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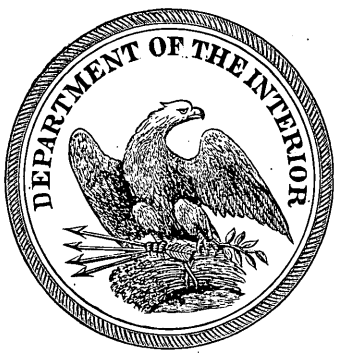

WASHINGTON
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1896

UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

BIBLIOGRAPHY AND INDEX

OF

NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY

FOR

1892 AND 1893

BY

FRED BOUGHTON WEEKS

WASHINGTON

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
DIVISION OF GEOLOGY,
Washington, D. C., April 30, 1895.

SIR: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the years 1892 and 1893, by Mr. F. B. Weeks, with the recommendation that it be published by the Survey. I believe that the work has been well done, and that the publication will be a useful one.

Very respectfully,

S. F. EMMONS,
Geologist.

Hon. CHARLES D. WALCOTT,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR 1892 AND 1893.

By Fred Boughton Weeks.

INTRODUCTION.

This Bibliography and Index is a continuation of the Record of North American Geology by N. H. Darton,[1] though the scope of the work and its arrangement have been materially changed. The last Record, Bulletin No. 99, embraced publications on geology for 1891. The present work covers the years 1892 and 1893 and consists of a record of the papers on North American geology, paleontology, petrology, and mineralogy contained in the List of Publications following.

Bibliography.—The Bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated, as ⅓ p., 5 l. (lines).

Index.—The subject headings, their subdivisions and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described; and under Petrology, a list of rocks described; reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

The author is under many obligations to different members of the Survey for suggestions as to the general character and arrangement of the material comprised in this volume.

[1] Bibliography of North American Geology for 1886, by Nelson H. Darton; Bull. U. S. Geol. Survey No. 44, 35 pp., 8°, 1887. Record of North American Geology for 1887 to 1889, inclusive, by Nelson Horatio Darton; Bull. U. S. Geol. Survey No. 75, 173 pp., 8°, 1891. Record of North American Geology for 1890, by Nelson Horatio Darton; Bull. U. S. Geol. Survey No. 91, 88 pp., 8°, 1891. Record of North American Geology for 1891, by Nelson Horatio Darton; Bull. U. S. Geol. Survey No. 99, 73 pp., 8°, 1892.

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A.

1 **Adams** (Frank D.). On the typical Laurentian area of Canada.
Jour. of Geol., vol. i, pp. 325-340.
Gives the results of a detailed study of the Laurentian rocks of the Grenville district in Quebec, including a description of the fundamental gneiss, the Grenville, Anorthosite, and Hasting series, and the orographic movements to which they have been subjected.

2 —— On a melilite-bearing rock (alnoite) from Ste. Anne de Bellevue, near Montreal, Canada.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 269-279.
Abstract: Am. Nat., vol. xxvi, p. 697.
Describes the formation occurring in the bed of the river and its mineralogic constituents. Differs from original alnoite in containing more olivine. Probably connected with volcanic center of Mount Royal.

3 —— Ueber das Norian oder Ober-Laurentian von Canada.
Neues Jahrbuch für Mineralogie, Geologie, und Palaeontologie, 1892, pp. 419-498.
Abstracts: Am. Nat., vol. xxvii, p. 564; Am. Jour. Sci., 3d ser., vol. xlvi., pp. 153-154 (½ p.).

4 —— Notes to accompany a tabulation of the igneous rocks based on the system of Prof. H. Rosenbusch.
Can. Rec. Sci., vol. iv, pp. 463-469.
Abstract: Am. Geol., vol. ix, pp. 268-269.
Noticed in record for 1891.

5 **Agassiz** (Alexander). Calamocrinus diomedæ, a new stalked crinoid, with notes on the apical system and the homologies of echinoderms.
Harv. Mus. Comp. Zool., Memoirs, vol. xvii, No. 2, pp. 5-95, pls. i-xxxii.
Gives an account of the confusion that has arisen in the nomenclature of the primary divisions of echinoderms. Describes the structure of the new crinoid.

6 —— Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U. S. Fish Commission steamer *Albatross*, Lieut. Commander Z. L. Tanner, U. S. N., commanding.
Harv. Mus. Comp. Zool., Bull., vol. xxiii, No. 1, pp. 1-89, pls. i-xxii.
Gives a brief account of the expedition, and a description of the character of the deep-sea deposits as shown by dredgings.

7 **American Geologist.** Pleistocene papers at the Rochester meetings.

Am. Geol., vol. x, pp. 217–224.

Abstracts of papers read before the Geological Society of America at its sessions in Rochester, N. Y., Aug. 15–22, 1892.

8 —— Pleistocene papers read at the Ottawa meeting of the Geological Society of America.

Am. Geol., vol. xi, pp. 171–179 and pp. 241–245.

Gives abstracts of papers and discussions concerning glacial deposits and phenomena.

9 —— Pleistocene papers at the Madison meetings.

Am. Geol., vol. xii, pp. 165–181.

Contains abstracts of papers and discussion on Pleistocene geology.

10 —— Reviews of the Ice age at the World's Congress on Geology.

Am. Geol., vol. xii, pp. 223–231.

Gives abstracts of papers on glacial succession.

10*a* **American Journal of Science.** [Papers read at the Madison meeting of the Geological Society of America.]

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 302–306.

Gives a list of papers read and brief abstracts of their contents.

11 **American Journal of Science.** Geological Congress at Chicago.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 306–307.

Gives list of papers presented.

12 **Ami** (Henry M.). Notes and descriptions of some new or hitherto unrecognized species of fossils from the Cambro-Silurian (Ordovician) rocks of the Province of Quebec.

Can. Rec. Sci., vol. v, pp. 96–103.

Describes species of Bryozoa, including Solenopora compacta Billings, var. minuta, n. var., Dicranopora parva n. sp., Prasopora lycoperdon Vanuxem, var. selwyni, n. var., Diplotrypa quebecensis n. sp., and Monotrypa incerta n. sp., and two doubtful species.

13 —— Paleontological notes.

Can. Rec. Sci., vol. v, pp. 104–108.

Gives a list of fossils found in the three Ordovician terranes along L'Assumption River and a list of Ordovician species collected from the Manitou Islands, Lake Nipissing, Ontario. At several points the islands consist of sedimentary strata, while the lake shores are completely made up of Archean rocks.

14 —— The Utica terrane in Canada.

Can. Rec. Sci., vol. v, pp. 166–183 and 234–246.

Describes the stratigraphic and lithologic characters of this formation, and gives lists of fossils, which number about sixty forms, mark a special horizon of the Ordovician, and show an affinity to the fauna of the overlying Hudson River and underlying Trenton.

15 —— Additional notes on the geology and paleontology of Ottawa and its environs.

Ottawa Nat., vol. vi, pp. 73–78.

Includes brief description of Silurian strata and some Pleistocene deposits in this vicinity and names of fossils found in them.

16 **Ami** (Henry M.). Notes on the geology and paleontology of the Rockland quaries and vicinity in the county of Russell, Ontario, Canada.

Ottawa Nat., vol. vii, pp. 138-147.

Describes the geologic features of the region, including a description of the Potsdam, Calciferous and Chazy, and Black River and Trenton series and an account of the megascopic and microscopic characters of the Rockland limestone and a list of fossils collected at the quarries.

17 —— On the sequence of strata forming the Quebec group of Logan and Billings, with remarks.

Abstract: Ottawa Nat., vol. vi, pp. 41-43.

Discusses the relations of the strata composing this group and gives a table showing the formations comprising the Ordovician system.

18 —— Extinct Canadian vertebrates from the Miocene rocks of the Northwest Territories of Canada.

Abstract: Ottawa Nat., vol. v, pp. 74-76.

Describes Menodus angustigenis, Elotherium mortoni Leidy, and Leptomeryx mammifer Cope, and mentions other extinct forms.

19 **Arey** (Albert L.). Preliminary notice of the discovery of strata of the Guelph formation in Rochester, N. Y.

Roch. Acad. Sci., Proc., vol. ii, pp. 104-107.

Describes the outcrop and gives a table comparing its fauna with those of the Guelph formation of Canada, Wisconsin, and other localities.

19*a* **Argall** (Philip). [Gold-bearing quartz.]

Colo. Sci. Soc., Proc., vol. iv, pp. 331-336.

In discussion of paper by T. A. Rickard on certain dissimilar occurrences of gold-bearing quartz.

19*b* —— [Origin of ore deposits.]

Colo. Sci. Soc., Proc., vol. iv, pp. 353-354.

In discussion of paper by P. H. Van Diest on the evidence bearing on the formation of ore deposits by lateral secretion.

19*c* —— Nickel. The occurrence, geological distribution and genesis of its ore deposits.

Colo. Sci. Soc., Proc., vol. iv, pp. 395-421.

Describes the chemical composition and occurrence of nickel in meteorites. Gives the chemical composition of the nickel ores, and discusses the occurrence of the arsenides, sulphides, and silicates of nickel, the genesis of the ore bodies and the distribution of the nickel ores.

20 **Ayres** (Edward F.). Plattnerite, and its occurrence near Mullan, Idaho; by Wm. S. Yeates. With crystallographic notes.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 407-412.

B.

21 **Bäckström** (Helge). Causes of magmatic differentiation.

Jour. of Geol., vol. i, pp. 773-779.

Reviews the literature of the subject and discusses the causes and conditions under which magmatic differentiation takes place.

22 **Bailey** (E. H. S.) and **Case** (E. C.). On the composition of some Kansas building stones.

Kans. Acad. Sci., Trans., vol. xiii, p. 78 (½ p.).

Brief note giving results of chemical analyses.

23 **Bailey** (L. W.) and **McInnes** (W.). Report on portions of the Province of Quebec and adjoining areas in New Brunswick and Maine.

Canada Geol. Surv. Reports, vol. v, new series, part i, 1890–91, Report M, 27 pp.

Discusses the relations of the Cambrian and overlying Silurian rocks in this region, and states that fossils found in the latter indicate a Lower Helderberg horizon. Describes and illustrates by a colored sketch map the supposed arrangement of the Cambrian strata between Temiscouata Lake and Rivière du Loup.

24 **Bain** (Harry Foster). Distribution and relations of the St. Louis limestone in Mahaska County, Iowa.

Iowa Geol. Surv., vol. i, First Ann. Rept., 1892, pp. 173–179.

The Lower Coal Measures lie unconformably on the St. Louis limestone, the Kaskaskia beds to the south having been deposited in the interval. The Coal Measures filled up the valleys and the present drainage systems are independent of the old land surface.

25 **Bain** (F.). The Permian in Prince Edward Island.

Science, vol. xxi, pp. 132–133.

Describes the occurrence of Permian sandstones and shales and gives an account of their fossil contents.

26 **Baldwin** (S. Prentiss). Recent changes in the Muir glacier.

Am. Geol., vol. xi, pp. 366–375.

Discusses the methods of measuring the ice movement adopted by other observers and points out certain probable errors.

27 —— Muir glacier, Alaska.

Sci. Am., vol. lxvi, pp. 227–228.

Contains a general description of the glacier and an account of explorations in this region.

28 **Barbour** (Irwin H.). Notice of new gigantic fossils.

Science, vol. xix, pp. 99–100.

Describes some new fossils from northwestern Nebraska.

29 —— On a new order of gigantic fossils.

University of Nebraska, University Studies, vol. i, No. 4, July, 1892, p. 23, pl. 5.

Abstract: Jour. of Geol., vol. i, p. 421.

Describes a new order of Miocene fossils from Nebraska and proposes the following classification:

Order.	Family.	Genus.	Species.
.....	Daimonelicidæ	Diamonelix	circumaxilis.
			bispiralis.
			anaxilis.
	.....	.....	robusta.
			carinata.
		.....	.....
		.....	.....

30 **Barlow** (Alfred E.). On the nickel and copper deposits of Sudbury, Ontario.

Ottawa Nat., vol. v, pp. 51–71.

Abstract: Can. Rec. Sci., vol. v, pp. 68–69.

Gives an account of the mining operations of the district and a description of the geologic occurrence of the ore and of its mineralogic characters.

31 —— Relations of the Laurentian and Huronian rocks north of Lake Huron.

Geol. Soc. Am., Bull., vol. iv, pp. 313–332.

Abstract: Am. Nat., vol. xxvii, pp. 996–997.

Describes the general characteristics of Huronian and Laurentian rocks and their contact relations, and gives the results of the microscopic examination of the quartzites, gneisses, and schists. Summarizes the facts showing the eruptive nature of the Laurentian gneiss.

32 —— On the relations of the Laurentian and Huronian on the north side of Lake Huron.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 236–239.

Discusses the relations of the two formations in this region.

33 **Barrett** (S. T.). Note on the paper in the November number of this journal on "A new Oriskany fauna in Columbia County, N. Y."

Am. Jour. Sci., 3d ser., vol. xlv, p. 72 (communicated).

Considers that this fauna extended to and reached a higher stage of development in Lower Devonian strata.

34 **Barton** (George H.). Bowlders formed in situ.

Tech. Quart., vol. v, pp. 401–403.

Refers to some granite bowlders of Montana and of eastern Massachusetts.

35 **Barus** (Carl). High temperature work in igneous fusion and ebullition, chiefly in relation to pressure.

U. S. Geol. Surv., Bull. No. 103, pp. 11–57.

Describes the apparatus used and gives results of experiments showing the pressure variations of certain high temperature (metallic) boiling points, the contraction of molten igneous rocks on passing from liquid to solid and the thermal capacity of igneous rocks, considered in its bearing on melting point and pressure.

36 —— Criticism of Mr. Fisher's remarks on rock fusion.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 140–141.

Discusses statements concerning the fusion points of certain rocks, in paper by O. Fisher, "Rigidity not to be relied upon in estimating the earth's age."

37 **Bascom** (Florence). The structure, origin, and nomenclature of the acid volcanic rocks of South Mountain.

Jour. of Geol., vol. i, pp. 813–832.

Describes the different structures which these acid rocks assume. Considers that these acid lava flows are similar to recent lavas found in the Yellowstone National Park and that the process of devitrifaction in these rocks is similar to that of crystallization in a fluid magma, except for the great length of time required. Reviews the nomenclature used by various authors in describing similar acid rocks.

37*a* **Baskerville** (Chas.), **Mitchell** (R. H.) and. An example of river adjustment.

See Mitchell (R. H.) and Baskerville (C.), 675.

38 **Baur** (G.). Notes on some little known American fossil tortoises.

Phila. Acad. Nat. Sci., Proc., 1893, part iii, pp. 411–430.

Reviews previous descriptions and classifications of some Cretaceous species of Wyoming and Colorado.

39 —— On the morphology of the skull in Mosasauridæ.

Jour. of Morph., vol. vii, pp. 1–22, pls. i–ii.

Reviews the literature on the characters of the skull of the Mosasauridæ, describes the skull of Platecarpus coryphæus Cope, found in the Cretaceous of Kansas, and includes remarks on the relations of the Mosasauridæ.

40 **Bayley** (William Shirley). Eleolite-syenite of Litchfield, Me., and Hawes's hornblende-syenite from Red Hill. N. H.

Geol. Soc. Am., Bull., vol iii, pp. 231–252.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, pp. 500–501.

Describes the megascopic and microscopic characters of the specimens and gives several chemical analyses. Concludes that of the two the New Hampshire rock is more nearly a normal eleolite-syenite.

41 —— Notes on the petrography and geology of the Akeley Lake region in northeastern Minnesota.

Minn. Geol. and Nat. Hist. Surv., 19th Ann. Rept., pp. 193–210.

States that the results of microscopic study of certain specimens mentioned in the 16th and 17th Minnesota Reports indicate that a different interpretation should be given them. Gives locality of specimens, with petrographic notes, a discussion of the character of specimens mentioned in each report, and a summary of results.

42 —— A fibrous intergrowth of augite and plagioclase, resembling a reaction rim, in a Minnesota gabbro.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 515–520.

Gives the petrographic results of a study of the Keweenawan gabbros in northeastern Minnesota.

43 —— The classification and naming of igneous rocks.

Science, vol. xxi, pp. 87–88.

Reviews papers on "The origin of igneous rocks" and "The eruptive rocks of Electric Peak and Sepulchre Mountain, Yellowstone National Park," by J. P. Iddings, and discusses the principles of the classification of igneous rocks.

44 —— A fulgurite from Waterville, Me.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 327–328.

45 —— Striated garnet from Buckfield, Me.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 79–80 (communicated).

46 —— The basic massive rocks of the Lake Superior region.

Jour. of Geol., vol. i, pp. 433–456, 587–596, and 688–716.

Gives historical sketch of the gabbros and allied rocks, and discusses the question of the separation of the gabbros from the diabases. Reviews the literature concerning the basic massive rocks of the Lake Superior region and describes the position of the gabbros of northeastern Minnesota, with a petrographic description of the normal phase of gabbro.

47 **Bayley** (William Shirley). The eruptive and sedimentary rocks of Pigeon Point, Minn., and their contact phenomena.

U. S. Geol. Surv., Bull. No. 109, pp. 11–121, pls. i–xvi, figs. 1–15.

Describes the general distribution and relations of these rocks, the petrographic characters of the olivine-gabbro, diabase, red rock, contact rocks of olivine-gabbro and red rock, fragmental rocks, and the contact belt between the sedimentary and other rocks. Discusses the origin of the red rock.

48 —— Actinolite magnetite schists from the Mesabi iron range, in northeastern Minnesota.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 176–180.

Describes the petrographic characteristics of the rocks and remarks on their similarity to certain schists of the Penokee series.

49 **Beachler** (Charles S.). Keokuk group of the Mississippi Valley.

Am. Geol., vol. x, pp. 88–96.

Reviews the literature concerning this formation and gives a table of typical sections in Missouri, Indiana, Illinois, and Kentucky. Describes several exposures of the group.

50 —— Erosion of small basins in northwestern Indiana during the time preceding the Pleistocene period.

Am. Geol., vol. xii, pp. 51–53.

Describes the general features of a deep basin in Montgomery County and the character of the glacial deposits that were laid down in it.

51 **Beadle** (H. M.). The persistence of ores in lodes in depth. The Empire lode.

Eng. and Min. Jour., vol. lv, pp. 154–155.

Remarks on the evidences found in mines at Butte, Mont., concerning the formation of lodes in depth, with a description of the Empire lode.

52 **Becker** (George F.). Finite homogeneous strain, flow, and rupture of rocks.

Geol. Soc. Am., Bull., vol. iv, pp. 13–90.

Abstract: Am. Geol., vol. xi, p. 411 (¾ p.).

Discusses the general conditions of displacements, simple and compound strains, tangential strain, relation of stress and strain, and the viscosity, flow, and rupture of matter. Describes their geologic applications and reviews the theories of slaty cleavage.

53 —— Fisher's new hypothesis.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 137–139.

Refers to paper by O. Fisher "Rigidity not to be relied upon in estimating the earth's age," and discusses the bearing of oceanic tides on the theory of the viscosity or rigidity of the earth.

54 —— Quicksilver ore deposits.

U. S. Geol. Surv., Min. Res., 1892, pp. 139–168.

Describes the occurrence of mercurial deposits in the United States and foreign countries. Discusses the opinions of other writers concerning the origin of these deposits. Concludes that the usual association of minerals shows precipitation from solution which took place in thermal springs of volcanic origin to be the ordinary genetic process. The deposits occur as fissure veins, impregnations, and in zones of broken country rock. Tables of production.

55 **Beecher** (Charles E.). Devolopment of the Brachiopoda. Part II. Classification of the stages of growth and decline.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 133–155.

Abstract: Am. Geol., vol. x, pp. 253–255.

Reviews the literature of the subject and discusses the observed stages of the growth of brachiopods and their limitations.

56 —— Notice of a new Lower Oriskany fauna in Columbia County, New York, with an annotated list of fossils by J. M. Clarke.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 410–414.

Discusses the relations of the deposits of the region and concludes that the fauna are transitional.

57 —— Symmetrical cell development in the Favositidæ.

Conn. Acad. Arts Sci., Trans., vol. viii, part 2, pp. 215–219.

Describes the process of cell development and a symmetrical system of intermural cell multiplication observed in a specimen of Michelinia convexa D'Orbigny from the Corniferous limestone.

58 —— The development of a Paleozoic coral.

Conn. Acad. Arts Sci., Trans., vol. viii, part 2, pp. 207–214.

Describes the development of Pleurodictyum lenticulare. Concludes that its non-tabulate feature is without special consequence in considering the relations with other tabulate poriferous genera and that the development of mural pores is identical or homologous with the process of gemmation.

59 —— Larval forms of trilobites from the Lower Helderberg group.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 142–147.

Abstract: Am. Geol., vol. xii, pp. 334–335 (½ p.).

Describes and figures some larval forms of the trilobites, Phæthonides and Acidaspis, found in the Helderberg Mountains of New York and gives a classification of the stages of development.

60 —— A larval form of Triarthrus.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 378–379.

Describes an earlier stage in the development than that described by C. D. Walcott in 1879.

61 —— On the thoracic legs of Triarthrus.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 467–470.

Describes and illustrates specimens showing the presence and structure of thoracic legs in Triarthrus becki Green.

62 —— Revision of the families of Loup-bearing Brachiopoda: The development of Terebratalia obsoleta Dall.

Conn. Acad. Arts Sci., Trans., vol. ix, pp. 376–399.

Abstract: Am. Geol., vol. xii, pp. 188–190.

63 —— Ueber die Entwickelung der Brachiopoden.

Neues Jahrb. f. Min., etc., Band I, Heft 1, 1892, pp. 178–197.

Describes the general structure of brachiopods and the characteristics of several orders and gives a list of genera of each order.

64 —— and **Schuchert** (C.). Development of the brachial supports in Dielasma and Zygospira.

Wash. Biol. Soc., Proc., vol. viii, pp. 71–78, pl. x.

Describes the development of the loop in Dielasma turgida, as shown by a specimen from the Lower Carboniferous of Kentucky, the development of the brachial supports in Zygospira recurvirostra, and gives a statement of observations and correlations.

64*a* **Beecher** (Charles E.), **Dodge** (W. W.) and. On the occurrence of Upper Silurian strata near Penobscot Bay, Maine.
See Dodge (W. W.) and Beecher (C. E.), 253.

65 **Bell** (Robert). Report on the Sudbury mining district. With an appendix by Prof. George H. Williams.
Canada Geol. Surv. Reports, vol. v, new series, part i, 1890-91, Report F, 91 pp.
Abstract: Am. Geol., vol. ix, pp. 269-270.
Describes the Laurentian and Huronian rocks of the region, the occurrence of nickel and copper and their mineral association in these rocks, and discusses the origin of the ore bodies.

66 —— [Post-Glacial outlet to the Great Lakes.]
Geol. Soc. Am., Bull., vol. iv, pp. 425-427.
In discussion of paper by G. Frederick Wright "The supposed Post-Glacial outlet of the Great Lakes through Lake Nipissing and the Mattawa River."

67 **Benedict** (A. C.) Petroleum in Indiana.
Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 306-325.
Gives a historical sketch of petroleum and an account of the extent of the Indiana oil field and sections of oil wells in various parts of the State.

67*a* —— **Elrod** (Moses W.) and. Geology of Wabash County [Indiana].
See Elrod (M. W.) and Benedict (A. C.), 291.

68 **Bierbauer** (Bruno). A check-list of the Paleozoic fossils of Wisconsin, Minnesota, Iowa, Dakota, and Nebraska.
Minn. Acad. Nat. Sci., Bull., vol. iii, No. 2, pp. 206-247.
Contains a table giving the names of the fossils and the state and formation in which they occur.

69 **Bigney** (A. J.). Preliminary notes on the geology of Dearborn County, Indiana.
Ind. Acad. Sci., Proc., 1891, pp. 66-67.
States that the principal formation is a blue limestone of Silurian age. Briefly describes the glacial drift exposures.

70 **Birkinbine** (John). [Occurrence of titaniferous iron ore.]
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 277-278.
In discussion of paper by H. B. C. Nitze, "The magnetic iron ores of Ashe County, N. C."

71 **Bishop** (Irving P.). Report on the development of the salt industry of central New York for the year 1891.
N. Y. State Mus., 45th Ann. Rept., pp. 53-61.
Gives several sections as shown by well borings at different localities.

72 **Blake** (William P.). Association of apatite with beds of magnetite.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 159-160.
Mentions examples of such association in New York, Missouri, Utah, and New Jersey.

73 —— [Vein structure.]
Am. Inst. Min. Engrs., Trans., vol. xxi, p. 873.
In discussion of paper by Ernest Wiltsee, "Notes on the geology of the Half-Moon Mine, Pioche, Nev."

74 **Blake** (William P.). The mineral deposits of southwest Wisconsin.
Am. Geol., vol. xii, pp. 237–248.
Describes the geology of the region, the forms of the ore bodies and the character and structure of the blende deposits, with remarks on smithsonite, blende, barite, and marcasite ores.

75 —— The persistence of ores in lodes in depth.
Eng. and Min. Jour., vol. lv, p. 3.
Abstract: North of England Inst. of Min. and Mech. Engrs., Trans., vol. xlii, part v, p. 404 (⅓ p.).
Remarks on the independence of lode formation of any superficial phenomena and on the evidences of lateral secretion and vein filling in depth in the mines at Butte, Mont., and concludes that lode mineralization is deep seated and in a homogeneous rock formation may extend downward to and beyond the limit that mining operations can be conducted.

76 —— The progress of geological surveys in the State of Wisconsin. A review and bibliography.
Wis. Acad. Sci., Arts and Letters, vol ix, part i, pp. 225–231.
Reviews the literature of Wisconsin geology, particularly that relating to the lead and zinc deposits.

77 —— Age of the limestone strata of Deep Creek, Utah, and the occurrence of gold in the crystalline portions of the formation.
Am. Geol., vol. ix, pp. 47–48.
The limestone forms the ranges of hills and mountains and has been metamorphosed by the intrusion of granitic dikes. Its Carboniferous age is indicated by the contained fossils.

78 —— Relative abundance of gold in different geological formations.
Am. Geol., vol. ix, pp. 166–168.
Discusses the question as to the age of the chief gold-bearing formations in the United States.

79 **Blandy** (John F.). The persistence of ores in lodes in depth.
Eng. and Min. Jour., vol. lv, pp. 75–76.
Remarks on the evidences of lateral secretion and the comparatively limited depth to which mining has yet been carried.

80 —— Some notes on the geology of Arizona.
Eng. and Min. Jour., vol. lvi, pp. 473–474.
Describes the geology of portions of Arizona, with particular reference to the Triassic of the southern part of the Territory.

81 **Boyd** (Charles R.). The Indiana natural gas field.
Eng. and Min. Jour., vol. lv, pp. 440–441.
Describes the geologic structure of the region, illustrated by two cross sections.

82 —— The Wythe lead and zinc mines, Virginia.
Eng. and Min. Jour., vol. lv, pp. 561–562 and 586.
Gives a historical sketch of mining operations in this vicinity and describes the character of the ore and its manner of treatment.

83 **Boyle** (Cornelius Breckinridge). A catalogue and bibliography of North American Mesozoic Invertebrata.
U. S. Geol. Surv., Bull. No. 102, pp. 7–315.
Part I comprises an author's list of all publications that contain a description of species referred to the Mesozoic. Part II embraces a list of all names applied to Mesozoic species from North American rocks.

84 **Branner** (John C.). The mineral waters of Arkansas.

Ark. Geol. Surv., Rept. for 1891, vol. i, pp. 1-144.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 73 (3 l.).

Describes the general characteristics and manner of occurrence of mineral waters in this State and gives many chemical analyses. Discusses the origin of their therapeutic qualities and the cause of some of the mineral waters being hot.

85 —— Observations upon the erosion in the hydrographic basin of the Arkansas River above Little Rock.

The Wilder Quarter-century Book, 1868-1893, pp. 325-337, Ithaca, N. Y., 1893.

Describes the methods of observation used in the study of the erosion of the Arkansas River basin in Arkansas, the physical and chemical character of the sediment, and gives analyses of the filtered river water and tables showing the relations of suspended to dissolved matter and the amount of material carried by the Arkansas River past Little Rock during the year 1887-88.

86 —— The coal fields of Arkansas.

U. S. Geol. Surv., Min. Res., 1892, pp. 303-306.

The coal fields lie in the drainage area of the Arkansas River. The coal-bearing rocks belong to true Coal Measure series, but the upper beds are probably Permo-Carboniferous, equivalent to those of Kansas and Nebraska. The lignites cover an area of 720 square miles, and are confined to the Tertiary area.

87 —— The supposed glaciation of Brazil.

Jour. of Geol., vol. i, pp. 753-772.

Reviews the theories on the glaciation of Brazil and the evidences on which they are based. Expresses the opinion that there are no phenomena of bowlders, gravels, clays, etc., that can be attributed to glacial agencies.

88 **Brewer** (William M.). The Warwhoop bauxite bank, Alabama.

Eng. and Min. Jour., vol. lv, p. 461.

Describes the body of bauxite occurring at this locality.

89 —— The brown ore deposit of Baker Hill, Ala.

Eng. and Min. Jour., vol. lv, pp. 77-78.

Gives a brief description of this ore body.

90 —— Some Alabama gold-mining districts.

Eng. and Min. Jour., vol. lv, p. 486.

Describes the occurrence of gold in parts of Cleburne and Randolph counties, Ala.

91 —— The Coosa coal field in Alabama.

Eng. and Min. Jour., vol. lvi, pp. 7-8.

Describes briefly the geologic structure of the region, with remarks on the occurrence of the coal.

92 **Broadhead** (G. C.). The Cambrian and Ozark series.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 57-60.

Refers to different papers on the Ozark series. Gives the section of the St. Louis well to a depth of 3,843 feet, indicating the succession of the limestone and sandstone beds and the author's general section in Madison County, Mo., and concludes that the evidence does not at present warrant a new classification.

93 **Broadhead** (G. C.). The correct succession of the Ozark series.
Am. Geol., vol. xi, pp. 260–268.
Reviews statements of F. L. Nason in paper "Iron ores of Missouri." Gives the lithologic characters of the beds in the Ozark region and discusses the evidence indicating the succession of the sandstone and magnesian limestone series.

94 —— A critical notice of the stratigraphy of the Missouri Paleozoic.
Am. Geol., vol. xii, pp. 74–89.
Describes the lithologic character of the strata resting on the Archean and the occurrence and geographic distribution of the magnesian limestones and the sandstones, and gives the vertical section of a well at St. Louis, to a depth of 3,843 feet, showing the presence of Quaternary, Carboniferous, Lower Silurian, and Upper Cambrian beds. Mentions the principal fossil forms found in the several subdivisions of the Paleozoic in Missouri.

96 **Brown** (S. B.). The Lower Coal Measures of Monongalia and Preston counties, W. Va.
Am. Geol., vol. ix, pp. 224–228, 2 figs.
Describes the topographic features of the region, and gives vertical sections at various localities which show the position and thickness of the several coal seams.

97 **Brumell** (H. Peareth H.). Notes on manganese in Canada.
Am. Geol., vol. x, pp. 80–88.
Describes the ore deposits at various localities and gives several chemical analyses of the ores. The crystalline ores are found in the Lower Carboniferous and the bog ore deposits in beds of recent formation.

98 —— Report on natural gas and petroleum in Ontario prior to 1891.
Canada Geol. Surv., Reports, vol. v, new series, part ii, 1890–91, Report Q, 94 pp.
Discusses the character of the hydrocarbons, with extracts from different publications bearing on the subject. Gives a record of various boring operations up to the close of 1890. Illustrated by four maps and sections. Appendix C is a bibliography of the subject.

99 —— Notes on the occurrence of petroleum in Gaspé, Quebec.
Geol. Soc. Am., Bull., vol. iv, pp. 241–244.
Abstract: Am. Geol., vol. xii, pp. 120–121 (⅓ p.).
The oil-bearing formation is found in sandstones of Lower Devonian or Upper Silurian age. Gives an account of recent work in this area.

100 —— On the geology of natural gas and petroleum in southwestern Ontario.
Geol. Soc. Am., Bull., vol. iv, pp. 225–240.
Abstract: Am. Geol., vol. xii, p. 120 (⅓ p.).
Describes the character of the Devonian, Silurian, and Cambro-Silurian strata of this region from the sections shown by several wells. Describes the occurrence of oil in the Corniferous and Medina formations and the occurrence of gas in Clinton, Medina, Niagara, Onondaga, and Trenton rocks.

101 **Bryson** (John). The glacial geology of Marthas Vineyard compared with that of Long Island.

Am. Geol., vol. xi, pp. 210–212 (correspondence).

Discusses the evidences indicating the character of the glacial phenomena on Long Island, and compares them with those of Marthas Vineyard as described in the report on the geology of Marthas Vineyard, by N. S. Shaler.

102 —— The drift mounds of Olympia and Long Island.

Am. Geol., vol. xii, pp. 127–129 (correspondence).

Describes the sand dunes of Long Island and compares them with the drift mounds of Olympia previously described by G. O. Rogers in the June number, 1893, of the American Geologist.

103 —— Origin of Peconic Bay and Shinnecock Hills, Long Island.

Am. Geol., vol. xii, pp. 402–403 (correspondence).

Considers their formation due, in part, at least, to subglacial streams.

104 **Buell** (Ira M.). Geology of the Waterloo quartzite area.

Wis. Acad. Sci. Arts and Letters, vol. ix, part ii, pp. 255–274.

Describes the structural features and lithologic characters of some Precambrian strata in southeastern Wisconsin.

C.

105 **Cadell** (Henry M.). The Yellowstone region and its geysers.

Scottish Geog. Mag., vol. viii, pp. 233–248.

Describes the topographic and geologic features of the region and the thermal springs and their deposits. Illustrated by a colored geologic sketch map and reproductions of photographs of the Mammoth Hot Springs and of the Giant Geyser.

106 **Call** (R. Ellsworth). Artesian wells in Iowa.

Science, vol. xix, pp. 310–311.

Abstract: Iowa Acad. Sci., Proc., vol. i, part ii, pp. 57–63.

Mentions the localities where artesian waters have been and may be found. Gives section of deep well at Cedar Rapids. Accompanied by sketch map.

107 —— The Tertiary silicified woods of eastern Arkansas.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 37-43.

Gives a list of localities where specimens are found and the vertical section of two most important localities. Discusses the evidence as to the cause of the silicification. Gives a description of the occurrence of silicified wood in Iowa.

107*a* —— **Keyes** (C. R.), and. On a Quaternary section 8 miles south east of Des Moines, Iowa.

See Keyes (C. R.) and Call (R. E.), 531.

108 **Calvin** (Samuel). Notes on the difference between Acervularia profunda Hall and Acervularia davidsoni Edwards and Haime.

Am. Geol., vol. ix, pp. 355–358. Iowa Acad. Sci., Proc., vol. i, part ii, pp. 30–32.

States the difference between the two species.

109 **Calvin** (Samuel). The relation of the Cretaceous deposits of Iowa to the subdivisions of the Cretaceous proposed by Meek and Hayden.

Am. Geol., vol. xi, pp. 300–307. Iowa Acad. Sci., Proc., vol. i, part iii, pp. 7–12.

Describes the lithologic characters and gives a section of the Cretaceous deposits along the Big Sioux River. Refers to the descriptions of the Cretaceous of this region by Dr. C. A. White, and Meek and Hayden, and describes the processes of sedimentation and movements of elevation and subsidence during Cretaceous time.

110 —— On the structure and probable affinities of Cerionites dactylioides Owen.

Am. Geol., vol. xii, pp. 53–57. Iowa Acad. Sci., Proc., vol. i, part iii, pp. 13–15.

Refers to previous descriptions of Cerionites. Describes its fossil form and its probable characteristics while living.

111 —— Notes on some of the fossil corals described by David Dale Owen in his report of work done in the autumn of 1859, with observations on the Devonian species, Phillisastrea gigas of later authors.

Am. Geol., vol. xii, pp. 108–112.

Refers to species described by Owen and their identification and classification by later writers.

112 —— Notes on a collection of fossils from the Lower Magnesian limestone from northeastern Iowa.

Am. Geol., vol. x, pp. 144–148. Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 189–193.

Refers to previous publications on the fossils of the Lower Magnesian series and describes Straparollus claytonensis, n. sp.; Straparollus pristiniformis, n. sp.; Raphistoma pepinense, Meek; Raphistoma multivolvatum, n. sp.; Raphistoma paucivolvatum, n. sp.; Murchisonia, sp.; Orthoceras primigenium Vanuxem; and Cyrtoceras luthei, n. sp., which belong either to the Gasteropoda or Cephalopoda, found in the cherty layers of the series.

113 —— Cretaceous deposits of Woodbury and Plymouth counties, Iowa, with observations on their economic uses.

Iowa Geol. Surv., vol. i, 1st Ann. Rept., 1892, pp. 147–169.

Describes the character and extent of the Woodbury shales, Niobrara chalks and clays of this region, giving sections shown at various localities.

114 —— Report on some fossils collected in the Northwest Territory, Canada, by naturalists from the University of Iowa.

Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 163–165.

Describes Pentamerus decussatus Whiteaves, found in Upper Silurian strata near Lake Winnipeg.

115 —— Two unique spirifers from the Devonian strata of Iowa.

Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 165–167.

Describes and figures Spirifera urbana Calvin and Spirifera macbridei Calvin.

116 **Calvin** (Samuel). A geological reconnoissance in Buchanan County, Iowa.

Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 177-189.

Describes outcrops of Devonian strata in this region, mentions the fossils found in them, remarks on the irregularity in the line of outcrops and suggests it is due to an uplift at the close of the Niagara.

117 **Campbell** (John T.). Source of supply to lateral and medial glacial moraines.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 255-256.

Discusses the origin of the debris of glaciers where no mountains or hillsides are present.

118 **Campbell** (Marius R.). [Correlation of coal seams of Big Stone Gap coal field of Virginia and Kentucky.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 1004-1005.

In discussion of paper by James M. Hodge, "The Big Stone Gap coal field."

119 —— Geology of the Big Stone Gap coal field of Virginia and Kentucky.

U. S. Geol. Surv., Bull. 111, pp. 13-106, pls. i-vi, figs. 1-3.

Describes the topographic features and geologic structure of the region. Reviews the previous work and gives a description of the lithologic characters and distribution of the different formations and of the coal outcrops, and discusses their correlation with coal seams in other parts of the Appalachian belt.

119*a* **Cannon** (George L., jr.). Notes on a discovery of radiolites, Austinensis roemer (?).

Colo. Sci. Soc., Proc., vol. iv, pp. 75-76.

Brief note on the occurrence of this fossil in the Niobrara Cretaceous.

119*b* —— Notes on the geology of Palmer Lake, Colo., and the Paleozoic exposures along the Front Range.

Colo. Sci. Soc., Proc., vol. iv, pp. 224-234, with map.

Describes the topography of the region, the granites, the occurrences of Paleozoic rocks, and the Jura-Trias, Cretaceous, Tertiary, and Quaternary beds which occur in this vicinity.

119*c* —— The geology of Denver and vicinity.

Colo. Sci. Soc., Proc., vol. iv, pp. 235-270.

Discusses the causes of the abscence of Paleozoic measures and describes the Triassic, Jurassic, Cretaceous, Tertiary, and Quaternary beds of the Denver Basin. Mentions some of the fossils found at different horizons.

119*d* **Cardeza** (J. T. M.), **Rand** (Theodore D.), **Jefferis** (Wm. W.), and. Mineral localities of Philadelphia and vicinity.

See Rand (T. D.), Jefferis (W. W.), and Cardeza (J. T. M), 769.

120 **Carlyle** (W. A.). Notes on a great silver camp.

Can. Rec. Sci., vol. v, pp. 403-412.

Describes the geology of the mining districts of Leadville and Aspen, Colo., and the occurrence and character of the ore bodies.

121 **Cary** (Austin). A study in foot structure.

Jour. of Morph., vol. vii, pp. 305–315, pl. xviii.

The paper is based on a study of a Perissodactyl from the Bridger Eocene Palæosyops and includes remarks on the theoretical applications.

122 **Case** (E. C.), **Bailey** (E. H. S.) and. On the composition of some Kansas building stones.

See Bailey (E. H. S.) and Case (E. C.), 22.

123 **Case** (William H.). The Bertha zinc mines at Bertha, Va.

Eng. and Min. Jour., vol. lvi, pp. 292–294.

Describes briefly the geological structure of the region and the occurrence and character of the ore, illustrated by map and cross sections.

124 **Chalmers** (Robert). Height of the Bay of Fundy coast in the Glacial period relative to sea level, as evidenced by marine fossils in the bowlder clay at St. John, New Brunswick.

Geol. Soc. Am., Bull., vol. iv, pp. 361–370.

Abstract: Am. Geol., vol. xi, pp. 176–177.

Describes the bowlder clay and the sections displayed at two localities and mentions the occurrence of certain fossil marine shells. Discusses the height of the land and the mode of deposition of the bowlder clay, the oscillations of the ice sheet, and the climatic conditions during the deposition of the Leda clay and Saxicava sands.

125 **Chaney** (L. W., jr.). Cryptozoon minnesotense in the Shakopie limestone at Northfield, Minn.

Minn. Acad. Nat. Sci., Bull., vol. iii, No. 2, pp. 280–284.

Describes the outcrops of this limestone in this locality and discusses the question of the organic origin of the Cryptozoon specimens found in them.

126 **Chamberlin** (T. C.). The horizon of drumlin, osar, and kame formation.

Jour. of Geol., vol. i, pp. 255–267.

Abstract: Am. Geol., vol. xii, pp. 122–123.

Defines the term englacial and describes the movements of englacial material from the bottom of the ice sheet to limited heights and the agents of its transportation. Describes the drumlin area of Wisconsin and the bowlder trains and bowlder belts of Ohio, Indiana, and Illinois. Concludes that the osars and kames of the latter region are basal material.

127 —— The diversity of the Glacial period.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 171–200.

Reviews the different theories concerning the unity or diversity of the Glacial period, with special reference to and quotations from paper by G. F. Wright, "Unity of the Glacial period." Discusses the evidence as to the existence of the terminal moraine at certain points in New Jersey and the character of certain deposits in Delaware Valley and portions of Ohio. Refers to the gorge cutting of the Delaware and to concurrent erosion over the old drift surface, as proof of an interval between the earlier and later drift formation.

128 —— The altitude of the eastern and central portions of the United States during the Glacial period.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 250.

Gives a general summary of the author's conclusions.

129 **Chamberlin** (T. C.). The nature of the englacial drift of the Mississippi basin.

Jour. of Geol., vol. i, pp. 47-60.

Discusses the cause of the movement of basal material upward into the body of a glacier. Describes the course of several bowlder belts through Indiana, their relation to terminal moraines, and the characters that distinguish them from the average bowlders of the till, and concludes that they represent an example of englacial and superglacial transportation.

130 —— Some additional evidences bearing on the interval between the glacial epochs.

