EXPLORATIONS

ON THE

WEST COAST OF FLORIDA

AND IN THE OKEECHOBEE WILDERNESS.

With Special Reference to the Geology and Zoology of the Floridian Peninsula.

A NARRATIVE OF RESEARCHES UNDERTAKEN UNDER THE AUSPICES
OF THE WAGNER FREE INSTITUTE OF SCIENCE
OF PHILADELPHIA,

BY

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INTRODUCTION.

THE Wagner Free Institute of Science was founded by the late William Wagner, a citizen of Philadelphia, who devoted a long lifetime to the study and advancement of the sciences, especially the different branches of natural history. Mr. Wagner, during his life, formed a large museum, a library and a collection of chemical and physical apparatus. He established annual courses of lectures on various scientific subjects, in which he personally took an active part, which were continued for thirty years, and which were always open free to the public. In 1855, under the above name, the Institute was incorporated by an act of the Legislature.

Mr. Wagner bequeathed his property to the Institute, vested in a Board of Trustees. Since his death in January, 1885, the Trustees have been actively engaged in carrying out his plans, and, in accordance with his views, have elected a faculty of four professors, to take charge of the museum and library, to give lectures free to the public, and to teach the method of, and also to make, research. The first annual course of free lectures was given by the faculty during the season of 1885 and 1886. The sphere of usefulness of the Institute will expand as the pecuniary circumstances are adjusted and will permit. That the benefits of the Institute shall not be restricted to its locality, but may be widespread as possible, the Trustees propose to make provision in aid of original research and the publication of its results, towards the increase and diffusion of knowledge among men.

Mr. Joseph Willcox, one of the Trustees, who had spent several successive winters in Florida, in speaking of his observations in that State, suggested the interest it would be to the Institute and to science to make

an expedition to certain portions of the country, to make collections and investigations in their geology and fauna. Liberally offering his pecuniary and personal aid, and encouraged by the Academy of Natural Sciences, the Trustees of the Institute made the necessary provision, and the last winter sent Prof. Heilprin on the proposed expedition in company with Mr. Willcox. The results were valuable collections in zoology, and especially in geology, together with important investigations and discoveries in the latter, an account of which is presented in the following report by Prof. Heilprin. The well-observed facts of the report must greatly modify the opinions which have been generally held in regard to the geological construction of the peninsula of Florida; and altogether Prof. Heilprin's researches must be considered as an important contribution to science.

JOSEPH LEIDY,
President of the Faculty.

PHILADELPHIA, *January, 1887.*

PREFACE.

THE following pages briefly narrate observations made, during the early part of 1886, in a region the greater part of which had most singularly escaped the attention of the scientific world. Although nearly seventy years have elapsed since the dominion of Florida was by act of Congress constituted into a territorial government, and upwards of forty years since admission into the Union was obtained, the State remains to the present day, as far as its geographical, zoological and geological features are concerned, very nearly the least-known portion of the national domain. So vague, indeed, has been the general scientific knowledge respecting the peninsula, that up to the time of our visit not even its broader geological aspects had been determined; that most fascinating of theories which ascribed the formation of this long stretch of country to the unceasing labors of the coral animal, and which, for nearly a full quarter of a century, received the almost undivided support of naturalists of both hemispheres, had only just begun to meet with its own disproof. The labors of a number of investigators in the northern part of the peninsula had already clearly demonstrated the inapplicability of the coral theory of growth to the facts presented in that section of the State, but we were as yet without data respecting the larger southern portion. With a view of adding to our knowledge more particularly of this region, a veritable *terra incognita* to science, the expedition, the details of which are here recorded, was, with the generous co-operation of the Academy of Natural Sciences of this city, and of Messrs. Joseph Willcox and Charles H. Brock, organized by the Wagner Free Institute of Science.

The personnel of this expedition consisted of the gentlemen above mentioned, of Captain Frank Strobhar, master of the schooner "Rambler," Moses Natteal, cook, and myself. Observations were conducted on the west coast as far south as the mouth of the Caloosahatchie, whence the expedition was deflected eastward into the Okeechobee wilderness. The general results of our geological investigations are summarized on pp. 65–67 of this report. The zoological researches were almost wholly confined to an examination of the littoral oceanic fauna, and to the fauna of the Okeechobee Lake region, which, I believe, had not hitherto been systematically investigated. Our facilities for work in this direction were,

unfortunately, not quite as ample as could have been desired, and the results obtained perhaps not such as might have been anticipated. But the material collected, only a portion of which has thus far been elaborated, is sufficient to indicate the general faunal features of the region traveled over. The Gulf dredgings were all confined to shallow water, not exceeding twenty feet in depth.

A few words bearing upon the history of exploration of that mysterious body of water—Okeechobee—which had so long eluded research, and about which so many mythical fancies have clung, will not be amiss in this place.

