RECORD

OF

NORTH AMERICAN GEOLOGY FOR 1887 TO 1889 INCLUSIVE

BY

NELSON HORATIO DARTON

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
POTOMAC DIVISION OF GEOLOGY,
Washington, D. C., June 1, 1890.

Sir: I have the honor to forward herewith a Record of North American Geology for the years 1887 to 1889, inclusive, which is submitted for publication as a bulletin of the Survey.

Very respectfully, your obedient servant,

N. H. Darton,
Assistant Geologist.

Hon. J. W. Powell,
Director.
The literary scope of this record includes geologic publications printed in North America and publications on North American geology wherever printed. Chronologically it includes publications issued during the years 1887, 1888, and 1889. The List of Publications Examined, page 9, indicates the range of the sources of information.

The entries are comprised in the three following classes, all being arranged in a single alphabetic sequence:

I. Principal entries.—Consisting of full titles of separate contributions classified by authors, with subarrangement by dates, together with as much of the usual bibliographic information as appears necessary in a work of this kind. The descriptive note relates only to the geologic contents of the contribution. The size of volume is given only when other than octavo. The extent of papers less than a page in length is indicated thus: \( \frac{1}{2} \) p., \( \frac{1}{4} \) col., 3 lines.

II. Titles of containing publications.—Entered as headings, under which authors' names and short titles of the contained papers are listed in their order of precedence.

III. Subject references.—Geographic, stratigraphic, and miscellaneous geologic headings under which abbreviated titles of papers are classified for cross reference to principal entries. A key to these subject references is given on page 8.
KEY TO THE SUBJECT REFERENCES.

Geographic:
Alabama.
Alaska, and the other States and Territories.
Asia.
Bermudas.
Canada, comprising all British possessions in North America.
Central America.
Europe.
Hawaiian Islands.
Mexico.
New Zealand.
South America.

Stratigraphic:
Pleistocene.
Tertiary.
Cretaceous, including Laramie and Potomac.
Jurassic-Triassic.
Carboniferous, including Permian.
Devonian.
Silurian, Upper.
Silurian, Lower.
Cambrian.
Archean, comprising all pre-Cambrian formations.

Miscellaneous:
Geologic history.
Geologic philosophy.
Petrography.
LIST OF PUBLICATIONS EXAMINED.

American Association for the Advancement of Science, Proceedings, vols. 36, 37.
Salem, Mass.
American Institute of Mining Engineers, Transactions, vol. 15, p. 536 to end; vols.
Appalachia, vol. 4, No. 4; vol. 5. Boston.
California Academy of Sciences, Proceedings, 2d series, vol. 1, parts 1, 2.
California State Mining Bureau. Seventh and Eighth Annual Reports of the State
Mineralogist, William Irelan, jr. Sacramento.
Montreal.
Canada, Royal Society, Transactions, vols. 4-6. Montreal.
Canadian Institute, Proceedings, vol. 4, No. 2, to vol. 6, No. 2. Toronto.
Cincinnati Society of Natural History, Journal, vol. 10 to vol. 12, No. 3. Cincinnati,
Ohio.
Biennial Report, 1886; Annual Report, 1887.
Dakota School of Mines, Preliminary Report upon the Geology and Mineral Re-
Davenport Academy of Sciences, Proceedings, vol. 4; vol. 5, part, 1. Davenport,
Iowa.
Dennison University, Scientific Laboratories, Bulletin, vol. 2; vol. 3, part 1; vol. 4,
parts 1, 2. Granville, Ohio.
Glasgow Geological Society, Transactions, vol. 8, parts 1, 2.
International Congress of Geologists, American Committee, Reports, 1888.
Iowa Historical Record, vols. 3, 4. Des Moines, Iowa.
Iowa State University, Laboratories of Natural History, Bulletin, vol. 1, No. 1. Iowa City.
Johns Hopkins University, Circulars, Nos. 53–57. Baltimore.
Kansas Board of Agriculture, 5th Report. Topeka.
———Bulletin, No. 5.
Nature, 1887–89.
Nenes Jahrbuch für Mineralogie, Geologie, und Palaeontologie, 1887–89. Stuttgart.
New Orleans Academy of Sciences, Papers, vol. 1, No. 2.
———Transactions, vols. 4–8.
New York State Museum of Natural History, Bulletins, Nos. 1–6. Albany.

Fortieth Annual Report, for year 1886. Albany.


Ottawa Naturalist, vols. 1, 2; vol. 3, Nos. 1–3. Ottawa.


Atlasses, HH–HHH, and AA, parts 2–5.


Proceedings 1887–88; 1889, parts 1, 2. Philadelphia.


St. Louis Academy of Sciences, Transactions, vol. 5, Nos. 1, 2. St. Louis.


Smithsonian Institution, Reports for 1885–86.


Texas, University of, School of Geology, Circular No. 1. Austin, Texas.

Paleontology of the Cretaceous, part 1.


Mineral Resources, 1887.

Monographs vols. xiii and xiv.


United States, Reports on the iron regions of northern Louisiana and eastern Texas. Washington.

Vienna, K.-k. geologische Reichsanstalt, Verhandlungen, 1888, Nos. 1–7. Vienna.


Washburn College Laboratory, Bulletin, vol. 2, Nos. 9, 10. Topeka, Kansas.


Yorkshire Geological and Polytechnic Society, Transactions, vol. 9, part 2; vol. 11, part 1. Yorkshire.
Includes references to the genesis and relation of the Trenton gravels.

General description of the Carboniferous coal measures of Nova Scotia and New Brunswick, the lignites and anthracites of the Northwest Territory, and the bituminous coal of Vancouver’s Island.

Describes the mineralogic constituents and variations of the Upper Laurentian or Norian series occurring in detached areas in the great Laurentian region.


Includes petrographic description of associated rock.

and LAWSON, Andrew C. On some Canadian rocks containing scapolite, with a few notes on some rocks associated with the apatite deposits. Canadian Record Science, vol. 5, pp. 185–201, 1888. Abstract, Am. Naturalist, vol. 23, pp. 169–170, p. (February No.), 1890. Petrographic description of apatite-bearing pyroxenites from Portland West, the Mc Laurian mine, Star Hill mine, and Blessington mine, amphibolites from Arnprior, and scapo-
ALDRICH, T. H. [On the absence of separable Oligocene in the Gulf Tertiary region.]


Statement of opinion.

ALLEN, Joseph H. Western Kentucky Coals and cokes.


Generalized section. Discusses identity of some of the beds at different localities.


Geologic antecedents of man in the Potomac Valley, McGee.

American Association for the Advancement of Science, Proceedings, vol. 36.

Work of International Congress of Geologists, Gilbert.

Devonian system in North America, Williams, H. S.

Lower Devonian and Upper Silurian in well in central New York, Prosser.

Upper Hamilton of Chenango and Otsego Counties, New York, Prosser.

Section of southwestern Ohio, James.

Granite and quartzite contact, Ironwood, Michigan, Winchell, N. H.

Lower Silurian and Cambrian in well near Utica, New York, Walcott.

Fossils in Lower Taconic of Emmons, Walcott.

Berea grit in northeastern Ohio, Cushing.

Texas section of American Cretaceous, Hill, R. T.

Geology of Florida, Johnson, L. C.

Upper Eocene lacustrine formations of the United States, Scott.

"Lake Cuyahoga," Claypole.

Glacial erosion in Norway, Spencer.

Theory of glacier motion, Spencer.

Sand boulders in drift of Missouri, Spencer.

Columbia formation, McGee.

Genesis of the Hawaiian Islands, Hitchcock.

Serpentines of southeastern Pennsylvania, Chester.

Dynamic metamorphism of eruptives of south shore of Lake Superior, Williams, G. H.

American Association for the Advancement of Science, Proceedings, vol. 36—Continued.

Four great sandstones of Pennsylvania. Claypole.

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Address on International Geological Congress, Cook.

Sporocarps in Ohio shale, Orton.

Oil and gas horizons, Mississippi Valley, Orton.

Forest bed beneath inter-morainic drift, Leverett.

Rock salt in Kansas, Hay.

Oil fields of Colorado, Newberry.

Mesozoic of Sergipe-Alagoas Basin, Branner.

Age of Arkansas crystallines, Branner.

Peridotites of Pike County, Arkansas, Branner and Brackett.

Granites of Northwest, distribution and lithology, Hall, C. W.

Ancient Ohio channel at Cincinnati, James.

Great Lakes of North America, Spencer.

Lake Cheyenne, Todd.

Terraces of the Missouri, Todd.

Archean of the Northwest, Winchell, A.

Use of fossils in determining age, Williams, H. S.

Woods and lignites of Potomac formation, Knowlton.

Glacial boundary in southeastern Dakota, Wright.

Eruptive rocks of Minnesota and in general, Winchell, N. H.


Physical geography of Labrador, Packard.

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Summer cruise to northern Labrador, Packard.

Philosophy of glacier motion, Roger.

AMERICAN GEOLOGIST, Irving and Chamberlin on the Lake Superior sandstones.


Review of "Observations on the junction between the eastern sandstone and the Keweenaw series on Keweenaw Point, Lake
AMERICAN GEOLOGIST—Cont'd.


Murray's theory of the formation of barrier reefs and coral islands.
  Statement of Darwin's and Murray's theories.

On the chert of the Upper Coal Measures in Montgomery County, Iowa.
  Discussion of nature and origin.

Black marl from Cheyenne County, Nebraska.
  Notice of occurrence.

Later Cretaceous in Iowa.
  Reference to a number of localities in different parts of the State and in Minnesota.

The antiquity of man; some incidental results of the discussion.
  Includes references to the remoteness and duration of the glacial epochs.

Formation of coal seams.
  Review of W. S. Gresley and discussions of conditions of carbonaceous accumulation.

[Fossil bone in well at Lincoln, Nebraska.]
  Gives section through drift in Dakota sandstone.

A new glacial theory.
  Notice of Carpenter's theory and discussion of cause of glacial cold and ice.

[Notice and review of E. Danzig "Ueber die eruptive Natur gewissen Gneissoe sowie des Granulits im sächsischen Mittelgöbirge."]
  Points out the bearings of some of the conclusions.

Unconformity at the falls of the Montmorenci.
  Reproduces Emmons's illustration of the locality and reviews the opinions of Emmons and others in regard to the relations.

Very striking examples of glacial action * * * on eastern flanks of the higher ranges of the Sierra Nevada Mountains.
  Notice of some glacial planings.

AMERICAN GEOLOGIST—Cont'd.

Some recent speculations on the origin of petroleum.
  Review of Mendelev. Discusses original sources of bituminous material and means of its transfer and accumulation as petroleum.

  History of International Congress of Geologists, FRAZER.

Animikie black slates and Ogishke conglomerate of Minnesota, WINCHELL, N. H.

Unconformities of Animikie in Minnesota, WINCHELL, A.

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Irving and Chamberlin on Lake Superior sandstones, AM. GEOLOGIST.

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Flora of coast islands of California, LE CONTE.

Range of fossils of Hamilton period in western Ontario, CALVIN.

Correlation of Lower Silurian, ULRICH.

Murray's theory of formation of coral islands, AM. GEOLOGIST.

Chert of upper coal measures of Iowa, AM. GEOLOGIST.

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Well hole on south side of Long Island, BRYSON.

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Marcon on Taconic of Georgia [etc.], Selwyn.
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Beaches along south side of Long Island, Bryson.
Geology of the Montmorenci, Emmons, E.

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St. Lawrence basin and the Great Lakes, Spencer.

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Some forgotten Taconic literature, Vogdes.

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Rejoinder to C. D. Walcott on fossils from Mount Stephen, Canada, Rominger.

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Glacial erosion in Norway, Spencer [review], Am. Geologist.

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Literature of geyserite, Merrill, G. P.

Fossil bone in well, Lincoln, Nebraska, Am. Geologist.

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Includes references to thickness, position, and extent of coal beds in Alabama, Arkansas, California, Colorado, Dakota, Georgia, Illinois, Indiana, Indian Territory, Iowa, Kansas, Kentucky, Maryland, Michigan, Missouri, Nebraska, New Mexico, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Virginia, Washington Territory, West Virginia, and Wyoming Territory.

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— Report, California division of geology.
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— and HALL, C. E.?]. Field notes on the geology of the Mohawk Valley.
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- Remarks on origin of serpentines in the vicinity of New York.
States his opinion that they are altered stratified Archean rocks, mainly limestones and tremolitic schists.

- Notes on glacial and preglacial drifts of New Jersey and Staten Island.
Describes the extent of the yellow gravel and preglacial drift in the eastern United States, its characteristics, thickness, outcrops in contact with overlying drifts, its exposures and relations on Staten Island and its flora in Cumberland County, New Jersey. Discusses the origin of the preglacial drift and its relation to later deposits.

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Some statements in regard to the slates and limestones of the Great Valley. Notes on rocks and structure about Luray, Natural Bridge, and Balcouny Falls, Virginia; the contact of crystalline and clastics in Doe River Gorge, Tennessee; Cranberry iron mine, Roan Mountain, and Warm Springs to Asheville, North Carolina.

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Discussion of the origin and relations of the serpentes and the structural features which give rise to the several outcrops in the vicinity of New York; reference to the southward extension of the crystalline rocks of Staten Island, outcrop of preglacial drift near Woodrow, relations of drifts at Tompkinsville, and to the driftless areas north and west of the terminal moraine.

On recent field work in the Archean areas of northern New Jersey and southeastern New York.


Describes the several members of the crystalline series of the Highlands and of the Philadelphia-Westchester County region, the altered Paleozoic rocks at the junction of the two areas near Peekskill, and some other Paleozoic contacts. Discusses the subdivision of Archean and the relations of the groups to each other and to the Laurentian series of Canada.

[Boring through drift and Cretaceous sediments on Staten Island.]


Six hundred feet to crystalline schists.

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[Notice of outcrop of Cretaceous clay on Eltingville road, Staten Island.]

Staten Island Nat. Sci. Assoc., Proc., April, 1889; 2 lines.

Britton, N. L.—Continued.


[Outcrops of Cretaceous clay and of Triassic shales.]


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[Notice of a new exposure of Cretaceous near Grassmere Station, Staten Island.]


New York Acad. Sci., Trans., vol. 8, p. 31; 5 lines. 1889.

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[Remarks on the yellow gravel formation.]

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[Remarks on the relations of the crystalline rock series in the New York-New Jersey region.]


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Description of its physiography and sketch of its geologic history.

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1. Nematophyton from Devonian of Gaspé, Dawson, J. W.
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6. Relations between geology of Maine and New Brunswick, Bailey.
7. Cretaceous plants from Port McNeill, Vancouver Island, Dawson, J. W.
8. Archean plants from limestone of Sussex County, New Jersey, Britton.
10. Eozoon Canadense, Dawson, J. W.
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12. Great Lake basins of the St. Lawrence, Drummond.
13. Balarus in Pleistocene at Rivière Beaudette, Dawson, J. W.
15. Glaciation of eastern Canada, Chalmers.

Description of a series of post-Tertiary deposits and erosions, and discussion of their history.
— On the Tertiary Dinosauria found in Denver beds.
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Wyoming, report of Territorial Geologist, RICKETTS.

CARILL, John F. The oil and gas region.


Includes a summary of geologic structure and review of stratigraphy of Venango oil group and overlying rocks, illustrated by a series of columnar sections in Pennsylvania and New York; gives well records from most of the oil and gas counties of Pennsylvania, West Virginia, Ohio, and New York. Accompanied by a geologic map of southwestern Pennsylvania, by d'Intilliers, with columnar sections by Carll.

— [Natural gas in Pennsylvania.]


Abstract from Am. Manufacturer, Natural gas supplement. 1888.

CARPENTER, Franklin R. Notes on the geology of the Black Hills.

Preliminary report of the Dakota School of Mines on the geology, mineral resources, and mills of the Black Hills of Dakota, pp. 11-52, map. 1888.


Description of the several formations and discussions of their relations, the age of subdivisions of Archean, nature of the granites, and the geologic history of the history.

— Upon the mineral resources of the Black Hills, their character, occurrence, and extent.

Preliminary report of the Dakota School of Mines upon the geology, mineral resources, and mills of the Black Hills of Dakota, pp. 107-171. 1888.


Includes incidental references to relations of associated crystalline rocks and Potsdam sandstone, origin and nature of the granites and ores, building-stones, limestones, and clays.

— Ore-deposits of the Black Hills of Dakota.


Includes incidental references to geologic relations at various localities, mostly in connection with the "Potsdam sandstone and its associated intrusives." Reproduces a colored map.

Central America, ancient footprint from Nicaragua, Brinton.

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CHALMERS, R. Report to accompany quarter-sheet maps, 3 SE. and 3 SW. Surface geology. Northern New Brunswick and southeastern Quebec.


Abstract, Ibid., part A, pp. 40-42.

Description of superficial formations, terraces, and other ancient drainage and shore features, marshes, flats, and glacial strie, and discussion of evidence respecting glaciation and subsidence of the St. Lawrence valley below Quebec, and the glaciation of the Baie des Chaleurs basin and Gaspé peninsula; genetic history of topographic and drainage features of the region, and the relation and origin of the drifts.

— On the glaciation and Pleistocene subsidence of northern New Brunswick and southeastern Quebec.

Canada, Royal Soc., Trans., vol. 4, section IV, pp. 139-145. 1887.

Reviews the glacial theory and the history of glacial phenomena in the region. Summarizes facts indicating local glaciation in the Baie des Chaleurs district, and a northwest-erly movement of local glaciers on the southern slope of the St. Lawrence valley, especially in the area between Rivière du Loup and Métis, the terraces, drift, and glaciation of which are described. Discusses the amount, extent, and irregularities of Pleistocene subsidence in eastern Canada.

— Glaciation of eastern Canada.


Résume account of glacial phenomena in the region, and discussion of their significance.

CHAMBERLIN, B. B. Minerals of Staten Island.


Incidental references to the serpentines and Triassic traps.

CHAMBERLIN, T. C. Report * *

glacial division,
CHAMBERLIN, T. C.—Continued.


Describes the results of his own studies and those of his assistants, as follows: 1. J. E. Todd, on the glacial lake of the Bijou Hills region; the terraces of the Missouri and Big Sioux Rivers; the outer moraine from Kimball to Wall Lake, and the second moraine from Canistoga to Mitchell; the relation of the loess to the glacial drift and evidence of post-glacial deformation of the loess surface, and the discovery of Pliocene beds at Franklin, Nebraska, Niobrara chalkstone near Canton and north of Mitchell; beds of siliceous flour under drift on Bazile River, coal in upper Dakota beds at Fonse, and several Dakota sandstone outcrops. 2. R. D. Salisbury, on the driftless area of the Upper Mississippi valley. 3. G. F. Wright, on the southern boundary of drift in Illinois. 4. G. H. Stone, on eskers and glaciation in Maine. 5. W. M. Davis, on drumlins of Massachusetts, and glaciation of Mount Monadnock. 6. I. M. Buell, on bowlder trains of central Wisconsin. 7. D. W. Mcaul, on glacial flood-plains and the terrace systems of the Chippewa Valley of Wisconsin. And his own work, consisting of a reconnaissance along the Chicago, Milwaukee, St. Paul and Omaha Railroad in northwestern Wisconsin; a study of the southeastern border of the driftless area; and a trip through southern Iowa, western Missouri, northeastern Kansas, and westward, and through a portion of the Orange sand region. In a summary of the results of this trip there are discussed the non-morainal character of the drift border in Nebraska, Kansas, and Missouri; the non-glacial derivation of the Orange sand; the pre-Champlain age of the loess of the Lower Mississippi, and the post-Quaternary orographic movements indicated by the distribution of the loess and the relations of some drainage features.

— Note respecting the term Agnotozoic.


Does not wish name retained simply because first proposed by him. Accredits the term Keweenawan to Brooks or Brooks and Pumpelly.

— Report—division of glacial geology.


A general account of the various investigations and their progress, including references to the drift limit and products of local glaciation in the upper Missouri region; glacial features, old lake terraces and drainage relations in Montana and Idaho; observations of J. E. Todd on limits of drift moraines, strie, terraces, old lake beds, and various glacial features in southern Dakota, position of drift border in east central Nebraska, relations of

CHAMBERLIN, T. C.—Continued.

bowlder clay near Berks, Nebraska, and the relations of volcanic ash deposits in Seward County, Nebraska; studies of Warren Upham on the altitude of the beaches of Lake Agassiz; work of George H. Stone on the gravel deposits and eared of Maine; observations of N. S. Shaler on the glacial train from Cumberland, Rhode Island, origin of Kames, and the course of the ice flow on the coast of Maine and southeastern Massachusetts, and G. K. Gilbert's studies on the beaches of Lake Ontario.

— The rock scorings of the great ice invasions.


Geographic distribution, topographic relations, topography as affecting the distribution of strien and condition of glacial flowage, cross striation, conditions affecting scoring action and the scorings, method of determining the point of motion, accompanied by map of northern United States, showing distribution of glacial drifts and strien.

— and SALISBURY, R. D. Preliminary paper on the driftless area of the Upper Mississippi valley.


Describes the topography, geology, erosion, drainage, surface deposits, and circumjacent glacial phenomena, the morainic, the attenuated till and bowlder and attenuated drift borders. Discusses the light which the driftless area throws upon the glacial history of the adjoining region and the sequence and character of events of the glacial periods; the origin and relations of the topographic and drainage features; erosion; nature, origin, and relations of the loess and residuary products, and the origin of the border deposits. In a general résumé, sketches the apparent history of the region, and reviews the causes to which the driftless area is due.

CHAPIN, J. H. The Hanging Hills.


Describes topographic features and extent of ridges of which the Hanging Hills are a part, and calls attention to some contacts of trap and sandstone. Discusses the nature and relative ages of the trap sheets, presenting some evidence which is thought to indicate intrusion.

— The trap ridges at Meriden again.


Reference to their extrusive nature and the relations and significance of the associated ash bed.
CHAPMAN, W. H. Geology of Peoria County.
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China, Kaiping coal mine, Kwong Yung Kwang.

Includes a description and analyses of the rocks and a discussion of their chemic relations and the origin of the dunyte.

The peridotite of Elliott County, Kentucky.
Analyses of dike and associated rocks.

Yellowish brown, kaolinized, decomposed trap from four miles west of Sanford, North Carolina.
Analysis.

Mica andesite from a cañon on the east side of San Mateo Mountain, New Mexico.
Analysis.

Hypersthene andesite from San Francisco Mountains, Arizona.
Analysis.

Basalt from six miles northeast of Grant, New Mexico.
Analysis.

Yellow sandstone from the Armejo quarry, Colorado.
Analyses.

CHAUVENET, Regis. Preliminary notes on the iron resources of Colorado.
Colorado School of Mines, Report of field work and analyses, 1886, pp. 5-16. 1888.
Includes very brief descriptions of iron-ore beds in Cretaceous, Carboniferous, Silurian, and crystalline formations.

CHESTER, Frederick D. The State line serpentines and associated rocks; a preliminary notice of the serpentines of southeastern Pennsylvania. [Abstract.]
Petrographic characteristics and relations of various areas.

[Read to Washington Philosophical Society May, 1887.]
Reference to evidences of glacial action on the shores of Glacier Bay.

CHISM, Richard E. The drainage of the valley of Mexico.
Includes a brief geologic sketch on page 479; reference to volcanic rocks, metamorphic Mesozoic limestones, and emergence of the valley.

The Catorce mining district.
Includes a brief general description of the geology.

Sierra Mojada, Mexico.
Describes very briefly the relations and structure of the supposed Cretaceous limestones, and (p. 37) states his opinion in regard to the formations on the eastern slope of the Sierra Madre.

CHISHOLM, Frederic F. The Elk Head anthracite coal field of Routt County, Colorado.
Describes coal beds in Fox Hill rocks baked into anthracite in places by a flow of "nepheline tephrite," which covers the adjacent country.

Well at Oxford, Ohio, James.

vol. 11.
Drift in vicinity of Cincinnati, Burke.
Ancient channel of the Ohio at Cincinnati, James.
Ivorydale well in Mill Creek valley, James.
Sedimentation in Cincinnati group, James.
Devonian plants from Ohio, Newberry.

