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DEPARTMENT

OF

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W. S. BLATCHLEY,

STATE GEOLOGIST.

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State of Indiana, Department of Geology and Natural Resources.

INDIANAPOLIS, IND., February 23, 1903.

HON. W. T. DURBIN, *Governor of Indiana:*

Dear Sir—I have the honor to transmit herewith the manuscript of the Twenty-seventh Annual Report of the Department of Geology and Natural Resources, the same being for the calendar year 1902.

Respectfully submitted,

W. S. BLATCHLEY,
State Geologist.

ASSISTANTS.

GEORGE H. ASHLEY, Charleston, S. C..Field Assistant.
JAMES A. PRICE, Fort Wayne.....Field Assistant.
L. E. DANIELS, LaporteClerk and Field Assistant.
J. C. LEACH, Kokomo.....State Supervisor of Natural Gas.
B. A. KINNEY, MarionAssistant State Supervisor of Natural
Gas.
W. C. ZARING, Indianapolis. State Supervisor of Oil Inspection.
JAMES EPPERSON, Linton..... State Mine Inspector.
CHARLES LONG, Coal Bluff.....Assistant State Mine Inspector.
ANDREW DODDS, Oakland City.....Assistant State Mine Inspector.
ISADORE KESSLER, Indianapolis.....Stenographer.

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INTRODUCTORY.

The present report is the twenty-seventh in serial order issued by the Department of Geology and Natural Resources of the State of Indiana, and the eighth issued under the auspices of the present director of the department.

The first paper of the present volume, entitled "Gold and Diamonds in Indiana," has been prepared with a view to bring before the public in an official manner what is known regarding the presence of these two valuable mineral products in the State. While both undoubtedly occur, the paper shows that they are not native, but are of glacial origin, i. e., were brought in with the sand, clays, gravel, boulders and other drift material from some point in British America. The gold is widely disseminated throughout the drift-covered area of the northern two-thirds of the State, but occurs in commercial quantity only in Brown, Johnson, Morgan and one or two other counties near the southern edge of the glacial boundary. Here the gravel deposits, forming the base of the lowlands along the streams, in places yield 25 to 40 cents of gold per cubic yard. Under improved methods of hydraulic mining, these gravel deposits would, in places, perhaps well repay the working. The present water supply is, however, too limited to carry on the work for more than three months in the year. A permanent supply of water can, however, be obtained within a distance of 20 miles. In some of the western states water is piped a much greater distance for working placer deposits less productive of gold.

As to the diamonds, a few small ones have been found by the natives of the same counties while panning gold, but their discovery is only of scientific interest, as they are far distant from their original home. It is only by chance, at long intervals, that one is happened upon, and a search for one would be like seeking the proverbial "needle in the haystack."

Dr. George H. Ashley, the former efficient chief assistant of the writer, spent the last year of his work on the survey in an investigation of the "Lower Carboniferous Area of Southern Indiana." He was directed to pay especial attention to the outcrops and deposits of the noted "Indiana Oölitic Limestone" in those counties

south of the area covered by the paper of Messrs. Hopkins and Siebenthal on this valuable building stone, published in the report of this department for 1896. Dr. Ashley, assisted by Mr. E. M. Kindle, made a careful survey of Washington, Harrison, Crawford and parts of Orange and Floyd counties, and the paper, accompanied by two large maps and numerous illustrations, forms the second part of the present volume.

It has been the custom of the present director to publish from time to time, in the reports of the department, papers on the natural history of the State. These have been prepared by specialists, with the view of furnishing the teachers and pupils of the public schools of the State authoritative sources of information regarding the more important animals and plants which surround them. Papers on the fishes, batrachians and reptiles, butterflies, birds, shells, dragonflies and flowering plants have been heretofore published. Following this custom, a paper entitled "The Orthoptera of Indiana" has been prepared for the present volume. The order Orthoptera includes the insects commonly known as grasshoppers or locusts, katydids, crickets, cockroaches, etc., all of which are injurious to the farmer or the housewife. The present paper will, it is hoped, enable the student to readily determine any species of this group of insects which he may find in the State, and thus lead to a more detailed study of its habits and life history.

A paper giving the statistics of the petroleum industry in Indiana for the year 1902 is followed by the annual reports of the State Natural Gas Supervisor, the State Mine Inspector, and the State Supervision of Oil Inspection, in the order mentioned. The Legislature of 1901 removed the State Supervisor of Oil Inspection from the jurisdiction of the Department of Geology, and the included report of Mr. Zaring is the last report of the State Supervisor of Oil Inspection which will appear in the volumes issued by this department.

In the report of this department for 1899 was published an extensive paper on "The Mollusca of Indiana," by Prof. R. E. Call. Careful collecting by Mr. L. E. Daniels in different parts of the State during the past two years has brought to light nearly 100 species of mollusks not mentioned by Call. These are described, and, in part, figured in the final paper of the present volume. By combining this paper with that of Call's, above mentioned, the student of Indiana shells will have as nearly a complete descriptive list of the State's mollusca as it is possible to make.