

INDIANA.

DEPARTMENT

OF

Geology and

Natural Resources.

TWENTY-FOURTH ANNUAL REPORT.

W. S. BLATCHLEY,

STATE GEOLOGIST.

1899

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1900.

STATE OF INDIANA,
EXECUTIVE DEPARTMENT,
INDIANAPOLIS, January 25, 1900. }

Received by the Governor, examined and referred to the Auditor of State for verification of the financial statement.

OFFICE OF AUDITOR OF STATE,
INDIANAPOLIS, January 25, 1900. }

The within report, so far as the same relates to moneys drawn from the State Treasury, has been examined and found correct.

W. H. HART,
Auditor of State.

January 26, 1900.

Returned by the Auditor of State, with above certificate, and transmitted to Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

CHAS. E. WILSON,
Private Secretary.

Filed in the office of the Secretary of State of the State of Indiana, January 25, 1900.

UNION B. HUNT,
Secretary of State.

Received the within report and delivered to the printer this 8th day of February, 1900.

THOS. J. CARTER,
Clerk Printing Bureau.

State of Indiana, Department of Geology and Natural Resources.

INDIANAPOLIS, IND., January 25, 1900.

HON. JAMES A. MOUNT, *Governor of Indiana:*

DEAR SIR—In accordance with law, I submit to you herewith the manuscript of the Twenty-fourth Annual Report of the Department of Geology and Natural Resources. It comprises the reports of the chiefs of the different divisions of the Department for the calendar year 1899, together with papers relating to the economic geology and natural history of the State.

Yours very truly,

W. S. BLATCHLEY,

State Geologist.

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DEPARTMENT OF GEOLOGY AND NATURAL RESOURCES.
INDIANAPOLIS, IND.

W. S. BLATCHLEY, State Geologist.

PLEASE ACKNOWLEDGE RECEIPT OF THIS VOLUME.

In return, Scientific Books, Fossils, etc., and Implements of the "Stone Age"
are acceptable.

State Museum, Room 126, Third Floor, State House.

Office of State Geologist, Room 89, Third Floor, State House.

INTRODUCTORY.

It was the original intention to make a paper on the cement resources of Indiana the leading feature of the present report. Several circumstances, chief among which were the illness of the writer and the immense amount of work entailed upon the chief assistant in the editing and proof-reading of the last report, preventing the gathering of complete data for the cement paper. Its publication has, therefore, been deferred for one year.

The present volume deals more with the natural history than with the geology of Indiana. When this Department was reorganized, in 1881, the first phrase of the act was as follows: "A Department of Geology and Natural History is hereby established." In 1889, for political reasons solely, the name was changed to that which it now bears—"Department of Geology and Natural Resources."

Up to 1895, there had appeared in the reports of the Department papers relating to the fishes, batrachians, reptiles and butterflies of the State, together with papers on the flora of isolated counties or groups of counties. In the reports issued by the writer since 1895, papers on the crayfishes, cave fauna and birds of the State have been published. Believing that there is a demand, especially in the common schools, for a more accurate knowledge of the other forms of life now existing in the State, arrangements were some time ago made with specialists for the preparation of papers on the shells, plants and certain groups of insects occurring in the State. On account of the large amount of information pertaining to coal, it was found impossible to publish any natural history paper in the Twenty-third Report, and the present volume, therefore, contains three of the more important of those whose preparation had been authorized.

These are:

First—"The Dragonflies of Indiana," by E. B. Williamson, of Bluffton. Mr. Williamson was, for several years, under the special instruction of the late Professor Kellicott, of Columbus, Ohio, a noted specialist in this particular group of insects. He has, since his graduation, continued his work on the group, and has made large collections in different parts of Indiana. In the present paper he has given a full description of each species found in the State, together with notes pertaining to its life history, habits, etc. There are also

keys by which the student will be able to readily determine any species which he may have in hand. The young of dragonflies furnish much food for fishes, and in turn they, as well as the adults, prey upon the larvæ and mature forms of many insects, especially mosquitoes, so that the paper has an economic as well as a purely scientific phase.

Second—“*A Descriptive Catalogue of the Mollusca of Indiana,*” by R. E. Call. Dr. Call was for several years the Superintendent of Schools at Lawrenceburgh, and while there arrangements were made with him for the preparation of this paper. He is a noted specialist on mollusca and has published many important articles and catalogues relating to shells. Some of these, pertaining to Indiana shells, have appeared in the Proceedings of the Indiana Academy of Science. In the present paper every shell, both land and fresh water, known to occur in the State, is described, and almost all of them are figured. This paper, it is believed, is the most complete and valuable ever published by any state on its molluscan fauna.

Third—“*A Catalogue of the Flowering Plants and of the Ferns and Their Allies Indigenous to Indiana,*” by Stanley Coulter. This paper represents a collection of data covering a period of over six years and the results of a study of the flora of the State for over twenty years. In it an attempt is made to show the significance of plant life. It therefore discusses plants as interpreting soil, moisture and temperature conditions, with lists of plants typical of our various soils added by way of emphasizing the conclusions reached. It also considers in some detail certain economic relations, such as forests and reforestation, weeds and their extermination, poisonous plants and their recognition, plants in their relation to bird life; emphasizing, as far as is possible, the intimate relations existing between these lower life forms and the practical affairs of life. It is the hope that in the form presented it may prove suggestive to the teacher and helpful to the agriculturist and horticulturist. The forms included are, with few exceptions, represented in the herbaria of the State, and their listing under the nomenclature of Britton and Brown's Flora will prove of service to botanists.

In addition to the three articles on natural history above mentioned, there are two short papers on the Geology of Southeastern Indiana, by Messrs. Foerste and Price, and a paper on the Natural Resources of the State, by myself. The annual reports of the State Supervisor of Natural Gas, Inspector of Mines, and Supervisor of Oil Inspection are also included in the volume.