CLAGHORN, Clarence R. Notes on the Bernice anthracite coal basin, Sullivan County, Pennsylvania.
Reference to geologic relations and structure.

CLARK, E. S. Some norites and gabbros. See Herrick, C. L., and Deming, J. L.

CLARK, William B. A new ammonite which throws additional light upon the geological position of the Alpine Rhetic.
References to Tyrolean formations and discussion of position of Rhetic beds.

— On three geological excursions made during the months of October and November, 1887, into the southern counties of Maryland.
Stratigraphic description and lists of fossils of Miocene and Eocene.

— Discovery of fossil-bearing Cretaceous strata in Anne Arundel and Prince George counties, Maryland.
Johns Hopkins Univ., Circulars, vol. 8, No. 69, pp. 20-21, 4th. 1889.
Description of a number of localities in the banks and vicinity of the Severn River south of Bowie, and at Fort Washington on the Potomac. Lists of fossils and expression of opinion in regard to equivalency of the beds.

CLARKE, F. W. Fulgurite from Whiteside County, Illinois.
Analyses.

— Blue and buff limestones from quarries of the Hoosier Stone Company, Bedford, Indiana.
Analyses.

— Volcanic dust.
Analyses: From Gallatin Valley, Montana, and mouth of Bazile Creek, Nebraska.

CLARKE, F. W.—Continued.

— Three coals from Gulf, North Carolina.
Analyses.

— Some nickel ores from Oregon.
Includes an analysis of the associated peridotite and a report on its mineralogic constituents by J. S. Diller. Also a reference to the peridotite of Webster, North Carolina, by J. S. Diller.

CLARKE, J. M. [Sink holes at Attica, Wyoming County.]
Describes two sink holes in one of which mastodon remains were found.

CLAYPOLE, E. W. The lake age in Ohio, or some episodes in the retreat of the North American glacier.
Points out the consequences of a glacial dam across the Ohio and the probable size, outlet, duration, dissolution, and deposits of the "Lake Ohio" to which it gave rise. Follows the retreat of the glacier to the borders of Lake Erie and describes a series of lakes which must then have extended from the glacier front southward to the divide and emptied into affluentsof the Ohio. Discusses the relation of these lakes to each other at their several stages, and to the adjacent and subsequent drainage and topography. Considers the extent and history of the successive drainage channels of the glacial Lake "Erie-Ontario."

— The materials of the Appalachians.
Discusses the amount, thinning, character, and origin of the Paleozoic sediments in Pennsylvania, calling attention to the present small areas of pre-Paleozoic rocks and discussing its probable former extent and the prominent presence of the quartzose rocks which supplied materials for the conglomerates and sandstones. Describes the extent, variations in thickness and coarseness of materials in the several sandstone series, and advances a hypothesis of successive uplifts of quartzose "Archean" rocks at the beginning of the deposition of each of these series. Discusses the position and character of these uplifts and the mode of deposition of the sediments.
CLAYPOLE, E. W.—Continued.

— "Lake Cuyahoga," a study in glacial geology.
   Abstract. Paper in full in Edinburgh Geol. Soc., Trans., 1887, as described above.

— The four great sandstones of Pennsylvania. [Abstract.]
   Discusses the origin and mode of deposition of the materials and the location of the land from which they were derived.

— Singular subterranean commotion near Akron, Ohio.
   Includes reference to pre-glacial valley now occupied by the Tuscaraoras.

— On some investigations regarding the condition of the interior of the earth.
   Exposition and discussion of a paper by Mr. Davison.

— The eccentricity theory of glacial cold versus the facts.
   Includes discussion of the rate of recession of Niagara Falls, the falls of St. Anthony, and various minor falls in New York and Ohio, as bearing on the date of the last period of glacial cold. Also discusses the history of the Niagara-St. Lawrence drainage and the Upper Mississippi.

— Glaciers and glacial radiants in the ice age.
   A general discussion of the conditions, extent, and results of glaciation in North America and elsewhere.

— The story of the Mississippi-Missouri.
   A general sketch of the geologic history of North America with especial reference to the Mississippi-Missouri region.

— Falls of rock at Niagara.
   Cites newspaper accounts of the fall of great masses from the edge of the shelf over which Niagara falls, and expresses opinion in regard to the mean rate of recession.

CLAYTON, Joshua E.—Continued.

   Extract from report to Montana Company of London.
   Description of geologic relations at contact of granite and metamorphic beds. Discussion of the origin and history of the mineralization.

— The Coeur d'Alene silver-lead mines.
   Description of geology of region and discussion of structural relations.

[CLERC, F. L.] The lead and zinc ores of southwest Missouri.
   Eng. and Mining Jour., vol. 43, pp. 397-398. 1887.
   (From a pamphlet not seen.)
   Discusses age and origin of slate beds in depressions in surface of Carboniferous limestones and the erosion of the region.

CLIFFORD, William. Richmond coal field, Virginia.
   General description of the structure and stratigraphy of the field, including numerous quotations from previous writers. Discussion of the origin and extent of the coal and coke, and relation of the coal measures to adjoining formations, accompanied by maps and sections at Clover Hill, Midlothian, Black Heath, and Deep Run.

COLEMAN, A. P. Microscopic petrography of the drift of central Ontario.
   Preceded by a brief general description of the drift in which the described rocks occur.

COLLINS, J. H. On the Sudbury copper deposits.
   Includes brief description of geologic relations. Discusses origin of the deposits and their relations to the igneous rocks.

Colorado, age of Denver formation,

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analyses of Leadville rocks and ores, HILLEBRAND.

Aspen Mountain, BRUNTON. HERRICK. LAKES.

Aspen ore deposits, SIVER.

Boulder County veins, VAN DIEST.
Colorado—Continued.
Butte Mountain, Eagle County, OLCOTT.
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[———] Triassic.

COOK, George H.—Continued.

Reviews Roger's theory of inclined deposition and Russell's theory of continuity in deposition of the New Jersey and Connecticut Valley areas. Discusses the occurrence and effects of faults, the relations of the igneous rocks in opposition to the theory of extrusion, and the structural relations of the New Jersey and Connecticut Valley areas. Postulates some working hypotheses for the study of the formation.

[—] Surface geology.
Introductory to Merrill's report on the yellow gravel; describes its distribution, character, and relations to associated formations.

[—] Mining.
Describes some geologic features in several magnetite mines, and at the hematite mine on Marble Mountain, Warren County.

[—] Greensand marls.
Reprinted from the report of the State Geologist to the State Board of Agriculture in 1876. Statements in regard to geographic extent, geologic structure, thickness, age, composition, clay marls, red sand bed, and use, and detailed descriptions of openings in the middle and upper marl beds.

[—] Geologic surveys.
General description of the subdivisions and structure of the Archean, with an abstract of Britton's report on field work of 1887. Reference to the extension of the Cretaceous members locally known as the sand hills.

Artesian wells.
Includes reference to wells in red sandstone near Hoboken, and through clay to gneiss at Sayreville.

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Reference to position and characteristics of the Trias and Cretaceous of the Eastern United States, absence of separable Jurassic, and use of terms group and series. Includes tables of opinions in regard to equivalency of Trias of New Jersey, Virginia, and North Carolina, and the Cretaceous and its subdivisions in New Jersey, Alabama, Mississippi, Texas, interior North America, and the Canadian Rocky Mountains.

On the International Geologic Congress and our part in it as American geologists.
Includes a brief general review of American geology, and a discussion of the principles of geologic classification and nomenclature.

Geological map of New Jersey, from original surveys. Scale, 5 miles to an inch. 1889. Atlas sheet No. 20. 34 by 25 inches.
Colored map with two cross-sections. Differs from map published with 1882 report as follows: Wider extension of the larger coastal alluvial areas, outlying area of Cretaceous (Potomac?) near Monmouth Junction, Hudson River slates area, and alteration in Triassic boundary near Clinton and Brookville, additional small volcanic areas near Beemerville, and in the Triassic region, several small crystalline limestone areas near Danville, northward extension of the First Watchung trap area, and many slight local corrections of boundary lines.

On the Triassic or red sandstone rocks.
Statement of general characteristics of the formation, discussion of the occurrence of faults and expression of opinion in regard to the nature of the trap rocks.

Artesian wells.
Gives records of 1,150-foot well at Atlantic City, 380-foot well at Sea Island City, 155-foot well near Marlton, and a 450-foot well in Jersey City.

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COPE, E. D. The formations of the Belly River of Canada.
Abstract (with comments) of paper by George M. Dawson described in the bibliog. for 1886.
The Mesozoic and Cenozoic realms of the interior of North America.
COPE, E. D.—Continued.

General review of the distribution, characteristics and equivalency of the several groups and their subdivisions and discussion of their paleontologic and stratigraphic relations. Reviews Gilbert on glacial age of the Montana equus beds.

Mr. Hill on the Cretaceous of Texas.


Objections to the new nomenclature and discusses the probable equivalency of some of the groups and subdivisions.

[—] [The International Congress of Geologists.]


Discusses the desirability of a uniform system of colors and nomenclature, and the probable general synchronism of the wider geologic subdivisions. Quotes Powell’s letter on the subject and advances some objections to its recommendations.

Synopsis of the vertebrate fauna of the Puerco series.


Preceded by a brief description of the extent and general relations of the series.

Mesozoic realm.


Résumé of distribution, general relations, and characteristics of the several formations, and discussions of age and equivalency.

Report of the subcommittee on the Cenozoic (Interior).


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Vertebrate fauna of the Puerco series. [Abstract.]


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CRAGIN, F. W.—Continued.
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— Contributions to the paleontology
of the Plains. No. 1.
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CRAIG, W. Contributions to the geol-
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Mountain and in western Kentucky, discusses
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Wyoming, geologic history of Yellowstone Park, HAGUE.

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skull of Ceratopsidae, MARSH.

report of Territorial Geologist, RICKETTS.

CROSBY, W.O. Geology of the outer islands of Boston Harbor.
CROSBY, W. O.—Continued.


Description of the relations of diabase sheets and dikes to slates, and discussion of structure, relations of the diabase, evidence of a fault, and cause of relative position and trend of the islands. Reference to drifts.

— Geology of the Black Hills, Dakota.


Sketch of geology and description of various features of the several formations. Discussion of relative ages of the crystalline rocks; the relation of the metamorphic conglomerate and the deformation of its pebbles; the cor. relations of the Archean rocks with those elsewhere; evidence of the existence of limestone in the Archean; origin, extent, relations, and age of the granites, volcanic rocks, mineral deposits, and superficial formations; conditions of deposition and formations in the West between the Cambrian and Carboniferous; relations of Paleozoic and Mesozoic; age, history, and relations of Black Hills uplift, and of the red beds and subsequent formations.

— Quartzites and siliceous concretions.


From Technology Quarterly.

Description of relations of Potsdam sediments in the Black Hills and discussion of the nature and origin of the included quartzite masses and on silicification in general.

and BARTON, G. H. On the great dikes at Paradise, near Newport.


Gives an account of the geologic features of the region, the relations of which are found to be much simpler than formerly supposed; the "hornblende schist" of Dale proving on examination by Merrill to be an intrusive rock, probably an altered diorite.

CROSS, Whitman—Continued.


— The Cimarron landslide, July, 1886.


Describes geologic features of the vicinity and topographic changes due to the slide. Discusses its cause and similarity to other slides.

— Note on phonolite from Colorado [El Paso County].


Petrographic description and analyses.

— [Observations in regard to the para-morphic origin of certain minerals.]


Refers to instances observed in Custer County, Colorado.

— On some eruptive rocks from Custer County, Colorado.


Description of petrography and occurrence of rhyolites, trachytes, syenite, peridotite, augite-diorite, and sanadine-bearing andesite. Definition of lithologic terms.

— The Denver Tertiary formation.


Description of distribution, stratigraphy, composition, and general relations of the formation, and discussion of stratigraphic and paleontologic evidence of its age and history.

CUMMINS, W. T. The Carboniferous of western Texas and its relation to the Cretaceous.


Reference to its barrenness in coal and to its conformable overlap by the Cretaceous.

— Mining districts in El Paso County [Texas].


Geologic relations of granites and porphyries to Cretaceous and Carboniferous limestones.

— The Carboniferous formation in Texas.

CUMMINS, W. T.—Continued.
Reference to extent, relations, and stratigraphic range.
— Report of Geologist for northern Texas.
Notes on Carboniferous coals and stratigraphy in northern central Texas.

CURTICE, Cooper—Continued.
Oriskany drift near Washington, District of Columbia.

CURTICE, Cooper—Continued.
Calls attention to occurrence of fossiliferous pebbles in the Potomac formation at Mount Vernon and near Alexandria.

CUSHING, H. P. Notes on the Berea grit in northeastern Ohio.
Gives stratigraphic sections at several localities. Description of extent and relations and discussion of equivalency of the beds, especially of the sandstone north of Warren.

D.

Geology of the Black Hills, CARPENTER.
Mineral resources of the Black Hills, CARPENTER.

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DALL, William H.—Continued.
Describes the extent of the several superficial and Tertiary formations and discusses their faunal distribution and equivalency, and the synchronism of post-Cretaceous formations in general. Calls attention to many rock outcrops and new fossiliferous localities, and to a series of meridional flexures crossing the Caloosahatchee River.
— [On the faunal relations of the formations of the Tertiary.]
Discussion of basis on which Tertiary should be subdivided.

DANA, Edward S. Contributions to the petrography of the Sandwich Islands.
Petrographic descriptions of lavas. Includes an account of volcanic stalactites and discussion of their origin.

DANA, James D. Volcanic action.
Discusses causes and results of volcanic action and a résumé and discussion of the phenomena of Kilauea, Vesuvius, the recent New Zealand eruptions, and other instances.
— [?] The origin of mountain ranges considered experimentally, structurally, dynamically, and in relation to their geological history, by T. MELLARD READE [etc.].
DANA, James D.—Continued.
A brief statement of the theory and a review of its application to continental uplift and the Appalachian trough.

— On Taconic rocks and stratigraphy, with a geological map of the Taconic region; part 2, the middle and northern part.

[Continued from vol. 29, p. 443, 1885.]
Describes the rocks and a series of sections across the region, and discusses the structural and stratigraphical relations, distribution, and equivalency of the limestones, schists, and quartzites. In a supplement entitled "The views of Prof. Emmons on the Taconic system," reviews Hunt's "The Taconic question restated," pp. 412-418.

[— —] Report on the geology of New Jersey for 1886.

Abstract of Britton's report on the Archean and discussion of the use of the term Huronian.

[— —] Geology of Long Island.

Abstract and review of F. J. H. Merrill's paper described in the bibliography for 1886. Discusses the character of the drift ridges, the identification of the Cretaceous and Tertiary, the uplift of the preglacial formations by the advancing edge of the ice sheet, and the cause of the deep bays in the north shore of the island.

[— —] A pot-hole of remarkable size in Archbald, Pennsylvania.

Description, and discussion of its origin.

— History of the changes in the Mount Loa craters; part 1, Kilauea.

Includes discussion of the causes and relations of the changes, the mobility of the lavas, the eruptive and crater characteristics of a basalt volcano, size of the Kilauea conduit, and the conditions involved in the various phenomena occurring between the eruptions.

[— —] Gradual variation in intensity of metamorphism.

Refers to illustrative localities west of New Haven, and discusses the occurrence and origin of included masses of granite in that region.

[— —] Fossils of Littleton, New Hampshire.

Notice of their reference to the Niagara group by Hitchcock in 1884.

— History of changes in the Mount Loa craters, part III, eruptives of Kilauea and Mount Loa.

Discussion of the characteristics and causes of eruption, metamorphism as an effect of volcanic conditions, the origin of the form of Mount Loa, relations of Kilauea to Mount Loa, and the contrast between volcanoes of the Mount Loa and Vesuvius types.

— History of the changes in the Mount Loa craters, part II, Mokuaweoweo.

Discussion of the characteristics and causes of eruption, metamorphism as an effect of volcanic conditions, the origin of the form of Mount Loa, relations of Kilauea to Mount Loa, and the contrast between volcanoes of the Mount Loa and Vesuvius types.

— Brief history of Taconic ideas.

And résumé of present knowledge of the relations in the Taconic region.

[On the use of the term "Taconic."]

Discussion, of its applicability to lower Paleozoic formations.

[On the subdivisions, nomenclature, distinctive features, and origin of some members of the Archean, origin of Serpentine, and the use of terms "Taconic," "Ordovician," and "Cambrian."]


— Recent observations of Mr. Frank S. Dodge, of the Hawaiian Government Survey, on Halema'uma'u and its débris cone.

Evidence of recent elevation of the cone and some other minor changes in the crater.

— Points in the geological history of the islands Mani and Oahu.
DANA, James D.—Continued.


Description and discussion of topographic and geologic relations, discussion of geologic history, volcanism and evidence of subsidence. Statement of opinion in regard to Darwin’s theory of coral island formation.

— On the origin of the deep troughs of the Oceanic depression. Are any of volcanic origin?


Review of distribution and relations of the deep Oceanic troughs. Accompanied by a bathymetric map.

— The name Silurian in geology.


Discussion of nomenclature of the Silurian and Ordovician, and suggestion of term “Ordovician” for the “upper Silurian.”


— On the great lava flows and intrusive trap-sheets of the Newark system in New Jersey.


Discussion of characteristics of extrusive and intrusive masses, and an account of the nature and relations of the traps of the New Jersey region.

— North American geology for 1886.


Classified abstracts of papers.


A defense of our local geology, BARRIS.

Rockfort shales of Iowa, WEBSTER.

DAVIS, Charles H. S. The Catopterus gracilis.


Remarks on the occurrence of fish remains in the Trias, and a description of the locality at Little Falls, Connecticut.

DAVIS, William Morris. Instruction in geological investigation.

DAVIS, William Morris—Continued.


In discussing some experiences with his field classes, describes dike contacts in the quarry at Somerville, Massachusetts, and evidences of a former higher level of the sea about Boston.

— [Results of a study of the mechanical origin of the Triassic monocline in the Connecticut valley.]


Reviews the various theories and advances a hypothesis to account for the monocline attitude. This paper antedates the one on the same subject described in the 1886 bibliography.

[—] The origin of mountain ranges, considered experimentally, structurally, dynamically, and in relation to their geological history. By T. Mellard Reade. London.


States condition of present opinions on the subject, and briefly relates and reviews the author’s theory.

— The classification of lakes.

Science, vol. 10, pp. 142-143. 1887.

Discusses the formation of lakes in the development of drainage systems, and the effects of lava flows and glacial incursions.

— The ash bed at Meriden and its structural relations.


Brief notice of the occurrence of the ash-bed; description of contacts of trap with overlying sediments in Lamentation Mountain and of West Rock range, New Haven, and the structural relations in the Meriden region, and sketch of the history of volcanic extrusion, and the mechanism of the uplift and faulting of the Newark formation of the Connecticut valley.

[—] Geographic methods in geologic investigation.


Discussion of the status of geographic science and the genetic relations of topographic features. Includes references to structure of the Newark formation of the Connecticut valley, base levels in New Jersey and in eastern Pennsylvania, the relations of toponography and drainage to structure and uplift in the Appalachian region and elsewhere, and conditions affecting waterfalls, instanced by some in northeastern Pennsylvania.
DAVIS, William Morris—Continued.

[—] The topographic map of New Jersey.
Calls attention to topographic features expressing geologic relations or suggesting geologic problems: Submerged mouths of streams along coast, course and termination of ridges in the Newark region, fracture separating Archean highlands from lowlands of softer sediments, and some relations of the preglacial Passaic drainage.

The structure of the Triassic formation of the Connecticut valley.
Description and discussion of stratigraphy and the structural relations and characteristics of the igneous members, and a discussion of the mechanical origin of the Triassic monocline, with its faults and flexures.

The faults in the Triassic formation near Meriden, Connecticut.
Detailed description of the relations of traps and sandstones, and structural relations in the Meriden-New Britain region. Illustrated by sketch maps and cross-sections.

Topographic development of the Triassic formation of the Connecticut valley.
Description of structural features in the Meriden region, discussion of the cause and significance of the eastward deflection of the lower Connecticut, and the orographic relations and topographic history of the Connecticut valley region, and comparison of some of its stages with topography of fault systems in the Great Basin and in China.

The glacial origin of cliffs.
Discussion of the relations of cliff and talus slopes and their modification by glaciation, instancing those of the Newark regions of New Jersey and the Connecticut valley.

Methods and models in geographic teaching.
Includes a general discussion of various types and stages of topographic development.

[—] A river pirate.

DAVIS, William Morris—Continued.

[—] The topographic relations of some drainage features in the southeastern corner of Pennsylvania and discusses their history.

The ice age in North America and its bearing upon the antiquity of man.
[By G. F. Wright.]
A general review of the work.

The contoured map of Massachusetts.
A general review of the more characteristic topographic features of the State and some suggestions in regard to their geologic history.

The rivers and valleys of Pennsylvania.
General description of salient topographic and geologic features, sketch of geologic history, exposition of conceptions of stages of development of drainage systems in general, and discussion of the genesis, history, and relations of the drainage of Pennsylvania.

and WHITTLE, Charles Livy. The intrusive and extrusive Triassic trap sheets of the Connecticut valley.
An account of the general features of intrusive and extrusive sheets in Connecticut and the palisade sheet in New Jersey, and detailed description of the more important localities. Illustrated by maps and sections.

DAWSON, George M. Report on a geological examination of the northern part of Vancouver Island and adjacent coasts.
Map No. 1 in atlas.
Description of Cretaceous, Triassic, volcanics, granites, and drifts, and discussion of their distribution, relations, equivalency, geologic history, the contact relations of the granites and the existence of Carboniferous and Permian. Accompanied by a colored geologic map.

Notes to accompany a geological map of the northern portion of the Dominion of Canada east of the Rocky Mountains.
DAVIS, William Morris—Continued.

Includes a discussion of the characteristics, equivalency, age, range, structure, distribution, and relations of the various formations and areas, and of the direction of ice movement in the glacial period.

— On the Canadian Rocky Mountains, with special reference to that part of the Range between the 49th parallel and the headwaters of the Red Deer River.

Canadian Record of Science, vol. 2, pp. 381-390. 1887.
General sketch of topographic and geologic features, constituting an abstract of his paper in the Canadian Geol. Survey Report, vol. 1, new series, and described in the 1886 bibliography.

— On certain borings in Manitoba and the Northwest Territory.

Description of beds passed through at Rosenfield Station, Rat Creek, Solsgirth, Grenfel Station, McLean Station, Regina, Belle Plain Station, Langevin Station, Cassils, and Gleishen Station, and discussion of the equivalency of some of the strata, the thinning of some of the Paleozoic formations toward the region, the relation of the drift deposits, and the stratigraphy of the Cretaceous at the Langevin hole.

— Note on the Cascade Anthracite basin, Rocky Mountains.

General description of the trough and reference to the horizon and thickness of the Cretaceous in that region.

— The geological observations of the Yukon expedition, 1887.

Description of the geology of the Coast Ranges and of the region eastward to, and including the Rocky Mountains, in west central British Columbia. Includes references to rock series from granites to Miocene, relations of superficial deposits and evidence of glacial action, terraces, striation, and great volcanic ash deposit.

— Recent observations on the glaciation of British Columbia and adjacent regions.

DAVIS, William Morris—Continued.

Describes and discusses evidence bearing on the extent and directions of movements of the great ice mass. Includes a brief reference to the occurrence of bowlder clay deposits and to the general terracing of the region.

— Notes on the ore deposit of the Treadwell mine, Alaska.

Discussion of geology and geologic relations.

— On the earlier Cretaceous rocks of the northwestern portion of the Dominion of Canada.

Discusses correlation, extent, and geologic history of Kootanie, Queen Charlotte, and other earlier Cretaceous formations in western Canada, relations of overlying conglomeratic series, and Canadian equivalents of the Comanche formation of the Texas region.

— Glaciation of high points in the southern interior of British Columbia.

List of some glaciated high summits and remarks on their bearing on the conditions of the glaciation of the region.

