.: Branson, C. C., 14.

Sheep Mtn. area: Stevens, E. H., 2.

Sherman peneplain: Hares, 3.

Shoshone Canyon area: Johnson, G. D., 1.

Shoshone Mts.: Rouse, 9.

Snake River Valley: Debler, 1.

South-central Wyo.: Lovering, 2.

Structural type, Yellowstone-Beartooth-Big Horn area: Thom, 13.

Sundance fm.: Neely, 4; Nichols, H. D., 1.

Sunlight area: Parsons, W. H., 1, 3.

Tensleep fault: Wilson, C. W., Jr., 18.

Tensleep fm.: Branson, C. C., 10.

Tertiary: Hares, 2; Schuchert, 44.

Tertiary conglomerate, Bald Mtn.: Hares, 2.

Teton Pass area: Horberg, 1.

Tetons: Fryxell, 9.

Torrington mbr. Lance fm.: Schlaikjer, 3.

Triassic-Jurassic contact: Branson, 22.

Triassic-Jurassic red beds, Rocky Mts. area: Bartram, 3.

Trout Creek Canyon: Sheets, 1.

Uinta Co.: Veatch, 1.

Varves, climate, Green River epoch: Bradley, W. H., 2.

Vermillion Creek gas field: Nightingale, 1.

Wasatch-Great Basin area: Eardley, 12.

Wind River Basin: Bauer, C. M., 4; Love, 4.

Wind River Canyon: Fanshawe, 1; Gwynne, 6; Jones, C. T., 2.

Yellowstone-Beartooth-Big Horn area: Field, R. M., 4; Thom, 13.

Mineralogy.

Agates: Buddhue, 29; Martin, R. L., 1.

Allanite: Wells, R. C., 8.

Asbestos: Beckwith, 5.

Bear Lodge meteorite: O'Harra, 8.

Bentonites: Heathman, 1.

Chromite: Beckwith, 5.

Clinoptilolite: Schaller, 11.

Concretions, Red Desert: Cassinet, 1.

Dahlite: McConnell, 2.

Dakeite, radioactive: Dake, 21; Larsen, 17, 18; Nováček, 1.

Dakeite and schroeckingerite identical: Nováček, 1.

Fibrous magnetite after chrysotile: Perry, E. L., 3.

Heavy minerals, Big Horn Basin: Stow, 12.

Meteorites: Nininger, 47.

Moss agates: Ellermeier, 2.

Nephrite: Anonymous, 194.

Ore deposits, Sunlight area: Parsons, W. H., 1.

Wyoming—Continued.

Mineralogy—Continued.

- Schroëckerite same as dakeite:
 Nováček, 1.
 Selenium in soils: Beath, 1, 3, 4.
 Shortite: Fahey, 1.
 South Pass-Atlantic City area: Abbott,
 1.

Paleontology.

