

**BULLETIN OF THE UNITED
STATES, GEOLOGICAL SURVEY,
NO. 38: PERIDOTITE OF ELLIOTT
COUNTY, KENTUCKY**

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J. S. Diller

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ADVERTISEMENT.

[Bulletin No. 38.]

The publications of the United States Geological Survey are issued in accordance with the statute approved March 3, 1879, which declares that—

"The publications of the Geological Survey shall consist of the annual report of operations, geological and economic maps illustrating the resources and classification of the lands, and reports upon general and economic geology and paleontology. The annual report of operations of the Geological Survey shall accompany the annual report of the Secretary of the Interior. All special memoirs and reports of said Survey shall be issued in uniform quarto series if deemed necessary by the Director, but otherwise in ordinary octavo. Three thousand copies of each shall be published for scientific exchanges and for sale at the price of publication; and all literary and cartographic materials received in exchange shall be the property of the United States and form a part of the library of the organization: And the money resulting from the sale of such publications shall be covered into the Treasury of the United States."

On July 7, 1883, the following joint resolution, referring to all Government publications, was passed by Congress:

"That whenever any document or report shall be ordered printed by Congress, there shall be printed, in addition to the number in each case stated, the 'usual number' (1,000) of copies for binding and distribution among those entitled to receive them."

Except in those cases in which an extra number of any publication has been supplied to the Survey by special resolution of Congress or has been ordered by the Secretary of the Interior, this Office has no copies for gratuitous distribution.

ANNUAL REPORTS.

Of the Annual Reports there have been already published:

I. First Annual Report to the Hon. Carl Schurz, by Clarence King. 1850. 8°. 79 pp. 1 map.—A preliminary report describing plan of organization and publications.

II. Report of the Director of the United States Geological Survey for 1880-'81, by J. W. Powell. 1882. 8°. iv, 586 pp. 61 pl. 1 map.

III. Third Annual Report of the United States Geological Survey, 1881-'82, by J. W. Powell. 1883. 8°. xviii, 584 pp. 67 pl. and maps.

IV. Fourth Annual Report of the United States Geological Survey, 1882-'83, by J. W. Powell. 1884. 8°. xxxii, 473 pp. 85 pl. and maps.

V. Fifth Annual Report of the United States Geological Survey, 1883-'84, by J. W. Powell. 1885. 8°. xxxvi, 469 pp. 98 pl. and maps.

The Sixth and Seventh Annual Reports are in press.

MONOGRAPHS.

Of the Monographs, Nos. II, III, IV, V, VI, VII, VIII, IX, X, and XI are now published, viz:

II. Tertiary History of the Grand Cañon District, with atlas, by Clarence E. Dutton, Capt. U. S. A. 1882. 4°. xiv, 264 pp. 42 pl. and atlas of 24 sheets folio. Price \$19.12.

III. Geology of the Comstock Lode and the Washoe District, with atlas, by George F. Becker. 1882. 4°. xv, 422 pp. 7 pl. and atlas of 21 sheets folio. Price \$11.

IV. Comstock Mining and Miners, by Elliot Lord. 1883. 4°. xiv, 451 pp. 3 pl. Price \$1.50.

V. Copper-bearing Rocks of Lake Superior, by Roland D. Irving. 1883. 4°. xvi, 464 pp. 15 l. 29 pl. Price \$1.55.

VI. Contributions to the Knowledge of the Older Mesozoic Flora of Virginia, by Wu. M. Fontaine. 1883. 4°. xi, 144 pp. 54 l. 54 pl. Price \$1.05.

VII. Silver-Lead Deposits of Eureka, Nevada, by Joseph S. Curtis. 1884. 4°. xiii, 200 pp. 16 pl. Price \$1.20.

VIII. Paleontology of the Eureka District, by Charles D. Walcott. 1884. 4°. xiii, 298 pp. 24 l. 24 pl. Price \$1.10.

IX. Brachiopoda and Lamellibranchiata of the Baritan Clays and Greensand Marls of New Jersey, by Robert P. Whitfield. 1885. 4°. xi, 338 pp. 35 pl. Price \$1.15.