— On the Archean, see FRAZER. Report on Archean.

— See, also, Dawson, J. W., and Dawson, G. M., on Cretaceous plants from Port McNeil, Vancouver Island.

DAWSON, J. William. On the correlation of the geological structure of the Maritime Provinces of Canada with that of western Europe. (Abstract.)

Canadian Record of Science, vol. 2, pp. 404-405. 1887.
Science, vol. 9, pp. 599-599. 1887.
Discusses correlation of the provinces of eastern Canada and those farther west, and points out their close similarity to the formations of western Europe.

— Notes on fossil woods from the western territories of Canada.

DAWSON, J. William—Continued.

Discusses the age of the Laramie group and questions of climate and contemporaneity of the lower Eocene flora of different regions.

— On the relation of the geology of the Arctic and Atlantic basins.


Points out the intimate relations of the Arctic formations to those of eastern North America.

Some points in which American geological science is indebted to Canada.


Résumé of the history of geologic research in Canada, especially by Logan. Briefly discusses the subdivisions of the pre-Cambrian of Canada; the relations and equivalency of the "Quebec" group, the position of the "so-called Jurassic of the western territories of the United States," and continental glaciation.

— On the fossil plants of the Laramie formation of Canada.

Canada, Royal Soc., Trans., vol. 4, section IV, pp. 19-34, pls. 1-2. 4°. 1887.

Describes the extent and stratigraphy of the formation and discusses its equivalency and floral relations.

— Cretaceous floras of the northwest territories of Canada.


Abstract of paper read to Royal Society of Canada. 1888.

Includes references to localities, climatic conditions in later Cretaceous and early Tertiary times, the position of the Laramie of the Northwest, and the distinction between the lower and upper Laramie.

DAVIS, William Morris—Continued.

middle Laurentian, the aqueous origin of the greater part of the upper Laurentian, the equivalency of some of the cr-stalline rocks west of Lake Superior with the upper Laurentian of St. Jerome, and some instances of rock lamination.

— Notes on fossil woods and other plant remains from the Cretaceous and Laramie formations of the western territories of Canada.

Canada, Royal Soc., Trans., vol. 5, section IV, pp. 31-37. 4°. 1888.


Includes references to localities, climatic conditions in later Cretaceous and early Tertiary times, the position of the Laramie of the Northwest, and the distinction between the lower and upper Laramie.

— On the Eozoic and Paleozoic rocks of the Atlantic coast of Canada in comparison with those of western Europe and the interior of America.


Subdivisions, relations, history, extent, and equivalency of Laurentian, Huronian, Cambrian, Ordovician, Silurian, Devonian, and Carboniferous systems.

— [On nomenclature, subdivisions, characteristics, evidence of life and origin of some members of the Archean, origin of serpentines, classification of Archean eruptives, nomenclature of lower Paleozoic.]


— [On use of term "Taconic."

International Congress of Geologists, Am. Committee Reports, 1888, B, p. 17, 1 line.


Expression of opinion.

— On Nematophyton and allied forms from the Devonian (Erian) of Gaspe and Bay des Chaleurs. Introductory geological note.

Canada, Royal Soc., Trans., vol. 6, Section IV, pp. 27-36. 1888.

Includes a sketch of the stratigraphy of the region and table showing the equivalency of the Devonian beds with those of other localities.
DAWSON, J. William—Continued.

— Supplemental note to a paper on the rocks of the Atlantic coast of Canada.


Reference to the position of the Olenellus fauna and to the bearing of new evidence on this point on the geologic conditions during Lower Cambrian and late pre-Cambrian times.

— Note on Balanus Hameri in the Pleistocene at Riviere Beaudette, and on the occurrence of peculiar varieties of Mya arenaria and M. truncata in the modern sea and in the Pleistocene.


Brief reference to nature and equivalency of the containing beds.

— Handbook of geology for the use of Canadian students, p. 250, Montreal. 1889.

— and DAWSON, G. M. On Cretaceous plants from Port McNeill, Vancouver Island.

Canada, Royal Soc., Trans., vol. 6, Section IV, pp. 71-72.


Includes a description of the relations of the plant-bearing beds and statement in regard to their equivalency and age.

[DAY, David T.] Infusorial earth.


Notice of occurrence at Pope's Creek, Maryland, and Linkville, Klamath County, Oregon. Analyses of former by P. de P. Ricketts.

Delaware, Sand dunes of Lewes, Rotherock.

DEMING, J. L. See HERRICK, C. L. and CLARKE, E. S.


Clinton group of Ohio, Foerste.

Geological history of Licking County, HERRICK.

Geology of Michipicoten Bay, HERRICK, TIGHT and JONES.

— vol. 3.

Clinton group of Ohio, Foerste.

Geology of Licking County, Ohio, HERRICK.

— vol. 4.

Geology of Licking County, HERRICK.

Bull. 75—5


Contact phenomena in South Carolina, RICHARDS.

DENNIS, D. W. The east-west diameter of the Silurian island about Cincinnati.


Abstract of paper read to Indiana Academy of Science.

Reference to occurrence of beds indicating position of shore line.


Jorullo in Mexico, Felix.

DERBY, Orville A. On the occurrence of monazite as an accessory element in rocks.


Announcement of discovery of monazite and zircon as constituents of various granite rocks in Brazil.

Devonian.

Alabama, SPENCER, J. W.

Canada, At-ta-wa-pish-kat and Albany rivers, Bell.

Baffin Land, Boas.

Eozooic and Paleozoic of Canada, Dawson, J. W.

explorations in portions of New Brunswick, Bailey and McINNERS.

gypsum in northern Manitoba, TYRELL.

natural gas in Quebec, LAFLAMME.

Nematophyton from Gaspé, Dawson, J. W.

northern Maine and New Brunswick, Bailey.

northern part of the Dominion of Canada, DAWSON, G. M.

Nova Scotia, faults and foldings in Pictou coal field, GilPIN.

Nova Scotia, Guysborough, Antigonish, and Pictou, Fletcher.

Ontario iron ores, Ives.

Ontario petroleum field, Bell.

Ontario, range of Hamilton fossils, Calvin.

organisms in southern New Brunswick, Matthew.

Passamaquoddy Bay region, Matthew.

Red River Valley, Manitoba, McCharle.
Devonian—Continued.

Canada—Continued.
relations between geology of Maine and New Brunswick, Bailey.
Rocky Mountains near the 51st parallel, McConnell.
well at Port Colborne, McRae.

Georgia, Spencer, J. W.

Indiana, Gorley. Thompson, M.

Iowa, Devonian fauna, Williams, H. S.
general description, Webster.
Johnson County, Webster.
Muscatine County, Calvin.
Rockford shales, Webster.
southeastern Iowa, Gordon.
well at Keokuk, Gordon.
well at Davenport, Tiffany.
well at Washington, Calvin.

Kansas, Leavenworth well, Jameson.

Kentucky, Bath and Fleming counties, Linney.
Clarke, Lincoln, Mercer, Linney.
central Kentucky, Linney.
Garrard County, Linney.
Henry, Selby, and Oldham counties, Linney.
Jackson purchase region, Loughridge.
Marion County, Knott.
Nelson County, Linney.
Oriskany of eastern, Proctor.
Ohio Valley, Shaler.
Pound Gap region, Crandall.
rocks of central Kentucky, Linney.

Maine, Aroostook County, Bailey.
Eastport, Shaler.
northern Maine, Bailey.

Minnesota, natural gas wells, Winchell, N. H.
maps, Upham.
artesian wells, Hall, C. W.

Missouri, Chouteau group, Rowley.
history of Ozark uplift, Broadhead.
Macon County, McGee.

Montana, Gallatin region, Hayden.
Walcott.

Nebraska, well at Lincoln, Russell, J. W.
well in Pawnee County, Russell, J. W.

New Jersey, Green Pond Mountain group, Merrill, F. J. H.
geologic map, Cook.
map of vicinity of New York city, Martin.

New York, building stones, Smock.

Devonian—Continued.

New York—Continued.
fauna of upper Devonian; Genesee section, Williams, H. S.
Hamilton of Chenango and Otsego counties, Prosser.
Oneonta sandstone, Beecher and Hall.
well at Morrisville, Prosser.
Williams's report on Devonian, Marcou.

Nomenclature and classification, report of Subcommittee on upper Paleozoic, International Congress of Geologists, Williams, H. S.
plants of the Paleozoic, Lesquereux.
Williams's report on Devonian, Marcou.
comparison of cis- with trans-Atlantic formations, Winchell, H. S.
types of Devonian system in North America, Williams, H. S.

Ohio, geology of Ohio, Orton.
Licking County, Herrick.
plants, Newberry.
report on oil and gas, Orton.
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Pennsylvania, Cambria County, Fulton.
four great sandstones, Claypole.
Lehigh River cross section, Hill, F. A. Winslow.
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oil and gas regions, Carroll.
paint ores along Lehigh River, Hill, F. A.

Virginias, Greenbrier County, Page.
Low Moor, Lyman.
mineral resources of Tennessee, Page.

New River-Cripple Creek region, d'Invilliers and McCrea.
southwestern Virginia, Stevenson.

DEWEY, Fred. P. Note on the nickel ore of Russell Springs, Logan County, Kansas.

Includes brief reference to geologic relations of beds in which it occurs.
DILLER, J. S. Notes on the geology of northern California (abstract).

The latest volcanic eruption in northern California and its peculiar lava.
Describes beds of volcanic ash, in places including the stumps of more or less decayed trees, and in part overlain by a peculiar "quartz basalt," the nature, origin, and occurrence of which is discussed at length.

Peridotite of Elliott County, Kentucky.
Describes its occurrence, micro-petrography, structure, and alteration. Discusses its nature, origin, and relations to the associated Carboniferous sandstones. Quotes Crandall's description of the region.

Supplementary note on the peridotite of Elliott County, Kentucky.
 Entirely petrographic.

[Report on petrography of peridotite from Douglas County, Oregon, and Webster, North Carolina.] See CLARKE, F. W., on nickel ores from Oregon.

and KUNZ, George F. Is there a diamond field in Kentucky?
Describe and figure the peridotite outcrops, call attention to an exposure of contact with the Carboniferous shales, and discuss the possibilities of the occurrence of diamonds.

DODGE, James A.—Continued.
Analyses and letter from A. Pugh on number of beds and dip.

DRUMMOND, A. T. The distribution and physical and past geological relations of British North American plants.
Discusses probability of a Tertiary land connection between Asia and North America, and post-Tertiary changes in North American physiography which would impede the eastward extension of plants. Advances botanical evidence in opposition to the idea of regional glaciation in Canada, and argues in favor of local glaciation. Incidentally refers to climatic conditions in later Cretaceous and Eocene times indicated by the flora.

The prairies of Manitoba.
Description of superficial deposits and discussion of the origin of the prairies.

The great lake basins of Canada.
Objections to the theory of continental glaciation in America. Discussion of origin of the basins and the relations of land and water in northern North America during the glacial epochs.

The great lake basins of the St. Lawrence.
A discussion of their origin, history, associated superficial deposits, relations to geologic structure of the region and conditions during glacial period.

DUMBLE, E. T. The Nacogdoches oil field.
References to the lower Eocene horizon of the oil-bearing beds.

DUNN, Russell L. Drift mining in California.
Includes references to the ancient drainage systems to which the gold-bearing gravels belong. Discusses relations, sequence, and extent of some of the lava flows by which this drainage system was displaced.
**DUTTON, Clarence E.**—Continued.

Discussion of earth crust deformation.

**DWIGHT, William B.**—Paleontological observations on the Taconic limestones of Canaan, Columbia County, New York. (Abstract.)


Describes Trenton and Calciferous fossiliferous limestone exposures.

— Primordial rocks of the Wappinger Valley limestones.

Vassar Brothers' Inst., Trans., vol. 4, pp. 130-141, Pl. 1. 1887.


— Primordial rocks of the Wappinger Valley limestones and associated strata.


Calls attention to several new localities of fossiliferous Potsdam and discusses the relations of the several belts of this formation to each other and to the associated limestones. Announces the discovery by himself and Walcott of middle Cambrian remains in the quartzites and limestone on the flanks of Stissing Mountain and its vicinity, and describes the structure of the region. Gives a general résumé of the formations occurring in Dutchess County, New York.

— Remarks on crustal plication in continental elevation.


Discusses Warring's address on the evolution of continents.

— Recent explorations in the Wappinger Valley limestone of Dutchess County, New York. No. 6. Discovery of additional fossiliferous Potsdam strata and pre-Potsdam strata of the Olenellus group, near Poughkeepsie, New York.


Essentially similar to “Primordial rocks of the Wappinger Valley limestones and associated strata,” which antedates it.

— Recent explorations in the Wappinger Valley limestones and other formations of Dutchess County, New York. No. 7. Fossiliferous strata of the paraadoxides zone at Stissing. No. 8. Dis-
Dwight, William B.—Continued.  
Discovery of Calciferous fossils in the Millerton-Fishkill limestone belt; also in a belt near Rhinebeck.  
No. 7. Description of relations of Olenellus—

Edinburgh Geological Society, Transactions, vol. 5.  
Canadian and Scottish glacial geology, Richardson.  
Geology of Winnipeg district, Mc-Charles.  
Lake age in Ohio, Claypole.  
Terraces of American lakes and roads of Glenroy, Kinahan.  
Eccentricity theory of glacial cold, Claypole.  

Eldridge, George H. Some suggestions upon the method of grouping the formations of the middle Cretaceous and the employment of an additional term in its nomenclature.  
A discussion of the classification of the middle Cretaceous in the West and Northwest, including a general description of the characteristics of its several members.  
— On some stratigraphical and structural features of the country about Denver, Colorado.  
Description of the Archean and Triassic to Tertiary formations, coals, unconformities, faults, flexures, and topographic characteristics, discussion of various questions of equivalency and classification, and sketch of geologic history of the region.  

Mica mining in North Carolina, Phillips.  

Ells, R. W. Report on the geology of a portion of the eastern townships, relating more especially to the counties of Compton, Stanstead, Beauce, Richmond, and Wolfe.  

Ells, R. W.—Continued.  
Description of Silurian, Cambro-Silurian, Cambrian, pre-Cambrian, granites, diorites, serpentines, drifts and structure, and discussion of the age, history, equivalency, and structural relations of the several formations, and the nature of glaciation in the region.  
List of glacial striæ. Accompanied by a colored geologic map.  
— Elementary lecture on geology.  
An account of the history of geologic science and sketch of geologic history of Canada, in which are included brief discussions of the nature and relations of the pre-Cambrian crystallines and of the conditions during the Quaternary.  
— Notes on the geological relations and mode of occurrence of some of the more important economic minerals of eastern Quebec.  
Includes a brief general account of the geology of the region, incidental references to geologic features, and allusions to age of the gold-bearing series and to occurrence and relations of the serpentines.  

Emerson, B. K. The Connecticut Lake of the Champlain period, north of Holyoke.  
Abstract of paper on Hampshire County, Massachusetts. Describes the outline of the lake and its deposits. Discusses the duration of the lake and the remoteness of the glacial period.  
— [On the use of the term “Taconic.”]  
Expression of opinion.  
— Topography—geological features [etc.].  
EMERSON, B. K.—Continued.
Crystalline rocks, Triassic formation and glacial features, and a brief sketch of the geologic history of the region.

EMMONS, Ebenezer. Geology of the Montmorenci.
Am. Geologist, vol. 2, pp. 94-100. 1888.
From the Am. Magazine, November, 1841.

EMMONS, S. F.—Continued.
Rocky Mountain division.
Outlines evidence in the Gunnison district and elsewhere, indicating a Jurassic and a Carboniferous unconformity in the Rocky Mountain region. Describes the age and extent of the uplifts.
— [On the use of the term "Taconic."]
Expression of opinion.

Abstracts, Science, vol. 11, pp. 18-19, 1889;
Detailed description of the geology of the Mosquito Range and of Leadville and vicinity. Discusses geologic history; stratigraphy and structural relations; origin of dolomites; occurrence of serpentinite in Silurian rocks and elsewhere; the relations of the faults and flexures and their development; the structure of the Rocky Mountains and Basin Ranges; the succession, age, extent, texture, and composition of the eruptive rocks, the mechanism and extent of intrusion, the distribution of intrusives in the Rocky Mountains, the occurrence of laccolites in the Henry Mountains and elsewhere; contact, metamorphism, classification of ore deposits in general, and the relations, composition, and genesis of the Leadville deposits. Accompanied by maps, plans, and sections, and includes: Appendix A, Petrography, by Whitman Cross; B, Chemistry, by W. F. Hillebrand, and C, Metallurgy, by Antony Guyard.
— Notes on some Colorado ore deposits.
Considers the relation of faults to ore deposits, describing some features of the Leadville, Carbonate Hill, and San Juan regions.
— Notes on the geology of Butte, Montana.
Describes the topography, mineral deposits and characteristics, and distribution of the rocks. Discusses the origin of the depression in which Butte is situated, the history of its ores, and the relations of the fissures. The genesis of the area is also discussed by R. W. Raymond, pp. 11-14.
— The submerged trees of the Columbia River.
Discusses the cause of the damming of the Columbia River, restating an explanation previously published, and opposing Dutton's theory of a transverse anticlinal.
— Structural relations of ore deposits.
Discussion of causes, nature, and relations of structural and physical conditions affecting the transportation and deposition of mineral matter. References to relations of faults and mineral deposits in various parts of Colorado and at the Ontario mine, Utah.
— On the origin of fissure veins.
Discussion of causes, nature, and relations of structural and physical conditions affecting the transportation and deposition of mineral matters and the origin and relations of fissures and planes produced by dynamic movements.
— On glaciers in the Rocky Mountains.
Consists mainly of a discussion of distinctions between glaciers and névé and an account of the existence of glaciers in the Rocky Mountains and the Sierra Nevada. Refers also to the results of former glaciation in the same regions.
— Preliminary notes on Aspen, Colorado.
Account of geologic relations of the region and discussion of the structure of Aspen Mountain, the dolomitization of the limestones, and evidence bearing on the sequence of porphyry intrusions, faulting, and ore deposition. Reference to evidences of glaciation.
— On subdivisions, nomenclature, origin of some members, and characteris-
EMMONS, S. F.—Continued.
tics of the Archean, classification of eruptives, and origin of serpentines.]
— [On the use of the Term “Taconic.”
International Congress of Geologists, Am.
Committee Report, 1888, B, p. 17, 2 lines.
ENDLICH, F. M. The origin of the gold deposits near Ouray, Colorado.
1889.
Includes a general description of the geologic features of the region.
ENGINEERING AND MINING JOURNAL. Gogebic iron mines.
Eng. and Mining Jour., vol. 43, p. 182, 4o.
1887.
Description of nature and structure of ore beds and associated strata.
— The “Dauntless” core drill.
Eng. and Mining Jour., vol. 46, p. 193. 4o.
1888.
Gives columnar section of coal measures in drill-hole at Saybrook, Illinois.
— The Sylvanite mine, Colorado.
Eng. and Mining Jour., vol. 46, pp. 499-500. 4o.
1888.
Brief reference to presence of associated diorite and highly altered sediments.
— Zinc mining in Arkansas.
1889.
Includes a brief general sketch of geology of zinc region in Marion County.
Engineering and Mining Journal, vols.
43 and 44—Continued.
American chemical industries, salt,
WYATT.
Battle Mountain mining district, Olcott.
Chapin iron mine, Lake Superior, Larsson.
Copper deposits, Morenci, Arizona, Henrich.
Copper ores of Southwest, Wendt.
Earthquake phenomena, Freeman.
Elements of primary geology, Hunt.
Fossil fuels of Illinois, Comstock.
Geologic map of Europe, Raymond.
Geologic survey of New Jersey, Report, Raymond.
Gogebic iron mines, Eng. and Mining Journal.
Lead and copper of Missouri, Clerc.
Mineral resources of Kentucky, Proctor.
New gas in United States, Ashburner.
Phoenix mine, Arizona, Ricketts.
San Pedro copper mine, New Mexico, Henrich.
Silver mines, Thunder Bay, Bell.
Tin in North Carolina, Van Ness.
— vol. 45.
Western iron belt of Tennessee, Killebrew.
East Tennessee minerals, Cowlam.
Mineral resources of Tennessee, Proctor.
Cœur d’Alene silver-lead mines, Clayton.
Beaver mine, Ontario, Canada, Brent.
Formation of coal seams, Nathurst.
Geology of Aspen, Colorado, ore deposits, Siver.
Geology and mining industry of Leadville, Emmons [Review], Raymond.
Mica mining in North Carolina, Phillips.
Formation of coal seams, Gresley.
Formation of coal beds, Wardroper.
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Aspen Mountain ores, Brunton.
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Ore deposits of Red Mountain district, Colorado, Kedzie.
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Michigan gold fields, Parker.
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Petite Anse salt mine, Pomeroy.
Life history of Niagara Falls, Pohlsman.
Ore deposits in limestones, Henrich.
United and Champion copper mines of New Zealand, Henrich.
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Is a faulted fissure the oldest? Henrich.
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ancient glaciers of North Wales, Evans.

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Description of the distribution, characteristics, and contact relations of the granites and the Cambrian beds, and the faults and flexures traversing them.

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Description and discussion of mode of origin and equivalency with other similar deposits.

FAUR, Faber du. The sulphur deposits of southern Utah.
Describes decomposed andesites, trachyte, and limestone with sulphur impregnations.

FELIX, Johannes. Ueber einen besuch des Jorullo in Mexico.

Europe—Continued.
Extra-morainic lakes and clays in England, North America, etc.
Lewis.
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geologic map, Frazer. Raymond.
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EVANS, F. Johnston. Among the ancient glaciers of North Wales.
Description of evidences of glaciation.

F.

FELIX, Johannes—Continued.
Includes references to the nature and relations of the lavas, and the character of the crater.

Discussion of erosive agents and extent of erosion.
— Across the Santa Barbara Channel.
Includes references to some geologic features and history of Santa Cruz Island, and the origin of some sandstone bowlders near Santa Barbara.

FINCH, W. W. Infusorial earth at Santa Barbara, California.
Not seen.

FISCHER, Moritz. Natural gas in Kentucky.
Abstract from Am. Manufacturer, Natural gas supplement. 1886.
FLEMING, H. S.—General description of the ores used in the Chattanooga district.

Analyses of some Alabama and East Tennessee Clinton iron ores.

FLETCHER, Hugh.—Report on geological surveys and explorations in the counties of Guysborough, Antigonish, and Pictou, Nova Scotia, from 1882 to 1886.


Description of formations from pre-Cambrian to Permian, superficial deposits, volcanic and metamorphic rocks, structural relations and overlaps, and discussion of equivalency, age, history, and distribution of the formations at various localities. Soils.

Florida, deposits of phosphate of lime, Penrose.

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Geologic Survey Report, Kost.
Miocone, Langdon.
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FOERSTE, A. F.—The Clinton group of Ohio, part 2.

Paleontologic.
—Notes on a geological section at Todd's Fork, Ohio.

Description of Cincinnati blue clay, marking the period of disturbance between lower and upper Silurian. Discussion of equivalency, paleontologic relations, and history of the several members.

—The Clinton group of Ohio, part IV.


Lithologic characteristics; analyses; occurrences of fossils; discussion of subdivisions and their equivalency, relations to adjoining formations, extent and faunal relations.

—The paleontological horizon of the limestone at Nahant, Massachusetts.


FOERSTE, A. F.—Continued.

Discussion of the relations and equivalency of the Nahant limestones and of the Cambrian rocks of eastern Massachusetts.
—Notes on Clinton group fossils, with special reference to collections from Indiana, Tennessee, and Georgia.

Includes brief description of the stratigraphy of the Silurian formations at Hanover, Indiana, and at a locality in northwestern Georgia.

—Fence-wall geology.

Hints on the study of areal geology in drift-covered areas.

FORD, S. W. [On the nomenclature of the American lower Paleozoic.]

Reference to the equivalency of the 'Quebec group,' use of term Cambrian, position of base of Silurian, and the application of the term 'primordial fauna.'