- Absaroka volcanics dated by fossils:
 Jepsen, 10.
 Algae: Fenton, 56, 57.
 Reef-forming: Wieland, 6.
 Amphibia: Branson, E. B., 2.
 Ancylocidaris: Miller, A. K., 1.
 Aptenodus: Schlaikjer, 3, 4.
 Araeodon: Simpson, 44.
 Beartooth Butte fauna: Dorf, 4, 5.
 Flora: Dorf, 3, 4, 5.
 Big Horn Basin: Jepsen, 2; Troxell, 3.
 Birds: Wetmore, 24, 25.
 Brachiopoda: Crickmay, C. H., 23;
 Thomas, H. D., 9.
 Brachyhyops: Colbert, 5, 10.
 Bridger Basin: Gilmore, 7.
 Burrowing lizard: Walker, M. V., 4.
 Cats, sabre-tooth: Jepsen, 6.
 Cephalopoda: Foerste, 21; Miller, A. K.,
 5, 14, 17, 30.
 Cercidiphyllum: Brown, 24.
 Charophyta: Peck, R. E., 3, 8, 9.
 Colorado group, Cret.: Sidwell, 1.
 Conodonts: Branson, C. C., 3; Branson,
 E. B., 38.
 Corosaurus: Case, 20.
 Crocodilus: Mook, 7.
 Deadwood faunas: Meyerhoff, 15.
 Diatryma, Troxell, 4, 7-a.
 Dinosaurs: Brown, B., 11; Frison, 1;
 Gilmore, 6, 8; Moodie, 5; Russell,
 L. S., 4; Swann, 2; Anonymous, 31,
 56.
 Footprints: Swann, 2.
 Eagle: Wetmore, 27.
 Earthworm (?), Paleocene: Hazen, 1.
 Ectoganus: Gazin, 17.
 Edentata: Simpson, 15.
 Eocene: Troxell, E. L., 1.
 Plants: Berry, 35.
 Vertebrates: Troxell, E. L., 2.
 Equisettes: Black, 2.
 Eohippus cf. Hyracotherium tooth:
 Friant, 2.
 Eurypterids: Ruedemann, 21, 31.
 Faunas, dinosaur: Russell, L. S., 4.
 Morrison invertebrate: Branson, C.
 C., 9, 11.
 Phosphoria, from Embar red beds:
 Thomas, H. D., 5.
 Upper Cambrian: Howell, 25.
 Fish: Branson, C. C., 6; Branson, E. B.,
 8; Bryant, 3, 4, 7; Hesse, 17;
 Thorpe, 16.
 Floras, Absaroka Mts.: Dorf, 12.
 Aspen shale: Brown, R. W., 3.
 Colgate mbr. Fox Hills fm.: Brown,
 23.
 Corson Ranch: Dorf, 7.

Wyoming—Continued.

Paleontology—Continued.

- Eocene: Brown, R. W., 14.
 Fossil forest: Avery, P. P., 1.
 Frontier fm.: Berry, E. W., 7.
 Green River: Berry, E. W., 23.
 Lance-Fort Union, relations: Dorf, 13.
 Medicine Bow fm.: Dorf, 8.
 Florentiamyinae: Wood, A. E., 9.
 Footprint records: Branson, 15.
 Foraminifera: Carman, K. W., 1; Morey,
 P. S., 2; Peck, 11.
 Fox Hills fm.: Dorf, 10.
 Fusulinids: Thompson, M. L., 4.
 Gastroliths: Kemp, 1.
 Gentilocamelus: Loomis, 11.
 Geomyid rodents: Wood, A. E., 14.
 Goshen hole: Mammalia: Schlaikjer, 3.
 Heptodon: Seton, 1.
 Horses, 3-toed: Walker, M. V., 1.
 Invertebrata, Morrison fauna: Branson,
 C. C., 9, 11.
 Isoetales: Brown, 22.
 Jurassic: Crickmay, 26.
 Knowltonella: Berry, 41.
 Lagomorphs: Walker, M. V., 2.
 Lamdothierium: Bonillas, 1, 2.
 Larval chambers of bees: Brown, R. W.,
 7.
 Liquidambar: Brown, R. W., 4.
 Lizards: Gilmore, 22; Walker, M. V., 4.
 Lower Medicine Bow fm.: Dorf, 10.
 Mammalia: Denison, R. H., 1; Granger,
 1; Schlaikjer, 3; Simpson, G. G.,
 4, 46; Wood, A. E., 14.
 Medicine Bow fm.: Dorf, 10.
 Meniscotherium: Thorpe, 4.
 Metacheiromys and Edentata: Simpson,
 15.
 Microfossils, Eocene coal: Wilson, L. R.,
 10.
 Miotapirus: Schlaikjer, 6.
 Mollusca: Henderson, J., 8; Reeside, 9;
 Russell, L. S., 9, 34.
 Morrison invertebrate fauna: Branson,
 C. C., 9, 11.
 Multituberculata: Granger, 1.
 Myopterygius: Nace, 3.
 Nothosaur: Case, 19.
 Oreodonts: Schlaikjer, 5.
 Ostracoda: Morey, P. S., 1.
 Palaeolagus: Dice, 2.
 Palaeonictis: Sinclair, 1.
 Palaeosyops: Lane, H. H., 2.
 Paleocene, Polecat Bench: Jepsen, 9.
 Parahippus: Schlaikjer, 7.
 Parallelopora: Johnson, J. H., 31.
 Park Co.: Jepsen, 2.
 Pennsylvanian: Branson, C. C., 18.
 Phosphoria faunas from Embar red beds:
 Thomas, H. D., 5.
 Phosphoria fm.: Branson, C. C., 1.
 Plants, rooted, Sundance fm.: Black, 1.
 Plicatoderbya: Thomas, H. D., 9.
 Protomeryx: Loomis, 9.
 Protostrix: Wetmore, 44.