Wis. Acad. Sci. Arts and Letters, vol. viii, pp. 82-86.

The evidences point to the conclusion that toward the close of the earlier glacial epoch the altitude of the continent was low, in the interval it became higher, and during the later epoch its valley deposits were carried down the trenches formed during the interval.

131 —— [Glacial succession in the United States.]

Abstract: Am. Geol., vol. xii, pp. 227-228.

Paper read before the World's Congress on Geology.

132 —— and **Salisbury** (R. D.). On the relationship of the Pleistocene to the Prepleistocene formations of the Mississippi basin south of the limit of glaciation.

Abstract: Am. Nat., vol. xxvi, pp. 48-49.

Paper described in Record for 1891.

133 **Chapman** (E. J.). Note on the Belmont gold veins of Peterboro County, Ontario.

Can. Roy. Soc., Trans., vol. xi, sect. iv, pp. 51-52.

Describes the country rock of the region and the vein phenomena of the ore bodies.

134 —— On the corals and coralliform types of Paleozoic strata.

Can. Roy. Soc., Trans., vol. x, sect. iv, pp. 39-48.

In a tabular synopsis classifies the cœlenterates into five subdivisions.

135 **Chapman** (Henry C.). Note on the geology of Mount Desert Island.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, p. 350.

Brief description of the geology of the island.

135*a*. **Charlton** (Thomas). [Occurrence of nickel.]

Colo. Sci. Soc., Proc., vol. iv, pp. 420-421.

In discussion of paper by Philip Argall on "Nickel, the occurrence, geological distribution, and genesis of its ores," describes the occurrence of nickel in the Gem Mine, Fremont County, Colo.

136 **Chatard** (Thomas M.). Phosphate chemistry as it concerns the miner.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 160-175.

Discusses some problems of phosphate analysis and describes the processes to be followed in making a chemical analysis of a natural phosphate.

137 **Church** (John A.). The cause of faulting.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 782–792.

Discusses the different explanations of the cause of faulting and their insufficiency to account for local faults of moderate extent. Considers that fissuring of rocks by compression may occur without dislocation and that, in the movement of rocks, both walls participate in the movement and the fault becomes shortened.

138 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, pp. 469–470, 613–614, and 637–638 (correspondence).

Reviews statement of Albert Williams, jr., concerning the occurrence of veins on the lines of fault fissures and describes the characteristics of vein formations.

138*a* —— [Vein structure.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 871–872.

In discussion of paper by Ernest Wiltsee, "Notes on the geology of the Half-Moon Mine, Pioche, Nev."

139 **Clark** (William Bullock). The Mesozoic Echinodermata of the United States.

U. S. Geol. Surv., Bull. No. 97, pp. 13–101, pls. i–1.

Abstracts: Am. Nat., vol. xxvii, p. 1079 (¼ p.); Johns Hopkins Univ. Circ., vol. xii, pp. 51–52.

Gives a bibliography of North American Echinodermata, a description of the determining characteristics of the different species, and tables showing their geologic range in North America and the specific names employed by writers on the Mesozoic Echinodermata.

140 —— A preliminary report on the Cretaceous and Tertiary formations of New Jersey.

N. J. Geol. Surv., Ann. Rept. 1892, pp. 169–239, pls. iv–vi.

Reviews the literature on the deposits of this region. Describes the topographic features and the lithologic and structural characters of the Cretaceous and Tertiary formations. Gives lists of fossils found in the several marl beds and discusses the origin, character, and manner of occurrence of glauconite.

141 —— The Eocene of the United States.

Johns Hopkins Univ. Circ., vol. xii, pp. 50–51.

Describes the characters of the Eocene deposits of the Atlantic Coast, Gulf Coast, Pacific Coast, and interior regions.

142 —— Correlation Papers. Eocene.

U. S. Geol. Surv., Bull. No. 83, p. 159, pls. i–ii.

Abstracts: Am. Geol., vol. xii, p. 379 (⅔ p.); Am. Nat., vol. xxvi, pp. 330–332.

Describes the stratigraphy of the Eocene beds of the Atlantic Coast, Gulf States, and the Pacific Coast region, and gives lists of their contained fossils and discusses their correlation. Includes a bibliography of the papers on the Eocene of each of these regions.

142*a* —— **Williams** (G. H.) and. Reports on short excursions made by the geological department of the University during the autumn of 1891.

See Williams (G. H.) and Clark (W. B.), 1049.

143 **Clark** (William Bullock), **Williams** (G. H.) and. [Geology of Maryland.]

Maryland, its Resources, Industries, and Institutions, pp. 55–88, Baltimore, 1893.

Abstract: Am. Geol., vol. xii, pp. 396–398.

Includes a general description of the various geologic formations of Maryland.

144 **Clarke** (F. W.). Note on the constitution of ptilolite and mordenite.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 101–102.

145 **Clarke** (John M.). Notes on the genus Acidaspis; note on Coronura aspectans Conrad (sp.), the Asaphas diurus Green; observations on the Terataspis grandis Hall, the largest known trilobite.

N. Y. State Geologist, Tenth Ann. Rept., 1891.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, pp. 158–159; Am. Geol., vol. ix, pp. 202–203.

146 —— On the structure of the carapace in the Devonian crustacean Rhinocaris, and the relation of the genus Mesothyra and the Phyllocarida.

Am. Nat., vol. xxvii, pp. 793–801.

Describes the structural characters of the typical species of Rhinocaris and compares them with those of Mesothyra and Phyllocarida.

147 —— The protoconch of Orthoceras.

Am. Geol., vol. xii, pp. 112–115.

Reviews the descriptions of the structure of the protoconch of the nautiloid Orthoceras, by Professor Hyatt and Dr. Branco, and describes remains from the Genesee shales of New York.

148 —— The discovery of Clymenia in the fauna of the Intumescens zone (Naples beds) of western New York, and its geological significance.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 57–63.

Describes and gives drawings of newly discovered and very perfect specimens of Clymenia from the lower part of the Upper Devonian, which has hitherto been considered an horizon marker for the uppermost Devonian only, especially in Europe.

See Hall, 383 and 384.

149 —— On Cordania, a proposed new genus of Trilobites.

N. Y. State Mus., 45th Ann. Rept., pp. 440–443.

Discusses the classification of certain species from the Helderberg and Hamilton groups.

150 **Claypole** (E. W.). A new gigantic placoderm from Ohio.

Am. Geol., vol. x, pp. 1–4.

Describes the lower jaw and teeth of this species found in the Cleveland shale near Berea, Ohio.

151 —— The head of Dinichthys.

Am. Geol., vol. x, pp. 199–207.

Describes particularly the plates and illustrates the skull of Dinichthys in three figures.

152 **Claypole** (E. W.). The tin islands of the Northwest.
Am. Geol., vol. ix, pp. 228–236.
Describes the structural characteristics of the igneous and sedimentary rocks that form the Black Hills, and the movements of elevation and subsidence that have occurred in the region. The cassiterite is confined to the granite veins, and is very finely and irregularly disseminated.

153 —— A new Coccostean-coccosteus Cuyahogæ.
Am. Geol., vol. xi, pp. 167–171.
Refers to previous descriptions of species of Coccosteus, and describes a new species from the Cleveland shale of Ohio.

154 —— The cladodont sharks of the Cleveland shale.
Am. Geol., vol. xi, pp. 325–331.
Abstract: Am. Nat., vol. xxvii, p. 1083 (½ p.).
Refers to the description of Cladodont fishes by Dr. Newberry, with remarks on the classification. Describes: Cladodus kepleri, Cladodus clarki, Cladodus sinuatus, Cladodus rivi-petrosi, Monocladodus clarki, and Monocladodus pinnatus.

155 —— The three great fossil placoderms of Ohio.
Am. Geol., vol. xii, pp. 89–99.
Describes the general characteristics of the fossils found in the Cleveland and Huron shales, with special reference to placoderms.

156 ——On three new species of Dinichthys.
Am. Geol., vol. xii, pp. 275–279.
Describes three new species, D. lincolni, D. clarki, and D. gracilis, from parts of the organs of the mouth, one from the Marcellus shale and the others from the Cleveland shale.

157 —— On a deep Preglacial river bed near Akron, Ohio.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 259.
The evidence of the existence of the deep river bed is afforded by data obtained in sinking a deep well in the center of a pre-Glacial valley.

158 —— On the structure of the American pteraspidian, Palæaspis (Claypole), with remarks on the family.
Geol. Soc. Quart. Jour., vol. xlviii, pp. 542–561.
Gives a statement concerning the discovery of pteraspidian fishes in the Upper Silurian of Pennsylvania. Reviews some of the previous descriptions and classifications of these fossils. In a figure gives an attempted restoration of P. Americana and also gives an amended definition of Palæaspis.

159 —— A deep boring in the Pleistocene near Akron, Ohio.
Geol. Soc. Am., Bull., vol. iii, pp. 150–151.
Describes the surface geology of the region and the section exhibited by the boring.

160 —— The Upper Devonian fishes of Ohio.
Geol. Mag., dec. iii, vol. x, pp. 443–448.
Describes a deposit of shale which represents a transition period between the Carboniferous and Devonian, with remarks on some of the fishes found in the shale.

161 —— An episode in the history of the Cuyahoga River.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 176 (9 l.).

162 **Cobb** (Collier). A recapture from a river pirate.
Science, vol. xxii, p. 195 (correspondence).
Describes phenomena caused by changes in the drainage of the Jackson River, Virginia.

163 **Cole** (A. H.). Palæaster eucharis Hall.
Geol. Soc. Am., Bull., vol. iii, pp. 512-514.
Abstract: Am. Geol., vol. xi, p. 120 (5 l.).
Quotes the description of Dr. Hall of his type specimen, and states wherein the present specimen differs from it.

164 **Coleman** (A. P.). Some Laurentian rocks of the Thousand Islands.
Can. Rec. Sci., vol. v, pp. 127-131.
Describes the Laurentian granites, gneisses, and quartzites of which these islands are composed.

165 ——The rocks of Clear Lake, near Sudbury.
Can. Rec. Sci., vol. v, pp. 343-346.
Describes the petrographic characters of gabbro, micropegmatite, and other rocks from a portion of the Sudbury district not heretofore examined, and compares them with collections from other portions of this district.

166 **Coman** (C. W.). Geological work in southern New Jersey.
N. J. Geol. Surv., Rept. for 1891, pp. 111-256.
Gives a general description of the surface deposits of the region and its artesian wells, with numerous sections as shown by the borings.

167 **Comstock** (Theodore B.). A preliminary report on parts of counties Menard, Concho, Tom Green, Sutton, Schleicher, Crockett, Valverde, Kinney, Maverick, Uvalde, Edwards, Bandera, Kerr, and Gillespie, Tex.
Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 43-54.
Describes the Lower Cretaceous and Jurassic strata of this region, its topographic features, artesian water, and mineral resources.

168 —— Valuable experiments in vein formation.
Science, vol. xix, p. 214.
Refers to some experiments made by Prof. von Streeruwitz and the conclusions drawn therefrom.

169 **Cooper** (A. S.) The genesis of petroleum and asphalt in California.
Sci. Amer. Suppl., vol. xxxvi, pp. 14738-14740.
Gives a detailed description of some deposits near Santa Barbara, with topographic map of the region and cross section, and includes brief remarks concerning similar deposits in other portions of California.

170 **Cope** (E. D.). On the characteristics of some Paleozoic fishes.
U. S. Nat. Mus., Proc., vol. xiv, pp. 447-463, pls. xxviii-xxxiii.
Abstract: Am. Geol., vol. ix, pp. 263-264.
Describes new species from the Permian of Nebraska and Texas and the characters of other fossils from the Paleozoic.

171 —— On the cranial characters of Equus excelsus.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 285.
Distinguishes the general characters of the quagga from those of the horse.

172 **Cope** (E. D.). On a new horizon of fossil fishes.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 285.

Mentions five species of fish from South Dakota, which differ in species, and some of them as to genus, from any hitherto known. They are Cenozoic in age, but it is not yet known to which division they belong.

173 —— The Cenozoic beds of the Staked Plains of Texas.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 177 (4 1).

174 —— On a new form of Marsupialia from the Laramie formation.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 177 (5 1).

175 —— A contribution to a knowledge of the fauna of the Blanco beds of Texas.

Phila. Acad. Nat. Sci., Proc., 1892, part ii, pp. 226-229.

Describes Testudo turgida Cope, Testudo pertenuis, sp. nov.; Mastodon successor, sp. nov.; Pliauchenia obtained from these beds, and concludes that the fauna of the Blanco beds are intermediate between the Loup Fork and Equus beds. The fauna represent species of large size, including mastodons, camels, and horses.

176 —— A new extinct species of Cyprinidæ.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 19–20.

Describes a new species from Illinois which is probably not earlier than the Pliocene.

177 —— On Tiaporus, a new genus of Teiidæ.

Am. Phil. Soc., Proc., vol. xxx, No. 137, pp. 132–133.

178 —— The osteology of the Lacertilia.

Am. Phil. Soc., Proc., vol. xxx, No. 138, pp. 185–221.

Especial reference is made to the necessities of the paleontology of the order and to the Nearctic fauna.

179 —— On some new and little known Paleozoic vertebrates.

Am. Phil. Soc., Proc., vol. xxx, No. 138, pp. 221–229.

Describes Holonema horrida, sp. nov.; Holonema rugosa Clayp.; Bothriolepis minor Newb.; Ganorhynchus oblongus, sp. nov.; Coccosteus macromus, sp. nov.; Megalichthys macropomus, sp. nov.; (?) Holoptychius filosus, sp. nov. found in Chemung and Catskill beds of northern Pennsylvania.

180 —— On the skull of the dinosaurian Lælaps incrassatus Cope.

Am. Phil. Soc., Proc., vol. xxx, No. 138, pp. 240–245.

Describes two crania from the Laramie of Red Deer River, Canada.

181 —— On the genus Tomiopsis.

Am. Phil. Soc., Proc., vol. xxxi, No. 142, pp. 317–318.

Describes the characteristics of a tooth of this genus found in a bed of Neocene age in western Texas.

182 —— Report on paleontology of the vertebrata.

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 251–259; Am. Phil. Soc., Proc., vol. xxx, No. 137, pp. 123–131.

Refers to certain species found in the Fayette formation which indicate that it occupies the summit of the Tertiary. Describes Equus simplicidens, n. sp.; Creccoides osbornii Shufeldt, n. gen. et sp.; Testudo turgida, n. sp.; a Mesozoic Pycnodont, Microdus dumbelii, n. sp.; and Episcoposaurus haplocerus, n. sp., from the Triassic or Dockum beds.

183 **Cope** (E. D.). A preliminary report on the vertebrate paleontology of the Llano Estacado.

Texas Geol. Surv., 4th Ann. Rept., 1892, pp. 11-87, pls. i-xxiii.

Describes vertebrate remains found in the Dockum beds of the Trias, in the Loup Fork and Blanco beds of the Miocene, and in the Equus beds of the Pliocene.

184 **Cox** (Charles F.). On recently discovered deposits of diatomaceous earth in the Adirondacks.

N. Y. Acad. Sci., Trans., vol. xii, pp. 219-220.

Describes the deposits found in Herkimer County and gives a brief statement concerning the fossils found in them.

185 **Cragin** (F. W.). Observations on llama remains from Colorado and Kansas.

Am. Geol., vol. ix, pp. 257-260.

Describes some remains from volcanic ash beds of Kansas and from the Denver loess.

186 —— A contribution to the invertebrate paleontology of the Texas Cretaceous.

Texas Geol. Surv., 4th Ann. Rept., 1892, pp. 141-246, pls. xxiv-xlvi.

Description of genera and species of Cœlenterata, Echinodermata, Molluscoida, Mollusca, Gasteropoda and Cephalopoda from the Cretaceous series of Texas.

187 **Crane** (Agnes). The generic evolution of the Paleozoic brachiopoda.

Science, vol. xxi, pp. 72-74.

Am. Geol., vol. xi, pp. 400-406.

Refers to the work of different authors on the Paleozoic brachiopoda, with special reference to the work of Prof. James Hall and his recent memoirs "An introduction to the study of the genera of Paleozoic brachiopoda."

188 **Crawford** (J.). The geology of Nicaragua.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 261-270.

Describes the general geologic features. Concludes that there exists an Archean core upon which later rocks have been deposited unconformably, the latter being separated from each other by nonconformities. A glacial epoch existed synchronous with the same epoch in North America.

189 —— The peninsula and volcano of Cosigüina.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 270-274.

Describes the topographic features and orographic movements that have taken place in the region.

190 —— Recent discoveries in northeastern Nicaragua: granite hills, moutonnéd ridges and gold-containing lodes or reefs, and leads or placer mines.

Science, vol. xxii, pp. 269-272.

Describes the geology of the region and its mineral deposits.

191 —— Notes on earthquakes in Nicaragua, February 6, 1892.

Am. Geol., vol. x, pp. 115-118.

Describes the series of vibrations and oscillations which took place.

192 **Crook** (Alja Robinson). Ueber einige fossile Knochenfische aus der Mittleren Kreide von Kansas.

Palaeontographica, Band xxxix, 1892, pp. 107-124, pls. xv-xviii.

Describes some fossil fishes from the Cretaceous beds of Kansas, Protosphyrænidæ S. Woodward, Ichthyodectes anaides Cope, Ichthyodectes polymicrodus Cope, Portheus Cope.

193 **Crosby** (William O.). Geology of the Boston Basin.

Boston Soc. Nat. Hist., Occasional Papers IV, vol. i, part i, Nantasket and Cohasset, pp. 1-177.

Describes the older or granitic rocks and includes a description of the newer eruptive rocks of the region and the diabase and porphyrite dikes, by G. P. Merrill. Gives an account of the surface geology and its glacial deposits and phenomena.

194 —— Geology of Hingham, Mass.

Abstract: Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 499-512.

Describes the geology of the region, gives a general vertical section of the strata and discusses the evidences of their geologic age.

195 —— The origin of parallel and intersecting joints.

Am. Geol., vol. xii, pp. 368-375.

Abstract: Tech. Quart., vol. vi, pp. 230-236.

Reviews the torsion theory of joints and the character and results of Daubrée's experiments.

196 **Cross** (Whitman). Igneous rocks from the coal and iron regions of Coahuila and Nueva Leon, Mexico, collected by R. T. Hill.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 119-120.

Describes the microscopic characters of specimens of basalt, diorite, hornblende-porphyrite, and augite-diorite; the former are considered deep-seated eruptives and the latter equivalent to the diorite, but from smaller masses and probably consolidated nearer the surface.

197 —— Post-Laramie deposits of Colorado.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 19-42.

Abstracts: Am. Geol., vol. x, pp. 256-257 (½ p.); Am. Nat., vol. xxvii, p. 471 (½ p.).

Describes the deposits occurring in different parts of the State and concludes that, in Colorado, the deposition of the conformable series of the Cretaceous ended with the coal-bearing Laramie, as the result of a long-continued continental elevation in this region, and when it began again the deposits were laid down in lakes or small seas. Discusses the fossil evidences bearing on the geologic age of the formation.

197*a* —— The Post-Laramie beds of Middle Park, Colorado.

Colo. Sci. Soc., Proc., vol. iv, pp. 192-213.

Gives historical sketch of the work done and reviews the literature on this region. Describes the character of the beds, called doleritic breccia by Marvine, and the constitution of the lignitic beds. Discusses the stratigraphic relations and reviews the evidence of the fossil flora as to the age of the Middle Park beds.

197*b* —— On a series of peculiar schists near Salida, Colo.

Colo. Sci. Soc., Proc., vol. iv, pp. 286-293.

Reviews the representation of the geology of the region on the Hayden Atlas, and indicates the general character of the necessary corrections. Describes the stratigraphy and general character of the schists, and discusses their origin and relationships.

198 **Cross** (Whitman) and **Eakins** (L. G.). A new occurrence of ptilolite.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 96–101.

Abstract: Am. Nat., vol. xxvii, p. 43 (½ p.).

Describes the chemical and mineralogic characteristics of the rock in which ptilolite occurs.

199 **Culver** (G. E.). Notes on a little known region in northwestern Montana.

Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 187–205.

Abstract: Am. Geol., vol. xi, pp. 412–413 (½ p.).

Describes the general geographic features of the region, the structure of the plains and mountains and the strata exposed, with petrographic notes on the igneous rocks, chiefly diabase. Describes the character of the existing glaciers and the general features of former glaciers. Discusses the origin of the ice tongues of the eastern slope of the Rocky Mountains.

200 —— and **Hobbs** (Wm. H.). On a new occurrence of olivine diabase in Minnehaha County, S. Dak.

Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 206–210.

Describes the decomposition of the rock and states that considerable erosion has taken place. Gives petrographic notes on thin sections examined.

201 **Cummins** (A.). Geology of the natural gas fields about Pittsburg.

Eng. and Min. Jour., vol. liv, pp. 106–107.

Describes the structural features of the region and the character of the strata through which the borings pass. Gives information concerning the pressure of gas and its diminution in the wells.

202 **Cummins** (W. F.). Report for 1891.

Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 27–42.

Describes the topographic and geologic features of the Staked Plains region, its artesian water supply and mineral resources.

203 —— Report on the geography, topography, and geology of the Llano Estacado or Staked Plains, with notes on the geology of the country west of the plains.

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 129–223.

Describes the topographic features of the region and the Quaternary, Tertiary, Cretaceous, and Triassic formations, and includes notes on the same formations and the Carboniferous occurring in the country west of the plains.

204 —— Notes on the geology of northwest Texas.

Texas Geol. Surv., 4th Ann. Rept., 1892, pp. 179–238.

Describes the general geology of the region and gives a table containing a list of Pleistocene and fresh-water shells of the region. Remarks on the removal of the entire Cretaceous, comprising 10,000 feet of strata and the absence of the Tertiary below the Loup Fork beds over the entire area. Gives sections of the Tule, Blanco, and Loup Fork beds, and a description of the Permian of Texas and other parts of the United States and Europe, and of the occurrence of copper ore in these beds.

205 **Cummins** (W. F.). Tucumcari Mountain.
Am. Geol., vol. xi, pp. 375–283.
Reviews the previous publications concerning this region and refers to criticisms on the author's report in the Third Annual Report of the Texas Geological Survey, by Jules Marcou.

206 —— The Texas meteorites.
Texas Acad. Sci., Trans., vol. i, pp. 14–18.
Gives a historical sketch of Texas meteorites.

207 —— Geology of Tucumcari, New Mexico.
Science, vol. xxi, pp. 282–283.
Gives a list of fossils found at this locality and concludes that the strata are Triassic, Cretaceous, and Tertiary. Refers to certain statements concerning the geology of the region.

208 —— **Dumble** (E. T.) and. The Kent section and Gryphæa tucumcarii Marcou.
Am. Geol., vol. xii. pp. 309–314.
Gives the section occurring at this locality in western Texas, with a list of fossils found, representing three divisions of the Cretaceous.

209 **Cushing** (H. P.). The movement of Muir glacier.
Am. Geol., vol. xi, pp. 276–278 (correspondence).
Refers to criticisms by G. F. Wright.

210 —— Notes on the geology of the vicinity of Muir glacier.
Nat. Geog. Mag., vol. iv, pp. 56–62.
Describes the strata, consisting of argillites and limestones, in this region. A few fossils found indicate their Paleozoic age. The older eruptive rocks are diorites, which, with the sedimentaries, are cut by small dikes of later date.

D.

211 **Dale** (T. Nelson). On the structure and age of the Stockbridge limestone in the Vermont valley.
Abstract: Geol. Soc. Am., Bull., vol. iii, pp. 514–519.
The main feature of the region is a complex anticlinal of gneiss and Cambrian quartzite and schist, flanked by Cambrian limestone and Lower Silurian limestone. Owing to faults at some points the base of the Stockbridge limestone, with its Cambrian fauna, is exposed; in others, the top with Lower Silurian fauna. Accompanied by sketch map.

212 —— The Rensselaer grit plateau in New York.
U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 297–340, pls. xcvii–ci, figs. 18–41.
Describes the petrographic characters of the Cambrian and Silurian rocks in this region and mentions the fossils found in them. Discusses the geologic structure and relations of the formations and includes a table exhibiting the stratigraphic, petrographic, and paleontologic results obtained.

213 —— On plicated cleavage-foliation.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 317–319.
Describes an occurrence of this structure at West Rutland, Vt.

214 **Dall** (William Healey). Grand Gulf formation.

Science, vol. xx, pp. 164–165 and 319–320.

Describes the conditions of sedimentation during the Grand Gulf period and gives the names of fossils found in some of the deposits.

215 —— Tertiary mollusks of Florida.

Wagner Free Inst. of Sci., Trans., vol. iii, parts i and ii, 1892, pp. 1–446, pls. 1–22.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 441 (½ p.).

Reviews the opinions of other writers on the Tertiary beds and their fauna. Describes the processes of deposition in the Southeastern States during Tertiary time and locates and describes many species found in these beds.

216 —— and **Harris** (Gilbert Dennison). Correlation papers. Neocene.

U. S. Geol. Surv., Bull. No. 84, 349 pp., pls. i-iii, figs. 1–43.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlv, pp. 351–354; Am. Geol., vol. xii, pp. 399–402.

Gives a summary of the knowledge of the Neocene deposits of the Atlantic and Gulf coasts, of the Pacific Coast and Canada, and of the supposed Neocene of the interior of the United States, and includes a list of names applied to Cenozoic beds.

217 **Dana** (James D.). On subdivisions in Archean history. Part I.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 455–462.

Discusses the subdivisions of Archean time as based on—1, kinds of rocks; 2, stratification; and 3, physical and biological conditions.

218 —— Additional observations on the Jura-Trias trap of the New Haven region.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 165–169.

Describes the outcrop of a trap dike in this region and states that the outflow was laccolithic. Discusses two hypotheses concerning the origin of the trap belts.

219 —— New England and the Upper Mississippi basin in the Glacial period.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 327–330.

Abstract: Jour. of Geol., vol. i, pp. 847–849.

Considers that the cause of divergence of opinion concerning the unity of the glacial period is due to the different conditions in the eastern and western portions of the glacial area consequent on meteorological differences in the two regions. Describes the general conditions existing during the glacial period.

220 **Darton** (Nelson Horatio). Fossils in the "Archean" rocks of central piedmont Virginia.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 50–52.

Brief description of the occurrence of roofing slates in the piedmont plain west of Richmond, in which fossils, determined by C. D. Walcott as of Lower Silurian age, have been found.

221 **Darton** (Nelson Horatio). The stratigraphic relations of the Oneonta and Chemung formations in eastern-central New York.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 203–209.

Abstract: Am. Nat., vol. xxvii, p. 558 (⅔ p.).

Describes the geographic distribution of the two formations in this region and the relations of the beds, illustrated by cross section and columnar sections. Describes their lithologic characters and discusses the use of the term "Catskill."

222 —— The Magothy formation of northeastern Maryland.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 407–419.

Describes the general relations of the Costal Plain formations, including a geologic map of the Magothy and associated formations in northeastern Maryland and a discussion of the distribution and lithologic character of the Magothy strata in this region.

223 —— On fossils in the Lafayette formation in Virginia.

Am. Geol., vol. ix, pp. 181–183.

The fossils were found at the base of the formation and are so poorly preserved as to be difficult of identification, and, on account of their water-worn condition, it is possible they may have been derived from the underlying Chesapeake beds.

224 —— Record of North American geology for 1891.

U. S. Geol. Surv., Bull. No. 99, pp. 6–73.

Gives a list of papers on North American geology, with notes descriptive of contents and index references.

225 —— Notes on the stratigraphy of a portion of central Appalachian Virginia.

Am. Geol., vol. x, pp. 10–18.

Refers to the nomenclature of the formations in this region used by other writers. Describes the Silurian, Devonian and Carboniferous strata and compares them with strata of the same age in New York and Pennsylvania.

226 —— On two overthrusts in eastern New York.

Geol. Soc. Am., Bull., vol. iv, pp. 436–439.

Describes two overthrusts of Silurian rocks in the Shawangunk Mountain, illustrated by three cross sections.

227 **Davidson** (Walter B. M.). Florida phosphates: Origin of the bowlder phosphates of the Withlacoochee River district.

Eng. and Min. Jour., vol. liii, p. 42 (correspondence).

Reviews the paper by N. A. Pratt on the same subject.

228 —— The present formation of phosphatic concretions in deep-sea deposits.

Eng. and Min. Jour., vol. liii, pp. 499–500.

Gives the results of the *Challenger* expedition in this connection and quotes from the published report.

229 —— Notes on the geological occurrence of phosphate of lime in the United States and Canada.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 139–157.

Describes the occurrence of apatite in gneiss in Canada and the phosphate deposits of South Carolina and Florida, and discusses their geologic occurrence and origin.

230 **Davis** (William Morris). The Catskill delta in the Post-Glacial Hudson estuary.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 318–335.

Abstract: Jour. of Geol., vol. i, pp. 97–98.

Gives a sketch of the history of the Hudson River valley and describes the glacial deposits of the region.

231 —— Supplementary note: On the drainage of the Pennsylvania Appalachians.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 418–420.

Refers to a previous postulate of the author employed in his discussion of the rivers and valleys of Pennsylvania.

232 —— The subglacial origin of certain eskers.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 477–499.

Abstract: Jour. of Geol., vol. i, pp. 95–96.

Discusses the relation of climate to the results of erosion processes and the origin and deposition of certain eskers in Massachusetts. Concludes that they were formed during the closing stage of the last glacial epoch, and that their present form and structure indicate their sub-glacial origin.

233 —— The Loup rivers in Nebraska.

Science, vol. xix, pp. 107–108 and 220–221 (correspondence).

Comments on an article on the same subject by L. E. Hicks.

234 —— The Osage River and the Ozark uplift.

Science, vol. xxii, pp. 276–279 (correspondence).

Reviews a previous article on the subject by Arthur Winslow and discusses the evidence bearing on the question.

235 —— The lost volcanoes of Connecticut.

Pop. Sci. Mo., vol. xl, pp. 221–235.

Describes the occurrence of lava ash beds in Connecticut, and discusses the evidences indicating the location of the volcano from which they were derived.

236 **Dawson** (George M.). Notes on the geology of Middleton Island, Alaska.

Geol. Soc. Am., Bull., vol. iv, pp. 427–431.

Describes some specimens of bowlder clay and other material collected on this island, including a few fossil shells, and concludes that the material is of Pleistocene age and referable to the Glacial period.

237 —— Note on the distribution of the upturned Cretaceous beds of British America.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 433–435 (correspondence).

Describes the divisions of the Cordilleran belt in British America, with a brief reference to the distribution and structure of the Cretaceous strata.

238 **Dawson** (J. William). On the correlation of early Cretaceous floras in Canada and the United States, and on some new plants of this period.

Can. Roy. Soc., Trans., vol. x, sect. iv, pp. 79–93.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 439 (½ p.).

Gives a summary of geologic knowledge concerning rocks of Cretaceous age. Describes some species of the Kootenai formation and states that they represent Lower Cretaceous facies, an indication that the Kootenai belongs to the lowest portion of the Cretaceous.

239 **Dawson** (J. William). On new species of Cretaceous plants from Vancouver Island.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 53–73, pls. v–xiv.

Contains a statement concerning the locality where the collections were made and a description of the plant remains found.

240 —— Geological notes.

Can. Rec. Sci., vol. v, pp. 386–393.

Reviews the recent literature bearing on the classification of the oldest rocks and some recent papers on glacial phenomena. Mentions the discovery of fish remains in the Siluro-Cambrian of Colorado.

241 —— Note on fossil sponges from the Quebec group (Lower Cambro-Silurian) at Little Metis, Canada.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 409–410.

242 —— and **Penhallow** (D. P.). Parka decipiens.

Can. Roy. Soc., Trans., vol. ix, sect. iv, pp. 3–16.

Abstract: Am. Geol., vol. ix, p. 341.

Gives a historical and geologic sketch of the fossil and the microscopical and botanical results of a study of the specimens.

243 **Daubrée** (M.). Recherches expérimentales sur le rôle possible des gaz à hautes températures, doués de très fortes pressions et animés d'un mouvement fort rapide, dans divers phénomènes géologiques.

Soc. Géol. de France, Bull., 3d ser., vol. xix, pp. 313–354.

In referring to the relative altitude of volcanoes and their distribution, reference is made to those occurring in western North America.

243*a* **Dean** (George W.). Catalogue of the shell-bearing mollusca of Portage County, Ohio.

Am. Nat., vol. xxvi, pp. 11–23.

244 **Deby** (J.). The fossil Aulisci of California.

Torr. Bot. Club, Bull., vol. xx, pp, 118–119.

Gives a list of 30 forms from California.

244*a* **Derby** (Orville A.). On the separation and study of the heavy accessories of rocks.

Roch. Acad. Sci., Proc., vol. i, pp. 198–206.

Abstract: Am. Nat., vol. xxvi, pp. 694–695.

Describes the apparatus used by the author to separate the mineral constituents of rocks, the method of operation and its application to the study of rock-forming minerals.

244*b* —— A study in consanguinity of eruptive rocks.

Jour. of Geol.,.vol. i, pp. 597–605.

Describes the occurrence and character of some eruptive rocks of Brazil.

245 **Dewar** (R.). The occurrence of gold and silver in galena and iron pyrites.

Can. Inst., Trans., vol. ii, part i, pp. 121–127.

Contains notes on the association of these minerals and on the process of their deposition.

245*a* **Diest** (P. H. van). On the artesian wells of Denver.

Colo. Sci. Soc., Proc., vol. iv, pp. 1-6.

Gives a brief summary of the history of the Denver artesian basin, and discusses the evidences which indicate the character and extent of the collecting area, the oscillations of the water level, and the average available supply of artesian water in this basin. Considers that at about 1,500 feet in depth a supply of water can be obtained from the basal sandstones of the Laramie.

245*b* —— Evidence bearing on the formation of ore deposits by lateral secretion.

Colo. Sci. Soc., Proc., vol. iv, pp. 340-347.

Describes the geology and discusses the origin of the veins and ore deposits of the John Jay Mine, Boulder County, Colorado.

246 **Diller** (Joseph Silas). On a late volcanic eruption in northern California and its peculiar lava.

U. S. Geol. Surv., Bull. No. 79.

Abstract: Am. Geol., vol. ix, pp. 265-266 (⅔ p.).

Noticed in Record for 1891.

247 —— Mica-peridotite from Kentucky.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 286-289.

Abstract: Am. Nat., vol. xxvii, p. 273 (⅓ p.).

Describes the dike in which the specimen occurs and the mineralogic characteristics of the rock.

248 —— The Tertiary revolution in the topography of the Pacific Coast.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvi, p. 74 (⅓ p.).

Paper read before the Geological Society of Washington.

249 —— Note upon some observations on the auriferous gravels of lacustral origin in the region of Taylorsville, Cal.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 398-399 (correspondence).

Describes the general distribution of the gravels of the region and refers to the existence of a fault, indicating the displacement of the auriferous gravel since its deposition.

250 —— Lassen Peak sheet.

U. S. Geol. Surv., Geol. map of the U. S., preliminary edition, 1892.

Describes the topography of the area, the character of the metarphic rocks, the unaltered sedimentaries and igneous rocks. Gives general sketch of the geologic history of the region and its economic resources. Accompanied by topographic, areal, and economic geologic maps and a sheet illustrating the Cinder Cone.

251 —— Geology of the Taylorsville region of California.

Geol. Soc. Am., Bull., vol. iii, pp. 369-394.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 330 (⅓ p.); Am. Geol., vol. x, p. 183 (⅓ p.).

Reviews the previous work in this region and gives a table summarizing the geologic systems represented and their thicknesses. Describes the eruptive action which continued at intervals from the Paleozoic to Pleistocene time, the anticlinal and synclinal structure developed, and the character and displacement of the Taylorsville fault

252 **Diller** (Joseph Silas). Cretaceous and early Tertiary of northern California and Oregon.

Geol. Soc. Am., Bull., vol. iv, pp. 205–224.

Abstract: Am. Geol., vol. xii, pp. 119–120 (½ p.).

Discusses the relation, distribution, and composition of the Shasta-Chico series and gives list of fossils found in the different subdivisions of the series. Reviews the evidences of the pre-Cretaceous elevation of the Klamath Mountains and the Sierra Nevada, and the inter-Cretaceous-Tertiary upheaval of the former.

252*a* **D'Invilliers** (E. V.), **McCreath** (A. S.) and. The Clinch Valley coal fields.

See McCreath (A. S.) and D'Invilliers (E. V.), 611.

253 **Dodge** (William W.) and **Beecher** (Charles E.). On the occurrence of Upper Silurian strata near Penobscot Bay, Maine.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 412–418, with map.

Describes the formations in this region and gives a list of Clinton and Niagara fossils, with their location.

254 **Donald** (J. F.). The occurrence of platinum in Canada.

Eng. and Min. Jour., vol. lv, pp. 81–82.

Remarks on the occurrence of platinum in eastern Canada and in British Columbia.

255 **Douglas** (James). The copper resources of the United States.

Sci. Amer. Suppl., vol. xxxv, pp. 14183–14186.

Describes the copper mines of the Lake Superior, Arizona, Montana, and other districts in the United States.

256 **Drake** (N. F.). Stratigraphy of the Triassic formation of northwest Texas.

Texas Geol. Surv., 3d Ann. Rept., pp. 228-247.

Includes a description of the lithologic and stratigraphic relations of the beds comprising the formation in this region.

257 —— Report on the Colorado coal field of Texas.

Texas Geol. Surv., 4th Ann. Rept., pp. 357–446.

Describes the structural and lithologic characters of the subdivisions of the Cretaceous and Carboniferous formations of the district, the character and extent of the coal seams and the occurrence of iron ore, clay, and building stones. Illustrated by sections and two maps showing the areal geology and extent of the coal field.

258 **Drummond** (A. T.). The physical features of the environs of Kingston, Ontario, and their history.

Can. Rec. Sci., vol. v, pp. 108–117.

Describes the relations of the Laurentian and Cambrian rocks and the Quaternary beds of this locality.

259 **Dryer** (Charles R.) Report upon the geology of Dekalb County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept. 1888, pp. 98–104.

Describes the topographic features and drift deposits of this county.

260 **Dryer** (Charles R.). Report upon the geology of Allen County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 105–130.

Divides the county into six districts and describes the glacial features of each. Gives a section exhibited by an artesian well boring, showing the presence of Silurian limestones and shales underneath the drift-covering.

261 —— Report upon the geology of Steuben County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 114–134.

Describes the glacial moraines and drainage system of the county.

262 —— Report upon the geology of Whitley County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 160–170.

Describes the glacial moraine covering this region and the drainage systems.

263 **Dumble** (Edwin T.). Note on the occurrence of grahamite in Texas.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 601–605.

Abstract: Am. Geol., vol. xi, p. 120 (8 l.).

Describes the geology of the region in which the specimens were found and gives the section of the two bluffs, made up of Tertiary strata, in which they occur and chemical analyses.

264 —— Sources of the Texas drift.

Texas Acad. Sci., Trans., vol. i, pp. 11–13.

Abstract: Am. Nat., vol. xxvii, pp. 269–270 (⅓ p.).

Describes the lithologic character of the drift of the Rio Grande and Colorado River basins and of eastern Texas, and gives the author's conclusions as to the source of the material.

265 —— Volcanic dust in Texas.

Texas Acad. Sci., Trans., vol. i, pp. 33–34.

Describes briefly the geology of the region and the section in which the volcanic dust occurs.

266 —— Notes on the geology of the valley of the middle Rio Grande.

Geol. Soc. Am., Bull., vol. iii, pp. 219–230.

Abstract: Am. Geol., vol. x, pp. 65–66 (⅓ p.).

Describes the general topographic and geologic features of the region. The formations represented comprise the Neocene, Eocene, and Cretaceous.

267 —— Second report of progress.

Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 7–91.

Gives an account of the work done on the general and economic geology of the Carboniferous, Cretaceous, and Tertiary sections of the State and includes reports of the several assistant geologists.

268 —— [Report of State Geologist.]

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. xvii–lxi.

Gives a summary of the geologic work done during the year and the reports of the assistant geologists.

269 —— Progress of geological surveys in Texas.

Eng. and Min. Jour., vol. lv, p. 55.

Remarks on the work and results obtained by the Geological Survey of Texas in 1892.

270 **Dumble** (Edwin T.). Report of the State Geologist for 1892.
Texas Geol. Surv., 4th Ann. Rept., pp. xvii–xxxv.
Includes an account of the work done in 1892, with remarks on the deposits of the Coastal slope and the Colorado coal field, and on the deposits of the precious metals associated with copper and lead in the Trans-Pecos district.

271 —— Report on the brown coal and lignite of Texas.
Texas Geol. Surv., 1892, pp. 17–243.
Abstracts: Am. Geol., vol. xi, p. 209; Am. Nat., vol. xxvii, p. 379 (½ p.).
Describes the origin, formation, and characters of brown coal, the geology of the Texas deposits, and the occurrence and composition of the Tertiary brown coals in the different States, and compares them with European and bituminous coals.

272 —— and **Cummins** (W. F.). The Double Mountain section.
Am. Geol., vol. ix, pp. 347–351.
Describes the general features of the region and the character of the Cretaceous, Triassic, and Permian beds which make up the mountain mass and mentions the fossils found in them.

273 —— The Kent section and Gryphæa tucumcarii Marcou.
Am. Geol., vol. xii, pp. 309–314.
Gives the section occurring at this locality in western Texas and a list of fossils found, representing three divisions of the Cretaceous.

274 —— and **Harris** (G. D.). The Galveston deep well.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 38–42.
Gives the section shown by this well to a depth of 3,070 feet and a summary of conclusions drawn from a study of the fossils obtained from the well.

275 **Dunn** (R. L.). Siskiyou County [California].
Cal. State Min. Bur., 11th Rept., pp. 420–449.
Describes the geologic structure of the Coast Range, with notes on some of the mines of the county.

276 —— Trinity County [California].
Cal. State Min. Bur., 11th Rept., pp. 480–484.
Brief general description of the placer deposits.

277 **Dutton** (C. E.). On the greater problems of physical geography.
Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 258 (⅔ p.).

277*a* **Dwight** (A. S.). Notes on Montana sapphires.
Colo. Sci. Soc., Proc., vol. iv, pp. 174–175.
Describes the occurrence of sapphires in the bars of placer gravel and considers that they originally came from a dike.

278 **Dyche** (D. T. D.). The crinoid Heterocrinus subcrassus.
Science, vol. xx, p. 66.
Describes its structural characteristics.

E.

279 **Eakins** (L. G.). A new meteorite from Hamblen County, Tenn.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 283–285.
Gives the chemical composition of the metallic and siliceous portions of the meteoric mass.

279*a* **Eakins** (L. G.), **Cross** (W.) and. A new occurrence of ptilolite.
See Cross (W.) and Eakins (L. G.), 198.