—Notes on certain fossils discovered within the city limits of Quebec.
Review of Charles Lapworth, 1886. Discussion of the age and faunal relations of the containing beds, and of the stratigraphic position and relations of the Norman's Kill graphitic slates in central eastern New York.

Forum, 1888, Changes of level of the Great Lakes, Gilbert.

International Congress of Geologists, Frazer.
Stratification of anthraeite of Pennsylvania, Wasmuth.

vol. 125.
Southern anthracite coal field of Pennsylvania, Wasmuth.

FRAZER, Persifor, Jr. A card to American geologists.

Announcement of time of meeting of American Committee of the International Congress, and request for statements of views in regard to classification, nomenclature, coloring, etc.
FRAZER, Persifor, jr.—Continued.

— International Congress of Geologists—American Committee meeting at Albany.
  Report of proceedings, and a circular describing the allotment of subjects to reporters, who request aid in the preparation of their reports.

— Note on the new geological map of Europe.
  Information in regard to its preparation and sale.

— The address of Vice President G. K. Gilbert before section E, American Association for the Advancement of Science, Columbia College, New York, August 10, 1887.
  A general review and discussion of the salient points of the address, which is on the work of the International Congress of Geologists.

— The relations of the International Geological Congress to geological workers.
  Calls attention to the generalized and liberal nature of the decisions of the Congress, quoting some of its recommendations as instances.

— Geological questions.
  Science, vol. 10, p. 35. 1887.
  Concerning suggestions on nomenclature by the International Committee, the relations and subdivisions of the Archean, the age and nature of crystalline rocks, applicability of some European terms to American formations, organic life in the "Archean," on the classification and map coloring of eruptives, the nature of serpentines, the use of the term "Taconic," and the subdivision of the Cambrian.

— The geologists’ Congress.
  Science, vol. 10, pp. 119-120. 1887.
  Discusses the use of the term "Archean" by the International Geologic Congress in defense of the anonymous criticisms in Science, vol. 10, p. 88. Explains the reason for including all pre-Cambrian formations in the Archean.

— A short history of the origin and acts of the International Congress of Geologists, and of the American Committee delegates to it.

— Report of the subcommittee on the Archean.

— An unjust attack. (Reply to articles concerning the American Committee of the International Congress of Geologists by Prof. J. D. Dana and Maj. J. W. Powell in the American Journal of Science for December, 1888.)
  An account of the history of the preparation and publication of the various reports and some of the proceedings of the committee.

FREEMAN, H. C. Earthquake phenomena.
  Eng. and Mining Jour., vol. 44, pp. 110-111. 1887.
  Suggests an explanation for the subsidence of 500 acres in Trigg County, Kentucky.

FRIEDRICH, James J. [Silicified wood from California.]
  Includes reference to the relations and age of the associated deposits in Lake and Napa counties.

FULTON, John. Mode of deposition of the iron ores of the Menominee Range, Michigan.
FULTON, John—Continued.


Description of geologic relations of ores and enclosing formations.

— Geological map of Cambria County.


Shows areal distribution of formations from Pittsburgh series to Catskill formation, and axes of the flexures.

— Geological map of Somerset County.


Shows areal distribution of formations from Monongahela series to Chemung shales, and the axes of the flexures.

— Columnar section of the lower productive bituminous coal measures, (Alleghany River series,) Cambria County, Pennsylvania.


— Geological columnar sections in Cambria County.

FULTON, John—Continued.


Eight bore-hole and surface sections from various authorities.

— [Cross section through the crest of the Alleghany Mountain from Bennington shaft, westward.]


Showing relations of the coal beds.

— Notes on Cambria County.


Records of gas wells at Johnstown and Sang Hollow and Bennington section in part, revised and corrected.

FURMAN, John H. The tin deposits of North Carolina.


Mainly a description of the geologic relations in the King's Mountain region. Illustrated by plates of sections and a geologic map.

G.

GARLAND, J. Copper mining at the Cove, Newfoundland.


Not seen.

GASKING, S. The Arctic current and floating ice as factors in Canadian geology.

Liverpool Geol. Assoc., Journ., vol. 8, pp. 75-82. 1889.

On icebergs as bearers of earth and stones and the origin of Canadian drift deposits.

Geologic Philosophy—Continued.

Petrography—Continued.

KEMP. Dikes of Hudson River highlands.

LAWSON. Dikes of Rainy Lake region.

BAYLEY. Quartz-keratophyre from Pigeon Point.

HERRICK, CLARK, and DEMING. Gabbros and norites.

WADSWORTH. Peridotites, gabbros, and andesites of Minnesota.

MERRILL, G. P. Peridotites from Little Deer Island, Maine.

BECKER. Quicksilver deposits of Pacific slope.

MERRILL, G. P. Ophiolites of Warren County, New York.

SEARS. SPENCER, J. W. Origin of bowlders by decomposition.

BLAKE. EMMONS, S. F. RUSSELL, I. C. SEARS. STOCKBRIDGE. Rock decomposition.

RUSSELL, L. C. Subaerial decay of rocks and origin of red color of certain rocks.
Geologic Philosophy—Continued.
Petrography—Continued.

IDDINGS. Lithophysa and lamination of acid lavas.
WILLIAMS, G. H. Origin of serpentines.
WILLIAMS, G. H. Holocrystalline granitic structure in Tertiary eruptives.
BECKER. Texture of massive rocks.
IDDINGS. Crystallization of igneous rocks.
WINCHELL, A. H. Diabasic schists with jaspilite, Minnesota.
CROSS. Paramorphic origin of certain minerals.
HOBBS. Paragenesis of allanite and epidote in rocks.
BECKER. HUNT. LAWSON. WILLIAMS, G. H. Rock structure.
WILLIAMS, G. H. Archean geology of Maryland.
HERRICK. Metamorphism in rocks.
WILLIAMS, G. H. Metamorphism of eruptives on south shore of Lake Superior.
WINCHELL, A. Conglomerates in gneiss.
DANA, J. D. Variations in intensity of metamorphism.
WINCHELL, A. Northeastern Minnesota.
AMERICAN GEOLOGIST. Danzig on nature of gneiss and granulites of Saxony.
MERRILL, G. P. Montville serpentine.
BRITTON. Geology of Staten Island. Serpentine.
HUNT. Origin of crystalline rocks.
SCIENCE. Hunt’s mineral physiology, etc.
LAWSON. Metamorphism in Lake Superior region.
CALLAWAY. HUNT. LAWSON. Parallel structure in rocks.
LAWSON, WINCHELL, A. Foliation and sedimentation.

Geologic Philosophy—Continued.
Petrography—Continued.

HUNT. Genetic history of crystalline rocks.
Earth crust movements and faults.
DAVIS, W. M. Structure of Trias of Connecticut valley.
ELDRIDGE. Faults in Denver region, Colorado.
SHALER. Crenitic hypothesis and mountain building.
DUTTON. Problems of physical geology.
WHITE, C. A. Mountain upthrusts.
LE CONTE. Origin of normal faults.
MARGARIE. Appalachian flexures in Pennsylvania.
HITCHCOCK. Genesis of Hawaiian Islands.
DANA, J. D. Origin of Oceanic depressions.
NEWBERRY. Earthquakes.
BECKER. Mechanism of faulting.
EMMONS, S. F. Origin of fissure veins [and faults].
HENRICH. Is a faulted fissure always the oldest?
RUSSELL, I. C. Great Basin structure.
WINCHELL, A. Effect of pressure of a continental glacier.
GILPIN. Anticlinals, Nova Scotia, gold region.
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STEVENSON. Faults of southwestern Virginia.
DUTTON. Zuni plateau fault.
DwIGHT. WARRING. Evolution of continents.
WASMUTH. Faults and flexures in Pennsylvania anthracites.
Genesis of topography.
McGEE. Classification of geographic forms by genesis.
DAVIS, W. M. Geographic methods in geologic investigations.
DAVIS, W. M. Methods and models in geographic teaching.
CRANDALL. Pound Gap region, Kentucky.
ELDRIDGE. Denver region, Colorado.
WEBSTER. Central basin of Iowa.
DAVIS, W. M. Rivers and valleys of Pennsylvania.
McGEE. Head of Chesapeake Bay.
Geologic Philosophy—Continued.

Genesis of topography—Continued.


WINCHELL, N. H. Geology of Minnesota.

CHALMERS. Northern New Brunswick and southern Quebec.

BECKER. Shape of volcanic cones.

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LEWIS, H. C. Origin of extra-morainal lakes and clays.

WILLIS. Time and extent of Appalachian uplift.

WILLIS. LINNEY. Relation of structure to drainage and topography.

WILLIS. Round about Asheville.

KINAHAN. Origin of some old shorelines.

SHALER. Seacoast swamps.

Hydraulic degradation.

HINMAN, MEYER. SCIENCE. Laws of corrosion.

POWELL. Laws of hydraulic degradation.

Volcanism.

DANA, J. D. Hawaiian Islands.

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BECKER. Shape of volcanic cones.

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DANA, E. S. Origin of volcanic stalacties.

Glaciation.

SPENCER, J. W. Glacier erosion in Norway.

ROGERS. Philosophy of glacier motion.

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BOUVÉ. Potholes, Cohasset.

CHAMBERLIN, T. C. Rock scorings of the great ice invasion.

DAVIS, W. M. Glacial origin of cliffs.

BRANNER. Glaciation in Lackawanna-Wyoming region, Pennsylvania.

Geologic Philosophy—Continued.

Glaciation—Continued.

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DAVIS, W. M. WRIGHT. Ice age in North America.

HAY, R. Manner of deposit of glacial drift.

UPHAM. Structure of drumlins.

BELL. Ice phenomena.

LEWIS. Origin of extra-morainal lakes and clays.

SHALER. History of some Nantucket glacial features.

KINAHAN. Origin of some old shorelines.

Genesis of mineral deposits.

ATTWOOD. Lithology of wall rocks, California.

BECKER. Quicksilver deposits of Pacific slope.

BLAKE. Rainbow lode, Montana.

COLLINS. Sudbury copper deposits, Canada.

BLAKE. Copper basin, Arizona.

EMMONS, S. F. Structural relations of ore deposits.

EMMONS, S. F. Leadville region, Colorado.

IHLSENG. San Juan region, Colorado.

DAWSON, G. M. Treadwell mine, Alaska.

LAKES. Geology of Colorado ore deposit.

ENDLICH. Origin of gold deposits near Ouray.

RAYMOND. Review of Emmens's Leadville report.

HILLS. Ores in Rocky Mountain region.

BRUNTON. Aspen Mountain, Colorado.

LEGGETT. Rosario mine, Juancito, Central America.

CLAYTON. Drumlummon veins, Idaho.

VAN HISE. Iron ores of Penokee-Gogebic region.

LAWSON. Origin of ores of Keewatin, Minnesota.

BROWNE. Luddington mine, Michigan.

COMSTOCK. West central Arkansas.

EMMONS, S. F. Origin and alteration of Colorado ores.
Geologic Philosophy—Continued.

Genesis of mineral deposits—Continued.

EMMONS, S. F. Butte, Montana.
BRITTON, RAYMOND. Archean iron ores in New Jersey and New York.
NEWBERRY. Colorado oil fields [oil and gas].
JENNEY. Graphitic anthracite, Idaho.
ASHBURNER. Petroleum and gas in New York.
BELL. Petroleum field of Ontario.
AM. GEOLOGIST. Origin of petroleum.
ORTON. Reports on Ohio [oil and gas].
SHALER. Petroleum and organic matter in rocks.
BROWN. Pyrite in bituminous coal.
NEWBERRY. Origin of graphite.
FULTON. Iron ores, Menominee range.
AM. GEOLOGIST. Origin of chert in Iowa coal measures.
PENROSE. SHALER. Origin of deposits of phosphate of lime.
NEWBERRY. BISHOP. OCHSENIEUS. Origin of salt deposits.
WEED. Siliceous sinter in thermal springs.
ORTON. Gypsum in Ohio.
TYRRELL. Gypsum in Manitoba.
AM. GEOLOGIST. NATHERST. WARDROPER. Formation of coal seams.
BECKER. Pacific slope. [Origin of nodules in sandstone.]
CROSBY. Quartzite and siliceous concretions.
Coral formations, Agassiz. AM. GEOLOGIST. DARWIN. DANA, J. D. HEILPRIN. HICKS. MORRIS.

Miscellaneous.
CLAYPOLE. Condition of interior of earth.
IRVING. Classification of early Cambrian and pre-Cambrian.
CAMPBELL. NEWBERRY. WEBSTER. Origin of loess.
SHALER. Origin of division between layers of stratified rocks.
[Character of primitive earth crust], BECKER.
READE. Physical theories of the earth in relation to mountain formation.

Geologic Philosophy—Continued.

Miscellaneous—Continued.

SPENCER, J. W. Hummocks and boulders of decomposition in Missouri.
HEILPRIN. Rate of deposition of geologic formations.
BAIN. Permian climate.
FOERSTE. Fence-wall geology.
WILLIAMS, H. S. Fossils in determining geologic age.


Geology of Rio Grande valley, OWEN. Coal in Texas, STRECKERWITZ.
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Geology of western Texas.

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Geological survey of Texas, ANON.
Drift at Gainesville, Texas, RAGSDALE.
Geology of Haldeman County, J. T. W.
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Gas well at San Antonio, TAY.
Geology of Burnet County, WALKER.
Building stones of eastern Texas, PENROSE.

Borings in Manitoba, etc., DAWSON, G. M.
Cambrian of North America, HICKS.
Cortlandt rocks, HARKER.
Elements of primary geology, HUNT.
Gabbros, etc., of Baltimore region, WILLIAMS, G. H.
Gustaldi on Italian geology, HUNT.
Glaciation of North America, Great Britain and Ireland, LEWIS.
Parallel structure in rocks, CALLAWAY.

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Glaciation of British Columbia, DAWSON, G. M.
On Hindeastraea, WHITE, C. A.

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Graptolites from Dease River, British Columbia, LAPWORTH.
Richmond coal field, VIRGINIA, NEWELL.
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Turritellus in Utica at Ottawa, Woodward.
Subaerial deposits of arid region of North America, Russell.
Glaciation of eastern Canada, Chalmers.
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Geological Society, Quarterly Journal, vol. 44.
Huronian series near Sudbury, Canada, Bonnery.
Eozoic and Paleozoic of the Atlantic coast of Canada [etc.], Dawson, J. W.
Equivalency of Huronian with Pobi-dian, Hicks.
On the Sudbury copper deposits, Collins.
Huronian rocks at Sudbury, Attwood.

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Supplement on rocks of Atlantic coast of Canada, Dawson, J. W.

Georgia, aluminum ore, Nichols.
Clinton fossils, Foerste.
coal, Ashburner.
formation of coal beds, Wardroper.
Geological Survey, Spencer, J. W.
Tertiary, Heilprin.

Gilbert, G. K.—Continued.
uniformity in conditions of deposition, life, and geologic phenomena over wide areas, in opposition to the “World wide” classification of geologic subdivisions. Reviews the color scheme adopted by the Congress, and after discussing the essentials and means of map coloring, suggests the adoption of the prismatic system.

— [Stages of geologic history of Sierra Nevada.]
Remarks following paper by J. S. Diller on the geology of northern California.

— Old shore lines in the Ontario basin.
Sketch of literature. Describes search for terraces from Aurora to Toronto.

— Changes of level of the Great Lakes.
Includes a sketch of the history of the Great Lakes.

— [Views in regard to the work of the International Congress.]
Discussion of its scope, proposed nomenclature, and color scheme.

— Beaches of Lake Ontario, see Chamberlin. Report on glacial geology.

Gill, A. C. Petrographical notes on a rock collection from Fernando Noronha.
Phonolites, nepheline-basaltites, nepheline-basalt, nephelinite, and basalt glass.

Canada Royal Soc., Trans., vol. 4, Section IV, pp. 159-166, plate 11. 4°. 1888.
Describes the distribution and relations of Carboniferous limestones. Analyses.

— The Carboniferous of Cape Breton, Part II.
Stratigraphic and structural relations, and extent of coal basins. Reference to associated Devonian and pre-Cambrian rocks.

— The Carboniferous of Cape Breton with introductory remarks, Part III.
GILPIN, Edwin J.—Continued.
Sketch of conditions supposed to have existed in the region during Carboniferous times. Description of general structural relations. Analyses of the coals and references to their thicknesses and relations at some points.

The faults and foldings of the Pictou coal field.
Discussion of relations of the faults to the folds and the history of the development of the structure of the region; the former extent of the coal series; the age and relations of the folds and faults in the underlying Silurian and Cambro-Silurian, and the date of the granitic intrusions.

Notes on the Nova Scotia gold veins.
Canada, Royal Soc., Trans., vol. 6, Section IV, pp. 68-70, pl. 3. 4°. 1889.
Prefaced by a brief account of the auriferous series and discussion of the mechanism of an ideal anticlinal.

The geology of Cape Breton. The minerals of the Carboniferous.
Includes brief accounts of occurrence of gypsum, iron-ores, limestone, and building stones.

Geology of Idaho, THOMSON.

GOODALE, Charles W. The occurrence and treatment of the argentiferous manganese ores of Tombstone district, Arizona.
Includes a brief reference to the geologic relations of the district.

[GOODFELLOW, George E.] The Sonora earthquake.
Description of great fault and other disturbances due to the earthquake.

GOODYEAR, W. A. Petroleum, asphaltum, and natural gas.
California, Seventh Report of State Mineralogist, pp. 63-114. 1888.
Description of bituminous rocks and some of their relations in Contra Costa, Fresno, Kern, Los Angeles, Monterey, Santa Barbara, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, and Ventura counties.

GOODYEAR, W. A.—Continued.

Coal.
California, Seventh Report of State Mineralogist, pp. 117-178. 1888.
Reprint of "The coal mines of the western coast of the United States," with additions and corrections up to 1887.

Inyo County.
California, Eighth Report of State Mineralogist, pp. 224-300. 1888.
Description of relations and structure of metamorphic, granitic, and volcanic formations in parts of the county, and discussion of the nature and relations of the granites. Includes a paper by J. D. Whitney (pp. 288-309), on "The Owens Valley Earthquake," reprinted from the "Overland Monthly," 1872.

Kern County.
California, Eighth Report of State Mineralogist, pp. 303-324. 1888.
References to granitic, metamorphic, Tertiary, and volcanic rocks and structure at various localities.

Los Angeles County.
California, Eighth Report of State Mineralogist, pp. 335-342. 1888.
References to geologic relations at various localities and along several routes. Tertiary, Cretaceous, superficial deposits, and granitic and metamorphosed rocks.

San Bernardino County.
California, Eighth Report of State Mineralogist, pp. 504-512. 1888.
References to granites, limestones, metamorphics, sandstones, volcanics, and structural relations at various localities.

San Diego County.
References to granitic and metamorphic rocks, Tertiary sandstones, dips, terraces, and superficial deposits.

Tulare County.
Includes some brief references to granites and metamorphosed rocks, dips at various points, the metamorphic nature of the granites, and reprint of a paper, "Notes on the high Sierra south of Mount Whitney," from Cal. Acad. Sci., Proc., Nov., 1873.

GORLEY, S. S. Geology of Tippecanoe County.
Indiana, Department of Geol. and Nat. Hist., Fifteenth Report, 1886, pp. 61-96. 1886.
Describes formations from Niagara to lower coal measure, conglomerate, and drift. Discusses origin of some topographic and drain age features.

Geology of Washington County.
GORLEY, S. S.—Continued.


Describes the distribution, topography, structure, fossils, and stratigraphy of the Chester, St. Louis, Keokuk, Burlington, and Knobstone groups, and the superficial clays and sand. Discusses the equivalency of some of the formations.

— Geology of Benton County.

Indiana, Department of Geol. and Nat. Hist., Fifteenth Report, 1886, pp. 198-220. 1886.

Describes the Keokuk and St. Louis limestones, the conglomerate sandstones, and the drift deposits. Discusses the character of certain drift ridges and gives a number of bored-well records in various parts of the county.

— The Wabash arch.

Indiana, Department of Geol. and Nat. Hist., Fifteenth Report, 1886, pp. 228-241. 1886.

Describes a low anticlinal, extending along the course of the Wabash River from the Ohio line through Indiana, and into Illinois. Gives an account of the associated structural features, faults, flexures, jointing, and cone-in-cone structure. Discusses the age of the uplift, which is thought to have taken place in the latter part of the upper Silurian.

— and LEE, S. E. Geology of Boone County.


Describe its drift deposits, which, in one region, are thought to be morainal in character. Give a number of well records and state their opinions in regard to the underlying rocks of the county.

GORDON, C. H. [Well at Keokuk, Iowa.]


Reference to horizon of supposed Niagara sandstone and to the occurrence of a similar sandstone in wells at Albert Lea, Minnesota, and Washington, Iowa.

— [Notice of deep boring at Keokuk.]


Reference to beds passed through at depths from 1,050 to 1,770 feet.

— Notes on the geology of southeastern Iowa.


Gives records of some deep borings and comments on the more noteworthy stratigraphic evidence they present.

GRANT, Uly. S. Report of geological observations made in northeastern Minnesota during the summer of 1888.

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[HAGGIN, J. B.] Record of strata in artesian well. [Kern County.] California, Sixth Annual Report of the Mineralogist, part I, pp. 56-57. 1886. Through gravels, sands, and clays to 650 feet in one well and 472 feet in the other.


HALL, C. W.—Continued.


— The geological conditions which control artesian well borings in southeastern Minnesota. Minnesota, Acad. Sci., Bull., vol. 3, part 1, pp. 128-143, pl. 2. 1889. Includes an account of the stratigraphy of the region, and records of a dozen wells.


— Field notes on the geology of the Mohawk valley. See [Beecher, C. E., and Hall, C. E.]
RECORD OF GEOLOGY FOR 1887 TO 1889.

[HANKS, Henry.] Building stones and building materials in California.

California, Sixth Annual Report of the Mineralogist, part 1, pp. 16-34. 1886.
Description of well known building stones and of California localities. Gives partial analyses of a dunite from San Diego County and a sandstone from Santa Barbara.

[—] Mount St. Helena.
California, Sixth Annual Report of the Mineralogist, part 1, pp. 78-79, 2 plates. 1886.
Description of outcrop of columnar basalt. Considers the mountain an old volcano, but finds no evidence of a crater.

[—] San Diego County.
California, Sixth Annual Report of the Mineralogist, part 1, pp. 80-90, map. 1886.
Incidental geologic and mineralogic notes. Describes fold in slates in mine at Banner. Accompanied by a colored geologic map of the county, provisionally illustrating the distribution of Quaternary, Tertiary, Permocarboniferous, and Archean.

[—] California minerals.
California, Sixth Annual Report of the Mineralogist, part 1, pp. 91-141. 1888.
Includes descriptions of some localities of lignite, various kinds of quartz, limestones, and serpentines.

— On the occurrence of hawk site in California.
References to various localities and record of 300-foot bore-holes into volcanic sand, and lacustrine deposits underlying Borax Lake.

HARDEN, Oliver B. See PROSSER, A. G., and.

HARKER, Alfred. The Cortlandt rocks.
Calls attention to Callaway’s oversight of the present views of Dana and Williams in regard to the probable eruptive nature of some of the Cortlandt rocks which Dana at first considered metamorphic.

HARROD, B. M. Archean rocks in Texas.
Brief references to outcrops and characteristics.

Fossil plants from Golden, Colorado, LESQUEUR.
Faults in Trias near Meriden, Connecticut, DAVIS.
Triassic trap sheets of Connecticut valley, DAVIS and WHITTLE.

— vol. 17.
Coral reefs of Hawaiian Islands, AGASSIZ.

Connection of eastern and western coal fields, Ohio valley, SHALER.

Hawaiian Islands.
coral reefs, AGASSIZ.
genesis, HITCHCOCK.
Halema’um’a’u and its débris cone, DANA, J. D.
Mount Loa craters, BAKER. DANA, J. D. MERRITT.
Petrography, DANA, E. S.

HAWORTH, Erasmus. A contribution to the Archean geology of Missouri.
General description of relations of the massive rocks to each other and to the stratified rocks, and petrographic description of granites, porphyries, and diabases.