Wyoming—Continued.

Paleontology—Continued.

- Pseudocrocodi: Denison, R. H., 2.
 Pterygotus, eurypterid: Ruedemann, 21.
 Punctospirifer: Thomas, H. D., 7.
 Rails: Wetmore, 16.
 Reef-forming alga: Wieland, 6.
 Reptilia, Trias.: Huene, F., von, 3.
 Rhinoceroses: Wood, H. E., 2d, 2.
 Rodents: Wilson, R. W., 16, 18; Wood, A. E., 14.
 Rooted plants, Sundance fm.: Black, 1.
 Sacajawea fm.: Branson, C. C., 14.
 Selenium in Cret. vegetation: Beath, 2.
 Sharks, Perm.: Branson, C. C., 7.
 Sinclair dinosaur expedition: Brown, B., 11.
 Sphondylophyton: Schultes, 1, 2.
 Tapir: Schlaikjer, 6.
 Tempyska: Read, 10.
 Tertiary fossil collecting: Gilmore, 8.
 Titanotheres: Osborn, H. F., 1.
 Triceratops: Osborn, 31; Schlaikjer, 3.
 Trilobita: Miller, B. M., 1.
 Troödon: Gilmore, 17.
 Troodont dinosaur: Gilmore, 6.
 Tubulodon: Jepsen, 5.
 Uinta Co.: Veatch, 1.
 Vertebrates: Gilmore, 11; Jepsen, 1; Schlaikjer, 3; Troxell, E. L., 2.
 Collecting: Gilmore, 11.

Petrology.

- Agates: Buddhue, 29.
 Cretaceous sed., rocks, Black Hills: Rubey, W. W., 3.
 Dabillite, concretions: McConnell, 2.
 Front Range granites: Boos, 6, 8.
 Granites, Front Range, heavy minerals: Boos, 8.
 Heavy minerals, Front Range granites: Boos, 8.
 Owl Creek Mts.: Love, J. D., 1.
 Pennsylvanian: Branson, C. C., 18.
 Rex chert: Keller, 13.
 Sunlight area volcanic centers: Parsons, W. H., 2.

Physical geology.

- Absaroka Range: Love, 6.
 Breccia, intrusive: Pierce, 10.
 Absaroka volcanics: Rouse, 4, 5, 6.
 Algal reefs, oolites, Green River fm.: Bradley, W. H., 3.
 Analcite beds, Green River fm.: Bradley, W. H., 1.
 Asbestos deposits: Beckwith, 5.
 Bear Lodge Mts.: Meyerhoff, 21.
 Beartooth overthrust seismic inv.: Buwalda, 15.
 Bighorn Basin: Stow, 12.
 Diastrophism: Chamberlin, 21.
 Bighorn Basin-Yellowstone Valley area: Anonymous, 117.
 Conference, August 1937: Tomlinson, 10.
 Structure: Thom, 23.
 Black Hills: Meyerhoff, 21.

Wyoming—Continued.

Physical geology—Continued.