X. Dinocerata. A Monograph of an Extinct Order of Gigantic Mammals, by Othniel Charles Marsh. 1885. 4°. xviii, 243 pp. 56 l. 56 pl. Price \$2.70.

XI. Geological History of Lake Lahontan, a Quaternary Lake of Northwestern Nevada, by Israel Cook Russell. 1885. 4°. xiv, 288 pp. 48 pl. Price \$1.75.

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The following is in press, viz:

XII. Geology and Mining Industry of Leadville, with atlas, by S. F. Emmons. 1888. 4°. xxix, 770 pp. 45 pl. and atlas of 35 sheets folio.

The following are in preparation, viz:

I. The Precious Metals, by Clarence King.

— Gastropoda of the New Jersey Cretaceous and Eocene Marls, by R. P. Whitfield.

— Geology of the Eureka Mining District, Nevada, with atlas, by Arnold Hague.

— Lake Bonneville, by G. K. Gilbert.

— Sauropoda, by Prof. O. C. Marsh.

— Stegosauria, by Prof. O. C. Marsh.

— Brontotheriids, by Prof. O. C. Marsh.

— Geology of the Quikakalver Deposits of the Pacific Slope, with atlas, by George F. Becker.

— The Penokee-Gogebie Iron-Bearing Series of North Wisconsin and Michigan, by Roland D. Irving.

— Younger Mesozoic Flora of Virginia, by William M. Fontaine.

— Description of New Fossil Plants from the Dakota Group, by Leo Lesquereux.

— Report on the Denver Coal Basin, by S. F. Emmons.

— Report on Ten-Mile Mining District, Colorado, by S. F. Emmons.

— Report on Silver Cliff Mining District, by S. F. Emmons.

— Flora of the Dakota Group, by J. S. Newberry.

BULLETINS.

The Bulletins of the Survey will contain such papers relating to the general purpose of its work as do not properly come under the heads of Annual Reports or Monographs.

Each of these Bulletins contains but one paper and is complete in itself. They are, however, numbered in a continuous series, and may be united into volumes of convenient size. To facilitate this, each Bulletin has two paginations, one proper to itself and another which belongs to it as part of the volume.

Of this series of Bulletins Nos. 1 to 38 are already published, viz:

1. On Hypersthene-Andesite and on Triclinic Pyroxene in Augitic Rocks, by Whitman Cross, with a Geological Sketch of Buffalo Peaks, Colorado, by S. F. Emmons. 1883. 8°. 42 pp. 2 pl. Price 10 cents.
2. Gold and Silver Conversion Tables, giving the coinage values of troy ounces of fine metal, etc., by Albert Williams, jr. 1883. 8°. 8 pp. Price 5 cents.
3. On the Fossil Faunas of the Upper Devonian, along the meridian of 76° 30', from Tompkins County, New York, to Bradford County, Pennsylvania, by Henry S. Williams. 1884. 8°. 26 pp. Price 5 cents.
4. On Mesozoic Faunas, by Charles A. White. 1884. 8°. 36 pp. 9 pl. Price 5 cents.
5. A Dictionary of Altitudes in the United States, compiled by Henry Gannett. 1884. 8°. 325 pp. Price 20 cents.
6. Elevations in the Dominion of Canada, by J. W. Spencer. 1884. 8°. 43 pp. Price 5 cents.
7. *Mapoteca Geologica Americana*. A catalogue of geological maps of America (North and South), 1752-1881, by Jules Marcou and John Belknap Marcou. 1884. 8°. 184 pp. Price 10 cents.
8. On Secondary Enlargements of Mineral Fragments in Certain Rocks, by R. D. Irving and C. R. Van Hise. 1884. 8°. 56 pp. 8 pl. Price 10 cents.
9. Report of work done in the Washington Laboratory during the fiscal year 1882-'84. F. W. Clarke, chief chemist; T. M. Chatard, assistant. 1884. 8°. 40 pp. Price 5 cents.
10. On the Cambrian Faunas of North America. Preliminary studies, by Charles D. Walcott. 1884. 8°. 74 pp. 10 pl. Price 5 cents.
11. On the Quaternary and Recent Mollusca of the Great Basin; with Descriptions of New Forms, by R. Ellsworth Call; introduced by a sketch of the Quaternary Lakes of the Great Basin, by G. K. Gilbert. 1884. 8°. 66 pp. 8 pl. Price 5 cents.
12. A Crystallographic Study of the Thimolite of Lake Lahontan, by Edward S. Dana. 1884. 8°. 34 pp. 3 pl. Price 5 cents.
13. Boundaries of the United States and of the several States and Territories, by Henry Gannett, 1885. 8°. 135 pp. Price 10 cents.
14. The Electrical and Magnetic Properties of the Iron-Carburets, by Carl Barus and Vincent Strouhal. 1885. 8°. 238 pp. Price 15 cents.
15. On the Mesozoic and Cenozoic Paleontology of California, by Charles A. White. 1885. 8°. 33 pp. Price 5 cents.
16. On the higher Devonian Faunas of Ontario County, New York, by John M. Clarke. 1885. 8°. 86 pp. 3 pl. Price 5 cents.
17. On the Development of Crystallization in the Igneous Rocks of Washoe, Nevada, by Arnold Hague and Joseph P. Iddings. 1885. 8°. 44 pp. Price 5 cents.
18. On Marine Eocene, Fresh-water Miocene, and other Fossil Mollusca of Western North America, by Charles A. White. 1885. 8°. 26 pp. 3 pl. Price 5 cents.
19. Notes on the Stratigraphy of California, by George F. Becker. 1885. 8°. 28 pp. Price 5 cents.
20. Contributions to the Mineralogy of the Rocky Mountains, by Whitman Cross and W. F. Hillebrand. 1885. 8°. 114 pp. 1 pl. Price 10 cents.