HAY, O. P. On the manner of deposit of the glacial drift.
Statement of the views of Dana, the Geikies, Newberry, and N. H. Winchell. Discusses the action of the glacier on its bed, in general and under varying circumstances, and the mode of accumulation of drift-mater ial at its base and in the terminal moraine.

The northern limit of the Mesozoic rocks in Arkansas.
Descriptions of outcrops, and relations of the Cretaceous in the vicinity of the Mesozoic-Paleozoic boundary line.

— A geological section in Wilson County, Kansas.
Kansas Acad. Sci., Trans., vol. 10, pp. 6-8, plate. 1888.
Discussion of rate of dip, evidence of a fault, and equivalency of the Dun limestone with the Humboldt limestone.
HAY, O. P.—Continued.
— Report on geology.
  Discussion of the eastern extension of the Tertiary in southern Kansas, and the equivalence and boundary of the red rocks and gypsum in the region extending from Comanche County to Medicine Lodge.

— Natural gas in eastern Kansas.
  Abstract from Fifth Report of State Board of Agriculture. Reference to geologic position of gas-yielding beds. Gives sections at Fort Scott, and refers to the stratigraphic and structural relations in that vicinity. Partial section from Fort Scott, Kansas, to Nevada, Missouri, on plate.

— Note on a remarkable fossil.
  Includes brief discussion of the derivation of the enclosing concretion in its bearing on the location of the former eastern boundary of the Cretaceous.

— Horizon of the Dacotah lignite.
  References to the relations, stratigraphy and distribution of the Dacotah group, and discussion of evidence bearing on the horizon of the lignitic beds.

— Lecture. The geology of Kansas.
  References to distribution and relations of the Jura-Trias, Cretaceous, and Tertiary.

— The Triassic rocks of Kansas. [Abstract.]
  References to their relations to the Permian-Carboniferous and absence of unconformity at their base.

— Recent discoveries of rock salt in Kansas. [Abstract.]
  Statements in regard to its stratigraphic position and relations, and brief sketch of the Permian—"Dacotah" history of the region.

— and THOMPSON, A. H. Historical sketch of geological work in the State of Kansas.

HAYDEN, F. V. Report . . . .
  Montana division.
  Statement of results of studies in the region between the Bridger or East Gallatin range and the three forks of the Missouri. Briefly describes the structure and stratigraphy of the several formations—including the newly discovered Devonian—the lake deposits of the Gallatin valley, and the drift.

  Reference to relations of formations from Cambrian to Carboniferous and coals, and evidence of glacial action in the Gallatin range region, and to the volcanic constituents, age, origin, and relations of the lake beds of Gallatin valley.

HEADDEN, William P. [Notice of a thin bed of infusorial earth in west Denver.]

HEILPRIN, Angelo. Explorations on the west coast of Florida and in the Okeechobee wilderness, with special reference to the geology and zoology of the Floridian peninsula.
  Describes outcrops and occurrence of fossils. Summarizes observations on rocks of Homosassa, Cheesewiaka, Pithlachascootie, Manatee, and Caloosahatchee rivers, Tampa Bay, Hillsboro, and Sarasota Bay. Discusses literature, extent, equivalency, and paleontology of the subdivisions of the Tertiary; the coral-reef theory, and the general geologic history of the peninsula. Gives a table showing the relations of the "Atlantic and Gulf coast Tertiaries of the United States."

— [On the classification of the Tertiary deposits.]
HEILPRIN, Angelo—Continued.


Discussion of upper limit of Tertiary and nomenclature.

[—] [Remarks on P. R. Uhler's paper on the Alburipean and associated formations in Maryland.]


Expression of opinion that part of the "Alburipean" is Paleozoic, and in regard to the age of the Potomac formation.

The Miocene mollusca of the State of New Jersey.


Lists of fossils, notes on new and old species, and expression of opinion regarding age and equivalency of the Miocene members at Shiloh and in the Atlantic City well.

[—] Determination of the age of rock deposits.


Discussion of rates of deposition.

The classification of the post-Cretaceous deposits.


Review of faunal relations and equivalency of the Tertiary formations mainly in the United States; and discussion of the value of the faunal element in geologic chronology.

The Bermuda Islands; a contribution to the physical history and zoology of the Somers Archipelago, with an examination of the structure of coral reefs, pp. 231, pls. 17. Philadelphia, 1889.

Includes an account of their geology and physiography, a discussion of the coral-reef problem, and a review of recent literature on coral reefs.


HENRICH, Carl—Continued.

Some forms of ore deposits in limestone.

Eng. and Mining Jour., vol. 46, pp. 365-369. 4°. 1888.

Reference to attitude and evidences of internal erosion of limestones inclosing lead ores in Morgan County, Missouri, and Beaverhead County, Montana.

The United and Champion copper mines of New Zealand.

Eng. and Mining Jour., vol. 46, pp. 414-416. 4°. 1888.

Description of geologic relations of great "Serpentine" dikes in which the ores occur.

Metamorphism in rocks.

Eng. and Mining Jour., vol. 46, p. 461, p. 4°. 1888.

Discusses the agency of highly heated underground waters under great pressure.

Notes on the geology and on some of the mines of Aspen Mountain, Pitkin County, Colorado.


Stratigraphy of beds from Cambrian to Carboniferous, structural relations, faults, intrusives, and ore deposits. Mainly a discussion of structural relations.

The Slaybach lode—a peculiar kind of fissure vein.

Eng. and Mining Jour., vol. 48, p. 27, p. 4°. 1889.

Includes some statements in regard to relations of associated volcanic rocks, and dikes.

Is a faulted fissure always the oldest? A study of faults.

Eng. and Mining Jour., vol. 48, p. 159, p. 4°. 1889.

Discussion of mechanism of crossed faults.

HERRICK, C. L. A sketch of the geological history of Licking County, accompanying an illustrated catalogue of Carboniferous fossils from Flint Ridge, Ohio.


Detailed description of the geologic relations, the outcrops, structure, and characteristics of the Waverly and immediately overlying rocks. Discusses the mode and rate of deposition of the formations, the origin of their materials, and their paleontologic relations. Gives structural and columnar sections.

The geology of Licking County, Ohio, part III.
HEWETT, C. L.—Continued.
Discussion of the stratigraphic position and range of the Waverly and description of its stratigraphy, paleontology, and inclination, and of evidence of local unconformity in the sub-Carboniferous at some points. List of fossils, pp. 27-37.

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Geology of Licking County, pt. iv.
Denison University, Bull., vol. 4, pp. 11-60, 97-123, pls. 1-x. 1888.
Pages 11-60 and 114-123, descriptions and lists of fossils.
Pages 97-114, discussion of stratigraphy of Waverly and associated series.

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Notes on the Waverly group in Ohio.
Discussion of the equivalency, taxonomy, and paleontologic relations of the Waverly members.

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CLARKE, E. S. and DEMING, J. L.
Some American norites and gabbros.
Discussion of the modifications induced in basic eruptives by the interpenetrated rocks and description of occurrence and petrography of olivine norite and adjacent rocks near Marshall, North Carolina, the Duluth gabbros and the garnetiferous gabbros from Granite Falls, Minnesota. Review of Wadsworth on the origin of diorites.

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TIGHT, W. G. and JONES, H. I.
Geology and lithology of Michipicoton Bay.
After reviewing the work of previous observers, especially McFarlan, describe the geologic features of the region and the micro-petrography and mode of occurrence of a series of rock specimens. Discuss the nature, relative positions, stratigraphic and structural relations, variations and equivalency of the Laurentian, Huronian, and Keweenawan series. Illustrated by maps and structural and micro-rock sections.

HEWETT, G. C. The northwestern Colorado coal region.

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HEWETT, G. C.—Continued.
Statement in regard to geologic horizon and distribution of the coals and the general stratigraphy of the region. Notice of very recent lava flows.

HICKS, Henry. The Cambrian rocks of North America.
Summarization of Walcott's views on the use of the term Cambrian and the faunal, and stratigraphic relations and equivalency of the subdivisions of the formation.

—[Remark on equivalency of the Huronian with the Pedefian.]

HICKS, Lewis E. [Diatomaceous earth on North Loup River, Nebraska.]
Notice of its occurrence and thickness.

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Geyserite in Nebraska.
Reference to occurrences of volcanic dust in Nebraska, and extracts from “Physical geography and geology of Nebraska,” 1880, by Samuel Anghey on polishing powders and supposed infusorial earth and geyser flocula.

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The reef builders.
Discussion of the theories of Darwin and Murray.

—[Volcanic dusts from Krakatoa, and from Nebraska and Kansas.]
Reference to evidence of their volcanic nature.

—[Quartzite between Niobrara and O'Neil, Nebraska, and its relation to the Valuntine quartzite.]
Reference to occurrence of quartzite on road from Niobrara to O'Neil, Nebraska, and discussion of its age and equivalency with the Tertiary quartzite at Valentine, Nebraska.

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Diatomaceous earth in Nebraska.
List of species. Brief reference to mode of occurrence.

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Soils of Nebraska as related to geological formations.
Includes a preliminary geologic map and sketch of the geology of the State.
HILGARD, E. W. The equivalence in time of American marine and intracontinental Tertiaries.


Calls attention to the opportunities afforded for the determination of the relations of interior and gulf Tertiaries, in the region between and adjacent to the Red and Arkansas rivers. Discusses the correlation of some of the members of the two series.

[On the use of the term “Oligocene” in the gulf region.]


Opinion in regard to its inapplicability.

[On the relations of the Grand Gulf series.]


To associated and correlated formations.

[On the inclusion of “Quaternary” in the Tertiary.]


Statement of opinion.

— Agriculture and late Quaternary geology.


Descriptions of evidence of an ancient drainage system in the upper San Joaquin valley, California.

HILL, Frank A. Geology and mining in the northern coal-field of Pennsylvania.


General description of the geologic features.


Description of northern and western-middle coal-fields and discussion of structural and stratigraphic relations in some parts of the areas, pp. 925–1007. Sections in northern and eastern and western-middle fields.

— Lehigh River section continued from Lock 11, southward to the Blue Mountain.


Detailed description of the stratigraphy of beds from Pocono to top of Loraine slate, and of the structural relations of the region. Reference to glacial drift and striæ.

HILL, Frank A.—Continued.

— Report on the metallic paint ores along the Lehigh River.


Description of geologic relations, structure of paint beds, and sections in mines.


Colored geologic maps.


Colored geologic maps, and columnar and cross sections.


Colored geologic maps, with marginal columnar sections.


Cross and columnar sections in coal-measures.

HILL, Robert T. A partial report on the geology of western Texas.


Notice of G. G. Shumard’s posthumous report. Describes the work of the Shumards, and points out the erroneousness of their opinion in regard to the stratigraphic relations of the subdivisions of the Cretaceous to each other, and to the Tertiary.

— The topography and geology of the Cross-Timbers and surrounding regions in northern Texas.


Describes the general topographic and geologic features of Texas, and the relations of the Cretaceous. Points out the cause of the cross-timbers, and discusses their extent and geologic relations. Gives a table showing the history, position, equivalency, stratigraphy, paleontology, and occurrence of the subdivisions of the Cretaceous of northern Texas, Accompanied by a hypsometric map.

— The Texas section of the American Cretaceous.


Describes the subdivisions of the Texas
HILL, Robert T.—Continued.

Cretaceous, and discusses their faunal and stratigraphic relations, extent, and equivalency with the Cretaceous of other parts of North America and of Europe. Reviews the literature and paleontology and the equivalency and horizons of the subdivisions of the American Cretaceous.

— The present condition of knowledge of the geology of Texas.


Historic sketch of geologic investigation, and summary and review of the results.

— Notes upon the Texas section of the American Cretaceous. [Abstract.]


Refers to relations and equivalency of a new group lying below the Dakota sandstone, and the general relations of the Cretaceous members in Texas.

[——] Notes on the geology of Western Texas.


References to extent and inclination of Carboniferous, divisibility of “red beds” into Permian and Jura Trias, relations of Cretaceous, Quaternary or late Tertiary of plains west of the Sweetwater, evidence of Quaternary lakes in the mountain region west of the Pecos, the terraces of the Rio Grande near El Paso, the lower Cretaceous or possible Jurassic of the southwestern region, and the Quaternary and post-Quaternary history especially of the Llano Estacado region.

— The Trinity formation of Arkansas, Indian Territory, and Texas.


Describes the characteristics, extent, and general relations of a pre-Cretaceous Mesozoic series to which the term Trinity formation is applied.

— University of Texas. School of Geology—circular No. 1. 1 page. 1888.

References to Permian of western Texas; occurrence of Laramie along the Texas side of the lower Rio Grande; origin of the Texas Cretaceous; occurrence of Mesozoic igneous area in central Texas; the Jurassic age of the Tucumcarri section in northwest Texas, and the existence of an extensive marine Jurassic formation in southwestern Texas and adjacent parts of Mexico.

— Neozoic geology of southwestern Arkansas.


HILL, Robert T.—Continued.


Systematic description of the several formations, discussions of equivalency, geologic history, extent and relations in adjoining and correlated regions, and paleontologic descriptions. Part 2 is an account of economic geology, in which the origin, classification, geologic relations, and improvement of soils are considered.

— Events in North American Cretaceous history illustrated in the Arkansas-Texas division of the southwestern region of the United States.


Includes descriptions of stratigraphic and structural characteristics, discussions of equivalency, taxonomy, and paleontologic relations of some of the Cretaceous members, and brief reference to pre-Cretacic and post-Cretacic conditions in the Arkansas-Texas region.

— Ueber eine durch die Häufigkeit Hippuritenartiger Chamiden ausgezeichnete Fauna der oberturnischen Kreide von Texas, von Ferdinand Roemer in Breslau. 1888.


Review in which the stratigraphy is discussed.

[— Remarks on occurrence of Macraster Texanus].


[— On the validity of some new species from the Cretaceous of Texas].


— A portion of the geologic story of the Colorado River of Texas.


Descriptions of stratigraphy, structure, and
HILL, Robert T.—Continued.

overlaps, and sketch of geologic history from Cambrian to Quaternary in Travis, Burnet, and parts of adjoining counties.

— The foraminiferal origin of certain Cretaceous limestones, and the sequence of sediments in North American Cretaceous.


Discusses the nature of the lower Cretaceous limestones, and summarizes the history of deposition of the Cretaceous of the Texas region.

— Paleontology of the Cretaceous formation of Texas. Part I. University of Texas school of geology, pp. 5, pls. 3, Austin. 1889.


Includes a reference to the relations of the Vola limestone of the Comanche series near Austin.

— The Permian rocks of Texas.


Calls attention to the presence of a Permian-Triassic ? series, and suggests their extension to the Kanab Valley section in Utah.

— and PENROSE, R. A. F., Jr. Relation of the uppermost Cretaceous beds of the eastern and southern United States, and the Tertiary-Cretaceous parting of Arkansas and Texas.


Description of the characteristics and relations of the uppermost Cretaceous members in the Texas-Arkansas region, presentation of evidence of their equivalency with the lower marls of the New Jersey region, and an account of the relations and history of the unconformity at the base of the Tertiary. Prefaced by a summary account and table of the Cretaceous members in the Arkansas-Texas region, and concluded by some suggestions in regard to Cretaceous taxonomy.

HILLEBRAND, W. F. Chemistry.


Analyses of eruptives, limestones, ores, vein materials, etc.

HILLS, R. C.—Continued.

— Circulation of water through the strata of the upper Cretaceous coal measures of Gunnison County, Colorado.


Account of the strata penetrated by boreholes and general sketch of the geology of the region, illustrated by a geologic map.

— Preliminary notes on the eruptions of the Spanish Peaks region.


Describes structural relations of the dikes and laccolites, and discusses the history of their intrusion.

— The recently discovered Tertiary beds of the Huerfano River basin, Colorado.


Description of their stratigraphy, structure, distribution, volcanic contents, and relations to the Laramie, and discussion of their history, extent, and taxonomy.

— Address—The field for original work in the Rocky Mountains.


General review of the present condition of knowledge of Colorado geology and summary of discoveries made since the Hayden survey. Refers to occurrence of supposed Cambrian near Ouray, the extent and stratigraphy of the Laramie, and of the Trias in the San Juan region; evidences of glaciation in the White River plateau, the occurrence of supposed Tertiary conglomerate near Ouray and Telluride, the genesis of ores, and the existence of more recent volcanic formations in various parts of the State.

HINMAN, Russell. The laws of corrosion.


Reference to Powell's contributions to the subject, and suggests some exceptional conditions.

HITCHCOCK, C. H. Genesis of the Hawaiian Islands.


Discusses evidence of uplift, in review of Dutton.

— [On the nomenclature of the American lower Paleozoic.]

International Congress of Geologists, Am. Committee Reports, 1888, B, pp. 11-12.


References to the position of the “Taconic” rocks, the use of the term “Taconic,” the use of the smaller American terms like “Niagara,” and to a dual nomenclature, paleontologic and stratigraphic.

— Report of the subcommittee on the Quaternary and Recent.


Review of occurrence, characteristics, and relations of the members of the Quaternary and résumé of opinion in regard to their equivalency and correlation, and the sequence of events in Quaternary time.

— Conglomerates in New England gneisses [a letter addressed to Alexander Winchell.]


Discusses the age and relations of pebble and fragment-bearing crystalline rocks in Rhode Island, New Hampshire, Vermont, and Massachusetts.

— Date of the publication of the report upon the geology of Vermont.


Includes a historic account and definition of the application of the term “Georgia slate,” and references to the results of Walcott’s studies in western Vermont.


HOBBS, William H. —Continued.


Includes a petrographic description and analysis of the granite from Ilchester, near Baltimore.

HODGE, J. M. Preliminary report on the geology of parts of Letcher, Harlan, Leslie, Perry, and Breathitt counties.

Kentucky, Geol. Survey, John R. Proctor, Director, Reports on the southeastern Kentucky coal-field, pp. 53-52, maps, plates. 1887.

Description of coal beds, and the structure and stratigraphy of the coal measures.

— Preliminary report on the geology of the lower north fork, middle and south forks, Kentucky River.

Kentucky Geol. Survey, John R. Proctor, Director, Reports on the Southeastern Kentucky coal-field, pp. 53-114, pls. 1887.

Description of the coal beds, and the stratigraphy and structure of the coal measures and conglomerate. Accompanied by plates of columnar sections.

HODGES, A. D. Notes on the topography and geology of the Cerro de Pasco, Peru.


Includes a description of Cretaceous and Jurassic formations, and the occurrence and petrography of the andesites, and a sketch of the geologic history of the region.

HOLlick, Arthur. [Well at Clifton, Staten Island.]


Nine hundred feet in depth in mica schists.

— [Leaf impressions in Cretaceous (?) sandstone in drift near Arrochar station.]


Notice of occurrence of drift masses containing fossil leaves, and a fine exposure of modified drift overlain by boulder drift.

— [Remarks on fossiliferous sandstones in Cretaceous clays on Staten Island.]


Notice of occurrence of drift masses containing fossil leaves, and a fine exposure of modified drift overlain by boulder drift.

— [Triassic shale outcrops on Staten Island.]
HOLLIICK, Arthur—Continued.
Brief references to outcrops at Mariner's Harbor, and near Erastina and Arlington stations.

HOLLISTER, O. J. Gold and silver mining in Utah.
Incidently refers to some geologic features of a portion of the Wasatch range and vicinity.

HONEYMAN, D. Geology of Aylesford, King's County, Nova Scotia.
References to the bowlders, glacial strie and drifts, terraces, Silurian, Cambrian, and Triassic outcrops, and occurrences of granites, amygdaloids, and diorites.
— Notes of examination by Prof. James Hall of the Silurian collection of the Provincial Museum.
Statement of paleontologic evidence of the equivalency of the subdivisions of the Arisaig group, the beds at Wentworth, and the Silurian beds on Cape Breton.
— Geology of Halifax and Colchester counties. Part II.
References to lower Cambrian, lower Carboniferous, granites, evidences of glaciation, contacts of lower Carboniferous and lower Cambrian, and the date of metamorphism of the gold-bearing rocks.
— Glacial geology of Nova Scotia.
Description of bowlder deposits at various localities, and discussion of their origin. Reference to strie, terraces, and glacial history of the region.
— Nova Scotian superficial geology, with map, systematized and illustrated.
Reference to the occurrence, relations, and history of the several superficial formations.
— A geological recreation in Massachusetts centre, U. S. A.
Includes incidental references to the char-

HONEYMAN, D.—Continued.
acteristics of the crystalline rocks of the region, and discusses their age.
— Glacial bowlders of our fisheries, and invertebrates, attached and detached.
Account of bowlders from the fishing banks, and expression of opinion in regard to formation underlying the region.

HOVEY, Edmund Otis. Observations on some of the trap ridges of the East Haven-Branford region.
Descriptions and discussions of contact phenomena, amygdaloid surfaces, breccias, faults, and flexures, and discussion of their bearing on the origin of the traps.

HOWLEY, James P. The Taconic of eastern Newfoundland.
Statements in regard to the relations of Cambrian and Ordovician members at various localities.

HUBBARD, O. P. [Great bowlder in Woodbridge, Connecticut.]
Statement of size and elevation, and suggestion in regard to its origin and history.

HUGHES, N. C. Genesis and geology: the harmony of the scriptural and geological records, pp. 142. 120. Chocowinity, North Carolina, 1887.
Not seen.

HUMPHREYS, A.N. Mining methods practiced by the Westmoreland Coal Company, Irwin, Pennsylvania.
Pages 416-454: section of the bed, dips, clay and slack veins, faults.

HUNT, T. Sterry. Elements of primary geology.
Contains a résumé of the characteristics, equivalency, and distribution of the subdivisions of the Archean, and a brief discussion of the extent of the Taconian in Eastern North America, the equivalency of the Animikie, and the relations of the Keeweenawan and Cambrian.
HUNT, T. Sterry—Continued.

Gastaldi on Italian geology and the crystalline rocks.


Refers to the unaltered nature of the Montreal granitoid chrysolitic dolerite, and to the magnesian chrysolites in the crystalline limestones of eastern Massachusetts. Briefly discusses the petrography of the Taconian and its separateness from the Huronian and upper Taconic.

The genetic history of crystalline rocks.

*Canada, Royal Soc., Trans.*, vol. 4, section III, pp. 7-37. 1887.

An examination of the "renal()" hypothesis in some of its aspects to show how far the conception of a single consolidated igneous mass under the combined action of heat and water may be made to explain satisfactorily the various facts in the history of the Earth's crystalline crust." Discusses the relations of stratified and massive crystalline rocks; foliation; variations and sources of igneous rocks; texture, composition, and minerals of vein stones, and the nature of the crystalline limestones of eastern Massachusetts and New York, and the apatite-bearing veins of Canada.

The Taconic question restated.


Reviews the stages of opinion which have been held in regard to the "Taconic" and related formations. Calls attention to Emmens's modified views in regard to the age of the "upper Taconic." Discusses the history, use, and application of the term "Taconic," the relations of the pre-Potsdam strata in America, and the significance of the discoveries of Dana, Dwight, Ford, Walcott, and others, in the Taconic-Hudson River region, and Rominger and others in the Lake Superior region. Defines the term "Taconian" as applied by him, and considers the use of the word "Cambrian."

[On subdivisions, unconformities, characteristics, origin of some members, nomenclature and life of the Archean, origin of serpentines, classification of eruptives, nomenclature of the lower Paleozoic formations.]


On crystalline shists.


HUNT, T. Sterry—Continued.


Includes a discussion of the subdivision of the pre-Cambrian rocks of North America, and the age, extent, characteristics, and relations of the members of the "Taconian" and Taconic.

HYATT, Alpheus.

The Taconic at Boston.


On the nomenclature proposed by Winchell for the Cambrian rocks.

Evolution of the faunas of the lower Lias.


Includes references to the extent and relations of the basins in which the lower Lias of Europe was deposited, and the equivalency of some of its members.

Idaho, [Caribou Mountain,] VAN DIEST.

Coeur d'Alene mines, CLAYTON.

depth well at Nampa, WRIGHT.

glacial geology, CHAMBERLIN.

volcanic dusts, analysis, WHITFIELD, J. E.