- Breccia, intrus., Absaroka Mts.: Pierce, 10.
 Casper fm.: Knight, S. H., 2.
 Casper ss., cross-lamination: Knight, S. H., 4, 5.
 Chromite deposits: Beckwith, 5.
 Conglomerates, Green and Crook's Mts.: Knight, S. H., 11.
 Crook's Mts. conglomerate: Knight, S. H., 11.
 Cross-lamination, Casper, Tensleep ss.: Knight, S. H., 4, 5.
 Devil's Tower Nat. Monument: Effinger, 2.
 Dreikanter: Delo, 2.
 Faulting, near Lander: Branson, E. B., 7.
 Postglacial, Tetons: Fryxell, 10.
 Recent: Rubey, 11.
 Sandstones, through gliding: Terra, de, 1.
 Wind River Mts.: Gleason, 1.
 Woods-Jelm area: Knight, S. H., 7.
 Flow units, Yellowstone lava: Howard, A. D., 5.
 Folding, sandstones, through gliding: De Terra, 1.
 Shoshone River near Cody: Bucher, W. H., 16.
 Forelle lms.: Knight, S. H., 6.
 Fountain fm.: Knight, S. H., 2.
 Green Mtn. conglomerates: Knight, S. H., 11.
 Heart Mtn. overthrust: Bucher, 14; Pierce, 8.
 Jackson Hole earthquake: Fryxell, 4.
 Jointing, Devil's Tower: Dutton, Carl E., 1.
 Five Springs Creek area: Wilson, C. W., Jr., 3.
 Laramide structures, Beartooth Mts.: Lammers, 6.
 Laramie Basin structure: Beckwith, 4.
 Mountain range, buried: Love, 3.
 Permo-Pennsylvanian Hartville area: Condra, 13.
 Pre-Cambrian structure, Beartooth Mts.: Lammers, 6.
 Red Desert: Nace, 2.
 Rocky Mts.: Chamberlin, 10; Knight, S. H., 8.
 Sheep Mtn. area: Stevens, E. H., 2.
 Shoshone Mts.: Rouse, 9.
 Sunlight area volcanic centers: Parsons, W. H., 1, 2.
 Tensleep fault: Wilson, C. W., Jr., 14, 18.
 Tensleep ss., cross-lamination: Knight, S. H., 5.
 Teton Pass area: Horberg, 1.
 Tetons: Fryxell, 9.
 Thrust faults, Woods-Jelm area: Knight, S. H., 7.
 Tuffs, volcanic deposits, Yellowstone: Fenner, 16.

Wyoming—Continued.

Physical geology—Continued.

- Volcanic explosions, overthrusts: Bucher, 12.
 Wasatch-Great Basin area: Eardley, 12.
 Wind River Canyon: Fanshawe, 1;
 Jones, C. T., 2; Gwynne, 6.
 Wind River Mts.: Baker, 26, 27.
 Overthrusting: Baker, 27.
 Woods-Jelm area thrust faults: Knight, S. H., 7.
 Yellowstone Valley-Bighorn Basin area: Stow, 12; Thom, 23; Tomlinson, 10; Anonymous, 117.

Physiographic geology.

- Beartooth Mts. peneplanation: Hughes, R. V., 3.
 Bighorn Basin: Johnson, D. W., 33.
 And Yellowstone Nat. Park: Johnson, D. W., 30.
 Erosional history: Lucke, 7; Mackin, 7.
 Dinwoody glaciers, Wind River Mts.: Wentworth, 10.
 Glacial boulders, migrating, Teton glacier: Fryxell, 5.
 Glacial geology, Jackson Hole: Fryxell, 2.
 Medicine Bow Range: Atwood, W. W. Jr., 5.
 Park Range: Atwood, W. W., Jr., 5.
 Glacial tables, Teton Nat. Pk.: Fryxell, 3.
 Glaciers, Grand Teton Nat. Pk.: Fryxell, 7.
 Dinwoody, Wind River Mts.: Wentworth, 10.
 Medicine Bow Range, Pleist.: Atwood, W. W., Jr., 10.
 Greybull River, stream capture: Mackin, 5.
 Jackson Hole: Fryxell, 1.
 Glacial geology: Fryxell, 2.
 Landslide scar, Centennial Valley: Sharp, H. S., 4.
 Laramie Basin structure: Beckwith, 4.
 Medicine Bow Range, glacial geology: Atwood, W. W., Jr., 5, 10.
 Warped peneplain: Atwood, W. W., Jr., 5.
 Parallel drainage and log concretions: Wegemann, 2.
 Park Co. valley area: Rouse, 3.
 Park Range, glacial geology: Atwood, W. W., Jr., 5, 10.
 Warped peneplain: Atwood, W. W., Jr., 5.
 Red Desert: Nace, 2.
 Sheep Mtn. area: Stevens, E. H., 2.
 Sherman peneplain, Laramie Mts.: Hares, 3.
 Soil drifting, Great Plains: Leighton, 29.
 Stream capture, Absaroka Range: Mackin, 3.
 Greybull River: Mackin, 3.
 Sunlight area: Parsons, W. H., 3.