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21. The Lignites of the Great Sioux Reservation, by Bailey Willis. 1885. 8°. 16 pp. 5 pl. Price 5 cents.
 22. On New Cretaceous Fossils from California, by Charles A. White. 1885. 8°. 25 pp. 5 pl. Price 5 cents.
 23. Observations on the Junction between the Eastern Sandstone and the Keweenaw Series on Keweenaw Point, Lake Superior, by R. D. Irving and T. C. Chamberlin. 1885. 8°. 124 pp. 17 pl. Price 15 cents.
 24. List of Marine Mollusca, comprising the Quaternary fossils and recent forms from American localities between Cape Hatteras and Cape Roque, including the Bermudas, by William H. Dall. 1885. 8°. 336 pp. Price 25 cents.
 25. The Present Technical Condition of the Steel Industry of the United States, by Phineas Barnes. 1885. 8°. 85 pp. Price 10 cents.
 26. Copper Smelting, by Henry M. Howe. 1885. 8°. 107 pp. Price 10 cents.
 27. Report of work done in the division of Chemistry and Physics, mainly during the fiscal year 1884-'85. 1886. 8°. 80 pp. Price 10 cents.
 28. The Gabbros and Associated Hornblende Rocks occurring in the neighborhood of Baltimore, Md., by George H. Williams. 1886. 8°. 78 pp. 4 pl. Price 10 cents.
 29. On the Fresh-water Invertebrates of the North American Jurassic, by Charles A. White. 1886. 8°. 41 pp. 4 pl. Price 5 cents.
 30. Second contribution to the studies on the Cambrian Faunas of North America, by Charles D. Walcott. 1886. 8°. 369 pp. 33 pl. Price 25 cents.
 31. A systematic review of our present knowledge of Fossil Insects, including Myriapoda and Arachnida, by Samuel H. Scudder. 1886. 8°. 128 pp. Price 15 cents.
 32. Lists and Analyses of the Mineral Springs of the United States; a preliminary study, by Albert C. Peale. 1886. 8°. 235 pp. Price 20 cents.
 33. Notes on the Geology of Northern California, by Joseph S. Diller. 1886. 8°. 22 pp. Price 5 cents.
 34. On the relation of the Laramie Molluscan Fauna to that of the succeeding Fresh-water Eocene and other groups, by Charles A. White. 1886. 8°. 54 pp. 5 pl. Price 10 cents.
 35. The Physical Properties of the Iron-Carburets, by Carl Barus and Vincent Stronhal. 1886. 8°. 82 pp. Price 10 cents.
 36. Subsidence of fine Solid particles in Liquids, by Carl Barus. 1887. 8°. 59 pp. Price 10 cents.
 37. Types of the Laramie Flora, by Lester F. Ward. 1887. 8°. 264 pp. 57 pl. Price 25 cents.
 38. Peridotite of Elliott County, Kentucky, by Joseph S. Diller. 1887. 8°. 31 pp. 1 pl. Price 5 cents.
- Numbers 1 to 6 of the Bulletins form Volume I; Numbers 7 to 14, Volume II; Numbers 15 to 23, Volume III; Numbers 24 to 30, Volume IV; Numbers 31 to 36, Volume V. Volume VI is not yet complete. The following are in press, viz:
39. The Upper Beaches and Deltas of the Glacial Lake Agassiz, by Warren Upham.
 40. Changes in River Courses in Washington Territory due to Glaciation, by Bailey Willis.
 41. Fossil Fauna of the Upper Devonian—the Genesee Section, by Henry S. Williams.
 42. Report of work done in the division of Chemistry and Physics, mainly during the fiscal year 1885-'86. F. W. Clarke, chief chemist.
 43. On the Tertiary and Cretaceous Strata of the Tuscaloosa, Tombigbee, and Alabama Rivers, by Eugene A. Smith and Lawrence C. Johnson.
In preparation:
 44. Historic statement respecting geologic work in Texas, by R. T. Hill.
 45. The Nature and Origin of Deposits of Phosphates of Lime, by R. A. F. Penrose, jr.
 46. Bibliography of North American Crustacea, by A. W. Vogdes.
— The Gabbros and associated rocks in Delaware, by F. D. Chester.
— Report on Louisiana and Texas, by Lawrence C. Johnson.

STATISTICAL PAPERS.

A fourth series of publications, having special reference to the mineral resources of the United States, has been undertaken.

Of that series the following have been published, viz:

- Mineral Resources of the United States (1882), by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.
- Mineral Resources of the United States, 1836 and 1864, by Albert Williams, jr. 1885. 8°. xiv, 1016 pp. Price 60 cents.
- Mineral Resources of the United States, 1865. Division of Mining Statistics and Technology. 1886. 8°. vii, 576 pp. Price 40 cents.

Correspondence relating to the publications of the Survey, and all remittances, which must be by POSTAL NOTE OR MONEY ORDER (not stamps), should be addressed

TO THE DIRECTOR OF THE
UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

WASHINGTON, D. C., April 15, 1887.

DEPARTMENT OF THE INTERIOR

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No. 38



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1887

The following table shows the results of the experiment. The first column is the number of trials, the second column is the number of correct responses, and the third column is the percentage of correct responses. The data shows that the percentage of correct responses increases as the number of trials increases, indicating that the subject is learning the task.

Number of Trials	Number of Correct Responses	Percentage of Correct Responses
10	5	50%
20	12	60%
30	18	60%
40	25	62.5%
50	30	60%
60	35	58.3%
70	40	57.1%
80	45	56.25%
90	50	55.56%
100	55	55%

The results show that the subject's performance is stable around 55-60% correct responses. This suggests that the subject has reached a level of learning that is relatively consistent across different trial counts.

UNITED STATES GEOLOGICAL SURVEY

J. W. POWELL, DIRECTOR

PERIDOTITE

OF

ELLIOTT COUNTY, KENTUCKY

BY

Joseph Silas

J. S. DILLER



WASHINGTON
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1887