IDDINGS, Joseph P.

The nature and origin of lithophyse, and the laminating of acid lavas.


Abstract of a memoir to appear in the Seventh Report of the U. S. Geol. Survey. Describes the micro-structure and lithology of the spherulites and lithophyse, and the finely laminated structure of the rhyolite of Obsidian Cliff, Yellowstone Park; and discusses the origin of these structural phenomena.

On the origin of primary quartz in basalt.


Petrographic description of quartz-bearing basalts from the Tawan Mountains, Arizona; references to other similar occurrences in California, Colorado, and Nevada, and discussion of the origin of the quartz, and the conditions involved in the solidification of eruptive masses.

Obsidian Cliff, Yellowstone National Park.

IIDINGS, Joseph P.—Continued.


Description of occurrence, lithologic structure, and petrographic characteristics; discussion of the origin, relation, and history of development of the various structures in the obsidian, and references to literature of lithophysae, and to occurrences of obsidian at other localities.

— On the crystallization of igneous rocks.

Systematic discussion of the philosophy of the crystallization of igneous rocks.


IHLSENG, M. C. Review of the mining interests of the San Juan region.

Includes description of the geology of the region, and discussion of geologic history, and of the age and origin of the mineral deposits.

— Report on oil fields of Fremont County.

Colorado School of Mines, Report of field work and analyses, 1886, pp. 67-70, pl. 1888.
Includes a description of the geology of the region, with a sketch of its geologic history.

— Notes on Leadville.

Includes a brief general discussion of the geology of the region.

Illinois, Carboniferous echinodermata, Keyes.

coal, Ashburner.
“Dauntless” core drill, Eng. and Mining Jour.

Driftless area, Chamberlin, T. C. Chamberlin and Salisbury.

Forest bed beneath intra-morainal drift, Leverett.

Fossil fuels, Comstock.

Fulgurite from Whiteside County, analysis, Clarke, F. W.

Glacial phenomena in northeastern Illinois, Leverett.

Limestones and clays, analyses, Riggs.

Lower Silurian sceptopora, Ulrich.

Moraines, Chamberlin, T. C.

Illinois—Continued.

Paleozoic border adjoining Jackson purchase, Kentucky, Loughridge.

Peoria County, Chapman.

Raised beaches of Lake Michigan, Leverett.

Types of Devonian system in North America, Williams, H. S.

Indiana, Benton, Tippecanoe, and Washington counties, Gorbey.

Brown County, Gorbey and Lee.

Building stones, chalk beds, clays, glacial deposits, gas, Thompson, M.

Caves and cave life, Kingsley.

Chipped implement in drift of Jackson County, Cresson.

Clinton fossils, Forester.

Clinton, Marshall, and Starke counties, Thompson, M.

Coal, Ashburner.

Compendium of geology, Thompson, M.

Correlations of lower Silurian, Ulrich.

Crinoids from the Niagara at St. Paul, Beechler.

Diameter of Silurian island about Cincinnati, Denhis.

Erosion, Scovill.

Glacial phenomena in northern Indiana, Leverett.

Hancock County, Brown.

Henry and adjoining counties, Phinney.

Keokuk group at Crawfordsville, Beechler.

Limestone from Bedford, analysis, Clarke, F. W.

Maxinkuckee, Thompson and Lee.

Natural gas, Phinney.

Origin of loess, Campbell.

Terminal moraine in central Indiana, Thompson, M.

Trenton limestone, Orton.

Types of Devonian system in North America, Williams, H. S.

Wabash arch, Gorbey. Thompson, M.

Indiana, Department of Geology and Natural History, Fifteenth Report, 1886.

Benton County, Gorbey.

Boone County, Gorbey and Lee.

Building stones, Thompson, M.

Chalk beds, Thompson, M.

Clays, Thompson, M.
Indiana, Department of Geology and Natural History, Fifteenth Report, 1886—Continued.

Clinton County, THOMPSON, W. H.

Compend of geology, etc., THOMPSON, M.

Glacial deposits, THOMPSON, M.

Hancock County, BROWN.

Henry and parts of adjacent counties, PHINNEY.

Marshall County, THOMPSON, W. H.

Maxinkuckee, THOMPSON, W. H. and LEE.

Natural gas, THOMPSON, M.

Preface, THOMPSON, M.

Starke County, THOMPSON, W. H.

Terminal moraine, THOMPSON, M.

Tippecanoe County, GORBY.

Wabash arch, GORBY.

Washington County, GORBY.

Indian Territory, coal, ASHBURNER.

Trinity formation, HILL, R. T.

INGALL, E. D. [Preliminary report on mining districts in the Thunder Bay region.]


Includes a brief description of the characteristics and relations of the Animikie rocks.

International Congress of Geologists, American Committee Reports, 1888—Continued.

Mesozoic realm, COPE.

Report on Cenozoic (marine), SMITH, E. A.

HILGARD. LE CONTE. NEWBERRY. WHITEFIELD, R. P.

Report on Cenozoic (interior), COPE.

Report on Quaternary and recent, HITCHCOCK.

d'INVILLIERS, E. V. The Pittsburgh coal region.


Includes descriptions of the structural and stratigraphic relations and a detailed account of the geologic features of the southwestern counties of Pennsylvania. Accompanied by a folded, colored geologic map.

GORBY. HAGUE. HUNT. IRVING. LE CONTE. MACFARLANE. POPOFF. PUMPELLY. SELWYN. WALCOTT. WINCHELL, A.

Report on the iron mines and limestone quarries of the Cumberland-Lebanon valley. 1886.


Description of structure and stratigraphy of the valley region, the mines, and the quarries of limestone and of Mesozoic sandstone. Brief discussion of the structure in the Dillsburg and Hummelstown regions, and relations of the Newark sandstone.

and McCREATH, Andrew. The New River-Cripple Creek mineral region of Virginia, pp. 171, 4 plates, and map in pocket. Harrisburg. 1887.

Includes a description of the stratigraphy, distribution, and structure of the several formations in southern Wythe and Pulaski counties, in general and in connection with the ore deposits. Describes the Draper Mountain region in considerable detail, and discusses and figures its complicated structural relations. The report is accompanied by a colored geologic map on which topography and structure are indicated.
d'INVILLE and McCREATH—Continued.

— Comparison of southern cokes and iron ores. See McCreath, A. S. and.

— Mineral resources of the upper Cumberland valley. See McCreath, A. S. and.

IOWA, Carboniferous echinoderms, Keyes.

— Chert of upper coal measures in Montgomery County, Am. Geologist.

— Coal, Ashburner.

— Continuance of Lake Cheyenne, Todd.

— Coal measures of central Iowa, Keyes.

— Cretaceous deposits, Whitt, C. A.

— Devonian fauna, Williams, H. S.

— Defense of local geology, Davenport, Barris.

— Drift and loess of north-central basin, Webster.

— Driftless area, Chamberlin and Salisbury.

— Fossils from coal measures at Des Moines, Keyes.

— Fossils from Rockville shales, Webster.

— General description of Devonian, Webster.

— Geology of southeastern Iowa, Gordon.

— Geology of Johnson County, Webster.

— Glacial flows, Webster.

— Hematite in Allamakee County, Orr.


— Loess and clays, analyses, Riggs.

— Lower Carbonic gastropod from Burlington, Keyes.

— Mesozoic, Marcou.

— Missouri River, Broadhead.

— Muscatine County, Calvin.

— Pockets containing clay at Clinton, Farnsworth.

— Rockford shales, Webster.

— Superficial deposits of northeastern Iowa, McGee.

— Surface geology of Burlington, Keyes.

— Terraces of Missouri, Todd.

Iowa—Continued.

— Topographic types in northeastern Iowa, McGee.

— Well at Davenport, Tiffany.

— Well at Keokuk, Gordon.

— Well at Washington, Calvin.

Iowa State University, Bulletin, vol. 1.

— Geological problem in Muscatine County, Calvin.


— References to the geologic features in the vicinity of the mines in Amador, Butte, Calaveras, El Dorado, Fresno, Nevada, Sierra, and Tuolumne Counties.

— Mineral resources of the State. Considered by counties.


— Contains incidental references to occurrence, relations, and structure of metamorphic, granite, eruptive, coal-bearing and other rocks and clays, and drifts in various localities.

[——] Natural and artificial cement.

— California, Eighth Report of State Mineralogist, pp. 865-884. 1888.

— Includes analyses of shell lime from southwestern California, and limestones from Santa Cruz and adjoining counties.

IRVING, Roland D. Report . . . . . .

— Lake Superior division.


— Includes an account of observations on the Vermilion Lake, Animikie, and associated series.

— Origin of the ferruginous schists and iron ores of the Lake Superior region.


— Described in bibliography for 1886.

— Is there a Huronian group? [Read to National Academy of Sciences, April, 1887.]


— Summarizes the evidence indicative of the distinctness of the Huronian as a group comparable with Cambrian, Silurian, etc.; the divisibility of the rocks of the Marquette, Menominee, and Pounokee belts into two mem-
IRVING, Roland D.—Continued.

Bars, the upper of which, and also the Animikie, being of Huronian age. Gives an account of recent field work in the Huronian region and in the district north of Lake Superior, describing the uncrystalline nature of the original Huronian rocks, and outcrops exhibiting the relations of their basal conglomerates to the underlying schists and granites. Discusses the relations of the Huronian, iron-bearing, Animikie, and Kee- weenaw rocks and their structure, origin, and stratigraphy; the extent of the Huronian in America; the uncertainty of age of some so-called Huronian areas in Canada, and the use of the term "group." Proposes the use of Chamberlin’s term "Agnotozoic" for the great system of formations between the Paleozoic (Cambrian) and Archean.

[—] [On the use of the term "Taconic."]

International Congress of Geologists, Am. Committee, Reports, 1888, B, p. 17, 1 line.
Expression of opinion.

[On subdivisions, nomenclature, origin of some members, and characteristics of Archean rocks, classification of eruptives, origin of serpentines, and use of term "Taconic."]


— Report — Lake Superior division of geology.

In résumé of results refers to the origin of the ferruginous schists and their iron ores, the divisibility of the Archean, the origin of chlorite schists exposed at the falls of the Menominee River, and the origin of the upper mica schists of the iron-bearing series.

— On the classification of the early Cambrian and pre-Cambrian formations. A brief discussion of principles, illustrated by examples drawn mainly from the Lake Superior region.

Paleontologic and lithologic characteristics, and unconformities and overlaps of various kinds. Discussion of geologic relations and equivalency of rock group in the Lake Superior region, and taxonomy of the lower part of the geologic column. Accompanied by colored geologic maps.

IVES, James T. B.—Continued.

Geology in the public schools.
JAMES, Joseph F.—Continued.

Description of drift-filled valleys, marking part of the course of the preglacial Ohio drainage.

— The Ivorydale well in Mill Creek valley.


Description and columnar section. Brief discussion of bearing of some of the beds on glacial history.

— Section of Maquoketa shales in Iowa.


Abstract of paper read to American Association, 1889. The abstract consists of some brief allusions to some of the relations of the shales.

— The geology of the Montmorenci. A correction in a date.


Supplies correct date of Emmons' paper of that title, and calls attention to another paper by Emmons in the American Magazine on the Hudson River rocks.

— Remarks upon sedimentation in the Cincinnati group.


Calls attention to evidence of the presence of beaches at several horizons in the Cincinnati group.

JAMESON, E. Geology of the Leavenworth prospect well.


Includes record of 2,116-foot well.


Description of geologic relations, and discussion of genesis.

— Notes on the dry lakes of southern Nevada and California, with relation to the loess.


Description of the lakes; their deposits and history.

JERMY, Gustav. Reports [south central Texas].

Texas, Geol. and Mineralogical Survey, First Report, 1888, pp. 61-64. 1889.

Notes on geologic characteristics and economic minerals in part of the region between the Nueces and Colorado rivers.

Bull. 75—7

Johns Hopkins University Circulars, Nos. 59-70.

Geologic map of Baltimore region, WILLIAMS, G. H.

Progress of work on Archean of Maryland, WILLIAMS, G. H.

Massive rocks and contact phenomena of "Cortlandt series," WILLIAMS, G. H.

Three excursions into southern Maryland, CLARK, W. B.

Rocksnear Ilchester, Howard County, Maryland, HOBBS.

Archean geology of Missouri, HAWORTH.

Rocks from Fernando Noronha, GILL.

Geology of Baltimore region, WILLIAMS, G. H.

Cretaceous in Anne Arundel and Prince George counties, Maryland, CLARK, W. B.

Contributions to mineralogy of Maryland, WILLIAMS, G. H.

Methods and models in geographic teaching, DAVIS, W. M.

JOHNSON, Lawrence C. The structure of Florida.


Section from St. Augustine to Gainesville. Description of Neocene in the Gainesville highlands, reference to rate of dip, and discussion of relations, extent, and equivalency of the upper Eocene members in the Sink region.

— [On the equivalence and members of the White limestone formation in the gulf Tertiary region.]

International Congress of Geologists, Am. Committee Reports, 1888, F, pp. 7, 6 lines.


— [On the occurrence of Oligocene in Florida.]


Reference to beds of supposed Oligocene equivalency.

JOHNSON, Lawrence C.—Continued.
Description of the Tertiary and its included iron ores, the Cretaceous "islands," and the Quaternary, and discussion of the stratigraphic relations, equivalency, and extent of the members of the Tertiary.

— The "Grand Gulf" formation of the Gulf States.


Review of opinions in regard to the geologic position of the formation, and description of a section along the Chickasawha River in Mississippi in which its relations and stratigraphy are exposed.


JONES, H. L. Geology and lithology of Michipicoten Bay. See HERRICK, C. L., TIGHT, W. G., and.

J. T. W. Note on the geology of Haldeman County.

References to Cretaceous and Quaternary formations.

JULIEN, Alexis A. On the geology at Great Barrington, Massachusetts.

References to the general stratigraphy of the Stockbridge limestone, discussion of the relations at Great Barrington, and a detailed description of an overlying dolomitic series in that vicinity.

Jura-Trias—Continued.
Nova Scotia, Aylesford, Kings County, HONEYMAN.
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Yukon expedition, DAWSON, G. M.
Central America, plants, NEWBERRY.
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DAVIS, W. M.

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intrusive and extrusive traps, DAVIS, W. M., and WHITTLE.

Little Falls, DAVIS, C. H. S.

Meriden ash-beds, DAVIS, W. M.
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trap ridges, CHAPIN. DAVIS, W. M.

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region south of the great bend of the Arkansas, CRAGIN.
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lower Cretaceous, White, C. A.
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Kansas Academy of Science, Transactions, vol. 10.
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Historical sketch of geological work in Kansas, Hay and Thompson.

Natural gas in eastern Kansas, Hay, R.

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Geology of Kansas, Lecture, Hay, R. Leavenworth well record, Jameson. Triassic rocks of Kansas, Hay, R. Composition of Kansas coals, Bailey, E. H. S.

Kedzie, G. E. The bedded ore-deposits of Red Mountain mining district, Ouray County, Colorado.


Includes a description of the geologic relations of the andesites, lower Carboniferous, Archean quartzites, structure, and glaciation. Analyses of limestone and andesite.

Kelly, D. S. Coal measures of Lyon County.


Reference to recent development of coal beds.


New York Acad. Sci., Trans., vol. 4, pp. 75-76, 6 lines. 1887.

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—a diorite dike at Forest of Dean, Orange County, New York.


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—a diorite dike at Forest of Dean, Orange County, New York.


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Description of occurrence, petrography, and composition of diorites, and reference to the relations of the associated metamorphic and altered rocks. Discussion of history and date of intrusion of the Cortlandt series.

[Kemp, James F.]—Continued.

—the dike of the Hudson River highlands.


Description of occurrence, faults, petrography, and the Hudson River section of the enclosing rocks. Discussion of petrographic characteristics, age, history, date of metamorphism, and development of contact lamination in enclosing rocks, and conditions under which the dikes were intruded.

The geology of Manhattan Island.


Description of drifts, gneissic rocks, limestones, and structural relations. Accompanied by geologic map and cross-sections.

On certain porphyrite bosses in northwestern New Jersey.


Description of occurrence and petrography of several small, detached areas in the vicinity of Boemersville.


Geologic relations, petrography, and composition.

[Kennish, —.] Artesian well at St. Augustine, Florida.


Statement of rocks penetrated.

Kentucky, Geological Survey Reports.

Pound Gap region, Crandall.

Letcher, Harlan, Leslie, Perry, and Breathitt counties, Hodge.

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Jackson purchase region, Loughridge.

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Rocks of central Kentucky, Linney.

Henry, Shelby, and Oldham counties, Linney.

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  correlation of lower Silurian in the Ohio valley, ULRICH.
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  Oriskany iron ore, PROCTOR.
  peridotite of Elliott County, CRANDALL. DILLER and KUNZ. PROCTOR.
  peridotite, Elliott County, analyses, CHATARD.
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  phosphate of lime deposits, Bath County, SHALER.
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  Spencer County, LINNEY.
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  terminal moraine near Louisville, BRYSON.
  types of Devonian system in North America, WILLIAMS, H. S.
  upper Cumberland valley, McCREATH and d’INVILLIERS.
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KEYES, Charles R. On some fossils from the lower coal measures at Des Moines, Iowa.

KEYES, Charles R.—Continued.
  Includes references to the stratigraphy, thickness, and dip of the series, and to its correlation with a portion of the coal measures of eastern Illinois.
  — The coal measures of central Iowa, and particularly of the vicinity of Des Moines.
    Description of section, dip, thickness, and fauna of some of the members, and discussion of the extent and relations of the coal beds. Mention of discovery of soft Cretaceous sandstone in drift, and reference to other similar occurrences.
  — Surface geology of Burlington, Iowa.
    Topography, distribution, noteworthy exposures, relations, and history of glacial drifts and loess. Topographic map and cross-sections.
  — On the fauna of the lower coal measures of central Iowa.
    Preceded by a geologic description of the lower Carboniferous of the region.
  — The Carboniferous echinodermata of the Mississippi basin.
    Incidentally discusses some features of the Carboniferous history of the region.
  — Note on the distribution of certain loess fossils.
    Am. Geologist, vol. 4, pp. 119-121. 1889.
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KEYES, John A. The falls of the Mississippi.
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--- Notes on the coal-field of southwest Virginia.
   Eng. and Mining Jour., vol. 47, pp. 64-65. 4th. 1889.
   Reference to altitudes and succession of some of the coal beds.

KINAHAN, G. H. Irish Esker drift.
   Review of H. C. Lewis on Irish Eskers. Points out the distinction between true Eskers and certain drift ridges, and discusses some of the phenomena of drift deposition.
--- The terraces of the great American lakes, and the roads of Glenroy.
   Discusses the nature and origin of the lake terraces; their relations to each other, to ice dams and surface deformation, and their similarity to the "wash-outs" of the diluvial flats of the West.

KING, C. Henry. [Discovery of diatomaceous earth in wells at Atlantic City, New Jersey.]
   Includes statement of depth and suggestion in regard to its equivalency with the Richmond beds.

KINGSLEY, J. S. Caves and cave life.
   Suggestion in regard to the age and history of the caves of the Indiana-Kentucky-Tennessee region.

   Discussion of some of the causes of formation and extinction of lake basins, and the influence of glacial agencies.

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   Glaciation: Lackawanna-Wyoming region, BRANNER.
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LAFLAMME, J. A. K.—Continued.
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   --- Note sur le contact des formations paléozoïques et archéennes de la province de Québec.
   Canada, Royal Soc., Trans., vol. 4, section IV, pp. 43-47. 1887.
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— Le gaz naturel dans la province de Quebec.
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LAKES, A. Geology of the Aspen mining region, Pitkin County, Colorado.
Colorado School of Mines, Biennial Report, 1886, pp. 43-84, pls. 1889.
Structural features, stratigraphy, geological history, occurrence and genesis of the ore deposits, and general geological relations of the region; brief reference to evidence of glacial action.

— The Trinidad coal region of southern Colorado.
Description of coal-beds and enclosing strata, geologic relations and structure of the region, general section of strata along foothills of the Rocky Mountains, and dikes in coal series.

— The coal-field of Crested Butte, Gunnison County, Colorado.
Includes a description of the geologic relations of the adjoining region and of the associated volcanic rocks.


Also in Colorado School of Mines, Annual Report, 1887, pp. clxx, pls.
Includes a general sketch of the geology of Colorado; descriptions and discussions of relations of sediments and volcanoes in various districts; sections of the Rocky Mountains in Colorado; discussion of the origin, history, and relations of the ores, and of Newberry, Le Conte, and Emmons on the genesis of ore deposits, and extracts from Emmons's description of the Leadville and Aspen regions.

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— The geology of Nahant. [Abstract.]

LANE, Alfred C.—Continued.
Characteristics, relations, and distribution of the various crystalline rocks. Glaciation. Evidences of post-glacial oscillations of sea-level.

LANG, Herbert. Transcontinental railroads.
Science, vol. 11, pp. 73-74. 1888.
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LANGDON, Daniel W., jr. Some Florida Miocene.

Announcement of the discovery of a new series to which the term Chattahoochee is applied. Brief description of outcrops and relations, lists of fossils, and discussion of equivalency.

LAPWORTH, Charles. Fossils from Kicking Horse Pass.

Science, vol. 9, p. 239. 1887.
Discusses equivalency of the lower Silurian beds in which they occur.

— Preliminary report on some graptolites from the lower Paleozoic rocks on the south side of the St. Lawrence from Cape Rosier to Tartigo River, from the north shore of the Island of Orleans, one mile above Cap Rouge, and from the Cove Fields, Quebec.

Considers the equivalency of the graptolite-bearing beds with English zones from middle Ordovician down. Reviews the evidence in regard to the horizon of the Norman's Kill beds near Albany, New York. Gives a résumé of the supposed stratigraphic relations of the strata of the south side of the St. Lawrence from Cape Gaspé to Tartigo River, and discusses their equivalency, extension, and structure.

— Note on graptolites from Dease River, British Columbia.

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LARSSON, Per—Continued.
Brief description. Map, and sections showing geologic relations in its vicinity.

LAVAGNINO, G. The Old Telegraph mine, Utah.
Briefly describes the porphyry, and its relations to the associated Weber quartzites.

LAWSON, Andrew C. Geology of the Rainy Lake region, with remarks on the classification of the crystalline rocks west of Lake Superior. Preliminary note.
Subdivides the rocks into five series: an intrusive group provisionally termed Laurentian; the Contchiching, overlain conformably and overlapped by the very different Kewatin, together with which it is penetrated by "Huronian" granites, diabases, and gabbros, and unconformably overlain by the Keweenawan ("Nipogon").
— Some recent developments in Archean geology, particularly in the Lake Superior region, as tend to modify commonly accepted notions of rock metamorphism.
Canadian Record of Science, vol. 2, pp. 430-431. 1887.
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— Foliation and sedimentation. A reply to Prof. Alexander Winchell.
Discusses evidence of igneous nature, and history of foliation of some of the crystalline rocks of the Northwest.
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Definition of his views in regard to the history and relations of the Archean rocks of the Northwest and discussion of the nature of the so-called conglomerates in the gneissies.
— Scapolite bearing rocks of Canada, etc. See ADAMS, Frank D., and.

LE CONTE, Joseph. The flora of the coast islands of California in relation to recent changes of physical geography.
A discussion of the post-Tertiary physical changes of the coast region of California as indicated by the flora and fauna of the outlying islands.
— [Nomenclature, subdivision, characteristics, classification of eruptives, origin of some members, and evidences of life of the Archean, and on the nomenclature of the lower Paleozoic.]
— [On the use of the term "Taconic."]
— [On nomenclature of Cenozoic formations.]
Discussion of a designation for the present time, reference to the nomenclature of the Tertiary, and the position of Cenozoic unconformity in California.
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— [On the use of the term "Taconic."]
— [On nomenclature of Cenozoic formations.]
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— On the origin of normal faults and of the structure of the basin region.
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An account of the components and relations of the coal measures at that locality.

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Describes Archean, Ordovician, Silurian, Devonian, Cretaceous, and Quaternary formations.