Wyoming—Continued.

Physiographic geology—Continued.

- Teton Mts.: Fryxell, 6, 9.
 Teton Pass area: Horberg, 1.
 Tunnels, natural, Dinwoody Creek: Wentworth, 23.
 Valley area, Park Co.: Rouse, 3.
 Wind River Basin: Bauer, C. M., 4.
 Wind River Mts.: Baker, 26.
 Erosional history: Atwood, W. W. Jr., 7.
 Yellowstone Park and Bighorn Basin: Johnson, D. W., 32.
Underground water.
 Alcova Dam site: Bradley, W. H., 11.
 Hydrothermal activity: Kemp, 2.
 Intermittent spring, Swift Creek: Stearns, N. D., 1.
 Salt Creek-Teapot Dome uplift: Stabler, 1.
 Snake River Valley: Debler, 1.
 Xenohelix: Dryden, 6; Mansfield, W. C., 4.
 Xenoliths.
 Colville batholith, Wash.: Newcomb, 1.
 Cornucopia, Oreg.: Goodspeed, 2.
 Organ batholith, N. Mex.: Dunham, 4.
 Xiphosura, Dev., N. Am.: Ruedemann, 51.
 X-ray analysis of sediments: Mehmel, 1.
 X-ray crystal analysis and petroleum geology: Reynolds, D. H., 1.
 X-ray identification, antlerite: Waldo, 2.
 Brochantite: Waldo, 2.
 Ore minerals: Waldo, 1.
 X-ray method for estimating quartz: Clark, G. L., 2.
 X-ray powder camera: Buerger, 12.
 X-raying the earth: Daly, 4.
 X-rays in mineralogy: Peacock, 18.
 Yardangs, Mojave Desert: Blackwelder, 33.
 Yates oil field, Tex.: Gester, 1.
 Yegua problem: Stenzel, 15.
 Yellowstone National Park.
 Borings: Fenner, 5.
 Hoodoos: Hole, 1.
 Radioactivity, waters, gases, deposits: Schlundt, 2.
Historical geology.
 Cambrian type fms., revision: Deiss, 7.
 General: Field, R. M., 4.
 Geology: Stearns, 10.
 Grand Canyon of the Yellowstone:
 Fenneman, 9; Howard, A. D., 6;
 Jones, O. T., 1.
 Heart Mtn. overthrust-Yellowstone volcanics, ages: Hares, 1.
 Mount Everts sec.: Wilson, C. W., Jr., 2.
 Structural type, space, time relations, Yellowstone-Beartooth-Bighorn region: Thom, 13.
Mineralogy.
 Bore-hole inv.: Fenner, 14.
 Crystobalite: Howard, A. D., 13.

Yellowstone National Park—Continued.

Paleontology.

- Floras, Gallatin region: Andrews, H. N., 2.
 Lamar River: Read, C. B., 3.
 Lamar Valley, age: Read, C. B., 3.
 Insect borings in fossil wood: Brues, 2.
 Petrified forest: Chapman, W., 1.
 Pityoxylon: Conard, 1.

Petrology.

- Bore-hole inv.: Fenner, 14.
 Discharge, hot springs: Allen, E. T., 1.
 Lava cliffs: Brouwer, 1.
 Layering in rhyolite: Howard, A. D., 14.
 Rhyolite-basalt contact, Gardiner River: Fenner, 18; Wilcox, R. E., 3.
 Rhyolites, shear control of structure: Brouwer, 3.
 Structure: Brouwer, 2.

Physical geology.

- Drilling for geophys. data: Powers, 7.
 General: Howard, A. D., 6, 8.
 Grand Canyon of Yellowstone: Howard, A. D., 6.
 Heart Mtn. overthrust-Yellowstone volcanics, ages: Hares, 1.
 Hot springs: Allen, E. T., 1, 5; Behre, 20; Day, 8.
 Hydrothermal metamorphism, geyser basins: Fenner, 10.
 Lava cliffs: Brouwer, 1.
 Layering in rhyolites: Howard, A. D., 14.
 Old Faithful geyser: Bauer, C. M., 6.
 Rhyolite-Basalt contact, Gardiner River: Fenner, 11, 18; Wilcox, R. E., 3.
 Rhyolites, shear-control, of structure: Brouwer, 3.
 Structure: Brouwer, 2.
 Volcanoes in Nat. Parks: Waesche, 3.