280 **Eakle** (Arthur S.). On some dikes occurring near Lyon Mountain, Clinton County, N. Y.
Am. Geol., vol. xii, pp. 31–36.
Describes the location of the dikes, shown on an accompanying map of the region, and the petrographic characters and chemical composition of the dike rocks.

281 **Earle** (Charles). Revision of the species of Coryphodon.
Am. Mus. Nat. Hist., Bull., vol. iv, pp. 149–166.
Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 160 (⅓ p.).
Compares the Coryphodon material recently procured from the Wasatch formation in Wyoming with that contained in other collections.

282 —— A memoir upon the genus Palæosyops Leidy and its allies.
Phila. Acad. Nat. Sci. Jour., 2d ser., vol. ix, pp. 267–388, pls. x–xvii.
Describes the geologic succession, distribution, and characters of the different species.

283 —— **Wortman** (J. L.) and. Ancestors of the tapir from the lower Miocene of Dakota.
Am. Mus. Nat. Hist., Bull., vol. v, pp. 159–180.
Discusses the origin of the tapir in America, describes species from the Miocene of South Dakota, and reviews the evidences of relationship between American and European species of Protapirus.

284 **Edwards** (Arthur M.). Hudson River "Fiord."
Am. Jour. Sci., 3d ser., vol. xliii, pp. 182–183.
Gives a list of fossils found in the soundings from the Hudson River "Fiord," and concludes that, as the microscopic organisms are not those of Newark Bay, the "fiord" is not a continuation of that bay, but of the Hudson River.

285 —— On a Champlain (?) deposit of Diatomaceæ belonging to the littoral plain.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 385–388.
Gives a list of species collected in New Jersey and describes the glacial geology of the region.

286 —— The Diatomaceæ of the Triassic (?) sandstone of New Jersey.
Am. Nat., vol. xxvii, pp. 817–818.
Remarks on finding Diatomaceæ in Tertiary clays of New Jersey.

287 **Eldridge** (George H.). The Florence oil field, Colorado.
Am. Inst. Min. Engrs., Trans., vol. xx, pp. 442–462.
Gives a history of the development of the petroleum industry in this region, and describes the topographic and geologic features and structure. Describes the oil-bearing horizon, its thickness and extent, and the source of the oil. Discusses the relation between wells, their yield, and describes the character and treatment of the products. Discussed by F. H. Newell, p. 462.

288 **Eldridge** (George H.). A preliminary sketch of the phosphates of Florida.

Am. Inst., Min. Engrs., Trans., vol. xxi, pp. 196–231.

Describes the topographic and geologic features of the State, the character and occurrence of the four classes of Florida phosphates, and discusses their origin. Gives chemical analyses of a number of phosphate specimens. Presents a map showing the location and extent of the phosphate districts.

289 **Ells** (R. W.). The Laurentian of the Ottawa district.

Geol. Soc. Am., Bull., vol. iv, pp. 349–360.

Abstract: Am. Nat., vol. xxvii, p. 996 (½ p.).

Reviews the literature on the geology of this region and the work of Sir W. Logan on the Laurentian. Gives data obtained in an examination of the Trembling Mountain section and the region between the anorthosite area and Gatineau River. Describes the Laurentian gneiss and limestone and associated intrusive rocks, and presents a résumé of the facts and the author's conclusions.

290 —— The geology of the proposed tunnel under the Northumberland strait.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 75–84, with map.

Describes the geology of the region and gives the records of ten bore holes made along the line of the proposed tunnel.

291 **Elrod** (Moses N.) and **Benedict** (A. C.). Geology of Wabash County.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 192–272.

Describes the topographic features and gives a list of fossils found in this county. Gives the section shown at various localities and the lithologic character of the Niagara limestones, and discusses the probability of a tilting of these beds. Describes the Quaternary deposits and gives sections displayed by several gas wells.

292 **Emerson** (B. K.). Proofs that the Holyoke and Deerfield trap sheets are contemporaneous flows and not later intrusions.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 146–148.

Gives an abstract of the data showing that the main trap sheets of Massachusetts are contemporaneous and easily distinguished from smaller intrusive masses.

293 —— Notes upon two bowlders of a very basic eruptive rock from the west shore of Canandaigua Lake and their contact phenomena upon the Trenton limestone.

N. Y. State Mus., 46th Ann. Rept., pp. 251–255.

Describes the petrographic characters of the specimens and the contact phenomena.

294 —— Hawley sheet.

U. S. Geol. Surv., Geol. atlas of the U. S., preliminary edition, 1892.

Describes the topographic features of the region, the lithologic character, structure and relations of the Cambrian and Silurian formations. Illustrated by topographic, colored areal and economic geologic and structure section maps.

295 **Emerson** (B. K.). Outlines of the geology of the Green Mountain region in Massachusetts.

U. S. Geol. Surv., Geol. atlas of the U. S., Hawley sheet, preliminary edition, 1892.

Describes the topographic features of the region and the lithologic character, structure and relations of the Algonkian, Cambrian, Silurian, and Devonian formations.

296 **Emmens** (Stephen H.). The nickel deposits of North Carolina.

Eng. and Min. Jour., vol. liii, pp. 476–477.

Quotes from the previous descriptions of these deposits, compares them with the New Caledonia deposits, and describes the character and extent of the ore bodies.

297 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, p. 492, and vol. liv, p. 27 (correspondence).

Reviews statements of John A. Church on this subject.

298 **Emmons** (Samuel Franklin). Progress of the precious-metal industry in the United States since 1880.

U. S. Geol. Surv., Min. Res., 1892, pp. 46–94.

Gives a general review of the progress of the industry and a brief description of the principal ore deposits in the various States and Territories, tables of production, and a forecast of future production.

299 —— Fluorspar deposits of southern Illinios.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 31–53.

Gives a historical sketch of mining operations in this region. Describes the lithologic character of the strata and discusses the evidences which indicate the geologic subdivisions to which they should be assigned. Gives an account of the distribution of lead and associated minerals in limestones of the Mississippi Valley. Describes the mining developments of the district and discusses the manner of formation of the deposits and the origin of the vein material.

300 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, pp. 548–549.

Refers to previous communications on this subject and discusses the occurrence and characters of fracture planes and the conditions of their development and the general features of fault phenomena.

301 **Eyerman** (John). Bibliography of North American vertebrate paleontology for the year 1891.

Am. Geol., vol. ix, pp. 249–256.

Presents a bibliography and a list of new forms described in the papers mentioned.

302 —— Bibliography of North American vertebrate paleontology for the year 1892.

Am. Geol., vol. xi, pp. 388–393.

Contains a list of papers bearing on North American vertebrate paleontology for the year 1892.

F.

302*a* **Faber** (Charles), **Miller** (S. A.) and. Description of some sub-Carboniferous and Carboniferous Cephalopoda.

See Miller (S. A.) and Faber (C.), 671.

303 **Faber** (Charles), **Miller** (S. A.) and. Some new species and new structural parts of fossils.
Cinn. Soc. Nat. Hist. Jour., vol. xv, pp. 79–87.

304 **Fairbanks** (Harold W.). Geology and mineralogy of Shasta County [California].
Cal. State Min. Bur., 11th Rept., pp. 24–53.
Describes the lithologic character and distribution of the Cretaceous and metamorphic rocks in this county, with notes on the occurrence of coal seams and of the precious metals. Accompanied by colored geologic map.

305 —— Notes on the geology and mineralogy of portions of Tehama, Colusa, Lake, and Napa counties [California].
Cal. State Min. Bur., 11th Rept., pp. 54–75.
Describes the Cretaceous and crystalline rocks of these counties, with notes on some of their mineral deposits.

306 —— Geology of San Diego County; also of portions of Orange and San Bernardino counties [California].
Cal. State Min. Bur., 11th Rept., pp. 76–120.
Contains description of the crystalline, Cretaceous, Tertiary, and Quaternary rocks in these counties, with notes on some mineral deposits, and accompanied by a colored geologic map.

307 —— The relation between ore deposits and their inclosing walls.
Eng. and Min. Jour., vol. lv, p. 200.
Describes the Mother Lode of California, and discusses the question whether certain wall rocks indicate rich mines and whether the metals are derived from such walls or from deep-seated regions. Concludes that mineral deposits usually occur in regions of great disturbance, producing chemical action and access upward of mineral bearing solutions through existing fissure systems.

308 —— The validity of the so-called Wallala beds as a division of the California Cretaceous.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 473–478.
Reviews the evidences upon which the Wallala beds are separated from the Chico and Shasta series. Gives the results of observations in Lower California, and in southern California and concludes that the evidence does not warrant the separation of the Shasta beds from the Chico.

309 —— The pre-Cretaceous age of the metamorphic rocks of the California Coast ranges.
Am. Geol., vol. ix, pp. 153–166.
Quotes the opinions of other writers on the age of these rocks. Describes the structural conditions and fossil contents of the strata in this region, and concludes that the Coast ranges and Sierras were upheaved and metamorphosed prior to the Cretaceous, and, therefore, the gold-bearing slates are pre-Cretaceous.

310 **Fairbanks** (Harold W.). Notes on a further study of the pre-Cretaceous rocks of the California Coast ranges.

Am. Geol., vol. xi, pp. 69–84, with map.

Describes the general character and structure of the formations represented in the Coast ranges from the author's recent observations. Refers to the finding of Inoceramus in the San Francisco sandstones and Aucella in the metamorphic rocks and its bearing on the Cretaceous age of the beds. Concludes that the axes of the Coast ranges and Sierras are structurally closely related and were first raised during the Post-Jurassic upheaval.

311 —— Notes on the occurrence of rubellite and lepidolite in southern California.

Science, vol. xxi, pp. 35–36.

Abstract: Am. Nat., vol. xxvii, p. 1091, 5 l.

Gives a brief account of the geology of the locality in which this mineral association occurs and a description of their mineralogic characters.

312 **Fairchild** (H. L.). A section of the strata at Rochester. N. Y., as shown by a deep boring.

Roch. Acad. Sci., Proc., vol. i, pp. 182–186.

Abstract: Am. Nat., vol. xxvi, pp. 695–696.

Gives a table showing the correspondence of the exposed strata and the first part of the well record, followed by a condensed section of the well boring. Compares the published and measured records of rocks in this vicinity with those of the well record.

313 **Farish** (John B.). The ore deposits of Newman Hill [Rico, Colo.].

Colo. Sci. Soc., Proc., vol. iv, pp. 151–164.

Min. and Sci. Review, vol. xxviii, No. 26, p. 4, vol. xxix, No. 1, pp. 4–5 and No. 2, pp. 4–5.

Describes the geologic features of the locality and the structural and mineralogic characteristics of the ore bodies.

314 **Farnsworth** (P. J.). The Great Lake basins.

Science, vol. xx, p. 74.

Discusses the evidences as to the origin of these lake basins.

315 **Fechet** (Eugene O.). The mines of Sierra Mojada, Mexico.

Eng. and Min. Jour., vol. lv, pp. 151–152.

Describes the general topographic and geologic features of the region. The ore bodies occur in a Cretaceous limestone and their mineral contents are principally silver, lead, and copper.

316 **Felix** (J.) and **Lenke** (H.). Beitrage zur geologie und paleontologie der Republik Mexico.

Part i, Leipzig, 1890; part iii, Stuttgart, 1891.

Abstract: Am. Geol., vol. x, pp. 120–121.

317 —— Ueber die tektonischen Verhältnisse der Republik Mexico.

Zeit. Deut. geol. Gesell., Band xliv, Heft 2, 1892, pp. 303–323.

Describes the topographic and geologic structure of the mountain ranges and plateau of Mexico. Considers that the volcanoes owe their origin to and are arranged along certain definite fissure systems.

318 **Fenner** (Clarence). The Old Telegraph Mine, Bingham Canyon, Utah.

School of Min. Quart., vol. xiv, pp. 354–358.

Describes the character and structure of the ore bodies in this mine.

319 **Ferrier** (W. F.). Notes on the microscopical character of some of the rocks of the counties of Quebec and Montmorency.

Can. Geol. Surv., Reports, vol. v, new ser., part i, 1890–91, Report L, appendix, pp. 73–82.

Quotes Dr. Adams's scheme for the classification of the rocks of the gabbro family and describes the megascopic and microscopic characters of hornblende-granite-gneiss, mica-diorite-gneiss, anorthosite, norite, gabbro-gneiss, and pyroxenite-granite-gneiss.

320 **Fisher** (Osmond). Rigidity not to be relied upon in estimating the earth's age.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 464–468.

Reviews the paper by Clarence King, "The age of the earth," and quotes from other writers concerning the tidal rigidity of the earth. Concludes that rigidity can not be relied upon as furnishing data from which to estimate the earth's age.

321 **Fletcher** (Hugh). Report on the geological surveys and explorations in the counties of Pictou and Colchester, Nova Scotia.

Can. Geol. Surv., Reports, vol. v, new ser., part ii, 1890–91, Report P, p. 193.

The formations of the region range from the post-Tertiary to the Cambro-Silurian and are cut by dikes and sheets of igneous rocks. Describes sections shown at various points, the deposits of coal and iron, and the traces of lead and copper that were found.

322 **Foerste** (Aug. F.). Studies on the Chipola Miocene of Bainbridge, Ga., and of Alum Bluff, Fla., with an attempt at correlation of certain Grand Gulf group beds with marine Miocene beds eastward.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 244–254.

Describes the general character and relations of the strata in this region, with special reference to exposures at Bainbridge and Alum Bluff. Presents a provisional list of Gasteropoda Gully species, showing their geologic and geographic distribution, with notes on the various species.

323 —— New fossil localities in the early Paleozoics of Pennsylvania, New Jersey, and Vermont, with remarks on the close similarity of the lithologic features of these Paleozoics.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 435–444.

Describes the general relations and lithologic character of the Cambrian and Silurian strata in the portions of the States mentioned and their fauna, as shown by the observations of various investigators. Discusses the correlation of the beds in the several districts, and presents a geologic sketch map of the portions of New Jersey and Vermont.

324 **Foerste** (Aug. F.). An examination of Glyptodendron Claypole, and of other so-called Silurian land plants from Ohio.

Am. Geol., vol. xii, pp. 133–141.

Discusses the characteristics of the specimens found in rocks of Clinton age in Ohio, said to be land plants. Considers that at present there is no evidence of the existence of land plants in the region of the Cincinnati anticlinal during Clinton time.

325 —— Remarks on specific characters in Orthoceras.

Am. Geol., vol. xii, pp. 232–236.

Describes some of the special characteristics of Orthoceras.

326 —— The reproduction of arms in orinoids.

Am. Geol., vol. xii, pp. 270–271, (½ p.) (correspondence).

327 **Fontaine** (William M.). Description of some fossil plants from the Great Falls coal field of Montana.

U. S. Nat. Mus., Proc., vol. xv, pp. 487–495, pls. lxxxii–lxxxiv.

Describes the general character of the flora represented and the characteristics of several new species.

328 —— Notes on some fossil plants from the Trinity division of the Comanche series of Texas.

U. S. Nat. Mus., Proc., vol. xvi, pp. 261–282, pls. xxxvi–xliii.

Abstract: Am. Geol., vol. xii, pp. 327–328.

329 **Foote** (A. E.). A new locality for meteoric iron, with a preliminary notice of the discovery of diamonds in the iron.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 279–283.

Describes the locality in Arizona and the specimens obtained, and remarks on the occurrence of small black diamonds in them.

330 —— Preliminary notice of a meteoric stone seen to fall at Bath, South Dakota.

Am. Jour. Sci., 3d ser., vol. xlv, p. 64.

Gives a brief description of the stone, illustrated by photograph, pl. iii.

331 **Forrester** (Robert). Coal fields of Utah.

U. S. Geol. Surv., Min. Res., 1892, pp, 511–520.

The Coal Measures of the Laramie group are best developed on the eastern slopes of the Wasatch and the beds attain a maximum thickness of 28 feet. Coal also occurs in the Montana and Colorado Cretaceous. Gives analyses of coal from different localities.

332 **Forstall** (A. E.). The origin of coal and petroleum.

Sci. Amer. Suppl., vol. xxxiv, pp. 13796–13797.

Gives an account of the conditions existing during the formation of coal and petroleum and reviews the literature on the question of their origin.

333 **Freeland** (Francis T.). Fault rules.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 491–502.

Discusses the general characteristics of fault phenomena and gives a number of rules to be followed in mining where faults occur and a bibliography of the subject.

334 **Fuller** (Homer T.). Effects of droughts and winds on alluvial deposits in New England.

Geol. Soc. Am., Bull., vol. iii., pp. 148–149.

Describes terraces once covered with vegetation, but which are now almost entirely denuded, and states that the wind striking them at an angle carries the sand to the nearest lower spot to the leeward.

G.

335 **Gannett** (Henry). The mapping of the United States.

Scottish Mag., vol. viii, pp. 150–153.

Gives a history of the various surveying expeditions that have been made in the United States and a brief account of the character of the topographic maps now being executed by the U. S. Geological Survey.

336 **Garside** (G. W.). The mineral resources of southeast Alaska.

Min. and Sci. Review, vol. xxx, No. 7, pp. 4–5, and No. 8, pp. 4–5; Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 815–823.

Abstract: Eng. and Min. Jour., vol. lv, pp. 175–176.

Describes the character and value of the precious metal ores found in the several districts of this region, accompanied by sketch map of a part of Alaska, showing mineral belt.

337 **Gaudry** (M. Albert). Excursion dans les Montagnes rocheuses.

Soc. Géol. de France, Bull., 3d ser., vol. xix, No. 12, pp. 936–942.

Gives a general geologic description of the route traversed by an excursion composed of members of the Fifth International Congress of Geologists, crossing many of the Eastern, Middle, and Western States of the United States, and includes a description of the mammalian and other fossil faunas found in some of the Western States.

338 —— Similitudes dans la marche de l'évolution sur l'ancien et le nouveau continent.

Soc. Géol de France, Bull., 3d ser., vol. xix, No. 12, pp. 1024–1035.

Compares the characteristics of certain American faunas with those of Europe, and discusses the changes that have taken place in each and their relation to the progress of evolution.

339 **Geer** (Gerard de). On Pleistocene changes of level in eastern North America.

Am. Geol., vol. xi, pp. 22–44; Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 454–477.

Gives a general statement of the methods and results of the author's investigations in Europe and North America. Considers that continental changes of level are closely connected with the local structure of the earth's crust and that no changes in the level of the sea can account for the phenomena.

340 —— Isobases of the post-Glacial elevation.

Am. Geol., vol. ix, pp. 247–249.

Gives an account of the author's observations of the glacial deposits in various parts of the United States and Canada.

341 —— Quaternary changes of level in Scandinavia.

Geol. Soc. Am., Bull., vol. iii, pp. 65–68, with map.

Describes the author's methods of determining the marine boundary and gives the results of his observations.

342 **Geikie** (James). Glacial geology.
Smith. Inst., Ann. Rept., 1890, pp. 221-230.
Discusses the general conclusions of investigators of glacial phenomena and deposits in different portions of the world.

343 —— Address as president of the Section of Geography.
Brit. Assoc. Adv. Sci., Report 1892, pp. 794-810; Scottish Geog. Mag., vol. viii, pp. 457-479.
Describes the geographic development of coast lines and the orographic movements that have influenced their location and direction in North America and other parts of the earth.

344 **Genth** (Frederick A.). Contributions to mineralogy.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 184-189.
Notes on hübnerite, hessite, bismutite, and natrolite.

345 —— On penfieldite, a new species.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 260-261 (correspondence).

346 —— Contributions to mineralogy, No. 54, with crystallographic notes by S. L. Penfield.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 381-389.
Notes on aguilarite, metacinnabarite, löllingite, rutile, quartz from the alteration of orthoclase, danalite, yttrium-calcium fluoride, cyrtolite, lepidolite, and fuchsite.

347 —— On the "anglesite" associated with boléite, No. 55.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 32-33.
Abstract: Am. Nat., vol. xxvi, p. 1090.
Gives the crystallographic characters of the crystals examined and two chemical analyses.

348 —— The minerals of North Carolina.
U. S. Geol. Surv., Bull. No. 74.
Abstract: Am. Geol., vol. ix, p. 342 (⅓ p.).

349 **Gibson** (A. M.). Report on the Coal Measures of Blount Mountain, with map and sections.
Ala. Geol. Surv., 1893, pp. 7-80.
Describes the topography and geologic structure of the region and the stratigraphy of the lower and upper Coal Measures, with a detailed description of the coal seams. Discusses the correlation of the various seams and gives chemical analyses of some of the coals.

350 **Gilbert** (Grove Karl). Discussion of the papers "Relationship of the glacial lakes, Warren, Algonquin, Iroquois, and Hudson-Champlain," and the two papers by J. W. Spencer, "The Iroquois shore north of the Adirondacks" and "Channels over divides not evidence per se of glacial lakes."
Geol. Soc. Am., Bull., vol. iii, pp, 492-494.
Reviews the descriptions given in the above-named papers and concludes that the Iroquois lake was bounded on the northeast by a wall of ice and that its surface level was determined by the altitude of a divide near Rome. Concerning the terraces mentioned in the last paper, considers there are certain features which indicate they are not littoral.

351 **Gilbert** (Grove Karl). Continental problems.

Geol. Soc. Am., Bull., vol. iv, pp. 179–190.

Abstracts: Am. Geol., vol. xii, pp. 118–119; Jour. of Geol., vol. i, pp. 204–205.

Differentiates the continental from the oceanic plateaus. Discusses the question of rigidity versus isostasy, the origin of the continental plateaus, the cause of continental movements of elevation and subsidence, and the permanence and growth of continents.

352 —— Post-Glacial anticlinal ridges near Ripley, N. Y., and near Caledonia, N. Y.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 249–250.

An examination of these ridges confirms the opinion previously expressed concerning certain other anticlinal ridges, that the phenomena are superficial. They are due to the sinking of the overlying Corniferous limestone by the removal of salt and gypsum by underground water.

353 **Goldsmith** (E.). Notes on some minerals and rocks.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 174–180.

Describes pimelite, asbeferrite, cacoxenite, amphibolite, phonolite, and granulite from various parts of Pennsylvania.

354 **Gorby** (S. S.). Limits of natural gas supply.

Eng. Mag., vol. v, pp. 419–426.

Discusses the evidences which indicate the organic origin of natural gas.

355 —— Geology of Miami County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 165–188.

Describes the topographic features of the county, the character of the drift mantle and the Devonian and Silurian limestones, and gives sections displayed by various gas wells.

356 —— Natural gas and petroleum.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 189–301.

In tabular form gives the thicknesses of the Paleozoic formations found in Indiana. Discusses the origin of natural gas, its permanency of supply, and the theories concerning the structural conditions necessary for its accumulation. Includes a description of the structural features of the State and numerous sections as shown by well borings.

357 **Gordon** (C. H.). Quaternary geology of Keokuk, Iowa, with notes on the underlying rock structure.

Am. Geol. vol. ix, pp. 183–190, three sections.

Gives a vertical section of the beds at this locality. Describes the glacial deposits and loess formation in this region.

358 **Graham** (James C.). Some experiments with an artificial geyser.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 54–60.

Describes the apparatus used and refers to McKenzie's theory of a geyser eruption. Gives tables showing the temperature of materials used, time of eruptions, etc., and discusses the results obtained as bearing on the phenomena of soaping geysers.

359 **Grant** (Ulysses Sherman). The stratigraphic position of the Ogishke conglomerate of northeastern Minnesota.

Am. Geol., vol. ix, pp. 4–10.

Describes the composition of the conglomerate and quotes the views of other writers on its age. Describes the relations of the conglomerate to the Saganaga granite and to the Keewatin. Concludes that it is not a parallel of the Animike and that it is a part of but younger than most of the Keewatin.

360 —— Note on an augite soda-granite from Minnesota.

Am. Geol., vol. xi, pp. 383–388.

Describes the petrographic characters and gives the chemical composition of a type of granite from the Precambrian of northeastern Minnesota.

361 —— Note on quartz-bearing gabbro in Maryland.

Johns Hopkins Univ. Circ., vol. xii, pp. 47–49.

Abstracts: Am. Geol., vol. xi, p. 209, (⅓ p.); Am. Nat., vol. xxvii, p. 383, (⅓ p.).

Describes the petrographic characters of certain quartz gabbros of Maryland.

362 —— Field observations on certain granitic areas in northeastern Minnesota.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 35–110.

Gives field observations in different areas of the region, containing statements as to the general rock structures and a catalogue of specimens collected.

363 **Gregory** (J. W.). The relations of the American and European echinoid faunas.

Geol. Soc. Am., Bull., vol. iii, pp. 101–108.

Describes the characteristics of these faunas on the two continents, from the Carboniferous to and including the Tertiary, and concludes that their succession presents a series of phenomena incompatible with the theory of the permanence of the great ocean basins.

364 **Gresley** (W. S.). A hitherto undescribed phenomenon in hematite.

Am. Geol., vol. ix, pp. 219–223.

Discusses the origin of certain holes in a specimen of hematite.

365 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, p. 517 and p. 660 (correspondence).

Describes an occurrence of coal which shows from the vein material that there has been a movement of the walls inclosing it.

366 —— North American geological notes.

Manchester Geol. Soc., Trans., vol. xxi, part ii, pp. 68–74.

Includes notes on some peculiar formations in the roof of a coal seam in Illinois, the occurrence of fossil trees in Pennsylvania anthracite beds and on some bowlders found in Coal Measures in the North American anthracite region.

367 **Grimsley** (G. Perry). Microscopical study of Ohio limestones.

Cin. Soc. Nat. Hist. Jour., vol. xv, pp. 160–167.

Describes the limestone formations of the State, their microscopic structure and the characters of some of the contained fossils.

368 **Griswold** (Leon S.). The structure of the Ouachita uplift of Arkansas.

Abstract: Am. Assoc. Adv. Sci. Proc., vol. xl, p. 261.

The uplift is formed of closely folded Silurian strata between two broad belts of Lower Carboniferous rocks, and appears to form a continuation of the Appalachian system.

369 —— A basic dike in the Connecticut Triassic.

Harv. Mus. Comp. Zool., Bull., vol. xvi, pp. 239–242.

Gives a brief description of the locality of the dike and the microscopic characters of the dike rock (*fourchite* ?), and discusses the question as to the class to which it belongs.

370 —— Whetstones and novaculites of Arkansas.

Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 1–443, pls. i–ix.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 332 (¼ p.); Am. Nat., vol. xxvii, p. 42 (¼ p.).

Gives a general historical sketch of whetstones. Describes the megascopic and microscopic characters of Arkansas novaculites, their chemical composition and the topography and geology of the Arkansas novaculite area. Discusses their origin.

370*a* **Guiterman** (Franklin). [Origin of ore deposits.]

Col. Sci. Soc., Proc., vol. iv, pp. 347–348.

In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

371 **Gulliver** (F. P.). The Newtonville sand plain.

Jour. of Geol., vol. i, pp. 803–812.

Abstract: Am. Geol., vol. xii, p. 177 (¼ p.).

Describes the process of making the clay model of the map of the region, reproduced in fig. 1; and of another clay model of the supposed relations of the deposits, shown in fig. 2. Describes the origin and relations of the glacial beds.

372 **Gurley** (R. W.). The geologic age of the graptolite shales of Arkansas.

Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 401–404.

Discusses the evidences presented by the fossils found in these shales in their bearing on the geologic age of the formation and their correlation with other beds of similar horizons, viz., the Trenton and Calciferous.

373 —— New species of graptolites.

Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 416–418.

Brief description of new species from Arkansas.

374 **Gurley** (Wm. F. E.), **Miller** (S. A.) and. Description of some new genera and species of Echinodermata from the Coal Measures and sub-Carboniferous rocks of Indiana, Missouri, and Iowa.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 327–373.

Describes new species of Echinodermata from the Carboniferous.

H.

375 **Hague** (Arnold). Geology of the Eureka district, Nevada.

U. S. Geol. Surv., Monograph XX, pls. i-viii, figs. 1-9.

Abstracts: Am. Geol., vol. xii, pp. 264-266; Am. Jour. Sci., 3d ser., vol. xlv, pp. 161-163.

Describes the topographic and geologic features of the region and includes a discussion of the relations of land and water during Paleozoic time. Gives an account of volcanic action in this region and a description of the ore bodies and their mode of formation. Appendix A gives a list of fossils found in each formation and Appendix B is a discussion of the microscopic characters of the crystalline rocks.

376 **Hall** (Charles E.). Geological notes on the manganese ore deposit of Crimora, Va.

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 46-49.

The ore bodies lie in a basin at the base of the mountains formed of Potsdam sandstones, shales, and slates, in the former of which black oxide of manganese is disseminated and from which the ore appears to have been derived by seepage of surface waters.

377 —— The formation and deformation of Minnesota lakes.

Sci. Amer. Suppl., vol. xxxvi, pp. 14625-14626.

Describes the process of formation and deformation of the glacial lakes in Minnesota.

378 —— A review of the theories of the origin of the granitic rocks and the crystalline schists.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, p. 175.

Brief résumé of the theories of the origin of granite and allied rocks.

379 —— A vacation trip into the Black Hills of South Dakota.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 185-186.

Gives an account of the relations of the formations in this region.

380 —— The deep well at Minneota, Minn.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 248-250.

Brief description of the formations penetrated, and gives the section as shown by the well record.

381 —— Notes on a geological excursion into central Wisconsin.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 251-268.

Describes the microscopic and megascopic characters of the rock types in the region visited.

382 —— and **Sardeson** (F. W.). Paleozoic formations of southeastern Minnesota.

Geol. Soc. Am., Bull., vol. iii, pp. 331-368.

Abstracts: Am. Nat., vol. xxvii, p. 144; Am. Geol., vol. x, pp. 182-183 (⅓ p.).

Describes the character of the Archean floor upon which the Upper Cambrian was deposited and the lithologic characters of the Magnesian series. The Lower Silurian is represented by the St. Peters sandstone, Trenton and Cincinnati limestones and shales, and the Devonian by siliceous limestones containing few fossils.

383 **Hall** (James). An introduction to the study of the genera of Paleozoic Brachiopoda, part i. Assisted by J. M. Clarke.

Nat. Hist. of N. Y. Paleontology, vol. viii, part i, pp. 1–367, pls. i–xx.

Describes genera and also some of the species of Brachiopoda.

384 —— An introduction to the study of the genera of Paleozoic Brachiopoda. Assisted by J. M. Clarke.

Nat. Hist. of N. Y. Paleontology, vol. viii, part ii, fascicle i, pp. 1–176.

Continues the review of the genera of Paleozoic Brachiopoda begun in part i.

385 —— An introduction to the study of Brachiopoda.

N. Y. State Mus., 45th Ann. Rept., pp. 455–616.

Abstracts: Am. Geol., vol. x, pp. 251–253; Am. Jour. Sci., 3d ser., vol. xliv, pp. 330–332.

Describes the general characters of the class, their habits of life and powers of locomotion, and includes a description of some of the genera.

386 —— Report of the State Geologist for the year 1891.

N. Y. State Mus., 45th Ann. Rept., pp. 323–345.

Gives a list of Devonian fossils found in the Livonia salt shaft.

387 **Hall** (W. S.). The South Dakota artesian basin.

Science, vol. xxii, pp. 29–30.

Discusses and illustrates by cross section the geology of South Dakota.

388 **Hallock** (William). Preliminary report of observations at the deep well at Wheeling, W. Va.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 234–236.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 257–259.

Gives a list of temperatures at various depths down to 4,500 feet, and a table of comparison with those of two other deep wells.

389 **Halse** (Edward). Notes on the occurrence of manganese ore near Mulegé, Baja California, Mexico.

North of Eng. Inst. of Min. and Mech. Engrs., Trans., vol. xli, pp. 202–307.

Abstract: Eng. and Min. Jour., vol. lv, pp. 223–225.

Describes veins of manganese ore in trachyte and gives chemical analyses of some specimens. The ore occurs as filling of superficial vein-like fissures and was probably derived from the trachyte by leaching.

390 **Harker** (Alfred). Thermometamorphism in igneous rocks.

Geol. Soc. Am., Bull., vol. iii, pp. 16–22.

Refers to the previous publication on this subject and describes the changes in the igneous rocks of the English lake district. Concludes that basic and intermediate lavas, when affected by weathering, are as easily changed by heat as argillaceous sediments; acid lavas and ashes may be very little modified by heat. Various feldspars, resulting from the rejuvenation of old feldspars or by recombinations of other minerals in the advanced stages of metamorphism, are abundant in the newly formed products.

391 **Harker** (Alfred). On the migration of material during the metamorphism of rock masses.

Jour. of Geol., vol. i, pp. 574–578.

Discusses the changes in rock masses which are due to thermal metamorphism. Considers that transference of material due to thermal causes is confined to narrow limits and this limit varies with the temperature.

392 **Harris** (Gilbert Dennison). The Tertiary geology of Calvert Cliffs, Maryland.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 21–31.

Gives the sections exposed by these cliffs at several localities, with a list of species found in each and map of the region.

393 —— Preliminary report on the organic remains obtained from a deep well at Galveston, together with conclusions respecting the age of the various formations penetrated.

Texas Geol. Surv., 4th Ann. Rept., pp. 117–119.

Gives in tabular form the bathymetric distribution of the fossils obtained from the well, from which the conclusions are drawn as to the geologic horizons represented, which are said to range from Pleistocene to Upper Miocene.

394 —— Correlation of Tejon deposits with Eocene stages of the Gulf Slope.

Science, vol. xxii, p. 97 (correspondence).

Remarks on similarity of the fauna found in the Eocene of the Gulf States, Texas, and California.

395 —— Republication of Conrad's fossil shells of the Tertiary formations of North America.

Abstract: Am. Geol., vol. xii, pp. 60–61.

395*a* —— **Dall** (W. H.) and. Correlation Papers. Neocene.

See Dall (W. H.) and Harris (G. D.), 216.

395*b* —— **Dumble** (E. T.) and. The Galveston deep well.

See Dumble (E. T.) and Harris (G. D.), 274.

396 **Harris** (T. W.). Mount Bob, Mount Ida, or Snake Hill.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 236–238.

Describes the formations of this hill in eastern New York as remnants of the Lower Helderberg group.

396*a* **Harrison** (J. B.), **Jukes-Brown** (A. J.) and. The geology of Barbados, part ii. The oceanic deposits.

See Jukes-Brown (A. J.) and Harrison (J. B.), 508.

397 **Hartwell** (E. Adams). The Pearl Hill pothole.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 421–425.

Describes the pothole as occurring in a bowlder of mica schist derived from a neighboring exposure of the same rock. Considers that it was formed by some glacial stream flowing down a crevasse.

398 **Hatcher** (J. B.). The Titanotherium beds.

Am. Nat., vol. xxvii, pp. 204–221.

Describes the geographic distribution of these beds, their lithologic composition and stratigraphic position, and discusses the character of the fauna by which they have been divided into lower, middle, and upper beds.

399 **Hatcher** (J. B.). The Ceratops beds of Converse County, Wyo.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 135-144.
Describes the geographic distribution of the Ceratops beds in this region, the lithologic character of the strata, and their stratigraphic position. Discusses the age of the Ceratops beds, as indicated by the fossils, and the probable conditions attending their deposition.

400 **Haworth** (Erasmus). The age and origin of the crystalline rocks of Missouri.
Mo. Geol. Surv., Bull. No. 5.
Review: Am. Geol., vol. ix., pp. 55-56 (⅔ p.).
This paper is principally devoted to giving the evidence of the eruptive origin of the crystalline rocks of Missouri, and adds confirmatory evidence of their assumed Archean or Prepaleozoic age.

401 —— Prismatic sandstone from Missouri.
Science, vol. xix, p. 58; Iowa Acad. Sci., Proc., vol. i, part ii, pp. 36-37.
Describes an occurrence of sandstone of a prismatic form resembling basaltic columns.

402 —— Notes on Missouri minerals.
Iowa Acad. Sci., Proc., vol. i, part ii, pp. 33-35.
Describes occurrences of melanite in a basic dike rock and of limonite pseudomorphs after calcite.

403 **Hay** (Robert). Geology and mineral resources of Kansas.
Kans. State Board of Agric., 8th Biennial Rept., 1891-92, pp. 99-162.
Describes the topographic features and lithologic character and the relations of the Carboniferous, Cretaceous, Tertiary and Post-Tertiary formations in the State, including an account of the lead and zinc, coal, salt, and other mineral deposits.

404 —— Notes on some new species of fossil cephalopods.
Kans. Acad. Sci., Trans., vol. xiii, pp. 37-47.
Description of species occurring in the Carboniferous and Permo-Carboniferous of Kansas.

405 —— Some characteristics of the glaciated area of northeastern Kansas.
Kans. Acad. Sci., Trans., vol. xiii, pp. 104-106.
Describes the glacial deposits and phenomena of this region.

406 —— Sandstone dikes in northwestern Nebraska.
Geol. Soc. Am., Bull., vol. iii, pp. 50-55, figs. 1-5.
Briefly describes the geologic formations of the region and states the width and direction of the two dikes.

407 —— A contribution to the geology of the Great Plains.
Geol. Soc. Am., Bull., vol. iii, pp. 519-521.
Abstract: Am. Geol., vol. xi, pp. 56-57.
The surface of the plains area consists of calcareous and arenaceous clays of Tertiary age which may grade into Post-Pliocene to the east.

408 **Hayes** (C. W.). An expedition through the Yukon district.

Nat. Geog. Mag., vol. iv, pp. 117-159.

Describes the character of the country traversed and its general orographic features. The sedimentaries are limestones, shales, sandstones, quartzites, and conglomerates. The igneous rocks are mainly basic, largely altered to serpentine, and granites. Placer gold is widely disseminated and copper occurs at several localities. Describes the recent volcanic phenomena and the general features of the glaciation of the region.

409 —— Notes on the geology of the Yukon basin.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 495-496; Am. Geol., vol. xi, pp. 58-59 (½ p.).

410 —— Report on the geology of northeastern Alabama and adjacent portions of Georgia and Tennessee.

Ala. Geol. Surv., Bull. No. 4, pp. 11-85, pl. i, map and structure sections, figs. 1-15.

Abstracts: Jour. of Geol., vol. i, pp. 98-99; Am. Nat., vol xxvii, pp. 34-35 (½ p.); Am. Geol., vol. x, pp. 322-323 (½ p.).

Describes the topographic features of the district, its drainage systems, the stratigraphy of the Cambrian, Silurian, Devonian, and Carboniferous strata and their structural relations.

411 —— Chattanooga sheet. (Tennessee.)

U. S. Geol. Surv., Geol. map of the U. S., Preliminary edition, 1892.

Describes the topography of the area, the character and relations of the Cambrian, Silurian, Devonian, and Carboniferous formations, their structure, and the mineral resources. Accompanied by topographic, colored areal and economic and structure section maps and a sheet of columnar sections.

412 —— Kingston sheet. (Tennessee.)

U. S. Geol. Surv., Geol. map of the U. S., Preliminary edition, 1892.

Describes the topography of the area, the character, structure, and relations of the Cambrian, Silurian, Devonian, and Carboniferous rocks, the mineral resources and soils. Accompanied by topographic, colored areal and economic geologic and structure section maps.

413 ——Ringgold sheet. (Tennessee and Georgia.)

U. S. Geol. Surv., Geol. map of the U. S., Preliminary edition, 1892.

Describes the topography of the region, the stratigraphy of the Cambrian, Silurian, Devonian, and Carboniferous rocks, their structure and mineral resources. Accompanied by topographic, colored areal and economic geologic and structure section maps.

414 —— Bauxite.

U. S. Geol. Surv., Min. Res., 1893, pp. 159-167.

Describes the geologic structure of the Cambrian and Silurian formations in which the deposits are found in the Appalachian province and the forms of the ore bodies, and discusses their origin.

414*a* —— **Willis** (B.) and. Conditions of Appalachian faulting.

See Willis (B.) and Hayes (C. W.), entry 1060.

415 **Headden** (William P.). Kehoeite, a new phosphate from Galena, Lawrence County, South Dakota.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 22-25.

Describes the mineralogic characters and chemical composition of a new substance for which the name kehoeite is proposed. Includes a note on jarosite.

416 **Headden** (William P.). Stannite and some of its alteration products from the Black Hills, S. Dak.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 105–110.

Describes the megascopic characters of a specimen found in a mine, containing mica. Gives a description of the alteration products and a chemical analysis of the mineral.

417 **Heilprin** (Angelo). The geology and paleontology of the Cretaceous deposits of Mexico.

Review: Am. Geol., vol. x, p. 121 (½ p.).

Noticed in Record for 1891.

418 **Heinrich** (Carl). Zinc-blende mines and mining near Webb City, Missouri.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 3–25.

Abstract: Eng. and Min. Jour., vol. liii, pp. 594–595.

The ore bodies occur in Subcarboniferous limestones, overlaid by bituminous clay, calcareous slates and shales, and are found at intervals over a considerable area. Describes the character and structure of the ore deposits.

419 **Henderson** (C. Hanford). Mica and mica mines.

Eng. and Min. Jour., vol. lv, p. 4.

Describes briefly the general characteristics and manner of occurrence of mica, with remarks on the mica veins of North Carolina.

420 **Hershey** (Oscar H.). The Utica shale in Stephenson County, Illinois.

Science, vol. xxii, p. 202.

Gives a generalized section of the Cincinnati group of this county, and describes its lithologic characteristics.

421 —— The Pleistocene rock gorges of northwestern Illinois.

Am. Geol., vol. xii, pp. 314–323.

Describes the rock gorges of this region and discusses the cause of their formation. Includes an account of the gorge cutting during the glacial period.

422 **Herzer** (H.). A new fungus from the Coal Measures.

Am. Geol., vol. xi, pp. 365–366.

Describes the fungus found in Zoar limestone, Tuscarawas County, Ohio.

423 —— A new tree from the Carboniferous rocks of Monroe County, Ohio.

Am. Geol., vol. xi, pp. 285–286.

Describes a new genus and species of Endogen.

424 —— A new fungus from the Coal Measures.

Am. Geol., vol. xii, pp. 289–290.

Describes a new fungus from Ohio.

425 **Hicks** (Lewis Ezra). Some elements of land sculpture.

Geol. Soc. Am., Bull., vol. iv, pp. 133–146.

Abstract: Am. Geol., vol. xi, p. 412, 6 l.

Discusses some principles of erosion processes.

426 —— The evolution of the Loup rivers in Nebraska.

Science, vol. xix, pp. 59 and 137.

Describes briefly the topographic features of the region.

427 **Hicks** (Lewis Ezra). Readjustments of the Loup rivers; examples of abstraction due to unequal declivities.

Science, vol. xix, pp. 288–290.

Discusses the question of the efficiency of abstraction to account for the capture of one stream by another and the changes which have taken place in the courses of the Loup rivers.

428 —— The geological structure and surface features of the region drained by the Loup rivers.

Neb. State Board of Agric., Ann. Rept. for 1892, pp. 337–359.

Describes the topographic features and the general character of the Tertiary beds of the Loup region.

429 **Hidden** (William Earl). On mackintoshite, a new thorium and uranium mineral; with analyses by W. F. Hillebrand.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 98–103.