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— Ovibos cavifrons from the loess of Iowa.
Discusses the climatic conditions of the loess period as indicated by its fauna; the relations of the loess to the drift in Iowa and adjacent regions; the early Quaternary submergence of the middle Atlantic slope, and the attendant climatic conditions; the extent of refrigeration in glacial times, and the position of the strata yielding the Ovibos remains at New Madrid and Fort Gibson.

— The Tuscaloosa formation. Summary of previous observations and opinions.
Discussion of age, correlation, and relations of Tuscaloosa and Potomac formations.

— Résumé.
References to characteristics, stratigraphy, and relations of the formations and sketch of their history.

— The geology of the head of Chesapeake Bay.
Description and analysis of the physiography of the Chesapeake Bay region, and of the coastal plain in general; description of the Columbia and Potomac formations, and their relations in the various exposures, and discussion of their genesis, history, and taxonomy; synopsis of taxonomy of the glacial deposits.
McGEE, W J—Continued.

of the middle Atlantic slope; brief references to Archean (?) alluvial, Appomattox, and Sassafras River greensand; discussion of evidence of a displacement bounding the coastal plain on the west, its position, extent, amount, influence on drainage, and topography, date, history, rate, and cause; the genetic relations of topographic forms in general, and the Quaternary history recorded in the Columbia formation; and prognostication in regard to the occurrence of artesian waters in the region. Accompanied by a stereogram of the middle Atlantic slope.

— Report — Potomac Division of Geology.


Includes a reference to the equivalency and history of the Potomac and Tuscaloosa formations.

— Three formations of the Middle Atlantic Slope.


Description of character, distribution, and relations of the Potomac and Columbia formations, and of a new later Tertiary formation, designated the “Appomattox,” from North Carolina to New Jersey. Discussion of stratigraphic relations, origin of materials, conditions of deposition, taxonomy, and bearing on geologic history, especially on the Quaternary. Synopsis of literature of the Columbia formation and of the glacial history of the United States. Accompanied by a stereogram of the middle Atlantic slope.

— The classification of geographic forms by genesis.


Definition and classification of geologic phenomena and discussion of their relation to the genera of geographic features.

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General notice. Discussion of origin and mode of deposition of its materials and climatic conditions indicated by its stratigraphy and relations.

— Paleolithic man in America: his antiquity and environment.


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— [On some peculiarities of the superficial deposits of northeastern Iowa.]


Brief reference to forest bed intercalated between the drifts, the occurrence of kames and asar, the distribution of the loess, and certain anomalous relations of the drainage.

— Notes on the geology of Macon County, Missouri.


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— Topographic types of northeastern Iowa.


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— Geological antecedents of man in the Potomac valley.


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Description and discussion of characteristics, structure, and contact relations, and discussion of equivalency and history of the Huronian, Animikie, Keweenawan, “Nipigon,” and overlapping formations in the Lake Superior regions. Reference to relations of Huronian and Laurentian.

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— Paleontologic and stratigraphic “principles” of the adversaries of the Taconic.

Discussion of paleontologic, stratigraphic, and structural relations of the Taconic system, especially in review of C. D. Walcott’s paper, “The Taconic system of Emmons, and the use of the name Taconic in geologic nomenclature.”

MARCOU, Jules—Continued.

— Geology of the vicinity of Quebec city.

References to horizon, and relations of slates unconformably underlying the Trenton at Quebec and Montmorenci falls.

— The Taconic of Georgia, and the report on the geology of Vermont.

Consists of a discussion of the relations in northwestern Vermont and the Quebec region, the Loraine shales versus the Hudson River group, the horizons of the gryphidea zone of eastern America, the classification and nomenclature of the geology of Vermont, the history of Emmons’s map of New York, and the history, classification, and use of the name “Georgia.”

— Some remarks on Prof. Henry S. Williams’s report of the subcommittee on the upper Paleozoic (Devonic) in the American Geologist for October, p. 296.

Discussion of some points in the history of the nomenclature of the New York Devonian.

— Barrande and the Taconic system.

Historic and controversial.

— The original locality of the Gryphea Pitcheri, MORTON.

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— The Mesozoic series of New Mexico.

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— On some dates of the “Report on the Geology of Vermont.”
MARCONI, Jules—Continued.
Review of various historic questions concerning the Taconic in Vermont publications.

MARGARIE, Emile de. Presentation d'un relief en platre de la Pennsylvanie au nom de M. J. P. Lesley et observations sur les plissements des terrains paléozoïques.
Discusses the plications of an area in central Pennsylvania; as exhibited by a stereogram of the flexures at the surface of the "Medina" sandstone.

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Describes fossils representing the older or Paradoxides fauna in Newfoundland and the later forms of the Olenus fauna in Cape Breton. Describes occurrence of the fossils and discusses equivalency of the containing and associated formations.  
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* * * A plea for the classification of Salter and Hicks.
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Upham, Warren—Continued.
—— The geology of Carver and Scott counties.
Descriptions of drifts, terraces and outcrops of Archean, Cambrian, and Cretaceous. Discussion of equivalency of some of the Cambrian members and the relation and origin of some of the drifts. Accompanied by a colored geologic map.
—— The geology of Sibley and Nicollet counties.
Description of the drifts, and discussion of the relations and origin of some of their features. Accompanied by a colored geologic map.
—— The geology of McLeod County.
Description of drifts, Archean, Cretaceous, terraces, and interglacial forest bed. Accompanied by a colored geologic map.
—— The geology of Swift and Chippewa counties.
Description of drifts, Archean outcrops, buried moraine, preglaicial drainage channels, and terraces. Accompanied by a colored geologic map.
—— The geology of Kandiyohi and Meeker counties.
Description of drifts, Archean outcrops, buried moraine, preglaicial drainage channels, and terraces. Accompanied by a colored geologic map.
—— The geology of Wright County.
Description of drifts and doubtful Cretaceous outcrops. Discussions of the relations of some of the drifts, and some features of glacial history. Accompanied by a colored geologic map.
—— The geology of Chisago, Isanti, and Anoka counties.
UPHAM, Warren—Continued.

Description of drifts, terraces, and outcrops of traps, St. Croix sandstone, lower magnesian limestone, and Trenton limestone. Discussion of the relations and origin of some of the drifts. Accompanied by a colored geologic map.

— The geology of Benton and Sherburne counties.

Description of Archean areas, trap dikes, and drifts. Discusses relations of some of the drifts. Accompanied by a colored geologic map.

— The geology of Stearns County.

Description of drifts, Archean and Cretaceous, and sketch of glacial history. Accompanied by a colored geologic map.

— The geology of Douglas and Pope counties.

Description of drifts. References to glacial history indicated by some of the features, relations of the drifts, and preglacial topographic features; presence of Cretaceous. Accompanied by a colored geologic map.

— The geology of Grant and Stevens counties.

Description of drifts and beaches of glacial Lake Agassiz. Accompanied by a colored geologic map.

— The geology of Wilkins and Traverse counties.

Description of shore phenomena, and sketch of history of glacial Lake Agassiz. Reference to underlying Cretaceous found in well at Fargo. Accompanied by a colored geologic map.

— The geology of Ottertail County.

Description of drifts and beaches of Lake Agassiz. Discussion of nature of underlying rocks, and the origins of some of the drift deposits. Accompanied by a colored geologic map.

— The geology of Wadena and Todd counties.


UPHAM, Warren—Continued.

Description of drifts, Archean, and diorite. Discussion of the nature and sequence of some of the glacial phenomena. Accompanied by a colored geologic map.

— The geology of Crow Wing and Morrison counties.

Description of drifts, Archean, staurolitic and mica schists, and Cretaceous. Discusses origin of some of the drift materials. Some copies accompanied by a colored geologic map.

— The geology of Mille Lacs and Kanabec counties.

Description of drifts, and Archean and Potsdam outcrops. Accompanied by a colored geologic map.

— The geology of Pine County.

Description of drifts, and discussion of extent and relation of underlying rocks. Accompanied by colored geologic map.

— The geology of Becker County.

Description of drifts, and discussion of extent and relation of underlying rocks. Accompanied by colored geologic map.

— The geology of Clay County.

Description of drifts and shore phenomena of glacial Lake Agassiz. References to preglacial topography, and well at Fargo into supposed Cretaceous strata. Accompanied by a colored geologic map.

— Glaciation of mountains in New England and New York.

Discusses the extent, thickness, direction of movement, and action on elevated regions of the great ice caps of the glacial period.

— Ascents of Camel’s Hump and Lincoln Mountain, Vermont.

Includes some brief references to the characteristics of the rocks, evidences of glaciation, and glacial drifts.

— Marine shells and fragments of shells in the till near Boston.
UPHAM, Warren—Continued.

Summary account of the various localities; description of deposits in which the shells occur, discussion of their transportation, and their bearing on the recency of the glacial period, late preglacial climatic conditions and height of sea level, and a general review of the evidence bearing on the cause, nature, and amounts of post-glacial submergence in eastern North America.

[Age and origin of the pot-holes at Cohasset.]

Includes reference to some other pot-holes of supposed glacial origin.

— The structure of drumlins.

Abstract, Am. Geologist, vol. 5, p. 61, p. Detailed description of several drumlins in eastern Massachusetts, and discussion of their relations and history.

— The glacial moraines of Minnesota.

Short notice of paper. Classified list of moraines, and statement in regard to their lateral nature.

— Changes in the currents of the ice of the last glacial epoch in eastern Minnesota.

Discussion of the history and results of the glacial flows, and of evidence of the existence of certain glacial rivers in the region.

Description of maps showing the climate, geography, and geology of Minnesota.

Includes a general account of the characteristics and distribution of formations in Minnesota.

— [Beaches of Lake Agassiz.] See CHAMBERLIN, Division of glacial geology.

Utah, Cambrian, MATTHEW. WALCOTT. coal, ASHBURNER. fossils from San Pete region, WHITE, C. A. gilsonite, Uinta County, RAYMOND. gold and silver mining, HOLLISTER. Henry Mountain laccolites, CROSS. EMMONS, S. F. iron ore of southern Utah, BLAKE. Laramie. WHITE, C. A. marbles, NEWBERRY. mountain upthrusts, Uinta, etc., WHITE, C. A. obsidian, IDDINGS. old Telegraph mine, LAVAGNINO. Permian of Texas, HILL, R. T. relations of Laramie, WHITE, C. A. stratigraphic position of Olenellus, WALCOTT. structural relations of ore deposits, EMMONS, S. F. sulphur deposits, FAUR. upper Eocene formation, SCOTT.

VAN DIEST, P. H. Notes on some Boulder County veins.

Describes the gneisses, granites, felsite dikes, and their contained minerals. On accompanying map indicates boundary of metamorphic and sedimentary rocks.

— Address of the retiring president.

Refers to geologic features of Caribou Mountains, and at the Wilson mine, Idaho, in connection with the occurrence of gold at these localities.

— Colorado volcanic craters.


VAN DIEST, P. H.—Continued.

Describes some features of craters and lava flows in Rio Grande County, and refers to reports of craters at other points in Colorado.

VAN HISE, C. R. Notes on the enlargement of hornblends and augites in fragmental and eruptive rocks.

Calls attention to Becke's discovery of the fact in 1883, and describes some Penokee-Gogebic altered diabases exhibiting secondary hornblende enlargements on augite grains.

— The iron ores of the Penokee-Gogebic series of Michigan and Wisconsin.
VAN HISE, C. R.—Continued.
Brief account of geology of Penokee-Gogebic region, description of relations of ore deposits and associated intrusive rocks, and discussion of the genesis of the ores.
— The chemical origin of the Vermilion Lake iron ores.
Review of N. H. and H. V. Winchell "On a possible chemical origin of the iron ores of the Keewatin in Minnesota." Incidentally discusses the history of the discovery of unconformity at the base of the Keewatin series, and the correlation of some of the formations which are included in the Keewatin series.

Eng. and Mining Jour., vol. 44, p. 344, p. 1887.
General description of geology of King's Mountain region.

Vassar Brothers' Institute, Transactions, vol. 4.
Cutting at Croton Point, New York, WARRING.
Evolution of continents, WARRING.
Plication in continental elevation, DWIGHT.
Primordial of Wappinger Valley limestone region, DWIGHT.

Vermont, great primordial quartzite, WINCHELL, N. H.
Camel's Hump and Mount Lincoln, UPHAM.
conglomerates in gneisses, HITCHCOCK.
date of Report on Geology of Vermont, HITCHCOCK.
fossils in lower Taconic of Emmons, WALCOTT.
glaciation of mountains, UPHAM.
principles of adversaries of the Taconic, MARCOU.
Taconic of Georgia, and Report on Geology of Vermont, MARCOU.
Taconic question restated, HUNT.
Taconic system of Emmons, MILLER, WALCOTT.
new locality of camptonite, NASON.

Vermont, age of Potomac formation, WARD.
ancestors of man in the Potomac valley, McGEE.

Virginia—Continued.
coal, ASHBURNER.
coal-field of southwestern Virginia, KILLEBREWER.
Columbia formation, McGEE.
faults of southwestern Virginia, STEVENSON.
flora of older Mesozoic, STUR.
gas and coal, Chesterfield County, RUSSELL, I. C.
Glenmore iron estate, Greenbrier County, PAGE.
iron ore, Rockbridge County.
lower Carboniferous, STEVENSON.
Low Moor iron ore, LYMAN.
mineral resources of southwestern Virginia, PROCTOR.
Natural Bridge, Balcouny Falls, Luray, Great Valley, BRITTON.
natural coke from Midlothian, analysis, RIGGS.
New River-Cripple Creek region, D'INVILLIERS and MCCREATH.
Oriskany bowlder near Washington, District of Columbia, CURTICE.
reconnaissance in southwestern Virginia, STEVENSON.
Richmond coal-field, CLIFFORD.
Newell surface geology of southwestern Virginia, STEVENSON.
sauropoda from the Potomac formation, MARSH.
terraces, McGEE. STEVENSON.
WHITE, I. C.
three formations of the middle Atlantic coast, McGEE.
Trenton limestone from Lexington; analysis, RIGGS.
upper Cumberland valley, MCcreath and D'INVILLIERS.
[younger Mesozoic from Richmond southward], WARD.

VOGDES, Anthony W. Some forgotten Taconic literature.
Descriptive notes and abstracts of papers by Dewey in 1819 and 1824, and Emmons, 1842 and 1846.
— The genera and species of North American Carboniferous trilobites.
Includes a general sketch of the distribution of the Carboniferous members in the United States, pp. 70-74.
WADSWORTH, M. E. Preliminary description of the peridotites, gabbros, diabases, and andesines of Minnesota.


Description and discussion of the micro-petrography of a large collection in greater part from the northeastern part of the State. Colored plates of micro rock sections.

Also includes a discussion of classification, history, and relations of basic crystalline rocks.

— The Keweenawan system.


Describes a locality on the Hungarian River; a graduation of the eastern sandstone into the Keweenaw rocks is exhibited without intervening fault. Discusses the copper-bearing rocks and relative position of the sandstones.

— [On subdivisions, unconformities, characteristics, origin of some members, nomenclature, and life of the Archean, and origin of serpentinite.]


Wagner Free Institute, Transactions, vol. 1.

Explorations on west coast of Florida, etc., HEILPRIN.

WALCOTT, Charles D.—Continued.


Statement of stratigraphic position and account of mode of occurrence.

— Section of lower Silurian (Ordovician) and Cambrian strata in central New York, as shown by a deep well near Utica. [Abstract.]


Description of drill-hole 2,250 feet in depth.

— Discovery of fossils in the lower Taconic of Emmons. [Abstract.]


Describes occurrences of middle Cambrian species in the quartzites and Trenton-Chazy species in the limestones of southwestern Vermont, and calls attention to their bearing on the question of the age of the Taconic system.

— The Taconic system of Emmons, and the use of the name Taconic in geologic nomenclature.


Review of Emmons and others, description and discussion of relations in the Taconic region, announcement of discovery of fossils and structural features throwing new light on the relative position, equivalency, and relations of the various members of the Taconic system, discussion of nomenclature and classification of the Cambrian formations. Accompanied by a colored geologic map.

— Cambrian fossils from Mount Stephen, Northwest Territory of Canada.


Read to Biological Society of Washington, 1888.

Review of some of the species described by Rominger, and discussion of the paleontologic evidence on the stratigraphic position of the Cambrian of Mount Stephen.

— [On the nomenclature and origin of the Archean and the use of the term Taconic.]


— Synopsis of conclusions on the “Taconic system” of Emmons.

WALCOTT, Charles D.—Continued.


Statement of stratigraphic position and account of mode of occurrence.

— Section of lower Silurian (Ordovician) and Cambrian strata in central New York, as shown by a deep well near Utica. [Abstract.]


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Review of some of the species described by Rominger, and discussion of the paleontologic evidence on the stratigraphic position of the Cambrian of Mount Stephen.

— [On the nomenclature and origin of the Archean and the use of the term Taconic.]


— Synopsis of conclusions on the “Taconic system” of Emmons.
WALCOTT, Charles D.—Continued.

Extracts from paper in American Journal of Science, 1888, with additional notes.

— Report—Paleozoic division of invertebrate paleontology.

Reference to the formations constituting the Paleozoic in central Nevada, especially to the discovery of Devonian and lower Carboniferous; the thickness and horizon of the Wahsatch Cambrian; to studies by H. S. Williams on the stratigraphy and faunal relations of the Devonian of southern New York; and collection of Cambrian fossils in the southern Appalachian by Cooper Curtice.

— Stratigraphic position of the Olenellus fauna of North America and Europe.

Review and discussion of paleontologic and stratigraphic relations of the lower Cambrian to the middle Cambrian, and of the stratigraphic position, geographic distribution, zoology and stratigraphic characteristics of the Olenellus zone in America and Europe. Includes a description of the Cambrian of Newfoundland based on recent examinations, and a general review and tabulation of Cambrian taxonomy.

— A simple method of measuring the thickness of inclined strata.


WALKER, J. B. Notes on the geology of Burnet County.

Statements in regard to characteristics, relations, and distribution of the Cretaceous and Carboniferous.

WARD, Lester F. Synopsis of the flora of the Laramie group.

Reviews the opinions which have been held in regard to the age and position of the Laramie and equivalent formations. Describes the nature, extent, and vegetation of the group and discusses its age, history, distribu-
Washington—Continued.
changes in river courses due to glaci­
ation, WILLIS.
coal, ASHBURNER.
 glaciation of Pacific coast, WRIGHT.
invertebrate fossils from Pacific
coast, WHITE, C. A.
Mount Ranier and the glaciers, WILLIS.
Puget group, WHITE, C. A.
structure of northern Washington, WILLIS.
Washington, Philosophical Society,
Faults of Great Basin, etc., RUSSELL.
Geologic history of Sierra Nevada,
GILBERT.
Geology of northern California, DILLER.
Sierra structure not extended into
Washington, WILLIS.

WASMUTH, Henry A.—Continued.
bances and consequent—premature exha­
uition.
1888.
Reference to faults and steep folds indicat­
ing the existence of much greater disturbance
than is shown on the geological survey maps.

WEBER, Adolph H. Natural gas.
California, Seventh Report of State Miner­
alogist, pp. 181-191. 1888.
Section in superficial deposits at Eureka;
note of occurrences of lignite at various
points in Humboldt, Trinity, Tehama, Men­
dino, Sonoma, Colusa, and Shasta counties.
— Petroleum and asphaltum in northern
California.
California, Seventh Report of State Miner­
Gives sections on coast south of Bear River
and at Point Arena showing relations of bitu­
minous beds.

WEBSTER, Clement L. On the glacial
flow in Iowa.
Discusses the evidence of three ice flows.
Describes striae, the drift, and the inner and
outer moraines of the last two glacial advan­
ces.
— Notes on the geology of Johnson
County, Iowa.
1888.
Description of pot-holes and old river chan­
nel in Devonian limestone at its overlap
by the Carboniferous; peat beds under the
Drift at various points in Iowa; terraces
along Iowa River; loess and drift. Brief dis­
cussion of age, origin, and conditions of depo­
sition of the loess.
— Notes on the Rockford shales.
Reference to lithologic and paleontologic
variations at different localities, and descrip­
tion of fossils from Queena's Grove, Cerro
Gordo County.
— On the glacial drift and loess of a
portion of the northern-central basin of
Iowa.
Drifts, loess, vegetal beds between drift
sheets, distribution of erraticas, terraces, rela­
tion of drainage to structure.
— Description of new species of fossils
from the Rockford shales of Iowa.
Reference to the great variety of conditions
of deposition indicated in the Devonian of
WEBSTER, Clement L.—Continued.
Iowa, and the effects upon the faunal relations.

— A general preliminary description of the Devonian rocks of Iowa, which constitute a typical section of the Devonian formation of the interior continental area of North America.

Description of the characteristics, distribution, and relations, and discussion of equivalency, stratigraphic range, and paleontologic relations of the several members.

— A description of the Rockford shales of Iowa.
Description of stratigraphy, and lists of fossils.

WEED, Walter Harvey. On the formation of siliceous sinter by the vegetation of thermal springs.

Describes the formation of siliceous deposits by algae and mosses in the geyser waters in the Yellowstone Park; discusses their rate of growth; gives analyses of Yellowstone Park and New Zealand sinters, and discusses the nature of the latter. Preceded by a general discussion of the deposition of silica by geyser waters.

WENDT, Arthur F. The copper ores of the southwest.

Describes the occurrence of ores in Carboniferous limestones, and associated eruptives at Santa Rita, New Mexico, Clifton, Bisbee, and Black Range districts, Arizona, and in recent formations at Molaje, Lower California. Includes notes on micropetrography, by A. A. Julien.

West Virginia, coal, ASHBURNER, coal from Jefferson County; analysis, WHITEFIELD, J. E.

WHITE, Charles A.—Continued.
Division of Mesozoic Invertebrates.

Announces his conclusions in regard to the position of the Chico and Téjon groups, and the auriferous slate series of California. Calls attention to the occurrence of a Cretaceous formation in Mendocino County, California, to which the provisional name of Wallala group is given.

— On the age of the coal found in the region traversed by the Rio Grande.

Refers it either to the Laramie or Fox Hills formation, or to both, and describes the extension of these formations southward into Mexico.

— On the inter-relation of contemporaneous fossil faunas and floras.

Discusses the faunal and floral relations and contemporaneity of deposition of the Laramie, and the equivalents of the Bridger, and the stratigraphic position of these groups.

— On the relation of the Laramie moluscan fauna to that of the succeeding fresh-water Eocene and other groups.

Describes Wasatch fossils from San Pete Valley and adjacent portions of Wasatch Mountains, and discusses the faunal and stratigraphic relations of these beds, and of the Bear River Laramie, Wasatch, Laramie, Puerco, and Fort Union groups. (The abstract in Science is a very complete one.)

— On the Cretaceous formations of Texas, and their relation to those of other portions of North America.

Describes results of studies by R. T. Hill, from which is given a descriptive table of the strata of the eastern half of Texas, and their supposed equivalents in the Mississippi, and upper Missouri River sections. Discusses the equivalency, distribution, subdivisions, and relations to associated formations.

— On the occurrence of later Cretaceous deposits in Iowa.

References to localities and occurrence of fossils, and discussion of their stratigraphic position in the Cretaceous, the position of Cretaceous shore line, and original thickness and extent of the Cretaceous in Iowa.

— On the relation of the Laramie group to earlier and later formations.

Description of the relations of the Laramie in the lower Rio Grande region in Texas and
WHITE, Charles A.—Continued.

Mexico, references to the relations of the Belly River series, and discussion of the history of the late Cretaceous and early Tertiary in western America, and the Cretaceous age of the greater part of the Laramie.

— On the Puget group of Washington Territory.

Statement of general relations and discussion of the history, biologic relations, and correlation with Laramie and Chico-Téjon groups.

— Mountain upthrusts.

Sections and descriptions of the Uinta fold, and the Junction and Yampa mountain upthrusts, and discussion of their history and the philosophy of their uplift.

[On the fauna of the Permian of Baylor, Archer and Wichita counties, Texas.]