Physiographic geology.

- Autopiracy, Tower Creek: Howard, A. D., 11.
 Glaciation, multiple: Miner, 2.
 Grand Canyon of Yellowstone: Fenner, 9; Howard, A. D., 4, 6.
 Hayden Valley lacustrine deposits: Howard, A. D., 4.
 Physiographic history: Field, 5.

Underground water.

- Bore-hole inv.: Fenner, 14.
 Geyser basins and ig. emanations: Allen, E. T., 6.
 Geysers: Bauer, C. M., 5.
 Hot springs: Allen, E. T., 1, 2, 6-a; Behre, 20; Day, 7, 8.
 Hydrothermal activity: Kemp, 2.
 Old Faithful geyser: Bauer, C. M., 6.

Yellowstone through the ages: Blackwelder, 44.

Yosemite Valley, geol. history: Matthes, 5.

Young's modulus of rocks, determination: Ide, 1.

Yukon.

Arcas described.

- Laberge area: Lees, E. J., 1.
 Little Salmon area: Cockfield, 1.

Yukon—Continued.

Economic geology.

- Freegold Mtn., Carmacks dist.: Johnston, J. R., 2.
 Laberge area: Bostock, 11.
 Mining industry: Bostock, 2, 3, 4, 5, 7, 8, 9, 10, 12; Cockfield, 2, 5.
 Placer gold deposits: Kerr, F. A., 10.
 Teslin-Quiet Lake-Big Salmon area: Bostock, 8.

Historical geology.

- Atlin sheet g. map.: Cockfield, 3.
 Carmacks dist.: Bostock, 6; Canada G. S., 1.
 Freegold Mtn., Carmacks dist.: Johnston, J. R., 2.
 Laberge area: Bostock, 11; Canada G. S., 1.
 Marine Triassic, S. Yukon: Cockfield, 4.
 Ogilvie area: Canada G. S., 1.
 Pelly River area: Johnston, J. R., 1.
 Pre-Cambrian: Mertie, 2.
 Teslin-Quiet Lake area: Canada G. S., 1; Lees, E. J., 2.
 Teslin-Quiet Lake-Big Salmon area: Bostock, 8.

Mineralogy.

- Mineral reconnaissance: Karpinski, 1.

Paleontology.

- Bison, Pleist.: Williams, M. Y., 13.

Petrology.

- Pelly River area: Johnston, J. R., 1.
 Teslin-Quiet Lake area: Lees, E. J., 2.

Physical geology.

- Carmacks dist.: Bostock, 6.
 Glaciation, depth of frost and ice veins, Keno Hill: Wernecke, 1.
 Laberge area: Bostock, 11.
 Pelly River area: Johnston, J. R., 1.
 Teslin-Quiet Lake area: Lees, E. J., 2.

Physiographic geology.

- Carmacks dist.: Bostock, 6.
 Glaciers: Washburn, 3.
 Laberge area: Bostock, 11.
 Pelly River area: Johnston, J. R., 1.
 Shapes, glacial and ice-jam cobbles: Wentworth, 40.
 Teslin-Quiet Lake area: Lees, E. J., 2.

Zeballos River area, Vancouver Is., British Columbia: Gunning, 11.

Zeolites.

- Manitoba: Brownell, G. M., 3.
 Minnesota: Hanley, 1.
 New Mexico: Needham, 8.

Zinc.

- Arizona: Fowler, 14; Hernon, 1.
 Arkansas: McKnight, 2; Miser, 11; Anonymous, 39.
 Boulder Dam area: Lee, 7.
 British Columbia: Armstrong, J. E., 1, 2; Cairnes, 12, 13, 14, 17; Evans, C. S., 4; Goranson, E. A., 3; Gunning, H. C., 1; Hanson, 1, 11; Hedely, M. S., 2; Kerr, F. A., 18, 20; Kindle, E. D., 2, 3, 4; Lay, 4; O'Grady, 1; Sargent, H., 1, 2.

Zinc—Continued.