Describes a new mineral from Texas and gives the chemical analyses of the material and a discussion of the composition.

430 —— Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 254–257.

Describes xenotime from North Carolina and jarosite from New Mexico.

431 —— and **Hillebrand** (W. F.). Description of rowlandite.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 208–212.

Describes the mineralogic characters of rowlandite from Llano County, Tex., including chemical analyses and a discussion of composition.

432 **Hilgard** (Eugene W.). The age and origin of the Lafayette formation.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 389–402.

Describes the beds as being predominately a ferruginous sand and the structure similar to that resulting from running and violently agitated waters. Extensive erosion preceded and followed its deposition. Discusses the evidence as to its geologic age and attributes the formation to a perion of high elevation, greater in northern latitudes.

433 —— The Cienegas of southern California.

Geol. Soc. Am., Bull., vol. iii, pp. 124–127.

Describes cienegas found in this region and the formations of which they are composed. Discusses their economic importance as a source of water supply.

434 —— Die Bodenverhältnisse Californiens.

Zeit. Deut. geol. Gesell., Band xlv, Heft 1, 1893, pp. 15–22.

Describes the general topographic and geologic features of California and discusses the evidence bearing on the character and extent of the various orographic movements.

435 **Hill** (R. T.). Paleontology of the Cretaceous formation of Texas. The invertebrate paleontology of the Trinity division.

Wash. Biol. Soc., Proc., vol. viii, pp. 9–40, pls. i–viii.

Reviews the literature on the stratigraphic divisions and nomenclature of the Comanche series. Describes the position and characteristics of the Trinity division. Discusses the general characters of the Trinity fossils and the age and significance of the Trinity beds, gives a list of fossils found in them and describes some of the species.

436 **Hill** (R. T.). The paleontology of the Cretaceous formation of Texas. The invertebrate fossils of the Caprina limestone beds.

Wash. Biol. Soc., Proc., vol. viii, pp. 97-108, pls. xii-xiii.

Describes the stratigraphic position of the Caprina limestone in the Comanche series, gives a list of characteristic fossils, discusses the age of the beds, and describes some of the species found in the Caprina limestone.

437 —— The occurrence of hematite and martite iron ores in Mexico.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 111-119.

Describes the geologic features of the Sierra de Mercado Mountain, in which the iron ore occurs, the occurrence of the ore bodies, and the chemical composition of the ore. Includes brief description of the iron ore bodies in other portions of Mexico occurring in rocks of Cretaceous and Tertiary age.

438 —— The Cretaceous formations of Mexico and their relations to North American geographic development.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 307-324.

Abstract: Am. Nat., vol xxvii, pp. 657-658.

Classifies the formations into four groups and describes the lithologic character and structure of the Cretaceous. Discusses the age and homotaxial relations of the Comanche series, the extent and history of its sedimentation, and includes a table showing the known positions of the Comanche series and related formations in Mexico.

439 —— The deep artesian boring at Galveston, Tex.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 406-409.

Gives the vertical section as shown by the boring, which shows, by the absence of consolidated material, that the beds are Post-Cretaceous. Sedimentation took place in shallow water, and it is considered that the total subsidence of the Eocene shore line has been about 3,000 feet.

440 —— Notes on the Texas-New Mexican region.

Geol. Soc. Am., Bull., vol. iii, pp. 85-100.

Describes the remnant of Eocene occurring in this region and its relations to the mountains and plains area. Includes description of the other geologic formations and the volcanic area of eastern New Mexico.

441 —— The geologic evolution of the non-mountainous topography of the Texas region. An introduction to the study of the Great Plains.

Am. Geol., vol. x, pp. 105-115.

Gives a general statement concerning the topographic features at the close of the Paleozoic. Describes the processes of elevation and subsidence during Mesozoic and Tertiary times and the formation of the drainage systems during and since the close of the Tertiary.

442 —— Mexico as an iron-producing country.

Eng. Mag., vol. iv, pp. 744-753.

Describes the occurrence of the iron ores of Moncliva and those in the States of Jalisco and Guerero.

443 **Hill** (R. T.). On the occurrence of artesian and other underground waters in Texas, eastern New Mexico, and Indian Territory west of the ninety-seventh meridian.

Final Report of the Artesian and Underflow Investigation, part iii, Govt. Print. Office, Washington, 1892.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 333 (⅛ p.); Am. Nat., vol. xxvi, pp. 935-936.

Describes the general topographic and geologic features of the southwest portion of the United States, including a more detailed account of the Cretaceous beds.

444 —— Tucumcari.

Science, vol. xxii, pp. 23-25 (correspondence).

Refers to the writer's previously published opinions on the geology of Tucumcari and gives a vertical section of the mesa and a list of fossils which indicate the beds are of Cretaceous age.

445 **Hillebrand** (W. F.). Zinc-bearing spring waters from Missouri.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 418-422.

Describes the locality of the springs and gives chemical analyses of two samples.

445*a* —— **Hidden** (W. E.) and. Description of rowlandite.

See Hidden (W. E.) and Hillebrand (W. F.), 430.

446 **Hills** (R. C.). Coal fields of Colorado.

U. S. Geol. Surv., Min. Res., 1892, pp. 319-365.

The Coal Measures are of Upper Cretaceous age. The character of the coal shows great variations dependent on certain structural conditions and on the intrusion of eruptive masses. Describes the geographic and stratigraphic features of the various coal fields and gives analyses of the coals.

446*a* **Hills** (R. C.) Denver artesian basin.

Colo. Sci. Soc., Proc., vol. iv, p. 6 (½ p.).

In discussion of paper by P. H. van Diest, "On the artesian wells of Denver."

446*b* —— Remarks on the classification of the Huerfano Eocene.

Colo. Sci. Soc., Proc., vol. iv, pp. 7-9.

Refers to the author's former classification of these beds and discusses the evidences on which this classification is based.

446*c* —— Types of past eruptions in the Rocky Mountains.

Colo. Sci. Soc., Proc., vol. iv, pp. 14-32.

Includes brief remarks on the Pretertiary and Cenozoic eruptions in this region. Describes the structure of the Sangre de Christo, Henry, and La Plata mountains and the Spanish Peaks as being formed by intrusive bodies, and of the San Juan Mountains, the White River Plateau, Raton and Uinkaret mountains and Mount Taylor as being made up of extrusive bodies. Gives a table of the intrusive, extrusive, and tufaceous rocks, and describes briefly their distribution.

446*d* —— Twin crystals of selenite.

Colo. Sci. Soc., Proc., vol. iv, p. 32 (⅛ p.).

Brief note on the crystallographic character of selenite crystals said to have been found in a cave near Fort Stanton, N. Mex.

446*e* **Hills** (R. C.) [Post-Laramie beds of Middle Park, Colorado.]
Colo. Sci. Soc., Proc., vol. iv, pp. 213-214.
In discussion of paper by Whitman Cross on the same subject.

446*f* —— [Origin of ore deposits.]
Colo. Sci. Soc., Proc., vol. iv, pp. 351-353.
In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

447 **Hitchcock** (C. H.). Terminal moraines in New England.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, pp.173-175.
Locates the line of terminal moraines as determined by the author.

448 —— Studies of the Connecticut Valley glacier.
Geol. Soc. Am., Bull.. vol. iv., pp. 3-4.
Describes certain glacial phenomena in this region.

449 —— The Green Mountains anticlinal.
Science, vol. xx, p. 328.
Reviews previous publications on the geology of the Green Mountains. Describes the rock structure and relations to the anticlinal structure.

450 **Hobbs** (William H.). Notes on some pseudomorphs from the Taconic region.
Am. Geol., vol. x, pp. 44-48.
Describes briefly the microscopic character and chemical composition of the minerals and the rocks in which they were found in Connecticut.

451 —— New occurrence of parallel intergrowths of the minerals allanite and epidote.
Am. Geol., vol. xii., pp. 218-219.
Mentions several occurrences of this structure and refers specially to its occurrence in Maryland granites, described by C. R. Keyes.

452 —— Phases in the metamorphism of the schists of southern Berkshire.
Geol. Soc. Am., Bull., vol. iv., pp. 167-178.
Abstracts: Am. Geol., vol. xi, pp. 273-274 (½ p.); Am. Nat. vol. xxvii, p. 1087.
Describes the beds represented in the area and the origin and structure of the porphyritic constituents of the schists, and concludes that they originally formed part of a clastic rock and that the present structure is due to its partial recrystallization.

453 —— Secondary banding in gneiss.
Geol. Soc. Am., Bull., vol. iii, pp. 460-464.
Abstract: Am. Geol., vol, xi, pp. 59-60 (⅛ p.).
The secondary banding consists of straight banding parallel to the foliation and is due to an alternation of layers of different mineral composition, which gives the rock the appearance of ordinary sedimentation.

454 —— On some metamorphosed eruptives in the crystalline rocks of Maryland.
Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 156-160, pl. 1, figs. 1-3.
Gives an example of the metamorphism of gabbro into hornblende-gneiss and describes the general characteristics of the rock structures and their modifications in the vicinity of Baltimore.

455 **Hobbs** (W. H.). Note on cerussite from Illinois and Wisconsin.
Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 399-400.
Gives crystallographic measurements of certain specimens.

456 —— On the geological structure of the Mount Washington mass of the Taconic range.
Jour. of Geol., vol. i, pp. 717-736.
Reviews the previous work within the area and describes the lithologic characters of the four subdivisions of the Silurian represented. Explains the areal geologic map and sections illustrating the structure of the mountain mass.

457 —— The geological structure of the Hoosatonic Valley lying east of Mount Washington.
Jour. of Geol., vol. i, pp. 780-802.
Refers to the literature concerning the region. Describes the lithologic characters of the Silurian strata and the geologic structure of the area, illustrated by map and sections, with a description of the great Hoosatonic fault.

458. —— On intergrowth of hornblende with augite in crystalline rocks.
Science, vol. xx, p. 354.
Gives results of some recent observations.

458*a* —— **Culver** (G. E.) and. On a new occurrence of olivine diabase in Minnehaha County, S. Dak.
See Culver (C. E.) and Hobbs (W. H.), 199.

459 **Hobson** (J. B.) and **Wiltsee** (E. A.). Nevada County.
Cal. State Min. Bur., 11th Rept., pp. 263-318.
Describes briefly the geologic features of the Grass Valley district, with notes on some of its mines, and the Nevada City mining district, with notes on the quartz and drift gravel mines, and includes notes on mines in other mining districts in this county.

460 **Hodson** (W. G.). Shasta County.
Cal. State Min. Bur., 11th Rept., pp. 395-399.
Notes on some of the gold mines.

461 **Hodge** (James M.). The Big Stone Gap coal field.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 922-938 and 1005-1006.
Abstract: North of Eng. Inst. of Min. and Mech. Engrs., Trans., vol. xliii, part vi, appendices, p. 39 (¼ p.).
Describes the geology of the region, illustrated by sections of Little and Big Black Mountain and the geologic position of the different coal beds, with a statement as to the character of the coal found in each bed.

462 **Hoffman** (G. Christian). Chemical contributions to the geology of Canada from the laboratory of the Survey.
Can. Geol. Surv., Reports, vol. v, new series, Part II, 1890-91, Report R, p. 72.
Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 75-76.
Gives the locality from which each specimen was obtained and the chemical analysis of each of the different minerals, natural waters and ores mentioned.

463 **Hollick** (A.). The paleontology of the Cretaceous formation on Staten Island.

N. Y. Acad. Sci., Trans., vol. xi, pp. 96–102.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 259 (½ p.).

Gives a list of fossils found and describes the general character of the Cretaceous beds on this island.

464 —— Preliminary contribution to our knowledge of the Cretaceous formation on Long Island and eastward.

N. Y. Acad. Sci., Trans., vol. xi, pp. 222–237.

Reviews the literature on the Cretaceous of this region and describes plant remains found in Cretaceous clays.

465 —— Additions to the paleobotany of the Cretaceous formation on Staten Island.

N. Y. Acad. Sci., Trans., vol. xii, pp. 28–39.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 437 (½ p.).

Describes plant remains from the Cretaceous of Staten Island.

466 —— Plant distribution as a factor in the interpretation of geological phenomena, with special reference to Long Island and vicinity.

N. Y. Acad. Sci., Trans., vol. xii, pp. 189–202.

Describes the flora of New York, New Jersey, and New England and its relation to the geology of the region.

467 —— Paleobotany of the Yellow gravel at Bridgeton, N. J.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, pp. 177–178; Torr. Bot. Club, Bull., vol. xix, pp. 330–333.

468 —— A new fossil palm from the Cretaceous formation of Glen Cove, Long Island.

Torr. Bot. Club, Bull., vol. xx, pp. 168–169, pl. cxlix.

Describes Serenopsis kempii, n. gen.

468*a* **Hollick** (Arthur), **Kemp** (J. F.) and. The granite at Mounts Adam and Eve, Warwick, Orange County, N. Y.

See Kemp (J. F.) and Hollick (A.), 520.

469 **Holmes** (J. A.). Character and distribution of road materials.

Elisha Mitchell Sci. Soc., Jour., part ii, 1892, pp. 66–87.

Gives a table showing the coefficients of wear and crushing of different road materials. Describes those rocks which are suitable as road materials and their distribution in the Coastal Plain, Piedmont and Mountain regions of some of the Eastern and Southeastern States.

470 **Hopkins** (T. C.). The Eureka shale of northern Arkansas.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 256–257.

The shale occurs between the Silurian and Carboniferous and is widely but unequally distributed. The interval was marked by a depression of such depth that but little sediment was deposited during Upper Silurian and Devonian times.

471 **Houser** (Gilbert L.). Some lime-burning dolomites and dolomitic building stones from the Niagara of Iowa.

Iowa Geol. Surv., 1st Ann. Rept., 1892, vol. i, pp. 199–207.

Describes the character and chemical composition of the limestone and its exposures at different localities.

472 **Hubbard** (George C.). The cystidians of Jefferson County, Indiana.
Ind. Acad. Sci., Proc., 1891, p. 67.
Brief reference to locality where these fossils are found.

473 —— Hudson River fossils of Jefferson County, Indiana.
Ind. Acad. Sci., Proc., 1891, p. 68.
Includes list of species from this horizon.

474 —— The upper limit of the Lower Silurian at Madison, Indiana.
Ind. Acad. Sci., Proc., 1891, pp. 68-70.
Statement concerning the fossil evidence which indicates the line between the Upper and Lower Silurian in this locality.

474*a* **Hubbard** (Lucius L.), **Koenig** (G. A.) and. On powellite from a new locality.
See Koenig (G. A.) and Hubbard (L. L.), 562.

475 **Hulst** (D.). The iron ore deposits of a portion of the Menominee range, Michigan.
Abstract: Eng. and Min. Jour., vol. lv, p. 366.

476 **Hunt** (Alfred E.). Aluminum.
U. S. Geol. Surv., Min. Res., 1892, pp. 227-254.
Describes the deposits from which aluminum ores are obtained, the metallurgical processes involved in its reduction, and the properties of aluminum.

476*a* **Huntington** (Oliver W.), **Kunz** (G. F.) and. On the diamond in the Canyon Diablo meteoric iron and on the hardness of carborundum.
See Kunz (F.) and Huntington (O. W.), 568.

477 **Hyatt** (Alpheus). Jura and Trias at Taylorsville, California.
Geol. Soc. Am., Bull., vol. iii, pp. 395-412.
Abstracts: Am. Nat., vol. xxvii, pp. 470-471; Am. Jour. Sci., 3d ser., vol. xliv, p. 330 (½ p.); Am. Geol., vol. x, p. 183 (⅛ p.).
Names many of the species found in the Jurassic and Triassic formations and compares them with similar European species. From the facts cited it appears that the Jura occurs only in widely separated areas and that the deposits of Mount Jura furnish a larger number of fragments of the Jurassic system than any other known locality in the United States.

478 —— Carboniferous cephalopods. Second paper.
Texas Geol. Surv., 4th Ann. Rept., pp. 379-474.
Describes the method used in determining generic characters and explains the meaning of terms used and the plate of diagrams used to explain the terms more fully. Describes the genera and species of cephalopods from the Carboniferous of Texas.

479 —— The fauna of Tucumcari.
Am. Geol., vol. xi, p. 281 (⅛ p.) (correspondence).
Refers to criticisms by Jules Marcou.

480 —— Remarks on the Pinnidæ.
Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 335-346.
Gives a general description of the Pinnidæ.

I.

481 **Iddings** (Joseph Paxson). A dissected volcano of Crandall basin, Wyoming.

Jour. of Geol., vol. i, pp. 606–611.

Describes the general geologic structure of the region and the petrographic characters of the volcanic rocks, with remarks on the degrees of crystallization shown in rocks which occurred at approximately the same depth beneath the volcano, viz., 10,000 feet or more.

482 —— Genetic relationships among igneous rocks.

Jour. of Geol., vol. i, pp. 833–844.

Describes the differences and gradations in chemical and mineralogic composition of different varieties of igneous rocks, the consanguinities of rocks of the same petrographic province, the peculiarities which may distinguish the rocks of one province from those of another, and the general principle of magmatic differentiation which govern the differences and consanguinities.

483 —— The origin of igneous rocks.

Washington Phil. Soc., Bull., vol. xii, pp. 89–214, pl. ii.

Abstracts: Am. Geol., vol. xii, pp. 124–125; Am. Jour. Sci., 3d ser., vol. xliv, pp. 257–258; Am. Nat., vol. xxvii, pp. 40–42.

Gives a historical review of the literature of the subject. Discusses the evidence indicating the consanguinity of igneous rocks, the character, cause and results of the differentiation of molten magmas and the localization of volcanic phenomena. Concludes that the consanguinity of the various rocks of a natural group is shown by their mineralogic, chemical, and geologic relationships, and that the differentiation of a common magma is established by the geologic occurrence and order of eruption of the members of the group, and that this differentiation is of a chemico-physical nature. Eleven tables of rock analyses.

484 —— The eruptive rocks of Electric Peak and Sepulchre Mountain, Yellowstone National Park.

U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 577–664, pls. xlvi–liii.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 429 (½ p.).

Gives a geologic sketch of the region. Describes the diorite, porphyrite, and dike rocks of Electric Peak and the andesite, dacite, and tuff of Sepulchre Mountain, and discusses their correlation and classification as igneous rocks.

485 —— Microscopical petrography of the eruptive rocks of the Eureka district, Nevada.

U. S. Geol. Surv., Monograph XX, Appendix B, pp. 337–396.

Gives a petrographic description of the eruptive rocks of the Eureka district, including granite, andesite, dacite, rhyolite, and basalt.

486 —— On a group of volcanic rocks from the Tewan Mountains, New Mexico, and on the occurrence of primary quartz in certain basalts.

U. S. Geol. Surv., Bull. No. 66.

Abstract: Am. Geol., vol. ix, pp. 264–265 (⅛ p.).

486*a* **Indiana, Dept. of Geol. and Nat. Resources**, Seventeenth Report.

Abstract: Am. Geol., vol. xi, p. 349 (⅛ p.).

487 **Ingall** (E. D.). On the cherts and domolites of the Animikie rocks of Thunder Bay, Lake Superior.

Can. Rec. Sci., vol. v, pp. 29–38.

Describes the character of the cherts and dolomites and states that they apparently form interchangeable members of the series. Describes microscopic characters of several specimens, which show the alteration to have been by chemical action, unaccompanied by the more powerful forces of metamorphism.

488 **Ingalls** (W. R.). Aluminum in the United States.

Abstract: North of Eng. Inst. of Min. and Mech. Engrs., Trans., vol. xlii, p. 388.

488*a* **Iowa Geological Survey**, First Annual Report, 1890.

Abstracts: Am. Nat., vol. xxvii, pp. 985–987; Am. Jour. Sci., 3d ser., vol. xlvi, pp. 397–398; Am. Geol., vol. xii, pp. 337–339; Jour. of Geol., vol. i, pp. 747–751.

489 **Irving** (Roland Duer) and **Van Hise** (C. R.). The iron-bearing series of Michigan and Wisconsin.

U. S. Geol. Surv., Monograph XIX, pls. i–xxxvii, figs. 1–12.

Gives an account of previous geologic explorations in this region and their literature. Describes the relations of the formations, their character and extent, and the microscopic characters of the rocks examined in thin sections, including granites of the southern complex, cherty limestones, quartz and actinolitic slates and diabases. Discusses the origin of the rocks of the iron-bearing members and the position and concentration of the ore bodies.

490 —— The Penokee iron-bearing series of Michigan and Wisconsin.

U. S. Geol. Surv., 10th Ann. Rept., part i, pp. 341–507.

Abstract: Am. Geol., vol. ix, pp. 207–208.

Noticed in Record of 1891.

J.

491 **James** (James F.). Manual of the Paleontology of the Cincinnati group.

Cin. Soc. Nat. Hist., Jour., vol. xiv, pp. 45–72, and 149-163, and vol. xv, pp. 88–100 and 144–159.

Locates and describes species found in this group.

492 —— The preservation of plants as fossils.

Cin. Soc. Nat. Hist., Jour., vol. xv, pp. 75–78.

Describes briefly some of the modes of the preservation of plants as fossils.

493 —— Studies in problematic organisms, No. II. The Genus Fucoides.

Cin. Soc. Nat. Hist., Jour., vol. xvi. pp. 62–81.

Reviews the previous literature on the definition and classification of fucoids and gives a list of species now recognized.

494 —— Remarks on the Genus Arthrophycus Hall.

Cin. Soc. Nat. Hist., Jour., vol. xvi, pp. 82–86.

Reviews the literature describing this fossil and the question as to its generic designation.

495 **James** (James F.). Fossil fungi.

Cin. Soc. Nat. Hist., Jour., vol. xvi, pp. 94–100.

Contains a translation of a portion of an article published in the Revue Mycologique, April, 1893, from the French of M. Ferry, with remarks upon other papers concerning fungoid bodies.

496 —— Studies in problematic organisms. The Genus Scolithus.

Geol. Soc. Am., Bull., vol. iii, pp. 32–44.

Abstract: Am. Nat., vol. xxvi, pp. 240–242.

Refers to previous descriptions of Scolithus and gives a list of species of this genus described from North America, and considers that from this its geologic range appears to be from the Lower Cambrian to the Triassic.

497 —— The Cincinnati ice dam.

Am. Geol., vol. xi, pp. 199–202.

Describes certain glacial phenomena which indicate the existence of an ice dam at this locality during the Glacial period.

498 —— On the age of the Point Pleasant, Ohio, beds.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 283–284.

Reviews the opinions of other writers on the age of these beds. Describes the section at this point and considers there is no evidence to justify classifying them with the Trenton.

499 —— On problematic organisms and the preservation of algæ as fossils.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 284.

Considers that algæ are not included in the species referred to the class from lower rocks, and that the supposed tracks, trails, and burrows are more likely due to inorganic causes.

499*a* **Jefferis** (William W.), **Rand** (T. D.) and **Cardeza** (J. T. M.). Mineral localities of Philadelphia and vicinity.

See Rand (T. D.), Jefferis (W. W.) and Cardeza (J. T. M.), 771.

500 **Johnson** (Guy R.). Methods of working and surveying the mines of the Longdale Iron Company, Virginia.

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 96–107.

This ore body is occasionally overlain by Helderberg limestone, and the latter is overlain by Devonian shale. Describes the method of opening the ground and of surveying the mines.

501 **Johnson** (Lawrence C.). The Grand Gulf formation.

Science, vol. xx, pp. 151 and 247.

Describes the Pascagoula embayment, and states that it is a branch of the great Mississippi embayment.

502 —— The Miocene group of Alabama.

Science, vol. xxi, pp. 90–91.

Describes the occurrence of Miocene strata at various localities in Alabama.

503 —— Notes on the geology of Florida; two of the lesser but typical phosphate fields.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 497–503.

Describes the general character of the strata of Eocene and Miocene age, and the plate rock deposits, including a discussion as to the origin of the latter deposits.

504 —— The Chattahoochee embayment.

Geol. Soc. Am., Bull., vol. iii, pp. 128–133.

This embayment is an extension of the bay of Apalachee, and the deposits are very impure limestones. They form the base upon which lie the phosphates of the region. Gives sections of the beds at several localities.

505 **Jones** (Arthur J.). St. Louis limestone in Poweshiek County, Iowa.

Science, vol. xxii, p. 307 (correspondence).

Mentions the finding of exposures of St. Louis limestone in this county.

505*a* **Jones** (J. T.), **Winchell** (H. V.) and. The Biwabik mine.

See Winchell (H. V.) and Jones (J. T.), 1067.

506 **Jones** (T. Rupert). On some fossil Ostracoda from southwest Wyoming and from Utah, U. S. A.

Geol. Mag., dec. iii, vol. x, pp. 385–391.

Describes some species from the Cretaceous of Wyoming and Utah.

507 **Jordan** (E. T. J.). The gas area.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 328–364.

Describes the general extent of the gas area in Indiana, the occurrence of gas, and the conditions which govern its production.

508 **Jukes-Browne** (A. J.) and **Harrison** (J. B.). The geology of Barbados. Part II. The oceanic deposits.

Geol. Soc. Quart. Jour., vol. xlviii, pp. 170–226.

Discusses the evidences of the submergence of the Caribbean region and Central America in Pliocene time and considers that there was free communication between the Atlantic and the Pacific during the late Tertiary.

K.

509 **Keith** (Arthur). The geologic structure of the Blue Ridge in Maryland and Virginia.

Am. Geol., vol. x, pp. 362–368.

The sedimentary rocks consist of the valley limestone and the shales and sandstones of the mountain region, the sequence being in the order given from the top downward. Describes the stratigraphic and structural relations of the igneous and sedimentary rocks.

510 —— Geology of Chilhowee Mountain in Tennessee.

Washington Phil. Soc., Bull., vol. xii, pp. 71–88, pl. i.

States that the structure is synclinal and the mountain is formed of the oldest sedimentary rocks. Discusses the lithologic evidences bearing on the age of the limestone series and the contact relations of the beds. Concludes that the Chilhowee-Knox interval indicates that the Appalachian folding and faulting began after the deposition of the first Paleozoic beds instead of the last.

511 **Kellogg** (D. S.). Glacial phenomena in northeastern New York.

Science, vol. xix, p. 341.

Describes some glacial deposits in this region.

512 **Kemp** (J. F.). The great shear-zone near Avalanche Lake, in the Adirondacks.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 109–114.

Describes the region in which it occurs and the general mineralogic characteristics of the rock of the shear-zone and of the country rock.

534 **Keyes** (Charles Rollin). Geological formations of Iowa.
Iowa Geol. Surv., 1st Ann. Rept., 1892, vol. i, pp. 13–144.
Gives the general geologic section of Iowa. Describes the lithologic characters and relations of the Cambrian, Silurian, Devonian, and Carboniferous strata, with more detailed description of the Coal Measures, Cretaceous, and Quaternary formations. Accompanied by colored geologic map of the State and sections.

535 —— Annotated catalogue of minerals.
Iowa Geol. Surv., 1st Ann. Rept., vol. i, 1892, pp. 183–196.
Contains a list of minerals found in Iowa, with brief notes on their occurrence and mineralogic characters.

536 —— Bibliography of Iowa geology.
Iowa Geol. Surv., 1st Ann. Rept., vol. i, 1892, pp. 211–464.
Gives a list of papers treating of the geology of Iowa.

537 —— The Platyceras group of Paleozoic gasteropods.
Am. Geol., vol. x, pp. 273–277.
Mentions the difficulties which attend an attempt at separation of certain members of this group, gives a list of American platycerata assigned to each of three easily recognized groups, and describes the growth of the gasteropod shell.

538 —— The present basal line of delimitation of the Carboniferous in northeastern Missouri.
Am. Geol., vol. x, pp. 380–384.
Discusses the fossil evidences found in the Kinderhook beds, which, though hitherto assigned to the Lower Carboniferous, yield fossils of Devonian facies. Considers that there is marked unconformity between the Carboniferous and Devonian instead of the regular sequence of strata heretofore assumed.

539 —— The unconformity of the Coal Measures and the St. Louis limestone in Iowa.
Am. Geol., vol. xii, p. 99–102.
Describes briefly the lithologic character of the Carboniferous rocks and the movements of elevation and subsidence occurring during their deposition.

540 —— A new locality for millerite.
Am. Geol., vol. xi, p. 126.
Remarks on an occurrence of millerite in geodes in Keokuk limestone.

541 —— The principal Mississippi section.
Geol. Soc. Am., Bull., vol. iii, pp. 283–300.
Abstracts: Am. Geol., vol. x, p. 125 (⅓ p.); Am. Nat., vol. xxvi, p. 1027.
Gives the section at several localities. Divides the rocks into the Kinderhook, Osage, St. Louis, and Kaskaskia groups. Describes the lithologic character of the beds and their geologic structure.

542 —— Some Maryland granites and their origin.
Geol. Soc. Am., Bull., vol. iv, pp. 299–304.
Mentions localities where the granites occur, reviews the two theories of the origin of these granites, and discusses the evidence bearing on this question.

543 —— Epidote as a primary component of eruptive rocks.
Geol. Soc. Am., Bull., vol. iv, pp. 305–312.
Describes the occurrence and characteristics of epidote-bearing rocks and its mineralogic associate, allanite, and the character and abundance of epidote in Maryland granites.

544 **Keyes** (Charles Rollin). Sketch of the coal deposits of Iowa.

U. S. Geol. Surv., Min. Res., 1892, pp. 398–404.

Describes the strata in which the coal seams occur and states that they cover nearly one-third the surface of the State. The coal basins are thicker in the center and gradually become attenuated toward the margins.

545 —— An old volcanic eruption in Iowa.

Science, vol. xxi, p. 132.

Describes the occurrence of a basic rock of eruptive origin and mentions an occurrence of quartz-porphyry in the same region.

546 —— "Nickel ore" from Iowa.

Eng. and Min. Jour., vol. liv, p. 634.

Refers to the report of finding nickel ore in Iowa and mentions an occurrence in the Keokuk limestone of calcite covered with needles of millerite.

547 —— A remarkable fauna at the base of the Burlington limestone in northeastern Missouri.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 447–452.

Gives a vertical section, with a statement as to the geologic age of the different beds and a list of the characteristic fossils. The fauna are predominantly molluscan, typical of the Kinderhook beds, presenting a marked instance of a lower fauna suddenly appearing in the midst of a higher, with practically no change of lithologic characters.

548 —— and **Call** (R. E.). On a Quaternary section 8 miles southeast of Des Moines, Iowa.

Iowa Acad. Sci., Proc., vol. i, part ii, p. 30 (¼ p.).

Brief description of the section and list of fossils found in the loess.

549 **King** (Clarence). The age of the earth.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 1–20.

Abstract: Jour. of Geol., vol. i, pp. 202–203.

Gives results of a physical investigation, by Barus, of diabase as bearing upon the probable density and composition of the outer crust of the earth. In Pl. I variations of earth pressures and temperatures for radius are given, showing that the latter cease to increase within one-tenth radius from the surface. Pl. II indicates the distribution of earth temperatures and melting points of diabase for the superficial 0.08 of radius. Discusses Kelvin's and Croll's estimates of earth-time and earth-age as measured by sun-age, and concludes that the earth's age of about 24 million years accords with the estimate of that of the sun of 15 to 20 million years.

550 **Kirby** (Edmund R.). The ore deposits of Creede and their possibilities.

Eng. and Min. Jour., vol. liii, pp. 325–326.

Describes the geologic formations of the region and the veins or fissures in which the valuable minerals are found.

551 **Kloos** (J. H.). Geognostic and geographic observations in the State of Minnesota.

Minn. Geol. and Nat. Hist. Surv., 19th Ann. Rept., pp. 81–121.

General description of drift deposits in the State, the Lower Silurian and Archean of the Upper Mississippi, the Cretaceous and crystalline rocks of Sauk Valley, the Lower Silurian and Huronian melaphyre of the St. Croix Valley, the Upper Huronian slates of St. Louis River and the Silurian melaphyre and gabbro of Lake Superior with a résumé of results.

552 **Knowlton** (F. H.). Notes on a few fossil plants from the Fort Union group of Montana, with a description of one new species.

U. S. Nat. Mus., Proc., vol. xvi, pp. 33–36, pls. i–ii.

Describes and figures Populus meedsii n. sp. and Pterospermites cupanioides Newby.

553 —— Bread-fruit trees in North America.

Science, vol. xxi, pp. 24–25.

Describes the geographic distribution of certain species of bread-fruit trees in western North America, existing in Miocene or Pliocene time.

554 —— Note on a supposed new endogenous tree from the Carboniferous.

Science, vol. xxi, pp. 332–333.

Reviews the description of Winchellina fascina and considers that it may belong to one of the recently differentiated genera of the genus Psaronius.

555 —— Flora of the Dakota group, by Leo Lesquereux. Edited by F. H. Knowlton.

See Lesquereux (Leo), 582.

556 —— [Letter to I. C. Russell on fossil wood from the Triassic of North Carolina and review of Triassic plants of Prince Edward Island.]

U. S. Geol. Surv., Bull. No. 85, p. 29.

Refers to certain species from Prince Edward Island heretofore referred to the Trias which the writer considers are mostly Paleozoic.

557 —— Report on interglacial earth from Iowa.

U. S. Geol. Surv., 11th Ann. Rept., part i, p. 493.

Considers the material to be largely of vegetable origin and to belong either to the genus Juniperus or Thuya.

558 —— Description of a new fossil species of Chara.

Bot. Gazette, vol. xviii, pp. 141–142.

Describes Chara stantoni n. sp. from the Bear River Cretaceous formation of Wyoming.

559 —— Annotated list of fossil plants of the Bozeman, Montana, coal field, with table of distribution and description of new species.

U. S. Geol. Surv., Bull. No. 105, pp. 43–63, pls. v–vi.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 334 (⅛ p.); Wash. Biol. Soc., Proc., vol. vii, pp. 153–154.

Mentions the localities and the collectors of the material on which the paper is based, gives a list of species and description of new species, a table showing their geologic distribution, and discusses their value in confirming the results of stratigraphy.

560 —— Report on fossil plants from near Ellenburg, Washington.

U. S. Geol. Surv., Bull. No. 108, Appendix, pp. 103–104.

Gives a list of species and a brief description of them, with a statement as to their value in determining the age of the beds in which they were found.

561 **Koenig** (George A.). Paramelaconite and footeite.
Abstract: Am. Jour. Sci., 3d ser., vol. xliii, p. 158 (⅔ p.).

562 —— and **Hubbard** (L. L.). On powellite from a new locality.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 356–358.
Describes the mineralogic character and chemical composition of material obtained from Houghton County, Mich.

563 **Krassnof** (A. N.). The "black earth" of the steppes of southern Russia.
Geol. Soc. Am., Bull., vol. iii, pp. 68–81.
Describes the influence of the climate and relative age of the ground and subsoil on the properties of "black earth" and discusses the question of its geologic age. Discussed by E. W. Hilgard and G. C. Broadhead.

564 **Kummel** (Henry B.). Some rivers of Connecticut.
Jour. of Geol., vol. i, pp. 371–393.
Describes some of the topographic features of the State, the character of the Cretaceous peneplain, and the effects of the post-Cretaceous uplift. Discusses the changes that have taken place in certain rivers since Mesozoic time.

565 **Kunz** (George F.). Mineralogical notes on brookite, octahedrite, quartz, and ruby.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 329–330.

566 —— Mineralogical notes on brookite, octahedrite, and quartz.
Cal. State Min. Bur., 11th Rept., 1893, pp. 207–209.
Notes on minerals found in Eldorado County, Cal.

567 —— Precious stones.
U. S. Geol. Surv., Min. Res., 1893, pp. 680–702.
Describes sapphire deposits of Montana, the occurrence of rubies in North Carolina, of tourmaline in Maine and California, and of opal in Idaho.

568 —— and **Huntington** (Oliver W.) On the diamond in the Canyon Diablo meteoric iron and on the hardness of carborundum.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 470–473.
Gives the results of different experiments on the Canyon Diablo iron, one of them showing the material to be diamond or a similar substance. Experiments with carborundum show that it would not scratch or polish a diamond, and therefore is inferior to it in hardness.

L.

569 **Ladshaw** (George E.). Spartanburg, S. C., gold fields.
Eng. and Min. Jour., vol. liv, p. 52 (correspondence).
Describes the placer deposits occurring in this vicinity and the character of the associated gravel and clay beds.

570 **Lampard** (Henry). A few notes on an extinct volcano at Montreal, Canada.
Abstract: Am. Assoc. Adv., Proc., vol. xl, p. 260 (4 l.).
Descriptive geology and notes on minerals occurring in dikes.

571 **Langdon** (Daniel W.). Leaf impressions in the Eocene Tertiary of Alabama.

Science, vol. xxi, pp. 94–95 (correspondence).

Mentions localities in this State where there are occurrences of Tertiary fossil leaves.

572 **Lapworth** (C.). [Address as president of the Section of Geology.]

Brit. Assoc. Adv. Sci., Rept. 1892, pp. 695–707; Am. Geol., vol. x, pp. 225–242.

Discusses the phenomena of folds and faults and their influence on the form and structure of the earth's crust. Incidentally refers to the structure of the mountain ranges of America.

573 **Lawson** (Andrew C.). The Cordilleran Mesozoic revolution.

Jour. of Geol., vol. i, pp. 579–586.

Reviews the previous work in this region. Considers that the pre-Cretaceous Mesozoic revolution affected the entire extent of the Cordilleras, though it may not have been synchronous in all parts. Batholitic magmas were developed, invading and replacing large portions of the crust, and cooled as acid plutonic rocks. They were followed by continental uplift; hence the conditions commonly accepted as Archean are not peculiar to rocks of that age.

574 —— The Norian rocks of Canada.

Science, vol. xxi, pp. 281–282.

Reviews the monograph on norian rocks by Frank D. Adams, gives localities where anorthosite rocks occur, and some of the results of their study.

575 —— The anorthosites of the Minnesota shore of Lake Superior.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 8, pp. 1–23.

Abstracts: Am. Geol., vol. xii, p. 59; Am. Nat., vol. xxvii, p. 898.

Refers to previous descriptions of the rocks. Describes the petrographic characters and gives chemical analyses and discusses the geologic relations of the anorthosites.

576 —— The laccolitic sills of the northwest coast of Lake Superior.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 8, pp. 24–48.

Abstract: Am. Geol., vol. xii, pp. 59–60.

Reviews the literature on the rocks of this district and discusses the theories advanced as to the relations of the trap sheets. Describes the petrographic characters of diabase and quartz-porphyry and their contact relations and phenomena.

577 —— Sketch of the coastal topography of the north side of Lake Superior, with special reference to the abandoned strands of Lake Warren.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 181–289.

Abstract: Am. Geol., vol. xi, pp. 356–357.

Gives a brief statement concerning the formations bordering on Lake Superior and the conditions peculiar to each. Discusses the relations of the topography to the rock structure and describes the coastal contours and profiles. Concludes that Lakes Superior, Michigan, and Huron are remnants of the greater Lake Warren and occupy its subordinate depressions.

578 **LeConte** (Joseph). Theory of the origin of mountain ranges.

Jour. of Geol., vol. i, pp. 542–573; Sci. Amer. Suppl., vol. xxxvi, pp. 14768–14769 and 14776–14778.

Describes the structure of mountain ranges and the character of the materials of which they are composed. Theories are divided into two classes, the formal theory and the causal or physical theory. Gives the formal theory in detail and discusses the contractional and the alternative physical theories, and concludes that, in spite of many objections, the former still affords the best working hypothesis among causal theories.

579 **Lenke** (H.), **Felix** (J.) and. Beitrage zur Geologie und Paleontologie der Republik Mexico.

See Felix (J.) and Lenke (H.), 316.

579*a* —— Ueber die tektonischen Verhältnisse der Republik Mexico.

See Felix (J.) and Lenke (H.), 317.

580 **Lesley** (J. P.). A summary description of the geology of Pennsylvania.

Pa. Geol. Surv., Final Report, vol. i, pp. 1–719.

Abstract: Am. Jour. Sci., 3d ser., vol. xliii, p. 536 (½ p.).

Contains a discussion of some primary geologic principles, classification, and nomenclature, and a description of the Laurentian, Huronian, Cambrian, and Lower Silurian formations of the State, which includes a description of the crystalline gneisses and schists and their typical exposures, the geology of South Mountain, the Primal slates and their iron mines, and the limestones of the Great Valley, its subdivisions and deposits of iron, lead, and zinc, and the fossils found in these limestones.

581 —— A summary description of the geology of Pennsylvania.

Pa. Geol. Surv., Final Report, vol. ii, pp. 721–1628.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 73 (6 l.).

Describes the Upper Silurian and Devonian formations, including a description of the Clinton sandstones, shales, and slates, and their fossil iron-ore bodies, and the Niagara limestone and Salina shales and their fossils, as exposed in various portions of the State.

582 **Lesquereux** (Leo). The flora of the Dakota group. A posthumous work, edited by F. H. Knowlton.

U. S. Geol. Surv., Monograph XVII, 1892, pls. i–lxvi.

Abstracts: Jour. of Geol., vol. i, pp. 300–302; Am. Geol., vol. xii, pp. 328–329; Am. Nat., vol. xxvii, p. 1079 (⅔ p.).

Includes description of the species found in the Dakota group and a table showing their distribution in other formations and countries.

583 —— The Genus Winchellia.

Am. Geol., vol. xii, pp. 209–213.

Describes its characters and contains correspondence concerning the adoption of the name Winchellia.

584 **Leverett** (Frank). The glacial succession in Ohio.

Jour. of Geol., vol. i, pp. 127–146.

Abstract: Am. Geol., vol. xi, pp. 413–415.

Discusses the phenomena attending the different stages of the glacial epoch and the evidences which indicate the existence of an interval of deglaciation. Summarizes the present knowledge concerning the altitude in each stage. Accompanied by a map showing the area covered by the Maumee-Miami glacier.

585 **Leverett** (Frank). On the significance of the white clays of the Ohio region.

Am. Geol., vol. x, pp. 18–24.

Abstract: Am. Nat., vol. xxvii, p. 148.

The distribution of the clays shows that their deposition was not connected with an ice dam at or below Cincinnati. Compares them with the Upper Mississippi Valley silts, and considers that the deposition of the clays took place under conditions similar to those of the latter.

586 —— The Cincinnati ice dam.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 250–251.

Concludes that the theory of an ice dam at this point is questionable, since the silt deposits are too widespread and were deposited upon and are separated from the ice drift by a considerable time interval.

587 —— On the correlation of moraines with raised beaches of Lake Erie.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 281–301; Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 233–240.

Abstracts: Jour. of Geol., vol. i, pp. 99–100; Am. Nat., vol. xxvi, pp. 412–414.

Discusses the evidence of the existence of lakes in the drift-covered area of Ohio toward the close of the Glacial period. Considers that in its earlier stages Lake Erie occupied but a portion of its present area, the remainder being covered by the ice sheet. The extension of the lake area followed the retreat of the ice sheet, the beaches were replaced by lateral moraines, and it is probable that similar moraines will be found to connect with the beaches of Lake Ontario.