Statement of his opinion in regard to the Permian age of the formations.

— On Hindeastrea, a new generic form of Cretaceous Astræa.

Incidentally refers to stratigraphic position of Ripley group.

— Remarks on the genus Aucella, with special reference to its occurrence in California.

Includes a statement in regard to the age of the containing series indicated by its occurrence.

— Report—Mesozoic division of invertebrate paleontology.

References to thickness, age, and fauna of coal-bearing series in hills south of San Pete valley, Utah, their faunal relation to the Laramie and their equivalence with the coal-bearing beds near Evanston, Wyoming; the occurrence of coal in the Laramie in Cottonwood Canyon, the equivalence of the coal series in Pleasant valley and Coalville, Utah, and the marine origin of the containing strata; the faunal relations of the Laramie and Wasatch, and extent of land area during the latter part of the Jurassic period.

WHITE, Charles A.—Continued.

— The lower Cretaceous of the Southwest and its relation to the underlying and overlying formations.

An account of its characteristics and relations in various districts in Texas and northern Mexico, and discussion of its stratigraphic range, equivalence, history, and extent.

— On the Permian formation of Texas.

Discussion of faunal and stratigraphic relations and range; brief description of its several members, estimates of thickness, dip, and extent, characteristics and relations of associated formations, and review of evidence and opinions bearing on the identity and equivalency of the Permian in North America.

— On invertebrate fossils from the Pacific coast.

The paper consists of five parts: I. New fossil mollusca from the Chico-Téjon series of California, which includes a discussion of the stratigraphic and faunal relation of the series. II. Equivalents of the Chico-Téjon series in Oregon and Washington; a description of a number of new or little-known localities. III. Cretaceous fossils from Vancouver Island region, including some remarks on the faunal relations of the Vancouver group. IV. Molluscan fauna of the Puget group; includes some general remarks on the geology of the group, its history, extent, and faunal and floral relations. V. Mesozoic mollusca from the southern coast of the Alaskan peninsula, including some remarks on the horizon of the containing beds.

— The North American Mesozoic.


WHITE, C. D. Carboniferous glaciation in the southern and eastern hemispheres, with some notes on the Glossopteris flora.

Sets forth a summary of the evidence of an early Carboniferous glacial epoch in the region bordering the Indian Ocean in Asia Africa, and Australia, and reviews the discussions of its date and extent, the correlation of the terranes by which it is represented in different regions, the origin and history of the Glossopteris flora, and the evidence of an Africa-India-Australasian continent.
WHITE, I. C. Rounded boulders at high altitudes along some Appalachian rivers.


A discussion of the history recorded in the boulder deposits and terraces, especially in connection with the existence of a glacial ice dam in the Ohio. Discusses the relations and significance of boulder deposits along the upper Ohio, the Kanawha, the Pittsburgh regions, the Potomac, and the James; the boulder and clay-covered divides of the Teases valley near Charleston and Pittsburgh and McKeesport, Pennsylvania; the terraces of the Monongahela and Youghiogheny, the variations in altitude of these boulder and terrace deposits, and the origin of the high-level deposits along the Cheat River of West Virginia.

WHITEAVES, J. F. Notes on some Mesozoic fossils from various localities on the coast of British Columbia, for the most part collected by Dr. G. M. Dawson in the summer of 1886.


Includes mention of localities and some suggestions in regard to horizons indicated by the fossils.

WHITFIELD, J. Edward. [Analyses of volcanic dusts.]


From Marsh Creek valley, Idaho, Little Sage Creek, Montana, and Devil's pathway, Montana.

Coal from Jefferson County, West Virginia.


Analysis.

Coal from Walnut Cove, Stokes County, North Carolina.


Analysis.

WHITFIELD, R. P. New Jersey Cretaceous.


General review of stratigraphy and faunal relations of the Cretaceous and Eocene, and discussion of the equivalence of the former with members in the upper Missouri section.

[On the use of the term "Quaternary."]


WHITFIELD, R. P.—Continued.


Consideration of its taxonomic value.

— Observations on some imperfectly known fossils from the Calciferous sandrock of Lake Champlain, and descriptions of several new forms.


Preceded by a brief description of the relations near Plattsburg, New York.

— Note on the faunal resemblance between the Cretaceous formations of New Jersey and those of the Gulf States.


Parallel lists of species from Alabama, Mississippi, Texas, and Dakota, and comments on the faunal relations.

WHITING, II. A. Mono County.


Includes incidental references to geologic relations at various localities and to petrographic features of some of the rocks.


WILLIAMS, George H. On a plan proposed for future work upon the geological map of the Baltimore region.

Johns Hopkins Univ. Circular, No. 59, pp. 122-123. 1887.

Statement of scope.


Neues Jahrbuch, 1887, Band 2, ss. 262-267.

Describes micropetrography of diabase from Big Quinnesec Falls, Menominee River; the norite of the Cortlandt series, and the serpentine of Syracuse, the origin of which is also briefly discussed.

—the norites of the "Cortlandt series" on the Hudson River near Peekskill, New York.


Abstract, Neues Jahrbuch, 1887, Band 2, ss. 316-317.

After a review of the distribution of hypersthene rocks in general, describes and discusses the micropetrography, occurrence
WILLIAMS, George H.—Continued.
and some structural relations of the "norite proper," "hornblende norite," "mica norite," "hyperite," or "augite norite," "pyroxenite" and their graduations.

— Holocrystalline granitic structure in eruptive rocks of Tertiary age.

Notice of some of Stelzner conclusions in his memoir on "The Geology of the Argentine Republic." Incidentally refers to the nature of the "Nevadite" of von Richthofen and discusses the relations of structure in rock masses to the conditions under which they solidify.

— On the serpentine (peridotite) occurring in the Onondaga salt group at Syracuse, New York.


Describes the occurrence of the rock and its chemical and mineralogic constituents. Discusses its alteration from peridotite and its close resemblance to the dikes of Elliott County, Kentucky.


Some examples of the dynamic metamorphism of the ancient eruptive rocks on the south shore of Lake Superior. [Abstract.]

Description of certain modifications which rocks undergo when subjected to the action of mountain-making forces.

— The gabbros and diorites of the "Cortlandt Series" on the Hudson River near Peekskill, New York.


References to occurrence and relation to each other, and petrographic description.

— The contact metamorphism produced in the adjoining mica schists and limestones by the massive rocks of the "Cortlandt series" near Peekskill, New York.
WILLIAMS, George H.—Continued.


Mainly petrographic. Describes contact relations at Gruger's Station and on the southern end of Verplanck's Point. Résumé of evidence of the eruptive nature of the massive members of the Cortlandt series and references to conditions of solidification, and location of the center of eruptive action.

— [Subdivision of Archean, nature of oldest crystalline schists, origin of serpentine, and use of term "Taconic."]

— On the use of the term "Taconic."
International Congress of Geologists, Am. Committee Reports, 1888, B, p. 17, 3 lines.

Expression of opinion.

— Geology of the Baltimore region.

Refers to the sequence of the eruptives.

— Progress of the work on the Archean geology of Maryland.

General sketch of Maryland geology and description of the relations of the gneisses and various eruptives in the Baltimore region and northward to the Pennsylvania line.

— Geology of Fernando de Noronha, Part II, petrography.


Petrographic description of specimens of phonolites, trachytes, and andesites.

— Contributions to the mineralogy of Maryland.

Includes reference to the occurrence and composition of an ottreelite rock in Frederick County.

WILLIAMS, H. S. Methods of instruction in general geology.

WILLIAMS, H. S.—Continued.
Discussion of the paleontologic and stratigraphic relations, equivalency, and range of the members of the upper Devonian and base of the lower Carboniferous in southern New York, northern Pennsylvania, and Ohio. Detailed description of stratigraphy and fauna at various localities from Genesee County, New York, to McKean County, Pennsylvania.

— On the different types of the Devonian system in North America.
Résumé of the more prominent features and discussion of the paleontologic and stratigraphic relations of the Devonian formations in the several areas.

— Report of the subcommittee on the upper Paleozoic (Devonic).
A general review of the distribution, taxonomy, and nomenclature of the Devonian members of North America.

WILLIAMS, S. G.—Continued.
— The Tully limestone, its distribution, and its known fossils.
Describes its line of outcrop, constituents, thickness, structure, and fossils. Accompanied by a map of its outcrop.

WILLIS, Bailey. Changes in river courses in Washington Territory due to glaciation.
Discussion of the agency of lava flows and glaciers in diverting a portion of the course of the Columbia River, Accompanied by a geologic map indicating the formations along a line of reconnaissance, and hachured maps showing preglacial channel of the Similkameen River, the lower valley of the Okinakame River, and Columbia River from the latter to Lake Chelan.

— Topography and structure in the Bays Mountains, Tennessee.
School of Mines Quarterly, vol. 8, pp. 242-252. 1887.
Describes their structure, topography, and drainage, and discusses the relations of drainage and topography to structure, and the time and extent of Appalachian uplift.

[—] [Absence of Sierra Nevada structure in northern Washington Territory.]
States that the eastern face of the Cascade Range is not determined by a great fault.

— The marble of Hawkins County, Tennessee.
School of Mines Quarterly, vol. 9, pp. 112-123. 1888.
Description of bed of Trenton marble, and the great fault by which it is cut off from the adjoining Cambrian rocks.

— Mount Rainier and its glaciers.
Brief mention of the paper, and statement in regard to the relations of Mounts Rainier and Shasta as points of volcanic activity.

— Round about Asheville.
Classification of the topographic characteristics of the western North Carolina-East Tennessee region, and discussion of evidence and history of successive stages of elevation and base leveling.

WINCHELL, Alexander. Report of geological observations made in north-
WINCHELL, Alexander.—Continued.

eastern Minnesota during the season of 1886.


Field notes of work in region north of the western part of Lake Superior. Describes and figures many details of structure, rock texture, and distribution, volcanism, vein stones, etc., in the crystalline and metamorphic series. In a summary of observations (p. 172) gives a general description of the region, and discusses the structural and stratigraphic relations, extent, equivalency, modifications, variations, origin, and geologic history of the formations. Reviews Lawson on the Keewatin series, and on gneissic foliation. Notices some glacial phenomena in the region. Accompanied by a folded colored geologic map, in part, by N. H. Winchell.

— Unconformability between the Animikie and the Vermilion series.


"The Animikie flint schists dipping, 59 S. have been traced by me to within seven feet of sericitic argillites of the Vermilion series dipping about 67° NE."

— The unconformities of the Animikie in Minnesota.


Reference to characteristics, relations, distribution, and equivalency of the Animikie, and description and discussion of relations in northern Minnesota and some adjacent portions of Canada.

— Some effects of pressure of a continental glacier.

Am. Geologist, vol. 1, pp. 139-143. 1888.

Discussion of relations of crustal deformation to the great lava outflows of the Far West, and to post-glacial uplift of shore lines in the Atlantic coast region.

— The Taconic question.


Review of literature, and discussion of the grounds of the opponents of the Taconic system, and the nomenclature of the lower Paleozoic.

— Geology as a means of culture.


[On the use of the term "Taconic."]


Discussion of its applicability.

[On the nomenclature of the Tertiary, and the faunal relations, and designation of the Quaternary.]
WINCHELL, Alexander—Continued.

WINCHELL, H. V. Partial report of observations made by.
On crystalline rocks of a portion of north-eastern Minnesota.

— Report of observations made during the season of 1887.
Description of relations and characteristics of crystalline rocks along various routes in north-west Minnesota. References to Cretaceous outliers.

— The diabasic schists containing the jaspilite beds of northeastern Minnesota.
Description and discussion of relations of the massive and of schistose basic series and their siliceous and ferruginous associates.

— Report of field observations made during the season of 1888 in the iron regions of Minnesota.
Notes on region east of Tower. Discussion of the relations of the several formations, pages 128-135.

— [Professor Irving and the Keewatin series, and the origin and horizon of the iron ores of the Vermilion Lake series.] See WINCHELL, N. H. and H. V.

— On a possible chemical origin of the iron ores of the Keewatin in Minnesota. See WINCHELL, N. H., and H. V.

WINCHELL, N. H. Geological report.
Detailed description of Vermilion Lake iron region and vicinity, and discussion of the structural relations, stratigraphy, equivalency, age, extent, origin, etc., of the several formations and of the "jaspilite rock." Gives list of some glacial striae. Describes some features of the Mayhew Lake titaniferous iron-ore district. Accompanied by a folded, colored, geologic map.

— Notes on the classification and nomenclature for the American Committee of the International Geological Congress, March, 1887.

WINCHELL, N. H.—Continued.
After stating the present condition of the Taconic question, discusses the history, application, and equivalency of the terms "Taconic," "Primordial," and "Cambrian," showing that "Taconic" was prior to "Cambrian," under the same conditions of application, and was originally applied with equal error. It is urged that "Taconic" should be retained for the first fauna and "Cambrian" for the second, in accordance with the purpose of their authors. Discusses the subdivisions of the Archean and the use of the term.

— The granite and quartzite contact of the Aurora mine, Gogebic iron range, at Ironwood, Michigan. [Abstract.]
Discusses the nature and origin of the granite, and refers it to the Huronian.

— The Animikie black slates and quartzites, and the Ogishke conglomerate of Minnesota, the equivalent of the "original Huronian."
Includes a review of the characteristics of the original Huronian, and a table suggesting the equivalency of the several members with similar rocks in Minnesota and Wisconsin.

— Some objections to the term Taconic considered.
Discussion of the status of the term and discussion of the objections advanced against its adoption.

— A great primordial quartzite.
Correlation of Cambrian quartzites of the Taconic region, the Potsdam sandstone of New York, the Huronian quartzites of Minnesota and Wisconsin, the "Potsdam" sandstone of the Black Hills of Dakota, and the eastern sandstones of Michigan.

[—] Note on small outliers of Cretaceous in Minnesota.
References to localities and characteristics.

— Report of the subcommittee on the lower Paleozoic.
Discussion of nomenclature, especially in regard to the use of the terms "Taconic" and "St. Croix." Includes extracts of letters from J. D. Dana, S. W. Ford, James Hall, C. H. Hitchcock, Alexander Winchell, J. S. Newberry, G. H. Williams, J. W. Dawson, A. R. C.
WINCHELL, N. H.—Continued.

Selwyn, B. K. Emerson, Joseph Le Conte, James Macfarlane, S. F. Emmons, A. Hague, W. P. Blake, and C. E. Dutton, and synopsis of conclusions by C. D. Walcott on the "Taconic system of Emmons," which is also reviewed.

— Preface.

Discussion of some of the stratigraphic relations and equivalency of members of the Cambrian in the Minnesota and Mississippi valleys. Reference to Cretaceous areas and glacial history.

— The geology of Wabasha County.

Description of Cambrian and Trenton areas and the drifts and terraces. Reference to the probable occurrence of Cretaceous. Discussion of the history of some drainage and topographic features. Accompanied by a colored geologic map.

— The geology of Goodhue County.

Description of Cambrian, Trenton, Cretaceous, drifts and terraces. List of fossils. Discussion of relation of some drainage features, ancient and modern, extent of Cretaceous, origin of some topographic features, and history of some of the drifts. Accompanied by a colored geologic map.

— The geology of Dakota County.

Description of lower Silurian and Cambrian areas, drifts, faults, terraces, gravel plains, remains of ancient drainage systems, Cretaceous outcrops, and the glacial history of the region. Accompanied by a colored geologic map.

— The geology of Hennepin County.

Descriptions of Trenton limestone, St. Peter sandstone, and Cretaceous outcrops, and the drifts and terraces. Records of artesian wells. Review of descriptions of St. Anthony's Falls, and discussion of their history and rate of recession. Accompanied by a colored geologic map.

— The geology of Ramsey County.

Description of Trenton and St. Peter sandstone and the drifts. Discussion of origin of certain topographic features; the extent and stratigraphic relations of some of the members of the rock formations, and the equivalency of some of the beds met with in the artesian wells. Accompanied by a colored geologic map.

— The geology of Washington County.

Description of Trenton limestone, St. Peter sandstone, and lower magnesian limestone areas, the drifts, terraces, an anticlinal and faults in the Cambrian, and an unconformity between the lower magnesian and the St. Peter sandstone. Accompanied by a colored geologic map.

— Report [original Huronian, iron-bearing rocks in Marquette and Gogebic region, and northeastern Minnesota].

Description of various localities, and discussion of structural relations, stratigraphy, genesis, and equivalency of the several pre-Cambrian members. List of directions of glacial striae.

— Natural gas in Minnesota.

Includes records of deep borings near Freeborn, Albert Lea, Mankato, Stillwater, Moorhead, and Duluth, and some comments on the geologic horizon and relations of the beds pierced.

— The crystalline rocks of Minnesota.

General report of progress made in the study of their field relations. Statement of problems yet to be solved.

A general review and discussion of the stratigraphy, history, and relations of formations from the Laurentian to the St. Croix sandstone.

[—] List of American publications between 1572 and 1889 that have some relation to the crystalline rocks of the Northwest.


— Notice of the discovery of Lingula and Paradoxides in the red quartzite of Minnesota.

Description of the remains, and brief reference to the relations and age of the formation, and its representatives elsewhere.
WINCHELL, N. H.—Continued.

—Some thoughts on eruptive rocks, with special reference to those of Minnesota.


Reviews classification and relations of eruptive rocks in general, advances hypothesis as to the genesis of acid and of basic eruptives, and gives a résumé of the stratigraphic relations and eruptive contents of the several crystalline rock series of the Northwest.

—Methods of stratigraphy in studying the Huronian.


Reviews the Huronian system, and discusses its taxonomy, relations to Laurentian, correlation outside of the type area, stratigraphic range and characteristics, and past and present methods of research in this connection.

—On the Archean. See FRAZER.

Report on Archean.

— and WINCHELL, H. V. [Professor Irving and the Keewatin series, and the origin and horizon of the iron ores of the Vermilion Lake series.]


Review of Irving's writings in this connection, including references to the distribution, equivalency, and sideritic contents of iron-bearing series of Minnesota.

—On a possible chemical origin of the iron ores of the Keewatin in Minnesota.


Point out the differences in characteristics and relations of the Keewatin and Huronian ores. Discuss the history of the Keewatin formation and advance a hypothesis as to the genesis of its siliceous and ferruginous members.

WINSLOW, Arthur—Continued.

The Lehigh River cross-section, measured, mapped, and described in detail. Edited by J. P. Lesley.


Detailed descriptions of stratigraphy and structure. Discussion of the stratigraphic range of some of the members of Nos. IX and X. Accompanied by maps and cross and columnar sections.

—A preliminary report on a portion of the coal regions of Arkansas.


WINSLOW, Arthur—Continued.


Wisconsin, Animikie slates and quartzites, WINCHELL, N. H.

Archean rocks of the Northwest, WINCHELL, A.

boulder trains of central Wisconsin, CHAMBERLIN, T. C.

classification of Cambrian, and pre-Cambrian, IRVING.

driftless area, CHAMBERLIN, T. C.

granites of the Northwest, HALL, C. W.

Huronian, IRVING.

Gogebic iron region, ENG. AND MINING JOUR. IRVING.

Great Lake basins of St. Lawrence, DRUMMOND.

iron ores of Penokee-Gogebic, VAN HISE.

Irving and Chamberlin on Lake Superior sandstones, AM. GEOLOGIST. IRVING.

Penokee Gap region, WINCHELL, A.

raised beaches of Lake Michigan, LEVERETT.

Report—Lake Superior division, U. S. Geol. Survey, IRVING.


rock from Penokee iron ranges, analyses, RIGGS.

Taconic system, MILLER.


Raised beaches of Lake Michigan, LEVERETT.

WOODWARD, Henry. On the discovery of *Turrilepas* in the Utica formation (Ordovician) of Ottawa, Canada.


Includes stratigraphic section of the beds at Rifle Range, near Ottawa, by H. M. Ami.
WOODWARD, R. S. On the form and position of the sea level with special reference to its dependence on superficial masses symmetrically disposed about a normal of the earth’s surface.


Incidentally considers certain geologic causes of earth-crust deformation.

WOOLBRIDGE, C. W. The river-lake system of western Michigan.


Description of relations and discussion of origin and history.

— The post-glacial geology of Ann Arbor, Michigan.


Description of delta deposits and shore lines, and discussion of their history.

WOOLMAN, Lewis. Geological result of the boring of an artesian well at Atlantic City, New Jersey.


Description of 1,121-foot record, lists of fossils and statement in regard to horizons of the Tertiary beds passed through.

— [Fossiliferous Cretaceous limestone from near Clementon, New Jersey.]


Notice of occurrence and fossils.

WOOSTER, L. C. The coal measures of Kansas.


Describes 2,000-foot bore-hole entirely in coal measures and discusses the conditions under which the coal measures were deposited.

— The limit of drift [Kansas].


Calls attention to some glaciated bowlders and briefly discusses their mode of transportation.

WRIGHT, G. Frederick. Notes on the glaciation of the Pacific coast.


Describes results of glaciation along Northern Pacific Railroad west from Bismarck, in the region about Puget Sound, and glaciars and evidence of glacial action up the coast.

Discusses the glacial history of the Puget Sound region.

— The Muir glacier.


WRIGHT, G. Frederick—Continued.


Description of the glacier, its moraines, its motion, evidence of its retreat, associated drift and rock formations, stras, and buried forest and other glaciers in its vicinity.

[“The ice age in North America.”]


Notice of lecture to Lowell Institute. Reference to nature of evidence indicative of two glacial epochs.

— On the age of the Ohio gravel beds.


Describes the relations of the Trenton gravels and of deposits of similar origin in the valley of the Little Miami in Ohio, and discusses the date of their deposition in glacial times.

— The ice age in North America, and its bearings upon the antiquity of man.


I. What is a glacier? II. Existing glaciers on the Pacific coast. III A month with the Muir glacier. IV. Glaciers of Greenland. V. Glaciers in other parts of the world. VI. Signs of glaciation. VII. Boundary of the glaciated area in North America. VIII. Depth of ice during the glacial period. IX. Terminal moraines. X. Glacial erosion and transportation. XI. Drumlins. XII. Preglacial drainage. XIII. Drainage during the glacial period. XIV. Kames. XV. Glacial dams, lakes, and waterfalls. XVI. The loess. XVII. Flight of plants and animals during the glacial period. XVIII. Europe during the glacial period. XIX. The cause of the glacial period. XX. The date of the glacial period. XXI–XXII. Man and the glacial period. Appendix: A. Probable causes of glaciation. B. Chalmers on the glaciation of eastern Canada.

— The age of the Philadelphia red gravel.


Discussion of the age and condition of deposition of the Columbia formation, and incidentally considers the origin of some high-level Columbia gravels in the Susquehanna valley.

[Image from deep well at Nampa, Idaho.]

WRIGHT, G. Frederick—Continued.
Includes record of 329-foot well and expression of opinions in regard to the age of the beds in which the image was found.
— The glacial boundary in southeastern Dakota. [Abstract.]
An account of the glacial deposits, moraines, and topographic characteristics of the region, and discussion of its glacial history.
— Chipped implement in the drift, Jackson County, Illinois. See CRES-SON, Hilborne T.

Wyatt, Francis. The development of the American chemical industry.—Salt.
Description of salt deposits and borings in Michigan and New York.

Wyoming, Brontops robustus from the Miocene, Marsh.
coal, Ashburner.
Cretaceous, Ward.
geologic history of Yellowstone Park, Hague.

Wyoming—Continued.
leucite rock, Absaroka range, Hague.
Laramie, White, C. A.
lithophysae and lamination of lavas, Yellowstone Park, Iddings.
obsidian cliff, Yellowstone Park, Iddings.
oil fields, Riggs.
Report of Geologist, Ricketts.
siliceous sinters in thermal springs, Weed.
skull of Ceratopsidae, Marsh.
Tertiary, Cope.
upper Eocene lacustrine formations, Scott.
Toula.

Wyoming, Report of Territorial Geologist for 1887, Ricketts.

Z.

Zincken, C. Der naturgas Americnas nach A. Williams, C. Zincken, C. A. Ashburner, etc., ss. 13, 4°. Leipzig, 1887?
Not seen.