- California: Farrel, 1; Kelley, V. C., 10; Webb, R. W., 3.
 Canada: Alcock, 3, 10.
 Colorado: Behre, 32; Burbank, W. S., 3, 4; Chapman, E. P., 2; Cross, C. W., 2; Loughlin, 11, 12; Lovering, 15, 17; Rohlfing, 1; Vanderwilt, 11.
 Columbus River Basin, Wash.-Oreg.: Landes, H., 1.
 Europe-N. Am. correlations: Behre, 33.
 General: Jackson, C. F., 1.
 Hydrothermal exper.: Kristofferson, 1.
 Idaho: Anderson, A. L., 1, 23; Dickey, F. H., 1; McConnell, 1; Ross, C. P., 4, 31; Shenon, 17.
 Kansas: Landes, 34.
 Lead and zinc, upper Mississippi Valley: Banfield, 1.
 Lowlands, S.-cent. and Ouachita provs.: Ruedemann, P., 3.
 Mackenzie, Great Slave Lake Pint Pt. deposits: Bell, J. M., 2, 3.
 Manitoba: Brownell, G. M., 2; Bruce, E. L., 2; Wright, J. F., 1, 2.
 Meso-thermal deposits: McKnight, 1.
 Mexico: Donald, R. T., 1; Edelen, 1; Foshag, 12; Hayward, M. W., 1; Inlay, 10; Santillán, 14.
 Mississippi Valley area: Bastin, 20; Graton, 7; Newhouse, 9.
 Missouri: Dake, C. L., 1; Gleason, 3; Tarr, 21.
 Montana: Dickey, F. H., 2; Lovering, 1; Pardee, 4; Sahinen, 4; Schafer, 1; Spiroff, 3.
 Nevada: Ferguson, H. G., 1, 5; Hewett, 4; Vanderburg, 3; Westgate, 6.
 Newfoundland: George, P. W., 2; Snelgrove, 8.
 New Jersey: Bowen, W. C., 1; Olpp, 1; Palache, 28; Tarr, W. A. 3.

Zinc—Continued.

- New Mexico: Dunham, 3; Krieger, P., 2; Lasky, 16; Ransome, F. L., 3; Schmitt, 10; Spencer, A. C., 1; Stott, 1.
 New York: Brown, J. S., 2; Dyson, J. L., 1-a.
 North America: Sminnov, 1.
 Nova Scotia: Messervey, 10.
 Oklahoma: Fowler, 6; Speer, 1; Tarr, 11; Weidman, 2.
 Ontario: Bannerman, 1, 2; Burrows, 2; Freeman, B. C., 4; Hawley, 3; Hurst, 2; Moorhouse, 3; Osborne, 3, 31; Phemister, 3; Tuck, 2.
 Ore deposits: Butler, G. M., 4.
 Ore guides, Tri-State dist.: Ageton, R. V., 1.
 Oregon: Callaghan, 10; Smith, W. D. 11.
 Ozark area: Buehler, 10.
 Pebble and ruby jack, fm. temperature, Mo.: Smith, W. S. T., 6.
 Pennsylvania: Blank, E. W., 1; Butler, R. D., 1; Butts, 13.
 Quebec: Bell, L. V., 14; Jones, I. W., 1, 5, 7; Osborne, 30; Wilson, M. E., 14.
 Saskatchewan: Cameron, A. E., 3.
 South Dakota: Tullis, 6.
 Tennessee: Currier, 3; Newman, M. H., 1, 2.
 Tri-State district: Fowler, G. M., 1, 2, 4, 5, 7, 8, 10, 13; Harbaugh, 2; Kansas G. Soc., 10; Leith, 5; Rama Rao, B., 1; Ridge, 1; Tarr, 15.
 United States, W.: Loughlin, 8.
 Utah: Green, J., 1; Nolan, 6; Staples, L. W., 3.
 Virginia: Currier, 2, 3.
 Washington: Hayes, D. I., 1; Park, 9.
 Western U. S.: Loughlin, 8.
 Wisconsin: Behre, 14, 23, 24, 25, 27.
 Zinc-bearing chromite: Donath, 1.
 Zircon crystals in pegmatite, Wis.: Wilcox, R. E., 2.
 Zolarite, Nev.: O'Brien, J. D., 1.