588 —— Notes bearing upon the changes in the pre-Glacial drainage of western Illinois and eastern Iowa.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 176 (⅓ p.).

589 —— Relation of the attenuated drift border to the outer moraine in Ohio.

Am. Geol., vol. xi, pp. 215–216 (correspondence).

590 **Lewis** (Julia F.). H. Carvill Lewis's work on the glacial phenomena.

Science, vol. xix, pp. 305–306.

In a letter to Prof. G. F. Wright gives a summary of Professor Lewis's later views on glacial phenomena.

591 **Lincoln** (D. F.). Glaciation in the Finger Lake region of New York.

Am. Jour. Jour. Sci., 3d ser., vol. xliv, pp. 290–301.

Abstract: Am. Geol., vol. xii, pp. 177–178 (⅓ p.).

Gives a general sketch of the geology and topography of the country, illustrated by a map. Discusses the evidence concerning the pre-Glacial topography and the amount of glacial corrasion.

592 **Lindgren** (Waldemar). The gold deposit at Pine Hill, California.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 92–96.

Abstract: Eng. and Min. Jour., vol. liv, p. 610.

Brief description of the occurrence of gold deposits in California and of the locality in which this deposit occurs. The gold in many places is associated with barite in irregular veins or seams in a zone of decomposed or kaolinized diabase.

593 **Lindgren** (Waldemar). Notes on the geology and petrography of Baja California, [Mexico].

Cal. Acad. Sci., Proc., 2d ser., vol. iii, part i, pp. 25-33.

Gives the results of the study of rock specimens obtained in this region and a general statement of the orographic movements that have taken place.

594 —— The relation between ore deposits and their inclosing walls.

Eng. and Min. Jour., vol. lv, pp. 340-341.

Reviews a previous article on the same subject, with statements concerning the "lateral secretion" theory and the manner of occurrence of gold in California.

595 —— Sacramento sheet.

U. S. Geol. Surv., Geol. atlas of the U. S., Preliminary edition, 1892.

Gives a general outline of the geologic history of the Gold Belt region of California. Describes the topographic features, the character of the auriferous slates, igneous rocks, and the Cretaceous, Miocene, and Pleistocene strata. Accompanied by topographic, colored areal and economic geologic, and structure-section maps.

596 —— The auriferous veins of Meadow Lake, California.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 201-206.

Describes the distribution and general character of the rocks of the district, illustrated by a sketch map, and the structure of the ore deposits and the character of the ore and gangue material.

597 —— Eruptive rocks from Montana.

Cal. Acad. Sci., Proc., 2d ser., vol. iii, part. i, pp. 39-57.

Abstract: Am. Nat., vol. xxvi, p. 698 (8 l.).

These rocks do not occur as lava flows, but as dikes, sheets, or laccolites in sedimentaries. Describes the megascopic and microscopic characters of the rocks, which include dacites, hornblende-andesites, diorites, augite-syenites, trachytes, and basalts.

598 —— A sodalite-syenite and other rocks from Montana, with analyses by W. H. Melville.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 286-297.

Abstracts: Jour. of Geol., vol. i, pp. 634-638; Am. Nat., vol. xxvii, pp. 563-564; Am. Jour. Sci., 3d ser., vol. xlvi, p. 76 (⅓ p.).

Describes the geologic occurrence of the rocks from which the specimens were collected and their petrographic character, with tables showing their chemical composition.

599 —— Two Neocene rivers of California.

Geol. Soc. Am., Bull., vol. iv, pp. 257-298.

Abstracts: Am. Geol., vol. xii, p. 121 (¼ p.); Am. Nat., vol. xxvii, p. 1084 (⅓ p.).

Reviews the literature on the Sierra Nevada region and gives a summary of its geologic history, illustrated by cross sections. Describes the course of the Neocene rivers, Yuba and American, and their gravel deposits. Concludes that the Neocene Sierra Nevada formed a distinct mountain range similar to the modern one. Includes a map of the Recent and Neocene drainage systems and the grades of the Neocene rivers.

600 **Low** (A. P.). Report on the geology and economic minerals of the southern portion of Portneuf, Quebec, and Montmorency counties, Quebec.

Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part i, Report L, 71 pp.

Describes the Archean rocks, the Trenton limestone, and Utica shale, and the distribution of the Trenton, and gives lists of fossils found in it. Describes the glacial phenomena and gives a list of post-Pliocene fossils found.

601 —— Notes on the glacial geology of western Labrador and northern Quebec.

Geol. Soc. Am., Bull., vol. iv, pp. 419–421.

Describes the glacial phenomena of the region and the extent of Pleistocene changes of level in Labrador.

602 **Lucas** (F. A.). On Carcharodon mortoni Gibbes.

Wash. Biol. Soc., Proc., vol. vii, pp. 151–152.

Considers that the characters of the teeth of C. mortoni Gibbes, described by Gibbes, are due to an accident while young and that it should stand as a synonym of C. megalodon Agassiz.

603 **Ludeking** (C.). Synthesis of the minerals crocoite and phænicrocoite.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 57–58.

604 **Lyman** (Benjamin Smith). The great Mesozoic fault in New Jersey.

Am. Phil. Soc., Proc., vol. xxxi, No. 142, pp. 314–317.

Describes the topographic and geologic features which indicate the existence of this fault.

605 —— An occurrence of coarse conglomerate above the mammoth anthracite bed.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 713–719.

Presents a geologic and topographic map of a portion of Schuylkill County, Pa., where the conglomerate occurs, and discusses the geologic structure of the region and the relation between the coal beds and conglomerate.

M.

606 **McBride** (T. H.). A new cycad.

Am. Geol., vol. xii, pp. 248–250.

Describes and figures specimens from South Dakota considered to be from Lower Cretaceous or Jura-Trias rocks.

607 **McCalley** (Henry). Alabama bauxite.

Eng. and Min. Jour., vol. liv, p. 584; Science, vol. xx, p. 303.

Describes the geologic features of its occurrence and gives a chemical analysis.

608 **McCallie** (S. W.). Remains of the mastodons recently found in Tennessee.

Science, vol. xx, p. 333.

Brief description of the portions discovered.

609 **McCharles** (A.). The Algoma nickel mines [Ontario].

Eng. and Min. Jour., vol. liv, p. 147 (correspondence).

Contains brief description of the geologic occurrence of the ore bodies in the Province of Ontario.

610 **McConnell** (R. G.). Report on a portion of the district of Athabasca, comprising the country between Peace River and Athabasca River north of Lesser Slave Lake.

Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part i, Report D, 62 pp.

Describes the general physical features of the region. Gives several sections, with lists of fossils obtained, which consist of Devonian and Cretaceous types. The Cretaceous apparently overlies the Devonian conformably. The unequal distribution of glacial deposits produces a rolling type of country, and to it is due the large number of lakes and ponds which cover a considerable portion of its area. Gold was found in the bars of the rivers, and deposits of bitumen and indications of gas and oil were found.

611 **McCreath** (A. S.) and **D'Invilliers** (E. V.). The Clinch Valley coal fields.

U. S. Geol. Surv., Min. Res., 1892, pp. 521–528.

The Coal Measures belong to the Middle Coal series of Virginia and West Virginia, identical with the Lower Productive Coal series of Pennsylvania, which, in this region, carry five well-marked coal beds.

612 **McFarland** (R. W.). The close of the Ice age in North America.

Science, vol. xxii, pp. 45–46.

Reviews some of the theories on this question.

613 **McGee** (W J). The Gulf of Mexico as a measure of isostasy.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 177–192.

Abstracts: Am. Geol., vol. xi, p. 58 (½ p.); Geol. Soc. Am., Bull., vol. iii, pp. 501–503.

Discusses the evidences of the instability of the continents and of the encroachments of the sea in the region of the Gulf of Mexico. Concludes that the modern movement is slight, while the old movements were cataclysmic; that the land and sea are here in a state of hydrostatic equilibrium, and that these observations are corroborated by data from other prominent deposition tracts of the globe.

614 —— The Pleistocene history of northeastern Iowa.

U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 199–577, pls. i–lxi, figs. 1–120.

Abstracts: Am. Geol., vol. xi, pp. 178–179; Am. Jour. Sci., 3d ser., vol. xlv, p. 71.

Contains a discussion of geologic principles, a description of the geologic formations of the region, their deformation, the topographic features and glacial phenomena.

615 —— The Lafayette formation.

U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 353–521.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 163 (5 l.).

Describes the geologic formations of the Atlantic Coastal Plain and their economic resources and reviews the geologic history of the Lafayette formation.

616 —— Note on the "age of the earth."

Science, vol. xxi, pp. 309–310.

Discusses the different estimates of the duration of the different geologic periods and presents a table showing the mean, minimum, and maximum estimates of the various geologic ages.

617 **McGee** (W J). The field of geology and its promise for the future.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 191–206.

Discusses the general principles of geology and presents a classification of geologic processes.

618 —— The areal work of the United States Geological Survey.

Am. Geol., vol. x, pp. 377–379.

Gives a general description of its work since the organization of the present Survey.

619 —— Rock gas and related bitumens. Introduction to "The natural gas field of Indiana," by A. J. Phinney.

U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 589–616.

Describes the constitution and geologic distribution of bitumens and discusses the origin of rock gas and other bitumens.

620 —— Neocene and Pleistocene continent movements.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 253–254.

Gives a brief history of continental oscillations. Concludes that there were two periods of rapid oscillations; each submergence was comparatively short and immediately followed by a maximum high level, and that the two are separated by a great time interval.

621 —— [Glacial phenomena.]

Geol. Soc. Am., Bull., vol. iv, pp. 5–6 and 6–7.

In discussion of paper by C. H. Hitchcock, "Studies of the Connecticut Valley glacier."

622 —— A fossil earthquake.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 411–414.

Discusses the origin of certain dome structures of the Mississippi Valley.

622*a* **McInnes** (W.), **Bailey** (L. W.) and. Report on portions of the Province of Quebec and adjoining areas in New Brunswick and Maine.

See Bailey (L. W.) and McInnes (W.), 23.

623 **MacMechen** (Thomas R.). The ore deposits of Creede, Colo.

Eng. and Min. Jour., vol. liii, pp. 301–303.

Describes the geologic formations of the region and the nature and extent of the ore bodies.

624 **Marcou** (Jules). The Tucumcari fossils.

Science, vol. xxi, pp. 358–360.

Reviews the determinations of certain fossils from this region.

625 —— On the classification of the Dyas, Trias, and Jura in northwest Texas.

Am. Geol., vol. x, pp. 369–377.

Discusses the classification and nomenclature for the strata in northwest Texas used in the second and third annual reports of the Geological Survey of Texas.

626 —— Second supplement to "Mapoteca Geologica Americana," 1752–1881.

Am. Geol., vol. xi, pp. 95–99.

Gives titles of maps, date, and place of publication.

627 **Marcou** (Jules). Remarks on a part of the review of the Third Texas Report.

Am. Geol., vol. xi, pp. 212–214 (correspondence).

Reviews statements concerning the geology of the Tucumcari region.

628 —— Cerro Tucumcari.

Am. Geol., vol. xii, pp. 103–107.

Refers to statements in paper by W. F. Cummins, "Tucumcari Mountain," and gives a brief historical sketch of the early expeditions in this region.

629 **Margerie** (M. Emm. de). Sur la découverte de phénomènes de recouvrement dans les Appalaches.

Soc. Géol. de France, Bull., 3d ser., vol. xix, No. 7, pp. 426–429.

Describes the phenomena of overthrusting in the Appalachian province and compares them with similar phenomena in southern France.

630 —— [Letter to G. K. Gilbert concerning the Bibliography undertaken by the International Congress of Geologists.]

Am. Jour. Sci., 3d ser., vol. xliii, pp. 71–73; Am. Geol., vol. ix, pp. 64–67.

Gives list of members of the committee and minutes of the first meeting.

631 **Marsh** (O. C.). The skull of Torosaurus.

Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 81–84, pls. 2.

632 —— Discovery of Cretaceous Mammalia, Part III.

Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 249–262, pls. v–xi.

Describes briefly the characteristics of Cretaceous Mammalia and their bearing upon the determination of the relationships of Cretaceous and Tertiary deposits, followed by description of several species.

633 —— Notice of new reptiles from the Laramie formation.

Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 449–453.

634 —— Notes on Triassic Dinosauria.

Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 543–546.

Review: Am. Nat., vol. xxvi, pp. 410–412.

635 —— Notes on Mesozoic vertebrate fossils.

Am. Jour. Sci., 3d ser., vol. xliv, appendix, pp. 171–176, pls. ii-v.

636 —— Restoration of Claosaurus and Ceratosaurus.

Am. Jour. Sci., 3d ser., vol. xliv, appendix, pp. 343–349.

637 —— Restoration of Mastodon americanus Cuvier.

Am. Jour. Sci., 3d ser., vol. xliv, appendix, p. 350.

638 —— A new Cretaceous bird allied to Hesperornis.

Am. Jour. Sci., 3d ser., vol. xlv, appendix, pp. 81–82.

Describes remains found in Montana.

639 —— The skull and brain of Claosaurus.

Am. Jour. Sci., 3d ser., vol. xlv, appendix, pp. 83–86.

Describes the skull of Claosaurus found in Ceratops beds of Wyoming.

640 —— Restoration of Anchisaurus.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, appendix, pp. 169–170.

Describes some of the characters of the species and discusses its possible relation to the "bird tracks" of the Connecticut River sandstone.

641 **Marsh** (O. C.). Restoration of Coryphodon.

Am. Jour. Sci., 3d ser., vol. xlvi, appendix, pp. 321–326.

Reviews the literature concerning the Coryphodon and describes the restoration of one of its species.

642 —— Description of Miocene Mammalia.

Am. Jour. Sci., 3d ser., vol. xlvi, appendix, pp. 407–412, pls. vii–x.

Describes specimens from New Jersey and the Rocky Mountain region, which indicate a common horizon in the two regions.

643 —— Restoration of Mastodon americanus Cuvier.

Sci. Amer. Suppl., vol. xxxiv, p. 14085.

Gives a brief account of other restorations and of the characteristics of this species. Illustrated by sketch.

644 **Marshall** (D. T.). Pyrite incrustations of the Cretaceous formations of Middlesex County, N. J.

Science, vol. xix, p. 151.

Describes some incrustations and replacement of trunks, twigs, and bark by iron pyrites.

645 **Marshall** (William B.). Report on a deposit of marl and peat in the town of New Baltimore.

N. Y. State Mus., 45th Ann. Rept., pp. 46–52.

The marl is composed of shells of fresh-water Mollusca and carbonate of lime. The peat and muck on its surface is an accumulation of mosses and other plants.

645*a* **Marsters** (Vernon Freeman), **Kemp** (J. F.) and. The trap dikes of the Lake Champlain region.

See Kemp (J. F.) and Marsters (V. F.), 521.

646 **Matthew** (G. F.). List of the fossils found in the Cambrian rocks in and near St. John.

New Brunswick Nat. Hist. Soc., Bull. No. 10, pp. xi–xxiii.

Describes briefly the lithologic character of the Cambrian beds of St. John basin and gives their thickness as 3,550 feet. Gives a list of 157 fossils found in these beds, which shows their stratigraphic position in the series.

647 —— Protolenus. A new genus of Cambrian trilobites.

New Brunswick Nat. Hist. Soc., Bull. No. 10, pp. 34–37.

Describes Protolenus n. gen., and Protolenus elegans n. sp., and Protolenus paradoxides from the St. John group of Canada.

648 —— The climate of Acadia in the earliest times.

New Brunswick Nat. Hist. Soc., Bull. No. 11, pp. 3–18.

Describes the general climatic conditions of this region and the character of the fauna from Cambrian to Devonian time.

649 —— Notes on Cambrian faunas.

Can. Rec. Sci., vol. v, pp. 247–258.

Describes a hitherto unrecognized group of trilobites and correlates the faunas based on these four species.

650 —— Trematobolus. An articulate brachiopod of the inarticulate order.

Can. Rec. Sci., vol. v, pp. 276–279.

Abstract: Am. Geol., vol. xii, p. 396 (¼ p.).

Describes a shell from the pre-Paradoxides beds of the St. John group and discusses its different affinities.

651 **Matthew** (G. F.). Is the fauna called "Primordial" the most ancient fauna?

Can. Rec. Sci., vol. v, pp. 347–350.

Describes the metamorphosis of the Cambrian trilobites and mentions the discovery of radiolarian remains in Azoic rocks of Great Britain.

652 —— On the diffusion and sequence of the Cambrian faunas.

Can. Roy. Soc., Proc. and Trans., vol. x, sect. iv, pp. 3–16.

Describes the development of graptolites and other deep-water organisms. Reviews the opinions of other writers concerning the distribution of Cambrian faunas, and presents in tabular form the migration of their genera.

653 —— Illustrations of the fauna of the St. John group, No. VII.

Can. Roy. Soc., Proc. and Trans., vol. x, sect. iv, pp. 85–109.

Abstract: Am. Geol., vol. xii, pp. 192–193.

Describes the fauna of the Arenig horizon in the Bretonian division; also some graptolites and brachiopods of the same division.

654 —— Illustrations of the fauna of the St. John group, No. VIII.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 85–129.

Describes species chiefly from the St. John group and gives a list of Cambrian and Ordovician fossils found near St. John.

655 —— The St. John group.

Am. Geol., vol. xii, pp. 340–341 (correspondence).

656 **Matthew** (W. D.). On phosphate nodules from the Cambrian of southern New Brunswick.

N. Y. Acad. Sci., Trans., vol. xii, pp. 108–120.

Gives the subdivisions and lithologic characters of the St. John group and describes the megascopic and microscopic characters of the nodules. Compares them with other phosphate deposits and discusses the question of their origin.

657 —— On antennæ and other appendages of Triarthrus beckii.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 121–125; N. Y. Acad. Sci., Trans., vol. xii, pp. 237–241.

Abstract: Am. Geol., vol. xii, pp. 193–194 (⅓ p.).

Refers to the study of the trilobites by C. D. Walcott, with special reference to the organs of the under side, and gives a summary of the structure thus determined. Describes trilobites found in the Hudson River shales in New York and the structure of the antennæ preserved in the specimens.

658 **Meeds** (A. D.). The Stillwater deep well.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 274–277.

Gives brief description of the rocks penetrated by the well, the section shown by the well record, and the microscopic characters of a diabase porphyrite occurring at a depth of 3,300 feet.

659 **Memminger** (C. G.). [Phosphate deposits of Tennessee.]

U. S. Geol. Surv., Min. Res., 1893, pp. 709–711.

Gives the section of the Tennessee phosphate beds and chemical analyses of samples. Describes its physical characteristics.

660 **Merrill** (George Perkins). On some basic eruptive rocks in the vicinity of Lewiston and Auburn, Androscoggin County, Me.

Am. Geol., vol. x, pp. 49–55.

Describes the rock formations of the region and the basic dikes which cut them. Shows the location and direction of the dikes on a sketch map. Describes the microscopic characters of the dike rocks, diabase, and lamprophyrs, and gives several chemical analyses.

661 —— The wind as a factor in geology.

Eng. Mag., vol. ii, pp. 596–607.

Describes some results of the action of wind in cutting away and transporting the material of the earth's crust.

662 —— Notes on the petrography of the Paleozoic section in the vicinity of Three Forks, Montana.

U. S. Geol. Surv., Bull. No. 110, pp. 47–54.

Describes the petrographic characters of gneissic rocks of the region and certain fragmental rocks which appear to have been derived from them; and the character of some intrusive rocks occurring in the lower part of the Flathead shales.

663 —— The newer eruptive rocks.

Boston Soc. Nat. Hist., Occasional Papers IV, vol. i, part i, pp. 31–44.

Describes the eruptive rocks occurring in the form of lava flows and dikes. The lava flows include melaphyrs and porphyrites. The dikes consist chiefly of diabases.

664 —— and **Packard** (R. L.). On an azure-blue pyroxenic rock from the Middle Gila, New Mexico.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 279–280.

Gives a mineralogic and chemical description of the rock, occurring in serpentinous limestones, which has the formula of malacolite.

665 **Meyer** (Abraham). Notes on the occurrence of quartz and other minerals in the Chemung measures near the line of Lycoming and Tioga counties, Pennsylvania.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 194–196.

Describes some quartz crystals and gives the names of the associated minerals.

666 —— Pyrophyllite slates in northern Pennsylvania.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 197–200.

Describes some exposures of the Chemung beds of Pennsylvania.

667 **Mickle** (George). Notes on nickel.

Can. Inst., Trans., vol. ii, part i, pp. 77–92.

Contains notes on the occurrence of nickel, its mineral associates, and its metallurgy.

668 **Miers** (H. A). Quartz from the Emerald and Hiddenite mines.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 420-424.

Describes the crystallographic characters of quartz crystals from North Carolina.

669 **Miller** (S. A.). The structure, classification, and arrangement of American Paleozoic crinoids into families.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 302–326.

Reviews the opinions of several writers on the structure and classification of crinoids and describes some of their important family characteristics.

670 **Miller** (S. A.). Paleontology.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 611–705, pls. i–xx.

Describes species found in Silurian, Devonian, and Carboniferous series of Indiana and Missouri.

671 —— and **Faber** (C.). Description of some sub-Carboniferous and Carboniferous Cephalopoda.

Cin. Soc. Nat. Hist., Jour., vol. xiv, pp. 164–168.

Describes species from Coal Measures in Kentucky and near Kansas City, Mo.

672 —— Some new species and new structural parts of fossils.

Cin. Soc. Nat. Hist., Jour., vol. xv, pp. 79–87.

Abstract: Am. Geol., vol. x, pp. 316–317.

Describes specimens obtained from the Hudson River group from near Cincinnati.

673 **Miller** (S. A.) and **Gurley** (F. E.). Description of some new genera and species of Echinodermata from the Coal Measures and sub-Carboniferous rocks of Indiana, Missouri, and Iowa.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 327–373.

Contains description of new genera and species of Echinodermata from the Carboniferous of the States mentioned.

674 **Mills** (James E.). Stratigraphy and succession of the rocks of the Sierra Nevada of California.

Geol. Soc. Am., Bull., vol. iii, pp. 413–444.

Abstracts: Am. Geol., vol. x, pp. 318–319; Am. Nat., vol. xxvii, p. 147 (¼ p.).

Repeated uplifts along the same axes, followed by erosion, mark the orographic history of this range, and the present relief is due to Tertiary and Quaternary uplifting. Granites form the core and the great mass of the range and constitute the principal part of the pre-Mesozoic rocks. The Mesozoic sediments are mainly slates and some limestones. The eruptives consist of medium basic lavas altered to diabases or greenstones, and very basic lavas altered to serpentines.

675 **Mitchell** (R. H.) and **Baskerville** (C.). An example of river adjustment.

Elisha Mitchell Sci. Soc., Jour., part ii, 1892, pp. 64–66.

Describes and illustrates the processes of adjustment that have occurred in certain tributaries of the James River in Virginia.

676 **Moore** (Joseph). The recently found Casteroides in Randolph County, Indiana.

Am. Geol., vol. xii, pp. 67–74.

Describes the locality where the remains were found, gives a list of parts found and those missing and broken, some measurements, and a list of fragments from the same and other localities.

677 —— An inquiry as to the cause of variety in rock deposits as seen in Hudson River beds at Richmond, Indiana.

Ind. Acad. Sci., Proc., 1892, pp. 26–27.

Describes briefly some of the deposits in this vicinity.

678 **Moore** (Joseph). Glacial and pre-Glacial erosion in vicinity of Richmond, Indiana.

Ind. Acad. Sci., Proc., 1892, pp. 27-29.

Mentions a buried river channel and the discovery of potholes in this locality.

679 **Moses** (Alfred J.). One of the gypsum crystals from the cave at South Wash, Wayne County, Utah.

Science, vol. xxi, pp. 230-231.

Gives the crystallographic measurements of the crystal.

680 —— Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 488-492.

Describes the mineralogic characteristics of pyrite crystals and ettringite, including chemical analyses of the latter.

681 **Moxham** (Edgar C.). The "Great Gossan lead" of Virginia.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 133-138.

Describes the extent and character of an ore body in southwest Virginia which carries copper and iron, with special reference to the iron contents.

682 **Mudge** (E. H.). Observations along the valley of Grand River, Michigan.

Am. Geol., vol. xii, pp. 284-288.

Describes the glacial phenomena of this region.

N.

683 **Nason** (Frank L.) The Magnesian series of the Ozark uplift.

Am. Geol., vol. xi, pp. 91-94.

Refers to the previous classification of the Magnesian series and gives results of observations in the Ozark region. Concludes that there is but one continuous bed of sandstone in this area, and proposes for it the name of Roubidoux and for the underlying heavy-bedded limestone the name Gasconade.

684 —— Notes on some of the iron-bearing rock of the Adirondack Mountains.

Am. Geol., vol. xii, pp. 25-31.

Describes minerals associated with the magnetite ores of New York and New Jersey, and gives a brief description of several ore bodies in this region.

685 —— "The correct succession of the Ozark series;" a review reviewed.

Am. Geol., vol. xii, pp. 141-147.

Reviews statements in paper by G. C. Broadhead, "The correct succession of the Ozark series," with special reference to the separation and classification of the sandstone and magnesian limestone of the Ozark region.

686 —— A report on the iron ores of Missouri.

Mo. Geol. Surv., vol. ii, 1892, pp. 1-365, pls. i-viii, figs. 1-62.

Gives a general description of iron ores and their relative values. Describes the specular ores of the porphyry region and those of the Iron Mountain and Pilot Knob districts, the red hematites of the State, the geology of the Ozark uplift, the specular ore of the sandstone district and the limonite ores. Appendix A is a description of the iron deposits of northeastern Arkansas. Appendix B contains a historical and statistical sketch of the iron industry.

687 **Nelson** (N. P.). The formation of a terrace.

Am. Geol., vol. xii, pp. 125–126 (correspondence).

Describes the topographic features of a beach ridge in Ottertail County, Minn.

688 **Nitze** (H. B. C.) Notes on some of the magnetites of southwestern Virginia and the contiguous territory of North Carolina.

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 174–188.

Describes magnetite deposits of Franklin and Henry counties, Va., and of Stokes County, N. C. Includes a description of the ore bodies in the different sections and analyses of some of the ores. Discussed by Edmund Pechin, pp. 185–188.

689 —— The magnetic iron ores of Ashe County, N. C.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 260–280.

Describes various ore bodies of the region, with chemical analyses, their location being shown on an accompanying map.

690 —— Magnetic iron ore in Granville County, N. C.

Eng. and Min. Jour., vol. liii, p. 447.

Describes the rocks with which the ore is associated and gives a chemical analysis of the ore.

691 —— Iron ores of North Carolina. A preliminary report.

N. C. Geol. Surv., Bull. No. 1, pp. 21–239, pls. i–xx, figs. 1–58, and map of the State showing the distribution of the iron ore deposits.

Describes the different varieties of iron ores, the bog ores of the eastern counties, the magnetite, specular and brown hematite ores of the eastern, central, and western crystalline areas, the titaniferous magnetites, the iron ores of the Blue Ridge and its eastern foothills and the chromic iron ores of the chrysolite rocks. Gives chemical analyses of iron ores from many counties of the State.

O.

692 **Orton** (Edward). First Annual Report of the Geological Survey of Ohio, 1890, Third Organization, pp. 1–323.

Chapter 1 contains the geological scale of Ohio and a sketch of its geologic structure. Other chapters comprise a discussion of the origin and accumulation of petroleum and natural gas in the Trenton and Clinton limestones and other sources of oil and gas.

693 —— Origin of the rock pressure of natural gas in the Trenton limestone of Ohio and Indiana.

Smithsonian Inst., Ann. Rept., 1891, pp. 155–162.

Discusses the causes of rock pressure, the evidence supporting the hydrostatic theory, and the general laws of gas production.

694 —— On the occurrence of a quartz bowlder in the Sharon coal of northeastern Ohio.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 62–63.

Comparison of bowlders found with those found in England and description of the strata in which they occur in Ohio.

695 —— Report on the occurrence of petroleum, natural gas, and asphalt rock in western Kentucky.

Abstracts: Am. Geol., vol. ix, pp. 262–263 (½ p.); Am. Jour. Sci., 3d ser., vol. xliv, p. 78 (¼ p.).

Noticed in Record for 1891.

696 **Osann** (A.). Ueber ein Mineral der Nosean-Hauyn-Gruppe im Eläolith-syenit von Montreal.

Neues Jahrb. f. Min., etc., Band i, Heft 1, 1892, pp. 222–224 (correspondence).

Describes the geologic occurrence of the rock and its megascopic, microscopic, and chemical characters.

697 —— Melilite-nepheline basalt and nepheline basanite from southern Texas.

Jour. of Geol., vol. i, pp. 341–346.

Describes the petrographic characters of specimens from this region.

698 —— Report on the rocks of Trans-Pecos, Texas.

Texas Geol. Surv., 4th Ann. Rept., pp. 123–138.

Describes the petrographic characters of the igneous rocks of this region, which include granites from the Quitman Mountain, olivine diabase from the Diablo Mountains, elæolite and nepheline bearing rocks from the Davis Mountains, and a series of highly altered diabase rocks, showing ophitic structure, from the Carrizo Mountains.

699 **Osborn** (Henry Fairchild). Fossil mammals of the Upper Cretaceous beds.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 311–330.

Describes the characters of the teeth of certain Cretaceous mammals and discusses their relationship to the older Jurassic and more recent Eocene types. Concludes that the Laramie fauna is distinctly separated from the Jura and more nearly related to the basal Eocene forms and that the number of distinct types is limited.

700 —— Aceratherium Tridactylum from the Lower Miocene of Dakota.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 85–86.

Describes the remains from the Miocene of South Dakota.

701 —— The rise of the Mammalia in North America.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 379–392 and 448–466.

Gives a general historical sketch of the previous study of Mammalia, discusses the general principles on which their classification is based, and exhibits in tabular form the succession of North American Mammalia and their geologic distribution.

702 —— The Ancylopodia, Chalicotherium, and Artionyx.

Am. Nat., vol. xxvii, pp. 118–133.

Describes and compares some of their leading characters and discusses their relations and proper classification.

703 —— Recent researches upon the succession of the teeth in mammals.

Am. Nat., vol. xxvii, pp. 493–508.

Describes the researches bearing upon this question and gives a general summary of the work done and the conclusions that are to be drawn from it.

704 —— A reply to Professor Marsh's "Note on Mesozoic Mammalia."

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 290 (½ p.).

Discusses the structure of a number of Mesozoic mammals.

705 —— The ancestry of Chalicotherium.

Science, vol. xix, p. 276.

Refers to some recent discoveries of this species and considers that they were derived from the Meniscotheridæ.

706 **Osborn** (Henry Fairchild). Sur la découverte du Palæonictis en Amérique.

Soc. Geol. de France, Bull., 3d ser., vol. xx, No. 7, pp. 434–436.

Describes the character of Palæonictis found in the Wasatch beds of the Rocky Mountains.

707 —— and **Wortman** (J. L.). Fossil mammals of the Wasatch and Wind River beds.

Am. Mus. Nat. Hist., Bull., vol. iv, pp. 81–147.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 159–160.

Includes the following special articles: homologies and nomenclature of the mammalian molar cusps; the classification of the Perissodactyla; the ancestry of the Felidæ; taxonomy and morphology of the primates, creodonts, and ungulates, 1 Wasatch, 2 Wind River; geological and geographical sketch of the Big Horn basin; and narrative of the expedition of 1891.

708 —— Characters of Protoceras (Marsh), the new Artiodactyl from the Lower Miocene.

Am. Mus. Nat. Hist., Bull., vol. iv, pp. 351–371.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlv, p. 160 (½ p.); Am. Nat., vol. xxvii, pp. 147–148.

Description of species and discussion of characters of species recently found.

709 —— Artionyx, a new genus of Ancylopoda.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 1–18.

Describes remains found in the Miocene of South Dakota.

P.

710 **Packard** (R. L.). Genesis of nickel ores.

U. S. Geol. Surv., Min. Res., 1893, pp. 170–177.

Describes the occurrence of nickel in different deposits and reviews some of the theories as to their origin.

711 —— Natural sodium salts.

U. S. Geol. Surv., Min. Res., 1893, pp. 728–738.

Describes the lakes of Utah, Nevada, and California in which sodium salts have become concentrated and gives in tabular form the composition of the salts and discusses their origin.

711*a* —— **Merrill** (G. P.) and. On an azure-blue pyroxenic rock from the Middle Gila, New Mexico.

See Merrill (G. P.) and Packard (R. L), 664.

712 **Page** (William H.). The Carboniferous age and the origin of coal.

Eng. and Min. Jour., vol. lvi, pp. 347–349.

Reviews the generally accepted theory of the character of the Carboniferous period and the origin of its coal beds, and discusses evidences which conflict with this theory.

713 **Panton** (J. Hoyes). The mastodon and mammoth in Ontario, Canada.

Brit. Assoc. Adv. Sci., Report 1891, pp. 654–655.

Gives measurements of certain portions of the remains discovered in this Province.

714 **Parker** (Richard A.). The iron ore region of Lake Superior.
Eng. Mag., vol. ii, pp. 152–175 and 285–303.
Describes the iron deposits of the Marquette, Menominee, Gogebic, Vermillion, and Mesabi ranges.

715 **Pavlow** (Alexis). On the marine beds closing the Jurassic and opening the Cretaceous, with the history of their fauna.
Geol. Soc. Am., Bull., vol. iii, pp. 61–64.
Describes the changes which took place in the development of belemnites and ammonites and the geologic epochs which they indicate.

716 **Peale** (Albert Charles). The Paleozoic section in the vicinity of Three Forks, Montana.
U. S. Geol. Surv., Bull. No. 110, pp. 9–45, pls. i–vi.
Describes the geologic structure of the region and the lithologic character and distribution of the Algonkian, Cambrian, Devonian, Carboniferous and eruptive rocks, illustrated by a colored geologic map of the region and vertical sections showing the character and thickness of the different subdivisions of the formations.

716*a* **Pearce** (Richard). [Origin of ore deposits.]
Colo. Sci. Soc., Proc., vol. iv, pp. 348–350.
In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

716*b* —— The eruptive dykes near Manchester, Mass.
Colo. Sci. Soc., Proc., vol. iv, pp. 365–366.
Describes an extremely basic dike rock cutting the granite in this locality.

716*c* **Pearce** (Stanley H.), **Penfield** (S. L.) and. On polybasite and tennantite from the Mollie Gibson mine, in Aspen, Colo.
See Penfield (S. L.) and Pearce (S. H.), 724.

717 **Pechin** (Edmund C.). Virginia Oriskany iron ores.
Eng. and Min. Jour., vol. liv, p. 150.
Includes description of the mining operations and the character and extent of the ore bodies.

718 —— [Magnetite ore samples in Rocky Mount section, Virginia, and their chemical analyses.]
Am. Inst. Min. Engrs., Trans., vol. xx, pp. 185–188.
In discussion of paper by H. B. C. Nitze, "Notes on some of the magnetites of southwestern Virginia and the contiguous territory of North Carolina."

719 **Penfield** (S. L.). Contributions to mineralogy by F. A. Genth. With crytallographic notes.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 184–189.
Crystallographic notes on hubnerite, bismutite, and natrolite.

720 —— Contributions to mineralogy, No. 54, by F. A. Genth. With crystallographic notes.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 381–389.
Describes aguilarite, metacinnabarite lollingite, rutile, quartz, danalite, yttrium-calcium fluoride, lepidolite, and fuchite.

721 **Penfield** (S. L.). On cookeite from Paris and Hebron, Me.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 393–396.
Abstract: Am. Nat., vol. xxvii, pp. 901–902 (½ p.).
Describes the mineralogic characters and gives the chemical composition of specimens from these two localities.

722 —— Mineralogical notes.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 396–399.
Describes the mineralogic characters and chemical composition of zunyite and the mineralogic character of xenotime, from Colorado.

723 —— On pentlandite from Sudbury, Ontario, Canada, with remarks upon three supposed new species from the same region.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 493–497.
Abstract: Am. Nat., vol. xxvii, p. 902 (½ p.).
Describes the mineralogic characters of pentlandite and of the supposed new sulphides of iron and nickel, folgerite, blueite, and whartonite, all from the Sudbury district.

724 —— and **Pearce** (S. H.). On polybasite and tennantite from the Mollie Gibson mine in Aspen, Colo.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 15–18.
Abstract: Am. Nat., vol. xxvii, p. 43 (⅓ p.).

724*a* —— **Wells** (H. L.) and. On herderite from Hebron, Me.
See Wells (H. L.) and Penfield (S. L.), 1018.

725 **Penhallow** (D. P.). A preliminary examination of so-called cannel coal from the Kootenai of British Columbia.
Am. Geol., vol. x, pp. 331–339.
The specimens were made up of rod-like bodies which, in their interior, show tubular and branching openings strongly suggestive of vegetable growth.

726 —— A new species of Larix from the interglacial of Manitoba.
Am. Geol., vol. ix, pp. 368–371.
Locates and describes two specimens of Larix.

726*a* —— **Dawson** (J. W.) and. Parka decipiens.
See Dawson (J. W.) and Penhallow (D. P.), 242.

727 **Penrose** (R. A. F., jr.). A Pleistocene manganese deposit near Golconda, Nevada.
Jour. of Geol., vol. i, pp. 275–282.
Discusses the character of the ore and of the beds in which it occurs and the relations of the ore body to the country rock. Considers that the manganese was locally precipitated from spring waters.

728 —— The chemical relation of iron and manganese in sedimentary rocks.
Jour. of Geol., vol. i, pp. 356–370.
Describes the geologic occurrence of iron and manganese, the processes of their transportation and deposition, and the methods by which they are precipitated from surface waters, and discusses the causes of the association and separation of iron and manganese.

729 **Penrose** (R. A. F., jr.). The Tertiary iron ores of Arkansas and Texas.

Geol. Soc. Am., Bull., vol. iii, pp. 44–50.

The ores are limonites or allied forms, occupy a belt 300 miles long and 1 to 50 wide, and are found in Eocene beds as nodular or laminated ores. The deposition was originally contemporaneous with that of the associated strata, and the ores have been subsequently segregated. Discusses the origin of the ores.

730 —— The iron deposits of Arkansas.

Ark. Geol. Surv., Ann. Rept., 1892, vol. i, pp. 1–153.

Abstract: Am. Geol., vol. x, pp. 324–325.

Gives a historical sketch of iron mining and its geologic investigations in Arkansas. Describes the general distribution of the iron deposits of the State, their geologic relations and their character and commercial value. Describes the ore bodies in the different localities of the several counties and discusses their geologic relations and origin.

731 —— Manganese, its uses, ores, and deposits.

Ark. Geol. Surv., Rept. for 1890, vol. i, pp. 642.

Abstracts: Can. Rec. Sci., vol. v, pp. 65–68; North of Eng. Inst. Min. and Mech. Engrs., Trans., vol. xlii, pp. 427–428 (½ p.).

Noticed in Record for 1891.

732 **Perrine** (Charles D.). Earthquakes in California in 1892.

U. S. Geol. Surv., Bull. No. 112, pp. 7–57, figs. 1–5.

Describes the instruments and methods employed in the work, gives a list of stations and a chronologic record of earthquakes occurring in California in 1892.

733 —— Earthquakes in California in 1893.

U. S. Geol. Surv., Bull. No. 114, pp. 9–23.

Includes a description of instruments and methods used, list of stations, and record of observations of earthquakes in California during 1893.

734 **Perry** (Stuart H.). A classification of topographic forms.

Am. Geol., vol. xii, pp. 153–159.

Discusses the general features of constructive and destructive forces in their relation to topographic forms and gives in tabular form the classification proposed.

735 **Phelps** (Frank B.). The copper region of Michigan.

Eng. Mag., vol. iv, pp. 47–63.

Abstract: North of Eng. Inst. Min. and Mech. Engrs., Trans., vol. xlii, p. 423 (½ p.).

Gives a brief sketch of the geology of the region and an account of the mining operations.

736 **Phillips** (William B.). A preliminary report on a part of the lower gold belt of Alabama, in the counties of Chilton, Coosa, and Tallapoosa.

Ala. Geol. Surv., Bull. No. 3, pp. 13–97.

Includes a general description of the Alabama gold fields, a history of some of the mining operations in the counties named, and an account of the character, value, and extent of the gold ores.

737 **Phillips** (William B.). Murphree's Valley and its minerals.
Eng. and Min. Jour., vol. lvi, pp. 448–449.
Gives a brief description of the geology of the region and two cross-sections.

738 —— A list of minerals containing at least 1 per cent of phosphoric acid.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 188–196.
Discusses the effect of phosphorus on iron and steel and gives a list of minerals containing phosphoric acid, showing their composition, the per cent of phosphoric acid, and the system under which the mineral crystallizes.

739 **Phinney** (Arthur John). The natural gas field of Indiana.
U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 589–742.
Describes the character and structure of the formations and the extent of the gas field and gives an account of the well borings in the various counties.

740 **Pirsson** (L. V.). Datolite from Loughboro, Ontario.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 100–102.
Abstract: Am. Nat., vol. xxvii, pp. 1091–1092 (½ p.).
Describes the crystallographic characters of crystals from the Lacy mine in Ontario.

741 —— On the geology and petrography of Conanicut Island, Rhode Island.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 363–378.
Describes the Carboniferous conglomerates, sandstones, and shales, and the dikes which cut them. Describes the petrographic characters of the granite, minette, and phyllite, and the character of the contact metamorphic rocks.

742 **Plummer** (Fred G.). A diagonal moraine.
Am. Geol., vol. xii, pp. 231–232.
Describes a diagonal moraine occurring on Mount St. Helena, Washington.

743 **Powell** (J. W.). Report of the Director of the United States Geological Survey.
U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 1–30.
Includes an account of the progress of geologic, paleontologic, and related work undertaken by the Survey during the year 1889–99.

744 —— Report of the Director of the United States Geological Survey.
U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 1–19.
Gives an account of the progress of Survey work during the year 1890–91.

745 —— Report of the Director of the United States Geological Survey.
U. S. Geol. Surv., 13th Ann. Rept., pp. 3–240.
Contains a summary of the work of the Survey during the fiscal year 1891–92 and includes reports of the heads of different divisions.

746 **Powell** (S. L.). Notes on minerals recently obtained from the quarries of Jones Falls. [Maryland.]
Johns Hopkins Univ. Circ., vol. xii, No. 103, pp. 49–50.
Describes the mineralogic characters of calcite, beaumontite, and three varieties of feldspar occurring in a pegmatite vein in a quarry near Baltimore.

747 **Pratt** (N. A.). Florida phosphates: the origin of the bowlder phosphates of the Withlacoochee River district.
Eng. and Min. Jour., vol. liii, p. 380.
Describes the phosphate beds of this district and discusses the question of their origin.