It is not exactly easy to discover the earliest references to this lake. Captain Bernard Romans, who appears to have made an extended examination of the peninsula in the latter part of the last century, refers in his "Concise Natural History of East and West Florida" (p. 285)* to a large interior lake, unquestionably Okeechobee, as follows: "This is the river [St. Lucia], which, as i was told by a Spanish pilot of fishermen of good credit, proceeds from the lake Mayacco, a lake of seventy-five miles in circumference by his account. The man told me that he had formerly been taken by the savages, and by them carried a prisoner, in a canoe, by way of this river, to their settlements on the banks of the lake; he says, that at the disemboguing of the river, out of the lake, lies a small cedar island; he also told me that he saw the mouth of five or six rivers, but whether falling out of, or into, the lake, i could not learn of him; probably some of the many rivers i crossed in my journey across this peninsula, fall into it, and it is not improbable that St. John's river originates in it. The large river in Charlotte harbour [meaning the Caloosa, doubtless], by the direction of its course, meridian situation, and great width, i judge, might, perhaps, spring from the same fountain; however, the savages of Taloffo Ochasé told me, that in going far south, they go round a large water, emptying itself into the west sea, *i. e.*, Gulph of Mexico.

"Thus much have i been able to learn of this water, the exploring of which i always intended; whether there is really this lake, or not, i will not be positive, but the above circumstances, joined to a dark account, which the savages give of going up St. John's, and coming down another river, to go into some far southern region of East Florida (on which account the name of Ylacco, and the name given to St. Lucia by the savages, both conveying indecent meanings, are by them given to these rivers) seems to confirm it. That there is some such great water, is further to be gathered from the profusion of fresh water which this river,

* Printed in New York, 1776. From a pencil inscription in a copy of this work in the possession of the Academy of Natural Sciences of Philadelphia, it would appear that but very few numbers were ever distributed. It was sold by R. Aitken, Front Street, New York, "opposite the London Coffee House."

St. Lucia, pours down. Such is the immense quantity that the whole sound between the abovenamed island and the main, though an arm of the sea, situate in a very salt region, and in general two miles wide, is very often rendered totally fresh thereby; in so much, that it has made the very speculative Mr. De Brahm insist upon having seen mangrove stumps in fresh water. This lake has given rise to the intersected and mangled condition in which we see the peninsula exhibited in old maps."

It seems pretty certain from the above statement that little or nothing very definite was known of the lake before this period, except, perhaps, to a few who had accidentally visited its shores. The reference, however, to the "intersected and mangled condition" in which the peninsula appears in the earlier maps, clearly indicates that reports of the existence of such a lake had been broadly current, and not impossibly some accounts from personal observations had already been published. Indeed, on the map accompanying the "Account of the First Discovery and Natural History of Florida" of Roberts and Jefferys, published in London in 1763, the Laguna del Espiritu Santo is made to occupy approximately the position of our Okeechobee, although given a much greater extent than the lake actually occupies. A broad arm of the sea, designated the Bahia del Espiritu Santo, and corresponding in part with the modern Tampa Bay, is represented as opening into it from the west. Possibly the open water-way of the Manatee River suggested this connection. The lake is thus described (p. 18): "Laguna del Espiritu Santo is situated between the islands, extending from north to south about 27 leagues [81 miles], and is near eight leagues wide; it has several communications with the bays on the west side of the peninsula, as well as with the Gulf of Florida. The principal and best known entrance is about three leagues almost west from the Punta de Florida, which lies in 26 deg. 20 min. N. latitude. This entrance is two leagues nearly N. W., and at the end of it, in the lake, are two shoals and six islands, called the Cayos del Espiritu Santo; this large lake is as yet but little known." The entrance above referred to corresponds to a position a little to the north of Hillsborough River.

It is remarkable that these earliest accounts of the lake are but little less vague than those which have been published at various times during the succeeding hundred years, and surprising that our geographical knowledge of so large a portion of the national domain as is covered by the Okeechobee wilderness should have made such little headway. The great difficulty of gaining access to the region, doubtless, in great part accounts for this continued obscurity. Prior to the opening of the Okeechobee canal almost the only available approach was by way of the Kissimmee River. The beautiful waters of the Caloosahatchie, which are unquestionably fed by the Okeechobee swamps, lose themselves

before the lake is reached, and thus what appears to be the direct water-way, was in reality, until the last two or three years, all but inaccessible. The difficulties of this passage are thus described by engineer J. L. Meigs, who, in 1879, undertook an exploration of the region under the direction of the Government: "On the 14th of March the united parties attempted to force a skiff, by wading, dragging and pushing, through the burnt stubble across the marsh intervening between Lakes Hikpochee and Okeechobee. After a day of exhausting toil, struggling through water and mire for the most part 2 feet deep, they arrived late in the afternoon within ¼ of a mile of the western shore of Lake Okeechobee, but their progress was arrested by vast beds of water-lilies, careless and frog weeds, and wild lettuce, filling the entire space between them and the lake, across which they were unable, by their united strength, to force the boat. . . . . Reluctantly the effort to enter Okeechobee was abandoned, and the parties retraced their steps, arriving in camp after midnight in a state of exhaustion after 16 hours of continued wading through water and mire" (Report of the Chief of Engineers, 1879, p. 865).

The author wishes to express his indebtedness to Mr. George W. Tryon, Jr., Conservator of the Conchological Section of the Academy of Natural Sciences, for much valuable aid received in the preparation of this report, and to the Levytype Photo-Engraving Co., of this city, for the very perfect rendering of the illustrations of new fossil species. The figures are reproductions direct from the specimens themselves.

A. H.

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