748 **Preston** (E. B.). Amador County [California].
Cal. State Min. Bur., 11th Rept., pp. 139–146.
Includes notes on some of the mines of the county.

749 —— Butte County [California].
Cal. State Min. Bur., 11th Rept., pp. 150–165.
Contains notes on the mining operations and on the character of the ore in this county.

750 —— Calaveras County [California].
Cal. State Min. Bur., 11th Rept., pp. 167–178.
Contains notes on the occurrence of copper in the metamorphic slates west of the Gold Belt and on the gold mines.

751 —— Eldorado County [California].
Cal. State Min. Bur., 11th Rept., pp. 200–207.
Notes on the mineral deposits of the county.

752 —— North Fork mining district of Fresno County [California].
Cal. State Min. Bur., 11th Rept., pp. 218–223.
Describes the topography of the region, with notes on some of the mines.

753 —— Lassen County [California].
Cal. State Min. Bur., 11th Report, pp. 241–242.
Notes on the Hayden Hill mining district, with sketch map of the district.

754 —— Monterey County [California].
Cal. State Min. Bur., 11th Rept., pp. 259–262.
Notes on some gold mines.

755 —— Plumas County [California].
Cal. State Min. Bur., 11th Rept., pp. 323–333.
Notes on some of the gold mines.

756 —— San Benito County [California].
Cal. State Min. Bur., 11th Rept., pp. 370–373.
Describes briefly the geology of a portion of the Gabilan and Mount Diablo ranges.

757 —— Salton Lake [California].
Cal. State Min. Bur., 11th Rept., pp. 387–393.
Describes the depression occupied by the lake and gives a chemical analysis of the salt from the salt marsh.

758 —— Sierra County [California].
Cal. State Min. Bur., 11th Rept., pp. 400–412.
Gives the altitude of some of the peaks in this county and notes on some of the gold mines.

759 —— Tuolumne County [California].
Cal. State Min. Bur., 11th Rept., pp. 493–513.
Describes briefly the geology of the county, with remarks on the occurrence of copper on the west side of the Mother Lode and notes on the gold mines.

759*a* **Procter** (John R.). Progress of the Kentucky Geological Survey.
Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 78 (¼ p.).

760 **Prosser** (Charles S.). The geological age of the rocks of the novaculite area [Arkansas].
Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 418–423.
Reviews the literature on the age of these rocks.

761 —— Notes on Lower Carboniferous plants from the Ouachita uplift.
Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 423–424.
Brief description of localities and of the lithologic characters of the strata in which the plant remains were found.

762 —— The Devonian section of central New York along the Unadilla River.
N. Y. State Mus., 46th Ann. Rept., pp. 256–288.
Describes the lithologic character of the section and gives a list of fossils collected from different localities in this region.

763 —— The thickness of the Devonian and Silurian rocks of western New York, approximately along the line of the Genesee River.
Roch. Acad. Sci., Proc., vol. ii, pp. 49–104.
Abstract: Am. Geol., vol. x, p. 257 (⅓ p.).
Reviews previous publications regarding the geologic section in this part of the State. Gives sections displayed by different well borings, and concludes that 1,250 to 1,500 feet is a conservative estimate of the thickness at Rochester. Illustrated by map of the region showing location of wells.

764 —— The thickness of the Devonian and Silurian rocks of central New York.
Geol. Soc. Am., Bull., vol. iv, pp. 91–118.
Abstract: Am. Geol., vol. xi, pp. 411–412 (⅓ p.).
Gives the section shown by several deep wells from which is deduced a general geologic section of central New York.

765 —— The Devonian system of eastern Pennsylvania.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 210–221.
Discusses the fossil evidence as to the age of certain deposits in this region and of their correlation with the Tully and Genesee formations in New York. Illustrated by cross-section.

766 —— The Upper Hamilton and Portage stages of central and eastern New York.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 212–230.
Gives a historical sketch of the use of the term "Oneonta group" and list of fossils found at various localities and statements concerning their stratigraphic position, from which the author concludes that the Oneonta sandstone is not the top of the Hamilton series, but belongs to the Portage.

767 **Pumpelly** (Raphael). An apparent time-break between the Eocene and Chattahoochee Miocene in southwestern Georgia.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 445–447.
Describes the topographic features of the region and gives a list of fossils found in the Eocene and Chipola Miocene. Explains briefly the evidence indicating the existence of the time-break.

768. **Pumpelly** (Raphael) and **Van Hise** (C. R.). Observations upon the structural relations of the Upper Huronian, Lower Huronian, and Basement Complex on the north shore of Lake Huron.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 224–232.

Discusses the relations of the formations at various points in the region and concludes that the pre-Keweenawan rocks on the north shore of Lake Huron are separable by unconformities into three series similar to those on the south shore of Lake Superior and Steep Rock Lake, and that the unconformities are alike in the three districts and the formations once extended over the entire area.

R.

769 **Rand** (Theodore D.). Geology of the Isles of Shoals.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, pp. 324–325.

Describes the gneissoid rocks of which the islands are formed and the trap dikes which cut them.

770 —— The supposed South Chester Valley Hill fault.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, pp. 445–447.

Quotes descriptions of the region from the Final Report of the Second Geological Survey of Pennsylvania and discusses some of the statements quoted.

771 —— **Jefferis** (W. W.), and **Cardeza** (J. T. M.). Mineral localities of Philadelphia and vicinity.

Phila. Acad. Nat. Sci., Proc., 1892, part ii, pp. 174–202.

Describes many rock exposures in the region and mentions the minerals found in them.

772 **Raymond** (R. W.). [Occurrence of titaniferous iron ore.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 274–277.

In discussion of paper by H. B. C. Nitze, "The magnetic iron ores of Ashe County, N. C."

773 —— [Vein structure.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 872–873.

In discussion of paper by Ernest Wiltsee, "Notes on the geology of the Half-Moon Mine, Pioche, Nev."

774 **Reade** (T. Mallard). Physics of mountain building: some fundamental conceptions.

Am. Geol., vol. ix, pp. 238–243.

Discusses the effect of simple expansion by increase of temperature in the production of lateral pressure in the earth's crust.

775 **Reese** (Charles L.). On the influence of swamp waters in the formation of the phosphate nodules of South Carolina.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 402–406.

Brief description of the phosphate deposits and a statement of the results of certain chemical experiments.

776 **Reid** (Harry Fielding). Studies of Muir glacier, Alaska.

Nat. Geog. Mag., vol. iv, pp. 19-55, pls. i–xiv.

Abstract: Am. Geol., vol. x, p. 326 (½ p.).

Gives a general sketch of the geography of the country. Describes the main features of the glacier and its tributaries, and recites the evidences which indicate its former extension and recent diminution. Gives the results of measurements of the motion of the ice and the general features of its erosion.

777 **Reyer** (E.). On the causes of the deformation of the earth's crust.
Sci. Amer. Suppl., vol. xxxiv, pp. 13874–13875.
Discusses the effect of sedimentation and loading in producing deformation, illustrated by sketches of certain experiments.

778 **Rickard** (T. A.). The persistence of ores in lodes in depth.
Eng. and Min. Jour., vol. lv, pp. 51-52.
Remarks on the evidence of certain mines which indicate that the lodes becomes poorer when a considerable depth has been attained.

778*a* —— Certain dissimilar occurrences of gold-bearing quartz.
Colo. Sci. Soc., Proc., vol. iv, pp. 323–331 and 336–339.
Describes gold-bearing quartz veins of Australia, New Zealand, and California.

778*b* —— [Origin of ore deposits].
Colo. Sci. Soc., Proc., vol. iv, pp. 350–351.
In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

779 **Ricketts** (L. D.). Faulting in veins.
Eng. and Min. Jour., vol. liii, pp. 565–566.
Reviews the previous articles on this subject and discusses the characteristics of fault phenomena.

780 **Ries** (Heinrich). Notes on the clays of New York State and their economic value.
N. Y. Acad. Sci., Trans., vol. xii, pp. 40–47.
Describes the clays of Quaternary, Tertiary, and Cretaceous age occurring in various portions of the State.

781 —— List and bibliography of minerals occurring in Warwick Township, N. Y.
N. Y. Acad. Sci., Annals, vol. vii, pp. 651–654.

782 **Robertson** (James D.). Notes on the formation of the iron ores.
Science, vol. xxi, p. 131.
Describes an occurrence of specular hematite in Missouri and the evidences which indicate the replacement of limestone by iron from percolating waters.

783 **Rogers** (G. O.). Drift mounds near Olympia, Washington.
Am. Geol., vol. xi, pp. 393–399.
Describes some peculiar mounds occurring in this vicinity, reviews Professor Le Conte's theory as to their origin, and suggests that they are due to certain glacial phenomena.

784 **Rominger** (C.). On the occurrence of typical Chætetes in the Devonian strata at the falls of the Ohio and likewise in the analagous beds of the Eifel of Germany.
Am. Geol., vol. x, pp. 56–63.
Defines the characters which distinguish Chætetes from certain other genera and describes some specimens from the two localities.

785 **Ross** (O. C. D.). The origin of petroleum.
Brit. Assoc. Adv. Sci., Report 1891, pp. 639–641.
Refers to the occurrence of gypsum as being an indication of oil-bearing strata and to the general condition of the petroleum industry in the United States.

786 **Rothpletz** (A.). On the formation of oolite.
Am. Geol., vol. x, pp. 279–282.
Abstract: Am. Nat., vol. xxvii, p. 34 (⅓ p.).
Describes Glæocapsa and Glæothece cells found on the shores of Great Salt Lake. Describes the calcareous oolites, and concludes that a majority of the marine Cretaceous oolites, with regular zonal and radial structure, are of plant origin.

787 —— On the Permian, Triassic, and Jurassic formations in the East Indian Archipelago (Timor and Rotti).
Geol. Soc. Am., Bull., vol. iii, pp. 14–15.
Paper read before the society and discussed by C. A. White and Lester F. Ward.

788 **Rowley** (R. R.). Range of Choteau fossils.
Am. Geol., vol. xii, pp. 49–50.
Exhibits in tabular form the range of the common species of Choteau fossils in the Carboniferous of Missouri.

789 —— The Hamilton beds of Callaway County, Mo.
Am. Geol., vol. xii, pp. 203–205 (correspondence).
Gives list of fossils found in these beds.

790 —— Description of some new species of crinoids, blastoids, and brachiopods from the Devonian and sub-Carboniferous rocks of Missouri.
Am. Geol., vol. xii, pp. 303–309.
Describes new species from the Hamilton beds and Burlington, Choteau, and Louisiana limestones of Missouri.

791 **Ruffner** (W. H.). Some recent mineral discoveries in the State of Washington.
Science, vol. xix, p. 58.
Describes the ore deposits of different districts in the State.

792 **Russell** (F. W.). Notes upon Nebraska Tertiary.
Am. Geol., vol. ix, pp. 178–181.
Describes certain beds belonging to the Tertiary and discusses the evidences which indicate that some of them should be assigned to the Miocene and others to the Pliocene.

793 **Russell** (Israel C.). Malaspina Glacier.
Jour. of Geol., vol. i, pp. 219–245.
Abstract: Am. Geol., vol. xii, pp. 121–122 (⅓ p.).
Describes the geographic features of the Mount St. Elias region, illustrated by map, and the glacial characters of the ice sheet. Mentions the occurrence of forests on the moraines and of marginal lakes. The drainage is englacial or subglacial, and subglacial deposition takes place which may be similar to the osars of other glaciated regions.

794 —— Geological history of the Laurentian basin.
Jour. of Geol., vol. i, pp. 394–408.
Describes the sub-morainal topography of the basin. Discusses the origin of the basin, the character of its sediments, the evidences of the existence of lake shores, the fossils found in the sedimentaries, and the effect of a retreat of the ice sheet.

795 **Russell** (Israel C.). Correlation papers. The Newark system.

U. S. Geol. Surv., Bull. No. 85, 344 pp., pls. i–xiii, figs. 1–4.

Abstracts: Jour. of Geol., vol. i, pp. 740–744; Am. Geol., vol. xii, p. 402 (½ p.); Am. Nat., vol. xxvii, pp. 987–988.

Includes an account of the geographic distribution of the Newark system and a description of its lithologic character and stratigraphy, of the life of the period, and of the dikes and sheets of igneous rocks which penetrate the Newark strata. Contains a description of the structure and origin of the Newark areas, a discussion of the principles of correlation, the relation of the Newark to other systems, and a bibliography and index.

796 —— Second expedition to Mount St. Elias in 1891.

U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 7–91, pls. iii–xxi, figs. 1–6.

Describes the topographic features of the region and the character of the glacial phenomena and deposits.

797 —— A geological reconnoissance in central Washington.

U. S. Geol. Surv., Bull. No. 108, pp. 11–108, pls. i–xii, figs. 1–8.

Describes the character of the crystalline rocks, the Kittitas system, Columbia lavas, John Day system, and the glacial deposits. Discusses the geologic structure of the region and gives a description of the region traversed, including portions of Yakima, Kittitas, Okanogan, and Douglas counties.

798 —— Origin of the gravel deposits beneath Muir Glacier, Alaska.

Am. Geol., vol. ix, pp. 190–197.

Describes certain bowlder and gravel deposits on the west side of Yakutat Bay and assumes that similar deposits beneath Muir Glacier, described by H. P. Cushing, have a like origin.

799 —— Climatic changes indicated by the glaciers of North America.

Am. Geol., vol. ix, pp. 322–336.

Gives an account of the distribution of existing glaciers in North America and the evidences which indicate that they are now retreating. Concludes that the growth of glaciers and the initiation and decline of glacial epochs are the result of climatic changes so gradual as to require the lapse of centuries to become conspicuous.

800 —— Mount St. Elias and its glaciers.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 169–182.

Abstract: Am. Geol., vol. ix, pp. 340–341.

Gives an account of two expeditions to the region and describes the character of the country traversed. The prevailing structure is monoclinal and similar to the Great Basin type. Describes the glacial phenomena and states that the present ice drainage is consequent on the orographic structure.

S.

801 **Safford** (James M.). Notes on the Middleton formation of Tennessee, Mississippi, and Alabama.

Geol. Soc. Am., Bull., vol. iii, pp. 511–512.

Abstract: Am. Geol., vol. xi, p. 119 (6 l.).

Describes the characters of the formations in these States which form the lowest Eocene.

802 —— The pelvis of a Megalonyx and other bones from Big Bone Cave, Tennessee.

Geol. Soc. Am., Bull., vol. iii, pp. 121–123.

Describes the pelvis and other bones found in this cave and its location and history.

803 **Safford** (James M.). Exhibition of certain bones of Megalonyx not before known.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 289 (⅓ p.)

804 —— The Tennessee Coal Measures.

U. S. Geol. Surv., Min. Res., 1892, pp. 497–506.

Describes the strata in which the Coal Measures occur and states that they form the uppermost beds of the Cumberland Plateau, covering an area of about 5,000 square miles.

805 **Sahlin** (Axel). The talc industry of the Gouverneur district, St. Lawrence County, N. Y.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 583–588.

Briefly describes the occurrence of veins of talc in this district.

806 **Salisbury** (Rollin D.). On the probable existence of a second driftless area in the basin of the Mississippi.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 251–253.

The area lies principally in Illinois, between the Mississippi and Illinois rivers. As the region is approached the topography loses the characteristics of glacial erosion and develops those of subaerial erosion.

807 —— A preliminary paper on drift or Pleistocene formations of New Jersey.

N. J. Geol. Surv., Report for 1891, pp. 35–108.

Gives a general description of the drift formations of the State and of the phenomena connected with their deposition. Describes the development and movements of the ice sheet in North America and the modifications produced on the pre-Glacial surface. Describes the deposits of till, the terminal moraines, and the extra-morainic glacial drift of New Jersey.

808 —— Certain extra-morainic drift phenomena of New Jersey.

Geol. Soc. Am., Bull., vol. iii, pp. 173–182.

Describes the deposits found in different localities which indicate that glaciation had extended beyond the limit heretofore assigned to it. It is suggested that the ice period may have been divided into three epochs, since the first advance has no frontal moraine, the second is limited by morainal ridges, and the third by terminal moraines of more pronounced character.

809 —— On the northward and eastward extension of the pre-Pleistocene gravels of the Mississippi basin.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 183–186.

Refers to previous publications by the author on the relationships of the Mississippi Valley gravels to the glacial drift and gives the results of recent observations. It is thought that the gravels are pre-Pleistocene and the gravels of the driftless area in Wisconsin and southeastern Minnesota are to be correlated with those of the Ohio and Mississippi basins.

810 —— Surface geology, Report of Progress, 1892 [New Jersey].

N. J. Geol. Surv., Report for 1892, pp. 37–166.

Abstract: Am. Geol., vol. xii, pp. 336–337.

Gives a general description of glacial deposits. Describes the till, extra-morainic till deposits, the terminal moraine, eskers, osars, kames, overwash plains and valley trains, Trenton gravels outside of Delaware Valley, glacial phenomena of glacial lake Passaic, wind drift and residuary products, and the yellow gravel in New Jersey.

811 **Salisbury** (Rollin D.). Distinct glacial epochs and the criteria for their recognition.

Jour. of Geol., vol. i, pp. 61–84.

Abstract: Am. Geol., vol. xi, pp. 171–172.

Defines the term "glacial epoch" and describes the phenomena which would indicate the existence of distinct glacial epochs.

812 —— The drift of the north German lowland.

Am. Geol., vol. ix, pp. 294–319.

Describes the differences of glacial phenomena of Germany and America and reviews the paper by Dr. F. Wahnschaffe on "The causes of the surface form of the north German lowland."

812*a* —— The Older drift in the Delaware valley.

Am. Geol., vol. xi, pp. 360–362 (correspondence).

Refers to article by A. A. Wright, on the same subject.

812*b* —— **Chamberlin** (T. C.) and. On the relationship of the Pleistocene to the pre-Pleistocene formations of the Mississippi basin south of the limit of glaciation.

See Chamberlin (T. C.) and Salisbury (R. D.), 132.

813 **Sapper** (Carl). Ueber die räumliche Anordnung der mexikanischen Vulkane.

Zeit. Deut. Geol. Gesell., Band xlv, Heft 4, 1893, pp. 574–577.

Describes the general arrangement and the structure and character of the materials of the volcanoes of Mexico.

814 —— Bemerkungen uber die räumliche Vertheilung und morphologischen Eigenthünlichkeiten der Vulcane Guatemalas.

Zeit. Deut. Geol. Gesell., Band xlv, Heft 1, 1893, pp. 54–62.

Describes the general character of volcanic activity in Guatemala and the arrangement and geographic distribution of the volcanoes. Considers they were formed by volcanic material coming up through fissures, the volcanoes varying in size according to the size of the fissure, and that their present form is due to the action of winds and hurricanes in carrying away the loose materials.

814*a* **Sardeson** (F. W.), **Hall** (C. W.) and. Paleozoic formations of southeastern Minnesota.

See Hall (C. W.) and Sardeson (F. W.), 377.

815 **Schuchert** (Charles). On the development of the skull of Zygospira recurvirostra.

Wash. Biol. Soc., Proc., vol. viii, pp. 79–82, pl. xi.

Describes specimens obtained from Minnesota from a horizon equivalent to the Trenton of New York and gives a statement of observations and correlations.

816 —— A classification of the Brachiopoda.

Am. Geol., vol. xi, pp. 141–167.

Reviews the classifications of Brachiopoda adopted by previous writers. Gives the author's classification and a table showing the geologic distribution of Brachiopoda.

816*a* —— **Beecher** (C. E.) and. Development of the brachial supports in Dielasma and Zygospira.

See Beecher (C. E.) and Schuchert (C.), 64.

816*b* **Schuchert** (Charles), **Winchell** (N. H.) and. Preliminary description of new Brachiopoda from the Trenton and Hudson River groups of Minnesota.

See Winchell (N. H.) and Schuchert (C.), 1081.

816*c* **Schwarz** (T. E.) [Independence mine, Cripple Creek, Colorado.]

Colo. Sci. Soc., Proc., vol. iv. p. 422.

Brief note on the occurrence of gold ores in this mine.

817 **Schweitzer** (Paul). A report on the mineral waters of Missouri.

Mo. Geol. Surv., vol. iii, 1892, pp. 1–256, pls. i–xxxiii, figs. 1–11.

Abstract: Am. Geol., vol. xi, pp. 205–207.

Discusses the origin of mineral waters and their analysis, composition and therapeutics. Describes the occurrences of mineral waters or brines, and the alkaline, sulphatic, chalybeate, and sulphur waters. Compares European and Missouri waters. Appendix B contains analyses of waters from most of the counties. Appendix C comprises a bibliography of mineral waters.

818 **Scott** (W. B.). On the osteology of Mesohippus and Leptomeryx, with observations on the modes and factors of evolution in the Mammalia.

Abstracts: Am. Geol., vol. ix, pp. 402–404; Am. Jour. Sci., 3d ser., vol. xliv, p. 428.

819 —— A revision of the North American Creodonta, with notes on some genera which have been referred to that group.

Phila. Acad. Nat. Sci., Proc., 1892, part ii, pp. 291–320, and part iii, pp. 321–323.

Reviews the classifications that have been previously proposed and describes several species.

820 —— The mammals of the Deep River beds.

Am. Nat., vol. xxvii, pp. 659–662.

Gives list of fossils found in Deep River Valley, Montana, with brief description of some new species.

821 **Scudder** (Samuel Hubbard). Index to the known fossil insects of the world, including myriapods and arachnids.

Abstract: Am. Jour. Sci., 3d ser., vol. xliii, pp. 244–245 (8 l.).

822 —— The Tertiary Rhynchophora of North America.

Boston Acad. Nat. Hist., Proc., vol. xxv, pp. 370–386.

Abstract: Am. Nat., vol. xxvii, pp. 146–147.

Gives a general account of the Tertiary insects and in tabular form compares the recent and fossils Rhynchophora, the relative importance of the families, and the relative abundance of insects in western deposits. Describes some of the different families.

823 —— Tertiary Rhynchophorous Coleoptera of the United States.

U. S. Geol. Surv., Monograph XXI, pp. 1–175, pls. i-xii.

Discusses the general results of the author's study of fossil Rhynchophora. Describes the characters of different species and gives a table showing their abundance and geographic distribution.

824 —— Some insects of special interest from Florissant, Colo., and other points in the Tertiaries of Colorado and Utah.

U. S. Geol. Surv., Bull. No. 93, 25 pp., pls. i-iii.

Abstract: Am. Nat., vol. xxvii, pp. 558–559 (½ p.).

Includes description of insects of different orders.

825 **Scudder** (Samuel Hubbard). The American Tertiary Aphidæ.
U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 347–356, pls. cii-cvi.
Describes the general characters of American fossil plant lice and gives a list of them and a brief description of various species and the locality where found.

826 —— Insect fauna of the Rhode Island coal field.
U. S. Geol. Surv., Bull. No. 101, pp. 9–21, pls. i-ii.
Describes specimens from the Carboniferous of Rhode Island.

827 **Sears** (John H.). Geological and mineralogical notes, No. 5.
Essex Inst., Bull., vol. xxv, pp. 8–13.
Abstract: Am. Nat., vol. xxvi, p. 156 (⅓ p.).
Describes some of the granitic, crystalline, and older sedimentary rocks of Essex County, Mass., and the microscopic structure of certain specimens.

828 —— On the occurrence of augite and nepheline syenites in Essex County, Mass.
Essex Inst., Bull., vol. xxv, pp. 111–125.
Describes the rock outcrops and the megascopic and microscopic characters of the syenites of the region.

829 **Selwyn** (Alfred R. C.). Summary report on the operations of the Geological Survey for the year 1890.
Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part i, Report A, pp. 86.
Gives an account of observations on the gold-bearing rocks of Nova Scotia and of the Illecillewæt and Kootenai mining districts, and includes extracts from the reports of the assistant geologists.

830 —— Summary report on the operations of the Geological Survey for the year 1891.
Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part ii, Report A, pp. 92.
Abstract: Am. Geol., vol. x, p. 182 (⅓ p.).
Includes an account of observations in Manitoba and Alberta and extracts from the reports of the geologic assistants.

831 —— Geological age of the Saganaga syenite.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 319–322.
Refers to the paper by H. V. Winchell on the same subject. Discusses the use of the terms Huronian, Coutchiching, and Keewatin.

832 **Shaler** (Nathaniel Southgate). The origin and nature of soils.
U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 219–345.
Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 163–164 (⅓ p.).
Discusses the nature and origin of soil and describes the processes of soil formation and certain peculiar soil conditions.

833 —— General account of the fresh-water morasses of the United States, with a description of the Dismal Swamp district of Virginia and North Carolina.
U. S. Geol. Surv., 10th Ann. Rept., pp. 255–339.
Abstract: Am. Geol., vol. ix, pp. 206–207.
Noticed in Record for 1891.

834 **Shaler** (Nathaniel Southgate). The geological history of harbors.
U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 99–209, pls. xxii–xlv, figs. 7–15.
Describes the general nature and origin of harbors, the effects of the forces at work upon them, and includes a description of the harbors on the Atlantic and Pacific coasts and on the Great Lakes of the United States.

835 —— The conditions of erosion beneath deep glaciers, based upon a study of the bowlder train from Iron Hill, Cumberland, R. I.
Harv. Mus. Comp. Zool., Bull., vol. xvi, No. 11, pp. 185–225, pls. i–iv, and map.
Abstracts: Am. Geol., vol. xii, pp. 191–192; Am. Nat., vol. xxvii, p. 662 (¼ p.).
Describes the source of the bowlder train, its character and the rate of glacial erosion at this locality. Discusses the general characteristics of continental glaciation.

836 **Sherzer** (Will H.) A revision and monograph of the genus Chonophyllum.
Geol. Soc. Am., Bull., vol. iii, pp. 253–282.
Abstract: Am. Geol., vol. x, p. 66 (⅛ p.).
Describes the generic characters and gives a list of species of Chonophyllum. Its range is through Upper Silurian and the two lower divisions of the Devonian and reaching its maximum development in the Upper Helderberg.

837 **Shufeldt** (R. W.). A study of the fossil avifauna of the Silver Lake region, Oregon.
Phil. Acad. Nat. Sci., Jour., 2d ser., vol ix, pp. 389–425.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 286 (12 l.).
Describes some new forms of fossil gulls found in this region.

837*a* **Singley** (J. A.). Report for 1891.
Texas Geol. Surv., 2d Rept. of Progress, 1891, pp. 78–82.
Gives the section as shown by a deep well at Galveston.

838 —— Preliminary report on the artesian wells of the Gulf coastal slope.
Texas Geol. Surv., 4th Ann. Rept., pp. 87–113.
Gives the section displayed by the Galveston deep well to a depth of 3,070 feet and the names of the fossils found in the various fossiliferous beds. Includes a description of the artesian wells of the coastal prairie region and Tertiary belt, with chemical analyses of some of the waters and sections of many of the wells.

839 **Small** (H. B.). The phosphate mines of Canada.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 774–782 and 1003.
Abstract: Eng. and Min. Jour., vol. lv, pp. 173–174.
Describes the apatite district in the Province of Quebec and the lithologic character of the rocks with which the apatite is associated.

840 **Smith** (Eugene A.). Underthrust folds and faults.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 305–306.
Describes the typical Appalachian fold and the structure of the underthrust fold or fault.

841 **Smith** (Eugene A.). Phosphates and marls of Alabama.

Ala. Geol. Surv., Bull. No. 2, pp. 9–82.

Abstract: Am. Nat., vol. xxvi, pp. 1026–1027.

Describes the characteristics of the subdivisions of the Cretaceous and Tertiary formations of the State and their contained phosphate deposits and calcareous marls. Gives a statement of the quality of the Alabama materials and compares them with the New Jersey phosphatic marls.

842 —— Sketch of the geology of Alabama.

Roberts & Son, Birmingham, Ala., pp. 1–36.

Describes the characteristics of each of the geologic formations occurring in the State, which includes representatives of all formations from Archean to Recent, except the Permian, Triassic, and Jurassic. Gives an account of their geographic distribution and a description of their economic mineral constituents.

843 —— The Coal Measures of Alabama.

U. S. Geol. Surv., Min. Res., 1892, pp. 293–300.

Divides the coal fields into three districts. States that they were probably originally continuous, but have been disconnected by dynamic forces.

844 **Smith** (Hamilton L.). List of species and some notes upon them.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 293–306.

Contains notice of the discovery of a peat deposit of Minnesota carrying fresh-water forms, which occurs between layers of bowlder clay, and contain a marine fauna. Gives a list of diatoms found in the peat, with notes on the species.

845 **Smith** (W. Hampton). Ancient glacial moraine and drift at the mouth of the Columbia River.

Sci. Amer. Suppl., vol. xxxvi, p. 14658.

Describes and illustrates by cross-sections the structure and character of a mass of glacial débris occurring beneath a series of sandstones and shales 800 to 900 feet in thickness.

846 **Smith** (W. H. C.). Report on the geology of Hunters Island and adjacent country.

Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part i, Report G, 76 pp.

Reviews the work of previous years and gives a bibliography of the geologic literature pertaining to this field. Describes its physical and geologic features. The rocks are schists, quart-porphyries, and conglomerates, associated with altered volcanics and rocks of granitic and syenitic types, the latter exhibiting evidences of eruptive origin.

847 —— The Archean rocks west of Lake Superior.

Geol. Soc. Am., Bull., vol. iv., pp. 333–348.

Describes the character and relations of the Laurentian rocks and discusses the relation of the Coutchiching and Keewatin series to the Laurentian granites. Describes the character and extent of the Coutchiching, Keewatin, and Steep Rock series, with a brief description of the gold deposits and iron ores.

848 **Smock** (John C.). Annual report of State Geologist, 1892.

N. J. Geol. Surv., Report for 1892, pp. 3–30.

Gives an account of the work accomplished in ascertaining the character and extent of Pleistocene, Tertiary, and Cretaceous formations of New Jersey.

849 **Smyth** (C. H., jr.). Lake filling in the Adirondack region.

Am. Geol., vol. xi, pp. 85–90.

Describes the filling of several small lakes which were formed originally by the damming up of old drainage lines by glacial débris. Concludes that the obliteration of the lakes is due to sedimentation, and not to the cutting down of their outlets.

850 —— A geological reconnoissance in the vicinity of Gouverneur, N.Y.

N. Y. Acad. Sci., Trans., vol. xii, pp. 97–108.

Describes the topography and geologic features of the region. Discusses the relation of the limestone to gneiss and the effects of metamorphism.

851 —— Petrography of the gneisses of the town of Gouverneur, N. Y.

N. Y. Acad. Sci., Trans., vol. xii, pp. 203–217.

Describes the petrographic characters of the gneiss, granite, crystalline limestone, quartzite, pyroxene rocks and scapolite rocks of this region, mentioned in a previous article on "A geological reconnoissance in the vicinity of Gouverneur, N. Y."

852 —— A third occurrence of peridotite in central New York.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 322–327.

Description of the strata in which the peridotite occurs and of its mineralogic, chemical, and microscopic characteristics.

853 —— On the Clinton iron ore.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 487–496.

Abstract: Am. Geol., vol. x, pp. 122–124.

Describes the iron ore deposits occurring at Clinton, N. Y., and concludes that these deposits are not of secondary origin, but were deposited as hydrated peroxides of iron in partially inclosed basins of the Silurian sea.

854 —— Alnoite containing an uncommon variety of melilite.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 104–107.

Describes some thin sections of a dike rock from New York containing this mineral.

855 **Smyth** (Henry Lloyd). A contact between the Lower Huronian and the underlying granite in the Republic trough, near Republic, Mich.

Jour. of Geol., vol. i, pp. 268–274.

Describes the general relations and characteristics of the formations in this locality and the contact phenomena at the point where exposed.

856 **Snow** (Charles H.). Copper crystallizations at the Copper Glance and Potosi mines, Grant County, New Mexico.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 308–313.

Gives a sketch of the geologic structure of the Copper Glance and Potosi ore bodies, with a description of the occurrence of some copper crystalline forms. Illustrated by sketch of the specimens.

857 **Spencer** (J. W.). The Paleozoic group. The geology of ten counties of northwestern Georgia.

Ga. Geol. Surv., 1893, pp. 1–406.

Abstracts: Am. Geol., vol. xii, pp. 267–268; Am. Nat., vol. xxvii, p. 1078 (½ p.).

Describes the general characteristics of the Cambrian, Silurian, Devonian, and Carboniferous formations and the physical features of this region. Gives an account of the local geology of each of the ten counties and a description of the ore deposits of iron, manganese, aluminum, coal, and building stones.

858 **Spencer** (J. W.). The Iroquois shore north of the Adirondacks.
Geol. Soc. Am., Bull., vol. iii, pp. 488-491.
Abstract: Am. Geol., vol. xi, p. 58 (½ p.).
Describes in detail the shore-line. Considers that the accumulations at the mouths of all old valleys are identical with the Iroquois beach.

859 —— Channels over divides not evidence per se of glacial lakes.
Geol. Soc. Am., Bull., vol. iii, pp. 491-492.
Abstract: Am. Geol., vol. xi, p. 58 (½ p.).
Describes the valley of Black River, New York, and the character of the terraces, and considers that those on the south indicate the insufficiency of ice dams to account for such high level terraces. Discussed by G. K. Gilbert, I. C. Russell, and the author.

859*a* **Springer** (Frank), **Wachsmuth** (C.) and. Description of two new genera and eight species of camerate crinoids from the Niagara group.
See Wachsmuth (C.) and Springer (F.), 974.

860 **Stanley-Brown** (Joseph). Geology of the Pribilof Islands.
Geol. Soc. Am., Bull. vol. iii, pp. 496-500.
Abstract: Am. Geol., vol. xi, p. 57 (½ p.).
The islands were formed by recent volcanic action, marked by three distinct stages, whose contacts can be distinctly recognized. Describes the general character of and changes caused by igneous action.

861 **Stanton** (Timothy W.). The Colorado formation and its invertebrate fauna.
U. S. Geol. Surv., Bull. No. 106, pp. 13-189, pls. i-xlv.
Describes the geographic distribution of the formation, its lithologic characters, and thickness at different localities, with lists of fossils collected. Compares its fauna with other Cretaceous faunas of North America and Europe, and describes the characters of different species, stating the locality where found and their geologic position.

862 —— The stratigraphic position of the Bear River formation
Am. Jour. Sci., 3d ser., vol. xliii, pp. 98-115.
Abstract: Am. Geol., vol. ix, pp. 266-267.
Gives detailed description of the geologic sections at Bear River City and vicinity, in western Wyoming, and shows that this formation, formerly considered to be of Laramie or later age, is intermediate between the Jurassic and Colorado Cretaceous and probably above the Dakota. Of its thirty species of molluscan remains none have been found in the true Laramie. Accompanied by map and four sections.

863 —— The faunas of the Shasta and Chico formations.
Geol. Soc. Am., Bull., vol. iv, pp. 245-256.
Abstract: Am. Geol., vol. xii, p. 120 (½ p.).
Reviews the literature on the relations of these formations, gives a list of both faunas from northern California, and reviews the evidences correlating these beds with the Queen Charlotte series of British Columbia. Concludes that there is no faunal break in the Shasta-Chico series.

864 **Stefanescu** (Grégoire). On the existence of the Dinotherium in Roumania.
Geol. Soc. Am., Bull., vol. iii, pp. 81-83.
Mentions the occurrence of remains of large Mammalia in the Tertiary and Quaternary of this country. Describes and illustrates the beds in which fragments of Dinotherium were found and gives measurements of some of its parts.

865 **Steinmann** (Gustav). A geological map of South America.
Abstract: Geol. Soc. Am., Bull., vol. iii, pp. 13–14.
The paper was discussed by E. D. Cope, R. T. Hill, and C. A. White.

866 **Stevenson** (John J.). The Chemung and Catskill (Upper Devonian) on the eastern side of the Appalachian basin.
Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 219–247; Am. Geol., vol. ix, pp. 6–33.
Abstract: Am. Nat., vol. xxvi, p. 157 (½ p.).
Reviews the opinions of other writers concerning the geologic position of these beds and describes their structural characteristics. Concludes that the series from the Portage to the end of the Catskill forms one period, the Chemung, and should be considered as belonging to the Devonian.

867 —— On the use of the name "Catskill."
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 330–337.
Discusses the applicability of the term "Catskill" to designate an important formation and describes the general relations and character of the strata to which it is applied.

868 —— Prof. I. C. White's "Stratigraphy of the bituminous coal fields of Pennsylvania, Ohio, and West Virginia."
Am. Geol., vol. ix, pp. 352–355.
Gives a general review of the paper by Professor White.

869 —— On the origin of the Pennsylvania anthracites.
Abstract: Jour. of Geol., vol. i, pp. 677–687.
Discusses the different theories advanced to account for the occurrence of anthracite and gives a brief statement concerning the author's hypothesis.

870 **Stevenson** (Robert). The persistence of ores in lodes in depth.
Eng. and Min. Jour., vol. lv, p. 148.
Remarks on some evidences of barrenness and pinching out of ore bodies in mines of California at depths of 30 to 60 feet and widening out again within 25 feet of the bottom of the shaft.

871 **Stoek** (H. H.). Notes on the iron ores of Danville, Pa., with a description of the long-wall method of mining used in working them.
Am. Inst. Min. Engrs., Trans., vol. xx, pp. 369–385.
Gives a brief geologic description of the region and reproduces a section made by H. D. Rogers. The ore is of two varieties, one occurring in limestones, the other in sandstones. Includes analyses of the ores and a history of the development of the mines and the mining methods employed.

872 **Stone** (George H.). The osar gravels of the coast of Maine.
Jour. of Geol., vol. i, pp. 246–254.
Abstracts: Am. Geol., vol. xii, p. 122 (½ p.); Am. Geol., vol. xii, pp. 200–203 (correspondence).
Describes the osars of the region and remarks on the decrease in size of the gravel masses toward the coast and the presence of subglacial streams as shown by the occurrence of glacial potholes, and discusses the origin of the subglacial tunnels.

873 **Stone** (George H.). An extinct glacier of the Salmon River Range.
Am. Geol., vol. xi, pp. 406–409.
Describes an extinct glacier occurring in the Salmon River Mountains of Idaho.

874 —— The Turkey Creek mining district, El Paso County, Colo.
Eng. and Min. Jour., vol. lvi, p. 262.
Describes the occurrence of sandstone in granite, with brief statement concerning the other rocks of the district.

875 —— The Las Animas glacier.
Jour. of Geol., vol. i, pp. 471–475.
Describes the deposits of this extinct glacier and its tributaries in the smaller valleys.

876 **Storms** (W. H.). Los Angeles County [California].
Cal. State Min. Bur., 11th Rept., pp. 243–248.
Notes on the character and manner of occurrence of the gold and silver ores in certain mines.

877 —— San Bernardino County [California].
Cal. State Min. Bur., 11th Rept., pp. 337–369.
Describes the geologic features and the structure and character of the ore deposits of the Calico mining district and other mining districts of the county.

878 —— San Diego County [California].
Cal. State Min. Bur., 11th Rept., pp. 376–387.
Notes on some of the gold mines.

879 **Streeruwitz** (W. H. von). Report for 1891.
Texas Geol. Surv., 2d Rept. of Progress, 1891, pp. 20–26.
Gives an account of the general and economic geology of the Carrizo and Sierra Diablo mountains.

880 —— Trans-Pecos Texas.
Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 383–389.
Contains brief description of the Carboniferous and Cretaceous beds in this region and the indications of ore bodies in the Carrizo and Sierra Diablo mountains.

881 —— Trans-Pecos Texas.
Texas Geol. Surv., 4th Ann. Rept., pp. 141–175.
Describes the processes of subaerial erosion in this region and contains observations on the occurrence of silver and gold and on outcrops showing lead or copper. Describes the Cretaceous and Carboniferous strata and gives a measured section in the Sierra Diablo and Carrizo mountains and a list of fossils obtained.

882 —— On the precious and other valuable metals of Texas.
Texas Acad. Sci., Trans., vol. i, pp. 19–24.
Gives a brief description of the occurrence of gold, silver, and platinum and their distribution and that of iron in the several districts of Texas.

883 —— The non-metallic mineral resources of the State of Texas.
Texas Acad. Sci., Trans., vol. i, pp. 97–102.
Discusses the character of the brown and stone coals, fire clays, kaolin, salt deposits, and building stones of Texas.

884 **Stretch** (R. H.). The Monte Christo mining district, Washington.
Eng. and Min. Jour., vol. lv, p. 343.
Describes the topographic and geologic features of the region.

885 **Swezey** (G. D.). Evidence of two pre-morainic glacial movements.
Science, vol. xxi, p. 216.
Describes some glacial phenomena of Nebraska.

T.

886 **Taff** (J. A.). Report for 1891.
Texas Geol. Surv., 2d Rept. of Progress, 1891, pp. 70–77.
Describes the artesian water supply and mineral resources of central and southwest Texas.

887 —— Report on the Cretaceous area north of the Colorado River.
Texas Geol. Surv., 3d Ann. Rept., pp. 269–379.
Describes the geologic and petrographic features of the Cretaceous series and mentions some of the fossils found in them. Divides the report into two sections—the Bosque, which is the lowest of the Cretaceous in Texas, and the Lampasas-Williamson section, the latter comprising the whole Cretaceous in central Texas.

888 —— Report on the Cretaceous area north of the Colorado River.
Texas Geol. Surv., 4th Ann. Rept. pp. 241–354.
Continues the description of Cretaceous deposits contained in Third Annual Report for 1891. Discusses the artesian water problems and describes the soils and topographic features of the region. Accompanied by two maps showing the areal extent of the Cretaceous and the artesian water conditions.

889 —— [Reply to criticisms on Third Annual Report of the Geological Survey of Texas.]
Am. Geol., vol. xi, pp. 128–130 (correspondence).

890 **Talmage** (J. E.). A remarkable occurrence of selenite.
Science, vol. xxi, pp. 85–86.
Abstract: Am. Nat., vol. xxvii, p. 1091 (¼ p.).
Describes an occurrence of gypsum in a cave in southern Utah. Contains illustrations of the crystals as they occur in place.

891 **Tarr** (Ralph S.). The Permian of Texas.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 9–12.
Considers, from the lithologic character and fauna, that the Permian of western Texas was deposited in a shallow inclosed sea and separated from the Carboniferous, if at all, by a very slight time-break.

892 —— The central Massachusetts moraine.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 141–145.
Describes the moraine as extending from Cape Ann nearly to the Connecticut River. The halt in the retreat of the ice was only of sufficient length to form a well-defined morainal band.

893 —— A hint with respect to the origin of terraces in glaciated regions.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 59–61.
Describes the valley of the Colorado River in central Texas and states that the conditions here prevailing are practically similar to those at the time of the formation of the terraces of the Glacial epoch. Compares the Colorado River terraces with those of the Connecticut River.

894 **Tarr** (Ralph S.). The Glacial period.

Sci. Am., vol. lxviii, pp. 86 and 103.

Describes the glacial phenomena in North America and other countries and discusses the evidences indicating the length of time since the close of the Glacial period.

895 —— Extinct volcanoes in the United States.

Sci. Am. Suppl., vol. xxxvi, pp. 14657-14658.

Describes some extinct volcanoes found in the Sierra Nevada, Coast Ranges, and Appalachians.

896 —— The new physical geography.

Sci. Am. Suppl., vol. xxxvi, pp. 14975-14976.

Remarks on the interdependence of geography and geology and describes some processes of stream erosion.

897 —— The Cretaceous covering of the Texas Paleozoic.

Am. Geol., vol. ix, pp. 169-178.

Gives a general sketch of the geologic history of Texas from the Carboniferous to and including Cretaceous time, indicating that it was uninterruptedly a land area and toward the close of the period had become a base-leveled peneplain, over which the Cretaceous sea rapidly encroached.

898 —— The relation of secular decay of rocks to the formation of sediments.

Am. Geol., vol. x, pp. 25-44.

Describes the processes of secular disintegration of rocks, the formation and distribution of residual soils, and the forces which transport the products of rock decay and assist in rock formation.

899 —— Glacial erosion.

Am. Geol., vol. xii, pp. 147-152.

Describes the general characteristics of glacial erosion and discusses the possibility of estimating the rate of glacial erosion from a study of these features.

900 —— Notes on the physical geography of Texas.

Phila. Acad. Nat. Sci., Proc., 1893, part ii, pp. 313-347.

Describes the present topographic features and also those of the different geologic periods in various portions of the State, with a discussion of the base-leveling and changes in the drainage systems that have taken place.

901 —— Reconnoissance of the Guadalupe Mountains.

Texas Geol. Surv., Bull. No. 3, pp. 9-42.

Describes the Cretaceous, Permian and Carboniferous areas of central Texas, the topographic features of the Guadalupe Mountains, their stratigraphy and economic resources.

902 —— **Wolff** (J. E.) and. Acmite-trachyte from the Crazy Mountains, Montana.

See Wolff (J. E.) and Tarr (R. S.), 1093.

903 **Taylor** (F. B.). The highest old shore-line on Mackinac Island.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 210-218.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 260-261.

Discusses the evidences as to the altitude of the highest shore-line on this island and at other points in the region and suggests a provisional classification of the deserted beaches of the Great Lakes into two subdivisions, differing genetically and chronologically from each other.

903*a* **Texas Geological Survey.** Annual Report for 1891.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 427 (½ p.); Am. Geol., vol. x, pp. 311–316.

903*b* **Texas Geological Survey.** Annual Report for 1892.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvi, pp. 307–308.

904 **Thomas** (Benj. W.). Diatomaceæ of Minnesota interglacial peat.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 290–293.

Contains a description of Diatomaceæ and their geologic and geographic distribution.

905 **Thompson** (Maurice). Drift beds of Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 20–40.

Describes the modification of the drift since its deposition and discusses the theory of a "second glacial epoch." Describes the depth and structure of the drift deposits and their contained fossils and minerals.

906 —— The Wabash arch [Indiana].

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 41–53.

Gives an account of observations bearing on the formation and structure of the arch and considers that it was connected with a continental disturbance occurring about the close of the Niagara epoch.

907 —— Gold, silver, and precious stones [Indiana].

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 87–92.

Describes the characteristics and manner of occurrence of these metals and states that none of them are to be found in Indiana.

908 —— The formation of soils and other superficial deposits [Indiana].

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 93–97.

Describes the composition and mode of formation of the black prairie and some of the clay soils of the State.

909 —— Indiana building stones.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 19–113.

Describes the sandstones and limestones of Silurian, Devonian, and Carboniferous ages in the State, with an account of the quarrying industry and a list of the quarries.

910 —— Geological and natural history report of Carroll County [Indiana].

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 171–191.

Describes the topographic features and soil characteristics and discusses the disturbance of the Niagara limestone in this county.

911 **Thompson** (R. A.). Report on the soils, water supply, and irrigation of the Colorado coal field [Texas].

Texas Geol. Surv., 4th Ann. Rept., pp. 449–481.

Describes the characters of the various soils, giving chemical analyses, water supply, and irrigation possibilities of the region.

912 **Thompson** (W. H.). Fossils and their value.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 54–76.

Describes the nature and distribution of fossils, how to collect them, and the fossil beds of Indiana, and gives a list of fossils found at Crawfordsville, Ind., by Charles Beechler.

913 —— Outline sketch of the most valuable minerals of Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 77–86.

Describes the deposits of kaolin, the building stones, coals, iron ores, and beds of lime and chalk.

914 **Thompson** (W. H.). Partial report of survey of the western division, including sketches of Pulaski and White counties, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 131–154.

Includes description of the structural features of the Silurian and Devonian formations and the planing accomplished by the ice sheet in this region.

915 **Tiffany** (A. S.). Ancient waterways.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 10–11.

916 **Tilton** (J. L.). Strata between Ford and Winterset [Iowa].

Iowa Acad. Sci., Proc., vol. i, part iii, pp. 26–27.

Notes on the Coal Measures of this region in Iowa.

917 **Todd** (J. E.). Striation of rocks by river ice.

Am. Geol., vol. ix, pp. 396–400.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 19–20.

Describes occurrences of striation by river ice below the glaciated area and considers that planation and striation are sometimes the work of river ice armed with erratics.

918 —— Volcanic dust from Omaha, Nebr.

Am. Geol., vol. x, pp. 295–296.

Iowa Acad. Sci., Proc., vol. i, part ii, p. 16.

Describes the deposit and gives a vertical section of the bluff in which it outcrops.

919 —— The shore-lines of ancient glacial lakes.

Am. Geol., vol. x, pp. 298–302.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 17–19.

Discusses the causes of the obscurity of shore-lines of glacial lakes and gives the results of recent observations in the region of the Moreau and Big Cheyenne rivers.

920 —— Striæ and slickensides at Alton, Ill.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 254–255.

Describes the locality and states that the striæ seem to pass into slickensides and may be due to a force acting in a horizontal direction.

921 —— Further note on the Loup and Platte rivers.

Science, vol. xix, pp. 148–149.

Additional notes concerning the topography and drainage of these rivers.

922 —— The Quaternary geology.

Mo. Geol. Surv., Higginsville sheet, pp. 10–11.

Describes the deposits of the drift, loess, or upland loam, and the terraces and bottoms in the area of the Higginsville sheet.

923 —— Notes on the geology of northwestern Iowa.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 13–16.

Gives data bearing on the geology of the region obtained from well records.

924 **Topley** (W.). The geology of petroleum and natural gas.

Brit. Assoc. Adv. Sci., Report for 1891, pp. 637–639.

Refers to the oil and gas fields of the United States and describes the formations in which they occur.

925 **Turner** (H. W.). Glacial potholes in California.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 453–454.
Describes the potholes, and states that they were probably formed by the action of water in some way connected with the glacier that formerly filled the canyon.

926 —— The lavas of Mount Ingalls, California.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 455–459.
Describes the occurrence and characteristics of the four varieties of eruptive rocks found in this locality and gives two analyses of the basalt.

927 —— The coal deposits of California.
U. S. Geol. Surv., Min. Res., 1892, pp. 308–310.
The coal measures that have produced the largest quantity of coal belong to the Eocene formation. Coal also occurs along the foothills of the Sierra Nevada, in the Ione formation, which is considered to be of Miocene age.

928 —— Some recent contributions to the geology of California.
Am. Geol., vol. xi, pp. 307–324.
Reviews several papers which treat of the geology of portions of California.

929 **Tyrrell** (J. B.). Report on northwestern Manitoba, with portions of the adjacent districts of Assiniboia and Saskatchewan.
Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part i, Report E, pp. 231.
Describes the physical features of the region, with statistics of temperature and precipitation. The formations represented comprise the Silurian, Devonian, Cretaceous, post-Tertiary, and Recent. Several sections are given and lists of fossils from many localities. Salt obtained from brine springs forms the chief economic product of geologic interest.

930 —— Deep well at Deloraine, Manitoba.
Am. Geol., vol. xi, pp, 332–342.
Gives the section displayed by the well to a depth of 1,943 feet and describes the lithologic character of the deposits penetrated and mentions the fossils found.

U.

931 **Udden** (J. A.). On a natural formation of pellets.
Am. Geol., vol. xi, pp. 268–271.
Describes the formation of round white pellets in a deposit of volcanic dust occurring in McPherson County, Kans.

932 **Uhler** (P. R.). Gay Head.
Science, vol. xx, pp. 176–177.
General description of the geology of this locality.

933 —— Observations on the Cretaceous at Gay Head.
Science, vol. xx, pp. 373–374.
Gives the results of observations in this locality.

934 **Ulke** (Titus). A new tin mineral in the Black Hills.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 240–241.
Describes the character of a new mineral which the author names cuprocassiterite.

935 **Ulke** (Titus). A contribution to the geology of the Dakota tin mines.

Eng. and Min. Jour., vol. liii, p. 547.

Includes brief description of the Archean rocks in which tin occurs, the mineral species found, and a discussion as to the origin of the tin-bearing granites.

936 —— The occurrence of tin ore at Kings Mountain, N. C., and near Vesuvius, Va.

U. S. Geol. Surv., Min. Res., 1893, pp. 178–182.

Describes the character of the country rock of the two localities and the manner of occurrence of the tin ore.

937 **Ulrich** (E. O.). New Lamellibranchiata.

Am. Geol., vol. x, pp. 96–104.

Describes one new genus and eight new species found in shaly strata equivalent to the Black River limestone, in Minnesota.

938 —— New Lower Silurian Ostracoda, No. 1.

Am. Geol., vol. x, pp. 263–270.

Describes some minute Paleozoic fossils which represent recognizable stages in the development of Leperditiidæ.

939 —— Two new Lower Silurian species of Lichas (subgenus Hoplolichas).

Am. Geol., vol. x, pp. 271–272.

Describes two new species from Minnesota.

940 —— New Lower Silurian Lamellibranchiata, chiefly from Minnesota rocks.

Minn. Geol. and Nat. Hist. Surv., 19th Ann. Rept., pp. 211–248.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 79 (⅓ p.).

Names many forms of Lamellibranchiata found in the different horizons of the Lower Silurian, discusses their classification, and describes some of the forms.

940*a* **United States Geological Survey.** Tenth Annual Report.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, pp. 155–156; Am. Geol., vol. ix, pp. 337–340.

940*b* —— Eleventh Annual Report.

Abstract: Am. Geol., vol. xii, pp. 259–260.

941 **Upham** (Warren). [Pleistocene climatic changes.]

Abstract: Am. Geol., vol. xii, pp. 228–229.

Paper read before the World's Congress of Geology.

942 —— Altitude as the cause of the Glacial period.

Science, vol. xxii, pp. 75–76.

Reviews some of the theories as to the cause of the Ice age and the evidences which indicate a high altitude as the cause of the climatic changes.

943 —— Estimates of geologic time.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 209–220; Sci. Am. Suppl., vol. xxxv, pp. 14403–14405.

Abstracts: Jour. of Geol., vol. i, pp. 203–204; Am. Geol., vol. xi, p. 413 (⅜ p.).

Reviews the estimates of earth age and the time ratios adopted by different writers and the evidences on which they are based.

944 **Upham** (Warren). Epeirogenic movements associated with glaciation.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 114–121.

Discusses the evidence of deep submarine valleys eroded in late Tertiary and Quaternary time and its bearing on the theory of epeirogenic movements as the cause of the Glacial epoch.

945 —— Conditions of accumulation of drumlins.

Am. Geol., vol. x, pp. 339–362.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 70–71.

Defines and describes the varieties of drumlins. Outlines their geographic distribution, and states that they are probably the accumulation from englacial drift. Discusses the question of the unity of the Glacial epoch.

946 —— Englacial drift.

Am. Geol., vol. xii, pp. 36–43.

Discusses the use and application of the term "englacial drift," the distinction between subglacial till and the ice-inclosed drift, and the evidence showing that the drift is carried only into the lower part of the ice sheet. Considers that englacial drift becomes superglacial by the superficial melting of the ice and not by the gradual movement of the ice currents from the bottom to the ice surface.

947 —— Eskers near Rochester, N. Y. A discussion of the structure and origin of the Pinnacle Hills.

Roch. Acad. Sci., Proc., vol. ii, pp. 181–200.

Describes the structure of the Pinnacle Hills and eskers in Pittsford and discusses their relationship to glacial movements and their probable origin.

948 —— Processes of mountain building and their relationship to the earth's contraction.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 274–279.

Classifies mountain building forces into: first, that of folding; second, that form of energy acting in a vertical direction which has produced the arched, domed, tilted, and erupted forms. Both appear to be due to the earth's contracting in cooling, and the latter is dependent on the former in the occasional relief of stress by folding along mountain ranges.

949 —— A classification of mountain ranges according to their structure, origin, and age.

Appalachia, vol. vi, pp. 191–207.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, pp. 74–75 (½ p.); Am. Geol., vol. ix, pp. 205–206.

Noticed in Record for 1891.

950 —— Submarine valleys on continental slopes.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, pp. 171–173.

Describes submarine valleys in different parts of the world and compares their depths with that of the adjoining ocean level.

951 —— Inequality of distribution of englacial drift.

Geol. Soc. Am., Bull., vol. iii, pp. 134–148.

Describes the deposition of englacial drift and the region in which abundant and scanty deposition occurred. Discusses the relationship of the englacial drift to the terminal moraines and the forms in which the former were laid down.

952 **Upham** (Warren). Relationship of the glacial lakes Warren, Algonquin, Iroquois, and Hudson-Champlain.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 484–487; Am. Geol., vol. xi, p. 59 (¾ p.).

Describes the character and extent of the lake basins mentioned and in a general way defines their shore-lines.

953 —— The Champlain submergence.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 508–511; Am. Geol., vol. xi, p. 119 (⅞ p.).

Discusses the evidences of a submergence in Champlain time in eastern North America.

954 —— [Connecticut Valley glacier.]

Geol. Soc. Am., Bull., vol. iv, p. 6.

In discussion of paper by C. H. Hitchcock, "Studies of the Connecticut Valley glacier."

955 —— Comparison of Pleistocene and present ice sheets.

Geol. Soc. Am., Bull., vol. iv, pp. 191–204.

Abstract: Am. Geol., vol. xii, p. 119 (¼ p.).

Describes the existing ice sheets and glaciers and discusses the character and extent of the Pleistocene ice sheets from a comparison with present ice sheets, the continuity of the Ice age and the probable synchronism of glaciation in North America and Europe.

956 —— [The occurrence of Yoldia arctica in bowlder-clay.]

Geol. Soc. Am., Bull., vol. iv, p. 370.

In discussion of paper by R. Chalmers, "Height of Bay of Fundy coast in the Glacial period relative to sea-level as evidenced by marine fossils in the bowlder-clay at St. John, New Brunswick."

957 —— Drumlins near Boston.

Appalachia, vol. vii, pp. 39–48.

Refers to the earlier descriptions of drumlins in this vicinity, gives a list of papers treating on the drumlins near Boston, and discusses the theories as to their origin.

958 —— A recent visit to Lake Itasca.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 284–292.

Gives an account of some glacial phenomena in this region.

959 —— Recent fossils near Boston.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 201–209.

960 —— Recent fossils of the harbor and back bay, Boston.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 305–316.

Gives a table of 25 species of recent fossils found near Boston, 14 of which are distinctly southern and indicate that the sea here during a recent period has been warmer than at present. Since the post-Glacial oscillations are found to extend over all the North Atlantic region, the climatic changes are probably due to conditions determined by geographic movements of elevation and subsidence, with their effect on oceanic circulation.

V.

961 **Van Hise** (Charles Richard). The iron ores of the Lake Superior region.

Wis. Acad. Sci. Arts and Letters, vol. viii, pp. 219–227.

Abstract: Am. Nat., vol. xxvi, pp. 938–939.

Describes the geologic relations of the two formations with which the ore deposits are associated and discusses the question of the genesis of the ores.

962 **Van Hise** (Charles Richard). Correlation papers, Archean and Algonkian.

U. S. Geol. Surv., Bull. No. 86, pp. 549, pls. i–xii.

Review: Jour. of Geol., vol. i, pp. 525–531.

Gives a description of the Archean and Algonkian sections in the United States and Canada, and reviews the literature concerning their classification and correlation. Includes a discussion on the succession of these formations, the principles of correlation, and references to the literature.

963 —— The relations of the Archean and the Algonkian in the Northwest.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 260.

Reviews some opinions concerning the relations of the Archean and Algonkian. States that the upper series of the Huronian rests unconformably on the Archean and in the Marquette and Menominee districts the Lower Huronian rests unconformably on the Basement Complex.

964 —— The iron ores of the Marquette district of Michigan.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 116–132.

Abstract: Eng. and Min. Jour., vol. liv, p. 29.

Describes the manner of occurrence of the iron ores of this district, with incidental mention of those of the Menominee and Vermillion Lake districts. Concludes that the local concentration into workable bodies began in Upper Huronian time or later, and may be still going on; that the genesis of Upper and Lower Huronian ores is alike, and the principle of secondary concentration by downward percolating waters is generally applicable to Lake Superior deposits.

965 —— An historical sketch of the Lake Superior region to Cambrian time.

Jour. of Geol., vol. i, pp. 113–128.

Describes the lithologic characters of the Basement Complex, the Huronian, the Keweenawan and Lake Superior sandstone in this region, and the movements of elevation and subsidence that characterized each epoch. Accompanied by colored geologic map.

966 —— Summary of current pre-Cambrian North American literature.

Jour. of Geol., vol. i, pp. 304–314 and 532–541.

Reviews the current literature on the North American pre-Cambrian.

967 —— Some dynamic phenomena shown by the Baraboo quartzite ranges of central Wisconsin.

Jour. of Geol., vol. i, pp. 347–355.

Describes the dynamic phenomena and the changes which the quartzite has undergone in passing from a massive quartzite, showing little evidence of movement, to rocks that have been fractured and cleaved, and finally to a rock that is apparently a crystalline schist.

968 —— The Huronian volcanics south of Lake Superior.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 435–436.

969 —— **Irving** (R. D.) and. Penokee iron-bearing series.

U. S. Geol. Surv., 10th Ann. Rept., pp. 341–507.

Abstract: Am. Geol., vol. ix, pp. 207–208.

Noticed in Record for 1891.

969*a* **Van Hise** (C. H.), **Irving** (R. D.) and. The iron-bearing series of Michigan and Wisconsin.

See Irving (R. D.) and Van Hise (C. R.), 489.

969*b* —— **Pumpelly** (R.) and. Observations upon the structural relations of the Upper Huronian, Lower Huronian, and Basement Complex on the north shore of Lake Huron.

See Pumpelly (R.) and Van Hise (C. R.), 768.

970 **Vogdes** (Anthony W.). On the North American species of the genus Agnostus.

Am. Geol., vol. ix, pp. 377–396.

Reviews the literature of the subject and describes many different species.

971 —— On the genus Amphyx, with descriptions of American species.

Am. Geol., vol. xi, pp. 99–109.

Gives a historical sketch of this genus, with plates and descriptions of American species.

972 —— On some new Sedalia trilobites.

St. Louis Acad. Sci., Trans., vol. v, pp. 615–618.

Describes a new species from the Sedalia limestone and discusses the classification of Sedalia Crustacea and the age of the limestone.

973 —— A classed and annotated bibliography of the Paleozoic Crustacea, 1698–1892.

Cal. Acad. Sci., Occasional Papers iv, pp. 1–412.

Contains a bibliography of Paleozoic Crustacea and a catalogue of North American species.

W.

974 **Wachsmuth** (Charles) and **Springer** (F.) Description of two new genera and eight species of camerate crinoids from the Niagara group.

Am. Geol., vol., x, pp. 135–144.

Describes the different species and gives their horizon and locality.

975 **Wadsworth** (M. E.). Subdivisions of the Azoic Archean in northern Michigan.

Science, vol. xx, p. 355; Am. Jour. Sci., 3d ser., vol. xlv, pp. 72–73 (½ p.) (correspondence).

Gives the subdivisions in tabular form.

976 **Wahnschaffe** (Felix). Mittheilungen über das Glacialgebiet Nordamerikas. I. Die Endmoränen von Wisconsin und Pennsylvania.

Zeit. Deut. Geol. Gesell., Band xliv, Heft 1, pp. 107–122.

Describes the drift and terminal moraines in Wisconsin and Pennsylvania. Considers the terminal moraine does not mark the southern limit of glaciation. Compares the terminal moraines of Europe and North America.

977 **Walcott** (Charles Doolittle). Note on Lower Cambrian fossils from Cohasset, Mass.

Wash. Biol. Soc., Proc., vol. vii, p. 155.

Mentions two Cambrian fossils found at Cohasset which are identical with species found in Newfoundland.

978 **Walcott** (Charles Doolittle). Notes on the Cambrian rocks of Virginia and the southern Appalachians.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 52–57.

Describes localities in the southern Appalachian region in which Cambrian fossils have been found and compares the strata with those at different points in the northern United States and in Canada.

979 —— Notes on the Cambrian rocks of Pennsylvania and Maryland, from the Susquehanna to the Potomac.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 469–482.

Describes the formations of the region and gives two vertical sections, with list of fossils found in each bed. Reviews the opinions of other writers on the structure of the Blue Ridge. Considers the Balcony Falls section the key to the succession of sedimentary strata of Maryland and Pennsylvania, and that the "great thicknesses" which are said to occur in South Mountain are the result of foldings and overthrust faultings of the Cambrian and pre-Cambrian strata.

980 —— Preliminary notes on the discovery of a vertebrate fauna in Silurian (Ordovician) strata.

Geol. Soc. Am., Bull., vol. iii, pp. 153–167, 3 pls.; discussion, pp. 168–171.

Abstract: Am. Nat., vol. xxvii, pp. 268–269 (½ p.).

Describes the locality, near Canyon City, Colo., in which the fossils were found, gives the vertical section, and names the fossils found in the different beds. The vertical range of the fossils is 75 or 80 feet of the Harding quarry section, which extends horizontally 8 miles. The evidence of the existence of vertebrates is confined to plates and scales of ganoid fishes and a chordal sheath of a fish allied to Chimæra.

981 —— Systematic list of fossils found at Eureka, Nev.

U. S. Geol. Surv., Monograph XX, Appendix A, pp. 319–333.

Includes a list of fossils of each geologic horizon represented in this district.

982 —— The North American continent during Cambrian time.

U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 529–568, pls. xlii-xlv.

Abstracts: Am. Nat., vol. xxvii, pp. 734–735; Am. Jour. Sci., 3d ser., vol. xlv, p. 163 (6 l.).

Describes the character and extent of Cambrian sediments. Gives a description of the geographic distribution of pre-Cambrian land, and discusses the continental features and the relations of land and sea during middle- and post-Cambrian times.

983 —— Correlation Papers. Cambrian.

U. S. Geol. Surv., Bull. No. 81.

Abstract: Am. Geol., vol. ix, pp. 203–205; Am. Jour. Sci., 3d ser., vol. xliii, p. 244 (¼ p.).

Noticed in Record for 1891.

984 —— The Natural Bridge of Virginia.

Nat. Geog. Mag., vol. v, pp. 59–62.

Gives a diagrammatic section of the rocks cut by the canyon and describes the geologic formation and structure at this locality.

985 —— The geologist at Blue Mountain, Maryland.

Nat. Geog. Mag., vol. v, pp. 84–88; Sci. Amer. Suppl., vol. xxxvi, pp. 14753–14754.

Describes the geologic formations and their structure in this region. Gives a general sketch of the geologic history of the Blue Ridge.

986 **Walcott** (Charles Doolittle). Geologic time as indicated by the sedimentary rocks of North America.

Jour. of Geol., vol. i, pp. 639–676; Am. Geol., vol. xii, pp. 343–368.

Gives the estimates of different authors of the duration of geologic time. Describes the continental growth during the various geologic ages, the geographic conditions limiting the extent of Paleozoic sediments in the Cordilleras, the source and character of the material, and the conditions under which they were accumulated, with a discussion of the various processes of deposition and an estimate of the length of Paleozoic time in this region. Gives the ratios of the geologic periods adopted by other writers and presents the author's summary of the duration of each geologic period.

987 **Walther** (Johannes). The North American deserts.

Nat. Geog. Mag., vol. iv, pp. 163–176.

Describes the "Bad Lands" of Dakota, the region about Great Salt Lake and that of the Mohave Desert, and compares them with the deserts of northern Africa. Discusses the causes of erosion in the canyon of the Colorado.

988 —— A comparison of the deserts of North America with those of North Africa and northern India.

Science, vol. xix, p. 158.

Gives an abstract of paper read before the Geographical Society of Berlin.

989 **Wanner** (A.). Fossil tracks in the Trias of York County, Pa.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 286 (5 l.).

990 **Ward** (Lester F.). Principles and methods of geologic correlation by means of fossil plants.

Am. Geol., vol. ix, pp. 34–47.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 288–289; Am. Nat., vol. xxvi, p. 243 (½ p.).

Discusses the theory of homotaxis and gives the principles and methods which should govern the study of paleobotany as an aid to geologic correlation.

991 —— The plant-bearing deposits of the American Trias.

Geol. Soc. Am., Bull., vol. iii, pp. 23–31.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 286–288; Am. Jour. Sci., 3d ser., vol. xliii, p. 157 (½ p.).

Discusses the relations of the Trias beds with those which preceded and followed them. Divides the plant-bearing Trias into five geographic areas and in tabular form shows the number of species common to each area.

992 **Ward** (R. DeC.). Another river pirate.

Science, vol. xix, pp. 7–9.

Describes the process of uplift and erosion by which one stream has captured another in northeastern Pennsylvania.

993 **Ward** (Thomas). The salt deposits of the United States of America and Canada.

Manchester Geol. Soc., Trans., vol. xx, pp. 471–495.

Describes the salt beds in the States of New York, Michigan, and Kansas, and those of Canada.

994 **Warman** (Philip Creveling). Bibliography and index of the publications of the United States Gelogical Survey, with laws governing their printing and distribution.
U. S. Geol. Surv., Bull. No. 100, pp. 9–494.
Gives the title and table of contents of each publication of the Survey, the laws governing their printing and distribution, and an index.

995 **Watts** (W. L.). Alameda County [California].
Cal. State Min. Bur., 11th Rept., pp. 121–138.
Contains notes on an occurrence of manganese, quicksilver, building stones, and artesian wells.

996 —— Coal and clays in Amador County [California].
Cal. State Min. Bur., 11th Rept., pp. 146–149.
Notes on the occurrence of coal and clays in this county.

997 —— Colusa County [California].
Cal. State Min. Bur., 11th Rept., pp. 179–188.
Notes on the water supply, salt springs, quicksilver, gold, sulphur, and coal mines of the county.

998 —— Contra Costa County [California].
Cal. State Min. Bur., 11th Rept., pp. 189–194.
Notes on coal mines of Mount Diablo.

999 ——Del Norte County [California].
Cal. State Min. Bur., 11th Rept., pp. 195–199.
Includes brief notes on the placer, copper, and coal mines and building stones.

1000 —— Fresno County [California].
Cal. State Min. Bur., 11th Rept., pp. 210–218.
Describes the superficial formations of a portion of the county, with remarks on some coal mines.

1001 —— Humboldt County [California].
Cal. State Min. Bur., 11th Rept., pp. 227–232.
Gives notes on some of the coal seams and gold-bearing sands of the coast.

1002 —— Kern County [California].
Cal. State Min. Bur., 11th Rept., pp. 233–238.
Notes on the occurrence of sulphur and gypsum and artesian wells.

1003 —— Lake County [California].
Cal. State Min. Bur., 11th Rept., pp. 239–240.
Notes on some quicksilver mines.

1004 —— Marin County [California].
Cal. State Min. Bur., 11th Rept., pp. 249–254.
Brief notes on the occurrence of coal, silver, gold, copper, iron, and manganese.

1005 —— Sacramento County [California].
Cal. State Min. Bur., 11th Rept., pp. 334–336.
Notes on the occurrence of coal.

1006 —— Santa Clara County [California].
Cal. State Min. Bur., 11th Rept., pp. 374–375.
Brief notes on the occurrence of quicksilver, manganese, and magnesite.

1007 **Watts** (W. L.). Sonoma County [California].
Cal. State Min. Bur., 11th Rept., pp. 453–463.
Notes on some coal and quicksilver mines.

1008 —— Stanislaus County [California].
Cal. State Min. Bur., 11th Rept., pp. 464–468.
Notes on the Summit quicksiver mine.

1009 **Weed** (Walter Harvey). Two Montana coal fields.
Geol. Soc. Am., Bull., vol. iii, pp. 301–330.
Abstract: Am. Geol., vol. xi, pp. 181–182.
Describes the extent, structure, lithologic character, and the fauna of the Great Falls coal field. The coal occurs in the Kootenai formation. Describes the extent and location of the Rocky Fork coal field. The coal seams occur interbedded with coarse sandstones and thin clayey shales, which are considered to represent Fort Union beds.

1010 —— The coal fields of Montana.
Eng. and Min. Jour., vol. liii, pp. 520–522 and 542–543, and vol. lv, p. 197.
Describes the geologic occurrence of the coal beds and the character and extent of the coal seams in the Rocky Fork, Bozeman, Cinnabar, Gallatin, Judith, Great Falls, Sweet Grass Hills, and the Flathead Valley coal fields of Montana.

1011 —— The fossil forests of the Yellowstone.
School of Min. Quart., vol. xiii, pp. 230–236.
Describes the geologic structure of the region and states that the fossil trees are found in a series of breccias and tuffs and have been exposed by weathering of the rocks. These forests grew upon the flanks of a volcano and were covered and preserved by the débris of its eruptions.

1012 —— Geysers.
Smith. Inst., Ann. Rept., 1891, pp. 163–178.
Describes the occurrence of geysers in different parts of the world, discusses the theories of geyser action, and gives a summary of conclusions.

1013 —— The glaciation of the Yellowstone Valley north of the park.
U. S. Geol. Surv., Bull. No. 104, pp. 11–41, pls. i–iv.
Describes the character of certain peculiar marginal valleys in this region, illustrated by colored geologic map showing the distribution of the glacial deposits.

1014 —— The Laramie and the overlying Livingston formation in Montana.
U. S. Geol. Surv., Bull. No. 105, pp. 10–63, pls. i–vi.
Describes the Laramie strata and applies the name Livingston to beds of post-Laramie age largely composed of volcanic material. Defines the Fort Union formation and discusses the evidences of unconformity between the Laramie and Livingston formations and the age of the Livingston series.

1015 **Weeks** (Joseph D.). Manganese.
U. S. Geol. Surv., Min. Res., 1892, pp. 169–226.
Discusses the origin and occurrence of manganese ores. Describes the deposits of Georgia, Arkansas, and Crimora, Va., the latter illustrated by two figures. Discusses the character of these ores and gives many analyses and tables of production.

1016 **Wells** (David A.). Remarkable bowlders.
Pop. Sci. Monthly, vol. xl, pp. 340–346.
Gives size and weight of some bowlders found in Connecticut and Massachusetts.

1017 **Wells** (H. G.). The making of mountain chains.
Sci. Am. Suppl., vol. xxxvi, pp. 14974–14975.
Reviews the theories concerning the formation of mountain ranges.

1018 **Wells** (H. L.) and **Penfield** (S. L.). On herderite from Hebron, Me.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 114–116.
Abstract: Am. Nat., vol. xxvii, p. 276 (¼ p.).

1019 **Westgate** (Lewis G.). The geographic development of the eastern part of the Mississippi drainage system.
Am. Geol., vol. xi, pp. 245–260.
Abstract: Jour. of Geol., vol. i, pp. 420–421.
Describes the post-Carboniferous drainage and its adjustment in different regions, the geographic and geologic features of the Cretaceous base-level and its elevation at the commencement of the Tertiary, and the character and extent of the Tertiary erosion.

1020 **White** (C. A.). On the Bear River formation, a series of strata hitherto known as the Bear River Laramie [Wyoming].
Am. Jour. Sci., 3d ser., vol. xliii, pp. 91–97.
Abstract: Am. Geol., vol. ix, pp. 266–267.
Reviews the publications of other writers regarding the age of the Bear River formation. His examinations, made in company with Mr. T. W. Stanton, whose article on the stratigraphic position of this formation immediately follows, led them to believe that the formation hitherto known as the Bear River Laramie is much older than it had hitherto been considered and that it underlies the equivalent of the Fort Benton Cretaceous.

1021 —— Correlation papers. Cretaceous.
U. S. Geol. Surv., Bull. No. 82.
Abstract: Am. Geol., vol. xii, pp. 398–399.
Noticed in Record for 1891.

1022 **White** (David). Flora of the outlying Carboniferous basins of southwestern Missouri.
U. S. Geol. Surv., Bull. No. 98, pp. 11–121, pls. i–v.
Gives the localities where specimens were found and a description of their manner of occurrence. Describes their general characteristics, habitat, and relations.

1023 —— A new tæniopteroid fern and its allies.
Geol. Soc. Am., Bull., vol. iv, pp. 119–132.
Abstracts: Jour. of Geol., vol. i, p. 419 (¼ p.); Am. Geol., vol. xi, p. 412 (7 l.); Am. Jour. Sci., 3d ser., vol. xlv, pp. 439–440 (¼ p.).
Describes fossil plants from the Lower Coal Measures of the Carboniferous of Henry County, Mo.

1024 —— The Cretaceous at Gay Head, Marthas Vineyard.
Science, vol. xx, pp. 332–333.
Discusses the evidences of the age of certain beds in this vicinity.

1025 **White** (I. C.). The Mannington oil field and the history of its development. Appendix: The anticlinal theory of natural gas.

Geol Soc. Am., Bull., vol. iii, pp, 187–216.

Abstract: Am. Geol., vol. x, p. 65 (½ p.).

The oil is found in the Pocono sandstone, the lowest member of the Carboniferous, and it is known that this horizon contains hydrocarbons over a wide area. Three vertical sections are given and a historical sketch of the Mannington field and of the application of the "anticlinal theory." It is believed that the petroleum has been formed from the organic matter within the rock itself and that by the tilting of the beds the water, gas, and oil have been rearranged according to their respective gravities under the existing artesian pressure.

1026 —— Fossil plants from the Wichita or Permian beds of Texas.

Geol. Soc. Am., Bull., vol. iii, pp. 217–218.

Gives a list of the fossil plants as determined by Prof. Wm. M. Fontaine. From a comparison of these plants with those found in the beds above the Waynesburg coal horizon of West Virginia, and the general stratigraphic relations, it follows that the beds known as the Dunkard Creek series are of Permian age.

1027 —— Stratigraphy of the bituminous coal field of Pennsylvania, Ohio, and West Virginia.

U. S. Geol. Surv., Bull. No. 65.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, p. 156 (½ p.); Am. Geol., vol. ix, p. 264 (⅛ p.).

Noticed in Record for 1891.

1028 **Whiteaves** (J. F.). Description of a new genus and species of Phyllocarid Crustacea from the Middle Cambrian of Mount Stephens, British Columbia.

Can. Rec. Sci., vol. v, pp. 207–208.

Describes Anomalocaris (n. gen.), the locality where found, and the associated fauna.

1029 —— Notes on the Gasteropoda of the Trenton limestone of Manitoba, with a description of one new species.

Can. Rec. Sci., vol. v, pp. 317–328.

Describes the lithologic character of the Trenton limestone of Manitoba, with notes on the fossils found in it.

1030 —— Descriptions of two new species of Ammonites from the Cretaceous rocks of the Queen Charlotte Islands.

Can. Rec. Sci., vol. v, pp. 441–446.

Describes and figures Olcostephanus (Astieria) deansii (n. sp.) and Hoplites haidaquensis (n. sp.).

1031 —— The Orthoceratidæ of the Trenton limestone of the Winnipeg basin.

Can. Roy. Soc., Proc. and Trans., vol. ix, sect. iv, pp. 77–90.

Abstract: Am. Geol., vol. x, p. 124.

1032 **Whiteaves** (J. F.). Notes on the Ammonites of the Cretaceous rocks of the district of Athabasca, with description of four new species.

Can. Roy. Soc., Proc. and Trans., vol. x, sect. iv, pp. 111–121, pls. viii–xi.

Gives a section of the rocks in the region of the Athabasca and Lesser Slave rivers and describes some fossils found in these localities.

1033 —— The Cretaceous system of Canada.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 3–19.

Gives an account of the species found in the Cretaceous of British America, and reviews the literature treating of the Cretaceous system of North America.

1034 —— Note on the recent discovery of large Unio-like shells in the Coal Measures at the South Joggins, Nova Scotia.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 21–24.

Gives the views of the latest authorities on the occurrence of the genus Unio and describes and figures Asthenodonta westoni (n. sp.).

1035 —— The fossils of the Devonian rocks of the islands, shores, or immediate vicinity of Lakes Manitoba and Winnipegosis.

Can. Geol. Surv., Cont. to Paleontology, vol. i, part iv, pp. 255–359, pls. xxxiii–xlvii.

Abstracts: Am. Nat., vol. xxvii, pp. 469–470 (½ p.); Am. Jour. Sci., 3d ser., vol. xliv, p. 429 (½ p.).

Refers to the previous work done in this region and describes the characters of the fossils collected.

1036 **Whitfield** (Robert P.). Gasteropoda and Cephalopoda of the Raritan clays and greensand marls of New Jersey.

U. S. Geol. Surv., Monograph XVIII, pp. 402, pls. i–l, figs. 1–2.

Abstracts: Am. Geol., vol. xii, pp. 329–330; Am. Nat., vol. xxvii, pp. 728–729.

Contains tables showing the genera and species and their distribution in the several beds of New Jersey; also in other States, and description of species.

1037 —— Republication of descriptions of Lower Carboniferous Crinoidea from the Hall collection now in the American Museum of Natural History, with illustrations of the original type specimens not heretofore figured.

Am. Mus. Nat. Hist., Mem., vol. i, part i, pp. 1–37, pls. i–iii.

Quotes the descriptions of each species by Prof. James Hall, with comments.

1038 —— Discovery of a second example of the Macrouran decapod crustacean, Palæopalæomon newberryi.

Am. Geol., vol. ix, pp. 227–238.

Describes the specimen which is said to have been found in the Kinderhook group near Burlington, Iowa.

1039 **Whittle** (Charles Livy). An ottrelite-bearing phase of a metamorphic conglomerate in the Green Mountains.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 270–277.

Abstract: Am. Nat., vol. xxvii, p. 382 (½ p.).

Describes the occurrence and physical and microscopic characters of the ottrelite schist.

1040 **Whittle** (Charles Livy). Some dynamic and metasomatic phenomena in a metamorphic conglomerate in the Green Mountains.

Geol. Soc. Am., Bull., vol. iv, pp. 147–166.

Abstract: Am. Geol., vol. xi, p. 412 (½ p.).

Describes the character and extent of the ottrelite schist in the conglomerate and its alteration products and the petrographic characters of the rock. Describes the occurrence of clastic material in the conglomerate, the secondary enlargement of clastic tourmalines, the alteration of the feldspars, and the occurrence of albites.

1041 **Williams** (Albert, Jr.). Why dip is more likely to be regular than strike with fissure veins.

Eng. and Min. Jour., vol. liii, p. 398.

The fact that veins are usually on the lines of fault fissures is considered the principal reason why dip is more regular than strike.

1042 **Williams** (Edward H., Jr.). Glaciation in Pennsylvania.

Science, vol. xxi, p. 343.

Abstract: Am. Geol., vol. xii, p. 166 (¼ p.).

Gives some of the results of a study of the glacial phenomena in the vicinity of South Bethlehem.

1043 **Williams** (George Huntington). The volcanic rocks of South Mountain, in Pennsylvania and Maryland.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 482–496; Sci. Amer. Suppl., vol. xxxv, pp. 14208–14209.

Abstracts: Am. Geol., vol. xi, pp. 55–56; Johns Hopkins Univ. Circ., vol. xii, pp. 45–47.

Quotes the opinions of other writers assigning a sedimentary origin to the rocks of South Mountain. States that these rocks have preserved all the essential characteristics of recent rhyolites and basalts. Describes their petrographic characters and gives analyses of several varieties.

1044 —— Piedmontite and scheelite from the ancient rhyolite of South Mountain, Pennsylvania.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 50–57.

Describes the microscopic characteristics of these minerals and the occurrence of piedmontite as a microscopic constituent of rhyolite. Gives two chemical analyses and a list of the recorded occurrences of piedmontite as a rock constituent.

1045 —— On the use of the terms poikilitic and micro-poikilitic in petrography.

Jour. of Geol., vol. i, pp. 176–179.

Describes various occurrences of this structure and suggests the use of the terms in petrographic descriptions.

1046 —— Notes on the microscopical character of rocks from the Sudbury mining district, Canada.

Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part i, Report F, appendix 1, pp. 55–82.

The suite of rocks upon which this examination was based consists mainly of clastic rocks derived from granitic or gneissic débris and eruptives contemporaneous or subsequent in origin to the former. Both have been subjected to metamorphism and recrystallization. Describes the microscopic characters of greywacke, granite, gabbro, diorite, felsite, biotite-epidote gneiss, horneblende-biotite gneiss, sericitic-chlorite schist, vitrophyre tuff, and other rock varieties.

1047 **Williams** (George Huntington). Notes on some eruptive rocks from Alaska.

Nat. Geog. Mag., vol. iv, pp. 63–74.

Describes the petrographic characters of diorite, gabbro, micropegmatite, quartz-porphyry, hornblende-porphyrite, augite-porphyrite, and diabase, and states that these rocks bear a strong resemblance to the rocks which have come from portions of the Cordilleras and Great Basin farther southward.

1048 —— [Geology of Maryland.]

Maryland: Its Resources, Industries, and Institutions, Baltimore, 1893, pp. 55–58.

Abstract: Am. Geol., vol. xii, pp. 396–398.

Includes a general description of the various geologic formations of Maryland.

1049 —— and **Clark** (W. B.). Reports on short excursions made by the geological department of the university during the autumn of 1891.

Johns Hopkins Univ. Circ., vol. xi, pp. 37–39.

Describes the characters of the Coastal Plain deposits, their line of contact with the crystalline rocks and the rocks of the Piedmont plateau as seen in the sections examined.

1050 **Williams** (Henry Slater). The making of the geological time-scale.

Jour. of Geol., vol. i, pp. 180–197.

Reviews the classification of the geologic epochs adopted by different authors.

1051 —— The elements of the geological time-scale.

Jour. of Geol., vol. i, pp. 283–295.

Describes the geologic events which marked the periods that are represented in geologic classification and reviews the different estimates of the duration of geologic time.

1052 —— On the ventral plates of the carapace of the genus Holonema of Newberry.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 285–288.

Refers to previous descriptions of these plates and describes and figures their restoration from a specimen found in the Oneonta sandstone of New York.

1053 —— The scope of paleontology and its value to geologists.

Am. Geol., vol. x, pp. 148–169; Am. Assoc. Adv. Sci., Proc., vol. xli, pp. 149–170.

Reviews the history of the development of paleontology and the application of its principles by various writers in correlating the strata of different regions. The morphological characters exhibited by fossils indicate their ancestry and the conditions of their environment, and thus they become of paramount importance in investigations which pertain to the order of sequence of strata or to time-intervals.

1054 **Willimott** (C. W.). Canadian gems and precious stones.

Ottawa Nat., vol. v, pp. 117–142.

Gives a description of precious stones and the locality of their occurrence in Canada.

1055 **Willis** (Bailey). Studies in structural geology: The mechanics of Appalachian structure.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 551–566.

U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 217–281, pls. xlvi–xcvi, figs. 16–17.

Abstracts: Jour. of Geol., vol. i, pp. 96–97; Eng. and Min. Jour., vol. liv, pp. 390–391.

Describes the structural features of the Appalachian region from Cambrian to Silurian time and discusses the conditions of folding and faulting. Gives an account of some experiments made to reproduce the forms of folding, illustrated by sketches. Gives the author's conclusions drawn from the experiments and discusses the different theories which have been advanced to explain the cause of Appalachian compression.

1056 —— Outlines of Appalachian history.

U. S. Geol. Surv., Geol. Atlas of the United States, Kingston, Chattanooga, and Ringgold sheets, Preliminary edition, 1892.

Describes the processes of sedimentary formation in the Appalachian province. Gives a general sketch of the Cambrian, Silurian, Devonian, Carboniferous, and post-Carboniferous epochs and a brief description of the mineral resources.

1057 —— Conditions of sedimentary deposition.

Jour. of Geol., vol. i, pp. 476–520.

Classifies the processes of erosion, discusses the sequence of sediments, and classifies and describes the processes of sedimentation and organic deposition.

1058 —— and **Hayes** (C. W.). Conditions of Appalachian faulting.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 257–268.

Abstract: Jour. of Geol., vol i, p. 861.

Describes the conditions of sedimentation prior to the development of Appalachian structure and the conditions under which step-folds and thrust faults and repeated parallel folds or faults were developed. Compares the theoretical conclusions with the observed Appalachian structure and discusses the evidence indicating the direction from which the compressive force acted.

1059 **Williston** (S. W.). The Niobrara Cretaceous of western Kansas.

Kans. Acad. Sci., Trans., vol. xiii, pp. 107–111, 2 pls.

Gives a history of the early explorations in this region. Describes many exposures assigned to the Cretaceous and discusses the evidences which indicate their geologic age.

1060 **Wills** (J. Lainson). On natural phosphates.

Ottawa Nat., vol. vi, pp. 7–22.

Gives in tabular form the approximate geologic age of the different phosphate deposits, the chemical analyses of some phosphatic materials and a classification of natural phosphates, and describes deposits occurring in different countries.

1061 —— [The phosphate mines of Canada.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 1000–1002.

In discussion of paper by H. B. Small.

1062 **Wilson** (E. B.). [Faulting in veins.]

Eng. and Min. Jour., vol. liii, p. 638 (correspondence).

Describes occurrence of "slickensides" in certain mines.

1063 **Wiltsee** (E. A.). Some additional Sierra County mines [California].
Cal. State Min. Bur., 11th Rept., pp. 413–419.
Notes on some gold mines.

1063*a* —— **Hobson** (J. B.) and. Nevada County [California].
See Hobson (J. B.) and Wiltsee (E. A.), 460.

1064 **Wiltsee** (Ernest). Notes on the geology of the Half-Moon Mine, Pioche, Nev.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 867–873.
Abstract: Eng. and Min. Jour., vol. lv, p. 175.
Describes the geologic occurrence of the ore and the vein structure in this mine.

1065 **Winchell** (Horace V.). The Mesabi iron range.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 644–686; Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 111–180.
Abstracts: Am. Geol., vol. xi, pp. 355–356; Eng. and Min. Jour., vol. lv., pp. 177–178.
Describes the geology of the Mesabi Range, the stratigraphic relations of the Taconic and Archean rocks and the occurrence and quality of the ore and its varieties, and discusses the question of its origin.

1066 —— Note on Cretaceous in northern Minnesota.
Am. Geol., vol. xii, pp. 220–223.
Gives a list of fossils, determined by Dr. C. A. White to be of Cretaceous age, found in northern Minnesota. Describes other localities in which Cretaceous strata occur.

1067 —— and **Jones** (J. T.). The Biwabik mine.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 951–961.
Describes the character of the ore and the extent of developments in this mine, located in the Mesabi Range, Minnesota.

1067*a* —— **Winchell** (N. H.) and. The iron ores of Minnesota.
See Winchell (N. H.) and Winchell (H. V.), 1080.

1068 **Winchell** (N. H.). The crystalline rocks.
Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 1–28.
Gives a list of the principal rock formations of the Minnesota Lake Superior region and discusses the general principles of original and acquired rock structure, the character of the greenstones and schists, and the origin of crystalline rocks.

1069 —— Field notes of N. H. Winchell in 1890.
Minn. Geol. and Nat. Hist., 20th Ann. Rept., pp. 29–34.
Gives notes on some rock exposures in northeastern Minnesota.

1070 —— Oxide of manganese.
Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 321–322.
Contains brief note, with chemical analysis, of an occurrence of manganese found in Wright County, Minn.

1071 —— The iron-bearing formations of northeastern Minnesota.
Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 168–169.
Brief description of the geologic formations of the region.

1072 **Winchell** (N. H.). The so-called Huronian rocks in the vicinity of Sudbury, Ontario.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 183–185.

Gives a summary of observations in this region and concludes that the Huronian, as defined by Canadian geologists, embraces two or three formations—the true Huronian, the Keewatin, and Vermillion series.

1073 —— The iron-bearing rocks of Minnesota.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 277–280.

Gives a brief description of the formations in which iron ore occurs and of the manner of its deposition.

1074 —— Frondescent hematite.

Am. Geol., vol. xi, pp. 20–21.

Refers to description of similar phenomena by W. S. Gresley in Am. Geol., April, 1892, and discusses the cause of certain channels which maintain their form and direction through the mass of the material.

1075 —— The Norian of the Northwest.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 8, pp. iii–xxxiv.

Abstract: Am. Geol., vol xii, p. 60.

Gives an account of the investigation of the gabbros of the northern coast of Lake Superior, reviews the literature on the geology of this region, and describes the character and extent of gabbro rocks.

1076 —— The Kawishiwin agglomerate of Ely, Minn.

Am. Geol., vol. ix, pp. 359–368.

This agglomerate is the northern representative of the Lake Superior greenstones and is assigned to the Keewatin division of the Archean. Describes its peculiar characteristics at Ely and considers it originated from the joint action of oceanic water and igneous action.

1077 —— An approximate interglacial chronometer.

Am. Geol., vol. x, pp. 69–80.

Explains the evidences which indicate that the ancient Mississippi River once occupied a wider and deeper valley in Minnesota, and that it was choked up and expelled from its course by the movement of ice from the northeast on the initiation of the Glacial period. That during the interglacial period the river cut out a gorge, from which the author estimates the time-interval between the recession of the ice and its second invasion.

1078 —— Some problems of the Mesabi iron ore.

Am. Geol., vol. x, pp. 169–179.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 176 (7 l.).

Describes briefly the different hypotheses concerning the origin of iron ores, the character of the Mesabi iron ores and the stratigraphic relations of the inclosing rocks, and concludes that oceanic sedimentation is the only agent sufficient to explain the geographic and stratigraphic distribution of these deposits.

1079 —— Classification of the theories of the origin of iron ores.

Am. Geol., vol. x, pp. 277–278.

Gives in tabular form the theories advanced concerning the origin of iron ores.

1080 **Winchell** (N. H.) and **Winchell** (H. V.). The iron ores of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 6, pp. 1–429, geologic map, 26 figures and 44 plates.

Includes a review of earlier Minnesota reports and describes the megascopic and microscopic characters of the Vermillion schists and the qualities and origin of their contained magnetites, those of the Keewatin schists and their hematites, and the character of the inclosing rocks of the Taconic (Animikie) ores and their origin, and includes a brief description of the Cretaceous limonites and of the various mines and explorations in each of these formations. Classifies and discusses the different theories on the origin of iron ores, with a bibliography of the subject and concluding observations. Appendix A is a discussion of a possible chemical origin of the Keewatin ores. Appendix B compares the Taconic ores of Minnesota and western New England. Appendix C discusses the eastern equivalents of the iron ores of Minnesota.

1081 —— and **Schuchert** (C.). Preliminary descriptions of new Brachiopoda from the Trenton and Hudson River groups of Minnesota.

Am. Geol., vol. ix, pp. 284–294.

Abstract: Am. Geol., vol. xii, p. 332 (½ p.).

Describes different species and mentions the formation and locality where found.

1082 **Winslow** (Arthur). An illustration of the flexibility of limestone.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 133–134.

Describes and illustrates by sketch the flexibility of a slab of limestone.

1083 —— Notes on the Cambrian in Missouri and the classification of the Ozark series.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 221–226.

Describes the earlier work in this region and the classification then adopted. Gives a résumé of the results attained by the present State Geological Survey of Missouri, accompanied by two cross-sections and a statement of what is considered to be the geologic succession.

1084 —— The Osage River and its meanders.

Science, vol. xxii, pp. 31–32.

Discusses the hypothesis of a former base-leveled condition to explain the sunken curved course of this river and suggests a different hypothesis.

1085 —— The mapping of Missouri.

St. Louis Acad. Sci., Trans., vol. vi, No. 3, pp. 57–99.

Abstract: Am. Geol., vol. x, p. 323 (⅝ p.).

Gives an account of the early explorations in the State and the maps published from the results of these explorations. Describes the work of mapping undertaken by the various State geological surveys of Missouri and the United States Geological Survey.

1086 **Winslow** (Arthur). The Missouri Coal Measures and the conditions of their deposition.

Geol. Soc. Am., Bull., vol. iii, pp. 109-121. Sketch map and seven sections.

Discusses the evidences which indicate the relations of the Lower Silurian and Carboniferous formations. The present marginal limits of the Coal Measures are near the original ones, since the marginal beds are distinctly marginal deposits and no Coal Measure strata occur far away from the general margin of the formation. Describes the rocks of the Coal Measure series and the conditions of their deposition.

1087 —— A preliminary report on the coal deposits of Missouri.

Mo. Geol. Surv., 1891, pp. 19-226, with 131 illustrations.

Abstracts: Am. Geol., vol. xi, pp. 271-273; Am. Jour. Sci., 3d ser., vol. xliii, p. 435 (¼ p.).

Describes the topographic and geologic features of the Coal Measure formation, the process of its deposition, the distribution and character of the contained coal beds and the conditions of the coal industry. Gives a description of the coal seams now worked in each county.

1088 —— The Higginsville sheet in Lafayette County [Missouri].

Mo. Geol. Surv., 1892, pp. 1-17.

Review: Am. Geol., vol. x, pp. 317-318.

Describes the topographic and hydrographic features of the area and the stratigraphy and structure of the formations represented, including sections showing the thicknesses and succession of coal seams and associated strata and a description of other mineral resources. Accompanied by a geologic and topographic map and a sheet of geologic sections.

1089 —— The Coal Measures of Missouri.

U. S. Geol. Surv., Min. Res., 1892, pp. 429-436.

The coal area forms a plateau of moderate elevation but slightly affected by erosion, and composed of horizontal strata of Carboniferous age. The measures are thickest near the margins, where they occur near the surface. The coals are all bituminous, except cannel coal, which is found in local and small deposits.

1090 —— Notes on the lead and zinc deposits of the Mississippi Valley and the origin of the ores.

Jour. of Geol., vol. i, pp. 612-619.

Gives a brief history of mining operations in this region. Reviews the literature and the theories advanced concerning the origin of these deposits.

1091 **Witter** (F. M.). Gas wells near Letts, Iowa.

Am. Geol., vol. ix, pp. 319-321.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 68-70.

States that gas was struck at a depth of 100 feet and that it probably comes from an accumulation of vegetable matter buried in the heavy drift deposit.

1092 **Wolff** (J. E.). The geology of the Crazy Mountains, Montana.

Geol. Soc. Am., Bull., vol. iii, pp. 445–452.

Abstracts: Am. Geol., vol. x, pp. 319–321; Am. Nat., vol. xxvi, pp. 1027–1028 (½ p.).

Describes the topographic features of the region. The range is made up of nearly horizontal Cretaceous rocks, consisting of sandstones and conglomerates, interstratified with shales and calcareous beds. Many laccolites occur which form the caps of monoclinal buttes developed on either side of the range. The eruptives occur in dikes, sheets, and laccolites, but no surface flows were observed.

1093 —— and **Tarr** (R. S.). Acmite-trachyte from the Crazy Mountains, Montana.

Harv. Mus. Comp. Zool., Bull., vol. xvi, pp. 227–233.

Abstract: Jour. of Geol., vol. i, pp. 637–638.

Describes the field occurrence and petrographic characters of some trachytic rocks from the Crazy Mountains.

1094 **Wood** (Herbert). Flathead coal basin, Montana.

Eng. and Min. Jour., vol. liv, p. 57.

Describes the topographic and geologic features of the region and the structural features of the coal seams.

1095 —— Mineral zones in Montana.

Eng. and Min. Jour., vol. liv, p. 292.

Describes some mineral zones of Montana and discusses their relation to the question as to the usual occurrence of certain mineral zones in certain geologic formations.

1096 —— Gold in placers.

Am. Geol., vol. ix, pp. 371–377.

States the general features of placer deposits and the manner of occurrence of gold in them. Gives a description of several Montana placers.

1097 —— A note on the Cretaceous of northwestern Montana.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 401–406.

Describes the geologic formations of the region. The Cretaceous beds rest against the upturned edges of the Cambrian, consisting of about 7,500 feet of clays, shales, and sandstones. The coal of this district is lignitic.

1098 —— Glaciation in western Montana.

Science, vol. xx, p. 162.

Describes the general features of the country and the principal effects of its former glaciation.

1099 —— The Cabinet anticlinal.

Can. Rec. Sci., vol. v, pp. 261-266.

Describes the structure of a range of mountains on the borders of Idaho and Montana.

1100 **Woodward** (Arthur Smith). On the Lower Devonian fish fauna of Campbellton, New Brunswick.

Geol. Mag., dec. iii, vol. ix, pp. 1–6.

Abstract: Am. Geol., vol. ix, p. 263 (⅛ p.).

Describes some specimens recently collected in this locality.

1101 **Woodward** (Arthur Smith). Further contributions to knowledge of the Devonian fish fauna of Canada.

Geol. Mag., dec. iii, vol. ix, pp. 481–485.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 73.

Describes some fish remains from the Upper Devonian of Quebec.

1102 **Woodworth** (J. B.). Note on the occurrence of erratic Cambrian fossils in the Neocene gravels of the island of Marthas Vineyard.

Am. Geol., vol. ix, pp. 243–247.

Describes the conglomerate bed in which the fossils were found and states that the pebbles were derived from a calcareous zone of the Olenellus Cambrian. Considers that there is an extensive Cambrian section in this region which is now concealed or has been removed by erosion.

1103 —— An attempt to estimate the thickness of the ice blocks which gave rise to lakelets and kettle-holes.

Am. Geol., vol. xii, pp. 279–284.

Refers to the occurrence of certain lakelets and ponds in Massachusetts and discusses the possibility of estimating the thickness of the ice that once filled them.

1104 **Woolman** (Lewis). Cretaceous ammonites and other fossils near Moorestown, N. J. Their stratigraphic position shown by an artesian-well section at Maple Shade, N. J. Incidental reference to water horizons.

Phil. Acad. Nat. Sci., Proc., 1893, part ii, pp. 219–224.

Describes the occurrence of some Cretaceous fossils from New Jersey.

1105 —— Artesian wells in southern New Jersey.

N. J. Geol. Surv., Ann. Rept. 1892, pp. 275–311.

Gives the sections displayed by numerous wells in this region, showing the thickness and character of the strata.

1106 **Wortman** (J. L.). On the divisions of the White River or Lower Miocene of Dakota.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 95–105.

Describes the lithologic character of the Lower Miocene beds and their fauna, with a discussion of the distribution of the fauna and succession of types.

1107 —— and **Earle** (C.). Ancestors of the tapir from the Lower Miocene of Dakota.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 159–180.

Discusses the origin of the tapir in America, describes species obtained from the Miocene of South Dakota, and reviews the evidence of the relationships between American and European species of Protapirus.

1108 —— **Osborn** (H. F.) and. Characters of Protoceras (Marsh), the new Artiodactyl from the Lower Miocene.

Am. Mus. Nat. Hist., Bull., vol. iv, pp. 351–371.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlv, p. 160 (½ p.); Am. Nat., vol. xxvii, pp. 147–148.

Description of species and discussion of characters of species recently found.

1109 **Wortman** (J. L.)., **Osborn** (H. L.) and. Artionyx, a new genus of Ancyclopoda.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 1–18.

Describes remains found in the Miocene of South Dakota.

1109*a* —— Fossil mammals of the Wasatch and Wind River beds.

See Osborn (H. L.) and Wortman (J. L.), 707.

1110 **Wright** (A. A.). Extra-morainic drift in New Jersey.

Am. Geol., vol. x, pp. 207–216.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 175 (¼ p.).

Classifies the glacial deposits at various localities where extra-morainic materials occur. Accompanied by geologic sketch map.

1111 —— Older drift in the Delaware Valley.

Am. Geol., vol. xi, pp. 184–186.

Gives summary statements concerning the examination of Delaware Valley deposits which indicate the presence of older drift.

1112 **Wright** (G. Frederick). Supposed interglacial shell beds in Shropshire, England.

Geol. Soc. Am., Bull., vol. iii, pp. 505–508.

Describes the location and character of the shell beds. Considers they are not evidence of an interglacial subsidence, but that they were pushed along with other transported material by the glacier.

1113 —— The supposed post-Glacial outlet of the Great Lakes through Lake Nipissing and the Mattawa River.

Geol. Soc. Am., Bull., vol. iv, pp. 423–425.

Describes certain glacial phenomena indicating the temporary existence of another outlet to the Great Lakes in post-Glacial time.

1114 —— Additional evidence bearing upon the glacial history of the Upper Ohio Valley.

Am. Geol., vol. xi, pp. 195–199.

Discusses the evidences which indicate the pre-Glacial age of the Upper Ohio gorge, rather than interglacial.

1115 —— Theory of an interglacial submergence of England.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 1–8.

Discusses the evidence in favor of an interglacial submergence of England afforded by marine shells on elevated positions. Favors the view that they have been raised by an advancing ice sheet from the sea-level to their present position. Instances phenomena of the Muir glacier in Alaska and the terminal moraines of Pennsylvania.

1116 —— Unity of the Glacial epoch.

Am. Sour. Sci., 3d ser., vol. xliv, pp. 351–373.

Reviews the opinions of other writers on the Glacial period. Gives the results of recent studies in New Jersey and Pennsylvania, accompanied by map of the region. Discusses the relations of the terraces of the Ohio River and its tributaries.

1117 —— Extra-morainic drift in the Susquehanna, Lehigh, and Delaware valleys.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, pp. 469–484.

Quotes the opinions of various writers on glacial phenomena and gives the results of the author's recent observations in this region and the conclusions drawn therefrom.

1118 **Wright** (G. Frederick). Recent discoveries concerning the relation of the Glacial period in North America to the antiquity of man.

Brit. Assoc. Adv. Sci., Rept. 1891, pp. 647–649.

Incidentally refers to the tracing of the southern boundary of the glaciated region on the western continent and to the question of a succession of glacial epochs.

1119 **Wyatt** (Francis). The phosphates of Florida.

Eng. and Min. Jour., vol. liii, pp. 202–204.

Describes the topographic and geologic features of the State and the characteristics of the phosphate deposits. Discusses the question of their origin. This article taken from "Phosphates of America."

1120 —— [On the analysis of mineral phosphates].

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 172–174.

In discussion of paper by T. M. Chatard "Phosphate chemistry as it concerns the miner."

Y.

1121 **Yeates** (William S.). Plattnerite and its occurrence near Mullan, Idaho.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 407–412.

Reviews previous descriptions of this mineral. Describes its mineral associates and gives a chemical analysis.

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florissanti, Scudder, 824.
Barbatia micronema (Meek), Stanton, 861.
Baris
divisa, Scudder, 823.
harlani, Scudder, 823.
imperfecta, Scudder, 823.
matura, Scudder, 823.
Barroisella n. gen., Hall, 383.
Barycrinus
princeps n. sp., Miller and Gurley, 673.
sculptilis, Whitfield, 1037.
Batocrinus
æquibrachiatus var. alatus, Whitfield, 1037.
agnatus n. sp., Miller, 670.
bisbrachiatus n. sp., Whitfield, 1037.
boonvillensis n. sp., Miller, 670.
cantonensis n. sp., Miller and Gurley, 673.
crawfordsvillensis n. sp., Miller, 670.
decorus n. sp., Miller, 670.
discoideus, Whitfield, 1037.
facetus n. sp., Miller and Gurley, 673.
genista n. sp., Miller and Gurley, 673.
gorbyi n. sp., Miller, 670.
gurleyi n. sp., Miller, 670.
inornatus, Whitfield, 1037.
jucundus n. sp., Miller and Gurley, 673.
laura, Whitfield, 1037.
legrandensis n. sp., Miller and Gurley, 673.
lepidus, Whitfield, 1037.
marinus n. sp., Miller and Gurley, 673.
mediocris n. sp., Miller, 670.
oblatus, Whitfield, 1037.
poculum n. sp., Miller and Gurley, 673.
pulchellus n. sp., Miller, 670.
scopæ n. sp., Miller and Gurley, 673.
shepardi n. sp., Rowley, 790.
spartarius n. sp., Miller and Gurley, 673.
spergenensis n. sp., Miller, 670.
venustus n. sp., Miller, 670.
Batodon tenuis n. gen. et sp., Marsh, 632.
Beatricea, James, 491.
nodulosa James, 491.
undulata James, 491.
Belemnitella americana, Whitfield, 1036.
Belemnites(?) ambiguus, Whitfield, 1036.
Bellerophon
gorbyi n. sp., Miller, 670.
pelops(?) Hall, var., Whiteaves, 1035.
Belodon superciliosus Cope n. sp., Cope, 183.

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Genera and species described—Continued.
Liriodendron
giganteum Lesq., Lesquereux, 582.
var. cruciforme Lesq., Lesquereux, 582.
intermedium Lesq., Lesquereux, 582.
meekii Heer, Lesquereux, 582.
obcordatum Lesq., Lesquereux, 582.
pinnatifidum Lesq., Lesquereux, 582.
prætulipiferum n. sp., Dawson, 239.
primævum Newb., Lesquereux, 582.
semialatum Lesq., Lesquereux, 582.
snowii n. sp., Lesquereux, 582.
succedens n. sp., Dawson, 239.
wellingtonii n. sp., Lesquereux, 582.
Lispoceras, Hyatt, 478.
rotundum n. sp., Hyatt, 478.
trivolve n. sp., Hyatt, 478.
Lispodesthes nuptialis White, Stanton, 861.
Lithophthorus n. gen., Scudder, 823.
rugosicollis, Scudder, 823.
Litsea
cretacea n. sp., Lesquereux, 582.
falcifolia n. sp., Lesquereux, 582.
Litzea weediana n. sp., Knowlton, 559.
Lomatia saportanea Lesq., Lesquereux, 582.
Loxonema
altivolvis n. sp., Whiteaves, 1035.
cingulatum n. sp., Whiteaves, 1035.
gracillimum n. sp., Whiteaves, 1035.
Lucapina suffusa Reeve, Dall, 215.
Lucina
juvenis n. sp., Stanton, 861.
subundata H. and M., Stanton, 861.
Lunatia
concinna Hall and Meek (sp.), Stanton, 861.
halli, Whitfield, 1036.
halli Gabb, Whitfield, 1036.
Luxonema winnipegense n. sp., Whiteaves, 1029.
Lyria
costata Sowerby, Dall, 215.
musicina Heilprin, Dall, 215.
pulchella Sowerby, Dall, 215.
Macclintockia
cretacea Heer, Lesquereux, 582.
trinervis Heer, Dawson, 239.
Maclurea manitobensis, Whiteaves, 1029.
Macrochilina
blairi n. sp., Miller, 670.
pulchella n. sp., Whiteaves, 1035.
Macrodon pygmæus n. sp., Whiteaves, 1035.
Macrotæniopteris vancouverensis n. sp., Dawson, 239.
Macrorhoptus intutus, Scudder, 823.
Mactra
emmonsi Meek, Stanton, 861.
huerfanensis n. sp., Stanton, 861.
(Cymbophora?) utahensis Meek, Stanton, 861.
Magdalis sedimentorum, Scudder, 823.
Magnolia
alternans Heer, Lesquereux, 582.
amplifolia Heer, Lesquereux, 582.
boulayana n. sp., Lesquereux, 582.

Paleontology—Continued.
Genera and species described—Continued.
Magnolia
capellini Heer, Dawson, 239.
lacoeana n. sp., Lesquereux, 582.
obtusata Heer, Lesquereux, 582.
occidentalis n. sp., Dawson, 239.
pseudoacuminata n. sp., Lesquereux, 582.
tenuifolia Lesq., Lesquereux, 582.
Manteodon subquadratus Cope, Earle, 281.
Margarita
abyssina, Whitfield, 1036.
tampaensis n. sp., Dall, 215.
Margaritella abbotti, Whitfield, 1036.
Marginella
(apicina Menke var.?) pardallis Dall, Dall, 215.
aurora n. sp., Dall, 215.
ballista n. sp., Dall, 215.
(ballista var.?) tempæ Dall, Dall, 215.
bella Conrad, Dall, 215.
denticulata Conrad, Dall, 215.
elegantula n. sp., Dall, 215.
eulima n. sp., Dall, 215.
faunula n. sp., Dall, 215.
floridana n. sp., Dall, 215.
gravida n. sp., Dall, 215.
limatula Conrad, Dall, 215.
newmani n. sp., Dall, 215.
onchidella n. sp., Dall, 215.
precursor n. sp., Dall, 215.
semen Lea, Dall, 215.
styria Dall, Dall, 215.
virginiana Conrad, Dall, 215.
willcoxiana n. sp., Dall, 215.
(Volutella) amiantula n. sp., Dall, 215.
dacria n. sp., Dall, 215.
Mariacrinus
aureatus n. sp., Miller, 670.
granulosus n. sp., Miller, 670.
Mariopteris
mazoniana Lx. sp., White, 1022.
(Pseudopecopteris) decipiens Lx. sp., White, 1022.
Masteutes n. gen., Scudder, 823.
rupis, Scudder, 823.
saxifer, Scudder, 823.
Mastodon successor n. sp., Cope, 175.
Matheria rugosa n. sp., Ulrich, 940.
Mazzalina
costata n. sp., Dall, 215.
oweni Dall, Dall, 215.
Meekella White and St. John, Hall, 383.
Meioceras cingulatum n. sp., Dall, 215.
Megalichthys macropomus n. sp., Cope, 179.
Megalograptus, James, 491.
welchi, James, 491.
Megalonyx, Safford, 802.
leptostomus Cope, Cope, 183.
Melongena
corona Gmelin, Dall, 215.
sculpturata var. turricula, Dall, 215.
subcoronata var. aspinosa, Dall, 215.
Melocrinus
gregari n. sp., Rowley, 790.
oblongus n. sp., Wachsmuth and Springer, 974.

Paleontology—Continued.
Genera and species described—Continued.
Myrica
obliqua n. sp., Lesquereux, 582.
schimperi n. sp., Lesquereux, 582.
Myrsine crassa n. sp., Lesquereux, 582.
Myrsinites? gaudina Lesq., Lesquereux, 582.
Myrtophyllum warderi n. sp., Lesquereux, 582.
Mytilarca inflata n. sp., Whiteaves, 1035.
Nassa
bidentata Emmons, Dall, 215.
caloosaensis n. sp., Dall, 215.
harpuloides Conrad, Dall, 215.
johnsoni n. sp., Dall, 215.
lapenotierei n. sp., Dall, 215.
scalaspira Conrad, Dall, 215.
Nassarina glypta Bush., Dall, 215.
Natica
abyssina, Whitfield, 1036.
abyssina Morton, Whitfield, 1036.
alticallosa n. sp., Dall, 215.
globulella n. sp., Whitfield, 1036.
humilis n. sp., Cragin, 186.
striaticostata n. sp., Cragin, 186.
(Cryptonatica) floridana n. sp., Dall, 215.
Naticopsis
inornata n. sp., Whiteaves, 1035.
manitobensis n. sp., Whiteaves, 1035.
Nautilus
bryani, Whitfield, 1036.
cookana n. sp., Whitfield, 1036.
dekayi, Whitfield, 1036.
elegans Sowerby, Stanton, 861.
texanus Shum., Cragin, 186.
Nemodon sulcatinus Evans and Shumard (sp.)?, Stanton, 861.
Neobolus Waagen, Hall, 383.
Neptunella mullicaensis n. sp., Whitfield, 1036.
Nerinea
hicoriensis n. sp., Cragin, 186.
pellucida n. sp., Cragin, 186.
volana n. sp., Cragin, 186.
Nerita tampaensis n. sp., Dall, 215.
Neritina
apparata n. sp., Cragin, 186.
chipolana n. sp., Dall, 215.
incompta White, Stanton, 861.
pisum Meek, Stanton, 861.
(Theodoxus?) edentula n. sp., Dall, 215.
(Velatella) patelliformis Meek, Stanton, 861.
Neritopsis
biangulatus Shum., Cragin, 186.
tramitensis n. sp., Cragin, 186.
Neumayria walcotti Hill, Hill, 435.
Neuropteris
angustifolia Brongn., White, 1022.
caudata n. sp., White, 1022.
cordata, White, 1022.
dilatata (L. and H.) Lx., White, 1022.
fasciculata Lx., White, 1022.
fimbriata Lx., White, 1022.
flexuosa Sternb., White, 1022.
hirsuta Lx., White, 1022.
jenneyi n. sp., White, 1022.
rarinervis Bunb., White, 1022.

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Genera and species described—Continued:
Neuropteris
scheuchzeri Hoffm., White, 1022.
tenuifolia (Schloth.) Sternb., White, 1022.
cf. trichomanoides (Brongn.) Lx., White, 1022.
Niso
lineata Conrad, Dall, 215.
willcoxiana Dall, Dall, 215.
Nœggerathiopsis robinsi n. sp., Dawson, 239.
Nosotetocus n. gen., Scudder, 824.
marcovi, Scudder, 824.
Nucleospira Hall, Hall, 384.
indianensis n. sp., Miller, 670.
Nucula
coloradoensis n. sp., Stanton, 861.
manitobensis n. sp., Whiteaves, 1035.
Numitor n. gen., Scudder, 823.
claviger, Scudder, 823.
Obeliscus conellus n. sp., Whitfield, 1036.
Obolella Billings, Hall, 383.
Obolus Eichwald, Hall, 383.
(Botsfordia) pulchra Matthew, 654.
Odontofusus n. gen., Whitfield, 1036.
medians n. sp., Whitfield, 1036.
rostellaroides n. sp., Whitfield, 1036.
slacki, Whitfield, 1036.
typicus n. sp., Whitfield, 1036.
Odontostornia
(Syrnola)
attenuata n. sp., Dall, 215.
caloosaensis n. sp., Dall, 215.
Oehlertella n. subgen., Hall, 383.
Olcostephanus (Astieria) deansii n. sp., Whiteaves, 1030.
Olivella
lata n. sp., Dall, 215.
mutica Say, Dall, 215.
Ollacrinus papillatus, Whitfield, 1037.
Omileus evanidus, Scudder, 823.
Omphalocrinus manitobensis, Whiteaves, 1035.
Oncodoceras n. gen., Hyatt, 478.
Onychaster
asper n. sp., Miller, 670.
confragosus n. sp., Miller, 670.
demissus n. sp., Miller, 670.
Onychocrinus
cantonensis n. sp., Miller and Gurley, 673.
ulrichi n. sp., Miller and Gurley, 673.
Opali, see Scala (Opalia) H. and A. Adams, Dall, 215.
Opis texana n. sp., Cragin, 186.
Ophioglypha
bridgerensis (Morton), Clark, 139.
texana Clark, Clark, 139.
Ophryastes
grandis, Scudder, 823.
petrarum, Scudder, 823.
Ophryastites n. gen., Scudder, 823.
absconsus, Scudder, 823.
cinereus, Scudder, 823.
digressus, Scudder, 823.
dispertitus, Scudder, 823.
Oracodon conulus n. sp., Marsh, 632.

Paleontology—Continued.
Genera and species described—Continued.
Salix
proteæfolia
var. flexuosa Lesq., Lesquereux, 582.
lanceolata Lesq., Lesquereux, 582.
linearfolia Lesq., Lesquereux, 582.
longifolia Lesq., Lesquereux, 582.
Saperdirhynchus n. gen., Scudder, 823.
priscotitillator, Scudder, 823.
Sapindus
diversifolius n. sp., Lesquereux, 582.
morrisoni Lesq., Lesquereux, 582.
Sassafras
prinordiale n. sp., Lesquereux, 582.
subintegrifolium Lesq., Lesquereux, 582.
(Araliopsis)
cretaceum Newb., var. Grossedentatum Lesq., n. var. Lesquereux, 582.
dissectum Lesq., Lesquereux, 582.
papillosum n. sp., Lesquereux, 582.
Scala (Opalia) H. and A. Adams, Dall, 215.
(Opalia) de-bouryi Dall, Dall, 215.
(Sthemorytis) stearnsii, Dall, 215.
Scalaria
hercules n. sp., Whitfield, 1036.
pauperata n. sp., Whitfield, 1036.
sillimani, Whitfield, 1036.
tenuilirata n. sp., Whitfield, 1036.
(Opalia) thomasi?, Whitfield, 1036.
Scaphander Montfort, Dall, 215.
floridana Heilprin, Dall, 215.
primus Aldrich, Dall, 215.
Scaphella
trenholmii Tuomey and Holmes, Dall, 215.
(Aurinia)
mutabilis Conrad, Dall, 215.
virginiana Conrad, Dall, 215.
(Aurinia?) striata Gabb, Dall, 215.
(Caricella)
leana Dall, Dall, 215.
podagrina, Dall, 215.
subangulata Conrad, Dall, 215.
Scaphiocrinus
bellus n. sp., Miller and Gurley, 673.
bonoensis n. sp., Miller and Gurley, 673.
borbyi n. sp., Miller, 670.
lacunoses n. sp., Miller and Gurley, 673.
manus n. sp., Miller and Gurley, 673.
præmorsus n. sp., Miller and Gurley, 673.
repertus n. sp., Miller and Gurley, 673.
robustus (?) Hall, Miller, 670.
samsoni n. sp., Miller, 670.
Scaphites
hippocrepis, Whitfield, 1036.
iris, Whitfield, 1036.
larvæformis Meek and Hayden, Stanton, 861.
mullananus M. and H., Stanton, 861.
nodosus, Whitfield, 1036.
reniformis, Whitfield, 1036.
septem-seriatus n. sp., Cragin, 186.
similis n. sp., Whitfield, 1036.
ventricosus M. and H., Stanton, 861.
vermiformis M. and H., Stanton, 861.
warreni M. and H., Stanton, 861.

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Scenidium Hall, Hall, 383.
Schizambon Walcott, Hall, 383.
Schizobolus Ulrich, Hall, 383.
Schizocrania Hall and Whitfield, Hall, 383.
helderbergia n. sp., Hall, 383.
schucherti n. sp., Hall, 383.
Schizodus harii n. sp., Miller, 670.
Schizopholis Waagen, Hall, 383.
Schizophoria King, Hall, 383.
Schizotreta Kutorga, Hall, 383.
Schlœnbachia
leonensis Con., Cragin, 186.
peruviana Von B., Cragin, 186.
woolgari Mantell, Cragin, 186.
Schmidtella crassimarginata n. gen. et sp., Ulrich, 938.
Schmidtia Volborth, Hall, 383.
Schœnaster legrandensis n. sp., Miller and Gurley, 673.
Sciabregma n. gen., Scudder, 823.
rugosa, Scudder, 823.
Scolecophagus affinis n. sp., Shufeldt, 837.
Scyphophorus
fossionis, Scudder, 823.
lævis, Scudder, 823.
Scythropus
somniculosus, Scudder, 823.
subterraneus, Scudder, 823.
Seminula, see Athyris (Seminula) McCoy, Hall, 384.
Sequoia
langsdorffii Heer, Dawson, 239.
pagiophylloides n. sp., Fontaine, 328.
Serpula
intrica White, Stanton, 861.
paluxiensis n. sp., Hill, 435.
tenuicarinata Meek and Hayden, Hall, 215.
Serpulorbus
granifera tenera Dall, Dall, 215.
(granifera var.?) ballistæ Dall, Dall, 215.
Serrifusus
crosswickensis n. sp., Whitfield, 1036.
(Lirofusus) nodocarinatus n. sp., Whitfield, 1036.
Sibynes whitneyi, Scudder, 823.
Sigaretus
chipolanua n. sp., Dall, 215.
multiplicatus n. sp., Dall, 215.
(Eunaticina?) textilis n. sp., Stanton, 861.
Sigillaria Brongn., White, 1022.
Siliqua huerfanensis n. sp., Stanton, 861.
Siliquatia pauperata n. sp., Whitfield, 1036.
Siphonotreta de Verneuil, Hall, 383.
minnesotensis n. sp., Hall, 383.
Sitona
exitiorum, Scudder, 823.
fodinarum, Scudder, 823.
paginarum, Scudder, 823.
Smicrorhynchus n. gen., Scudder, 823.
macgeei, Scudder, 823.
Smilax
grandifolia-cretacea n. sp., Lesquereux, 582.
undulata n. sp., Lesquereux, 582.

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Genera and species described—Continued.
Surculites
annosus, Whitfield, 1036.
cadavarosus n. sp., Whitfield, 1036.
curtus n. sp., Whitfield, 1036.
Syntomostyles n. nom., Scudder, 823.
rudis, Scudder, 823.
Syringotheris Winchell, Hall, 384.
Systemodon
semihians Cope, Osborn and Wortman, 707.
tapirinus Cope, Osborn and Wortman, 707.
Tæniopteris missouriensis n. sp., White, 1023.
Tainoceras
cavatum, Hyatt, 478.
duttoni n. sp., Hyatt, 478.
quadrangulum, Hyatt, 478.
Tapes
cyrimeriformis n. sp., Stanton, 861.
dentonensis n. sp., Cragin, 186.
Taxocrinus
concavus n. sp., Rowley, 790.
juvenis, Whitfield, 1037.
subovatus n. sp., Miller and Gurley, 673.
Taxodium, Dawson, 239.
Technophorus
divaricatus n. sp., Ulrich, 937.
?extenuatus n. sp., Ulrich, 940.
filistriatus n. sp., Ulrich, 937.
subacutus n. sp., Ulrich, 937.
Teinostoma
caloosaense n. sp., Dall, 215.
chipolanum n. sp., Dall, 215.
collinus n. sp., Dall, 215.
funiculus n. sp., Dall, 215.
microforatis n. sp., Dall, 215.
milium n. sp., Dall, 215.
opsitelotus n. sp., Dall, 215.
pseudadeorbis n. sp., Dall, 215.
steiratum n. sp., Dall, 215.
vortex n. sp., Dall, 215.
Telacodon lævis n. gen. et sp., Marsh, 632.
Teleocrinus ægilops, Whitfield, 1037.
Tellina
isonema Meek, Stanton, 861.
modesta Meek, Stanton, 861.
subalata Meek, Stanton, 861.
(Palæomoera?) whitei n. sp., Stanton, 861.
Tellinomya
compressa n. sp., Ulrich, 940.
intermedia n. sp., Ulrich, 940.
longa n. sp., Ulrich, 937.
nitida n. sp., Ulrich, 940.
planodorsata n. sp., Ulrich, 940.
recurva n. sp., Ulrich, 940.
similis n. sp., Ulrich, 940.
subrotunda n. sp., Ulrich, 940.
Telmatotherium hyognathus, Earle, 282.
Temnocheilus McCoy, Hyatt, 478.
conchiferus, Hyatt, 478.
coxanus, Hyatt, 478.
crassus n. sp., Hay, 404.
Tenillus n. gen., Scudder, 823.
firmus, Scudder, 823.
Terataspis grandis Hall, Clarke, 145.

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Genera and species described—Continued.
Terebra
(Acus)
concava Say, Dall, 215.
dislocata Say, Dall, 215.
protexta Conrad, Dall, 215.
Terebratalia obsoleta Dall, Beecher, 62.
Terebratula gorbyi n. sp., Miller, 670.
Teretrum n. gen., Scudder, 823.
primulum, Scudder, 823.
quiescitum, Scudder, 823.
Testudo
hexagonata Cope, Cope, 183.
laticaudala Cope, Cope, 183.
pertenuis n. sp., Cope, 175.
pertenuis Cope, Cope, 183.
turgida n. sp., Cope, Cope, 182.
turgida Cope, Cope, 175.
turgida Cope, Cope, 183.
Tetrabelodon serridens ? Cope, Cope, 183.
shepardii Leidy, Cope, 183.
Tetradium, James, 491.
columnare, James, 491.
fibratum, James, 491.
minus, James, 491.
Thinnfeldia
lanceolata n. sp., Knowlton, 559.
polymorpha (Lx.), Knowlton, 559.
Thrincoceras
depressum n. sp., Hyatt, 478.
kentuckiense n. sp., Hyatt, 478.
Tiaporus n. gen., Cope, 177.
Tomasina n. gen., Hall, 383.
Tomiopsis, Cope, 181.
Tornatellæa lata, Whitfield, 1036.
Tornatina
canaliculata Say, Dall, 215.
wetherelli Lea, Dall, 215.
wetherelli, Whitfield, 1036.
Torosaurus, Marsh, 631.
Toxorhynchus n. gen., Scudder, 823.
minusculus, Scudder, 823.
oculatus, Scudder, 823.
Trachytriton
atlanticum n. sp., Whitfield, 1036.
holmdelense n. sp., Whitfield, 1036.
multivaricosum n. sp., Whitfield, 1036.
Trematis Sharpe, Hall, 383.
Trematobolus n. gen., Matthew, 650.
insignis Matt., Matthew, 654.
Trematoceras Hyatt, Hyatt, 478.
ohioense n. sp., Miller and Faber, 671.
Trematofusus venustus n. sp., Whitfield, 1036.
Trematopygus crucifer (Morton), Clark, 139.
Trematospira, Hall, 384.
Triarthrus, Beecher, 60.
becki Green, Beecher, 61.
becki, Matthew, 657.
Triboloceras, Hyatt, 478.
Trichocnemis aliena, Scudder, 824.
Trichotropis shumardi n. sp., Cragin, 186.
Triforis
perversa Linné, var. nigrocincta Adams, Dall, 215.
modesta C. B. Adams, Dall, 215.

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