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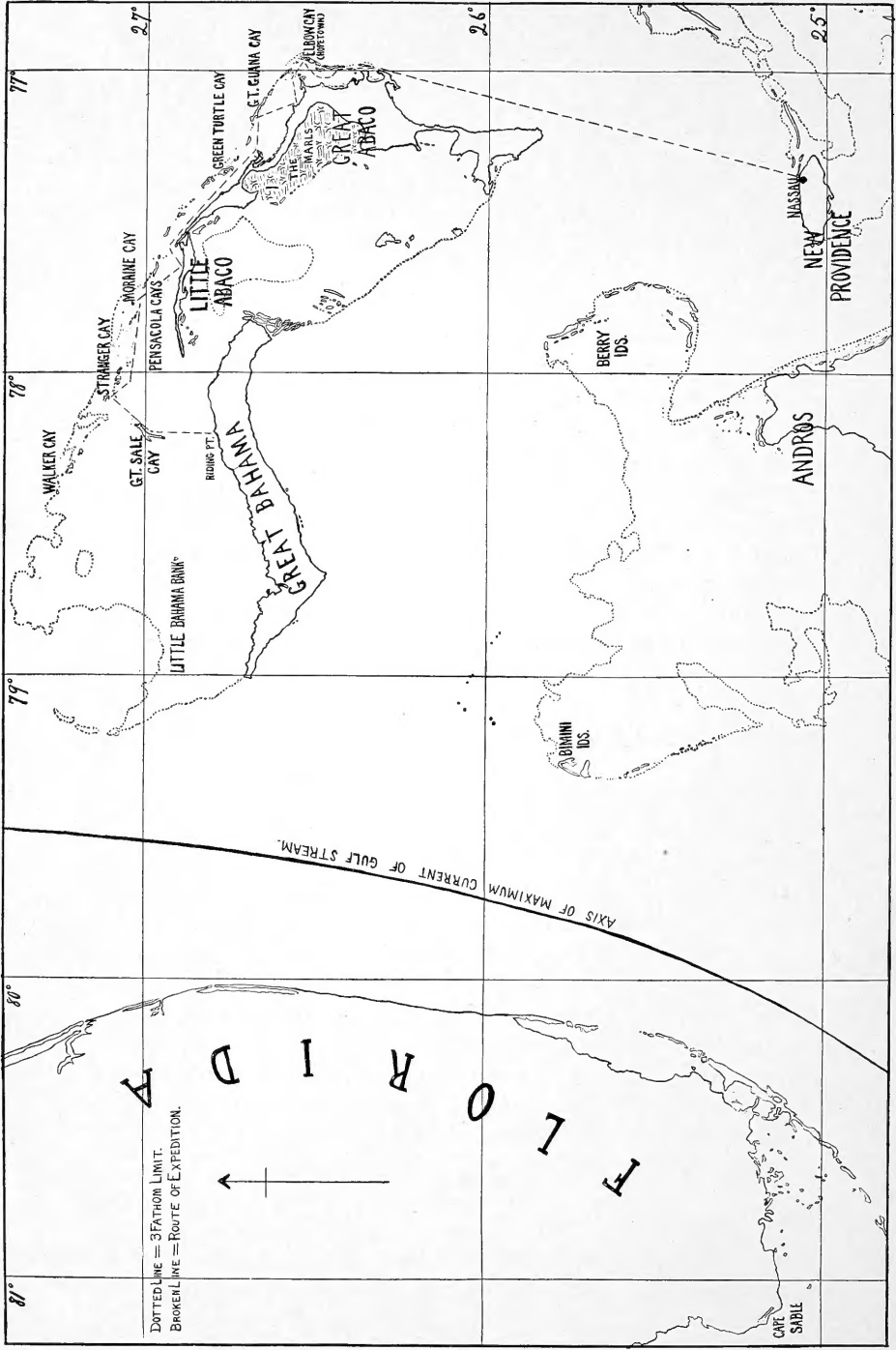
NARRATIVE OF A TRIP TO THE BAHAMAS.

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MAP OF THE NORTHERN BAHAMAS.

NARRATIVE OF A TRIP TO THE BAHAMAS.

BY GLOVER M. ALLEN AND THOMAS BARBOUR.

THIS is the first of a series of short papers on the flora and fauna of the Bahamas, the results of a trip made by us during the early part of the summer of 1904, with Mr. Owen Bryant. We visited a number of the northern islands of the Bahama group to make such collections as were possible in the limited time before the hurricane season.

These subtropical islands are easily accessible to naturalists from the continent, and although considerable work has been done among them, much yet remains for future exploration. Most visitors to the islands go in the winter season since the heat of summer is extremely oppressive. Yet we found it possible to be comfortable and at the same time to make valuable collections. The present account of our expedition is offered in the hope that it may be of use to other investigators who contemplate similar work among the Bahamas. Further reports, based on studies of the material collected, are in preparation, and will appear as occasion may offer.

The party left New York on the S. S. "Orizaba," sailing June 24th, for Nassau. About daybreak of June 28th we sighted New Providence Island, and a little later, on landing, found comfortable quarters at the Clifton House, the only hotel open during the summer season. We spent the few following days until July 2d in collecting in the vicinity of the city of Nassau. A carriage and driver may be had for 70 cents an hour and it is thus an easy matter to make excursions in several directions from the city proper, back into the country of the interior of the island. The gardens and cultivated grounds in the city itself, however, are rich in insects of many kinds as well as other indigenous animals.

On the advice of Mr. Ronald Young we chartered the sixty ton schooner "Wm. H. Albury" (Capt. Daniel Russell) and found her tolerably well adapted to our needs. She was fifty-nine feet over all and drew about six feet of water. She was roomy and most seaworthy; but had more of the space been cabin instead of hold we should have been suited better. We cannot too strongly advise

persons who contemplate a visit to the Bahamas in summer to make sure of an awning for the deck and an adequate supply of mosquito netting. Oils of citronella and pennyroyal mixed in equal parts will also be found very useful in helping to keep off the gnats, stinging flies, and mosquitoes, which are excessively abundant in some localities.

Our crew consisted of captain, mate, cook, and three ordinary seamen, with several extra men picked up along our route as occasion required. It is wise to have on board rather more men than are likely to be needed as physically they are far from strong. This applies especially to the white inhabitants of Abaco; for a diet of fruit, salt meat, and rice has left them poor workers even when they are aroused from their tropical lethargy. It is possible that in many respects a negro crew would be more useful.

A few words as regards food are not out of place in this connection. Manufactured ice, which may be obtained at Nassau for a reasonable price, $\frac{1}{2}d$ per lb., can be kept a long time if packed in large chunks with a liberal quantity of barley shucks. Good rain water may be obtained at Nassau. One should be careful not to rely on the various "wells," really holes in the ground where the surface water collects, for the water from these has a most unpleasant taste and is teeming with animal life, much of it quite visible to the naked eye. We found lime juice a most pleasant addition to the water and always used it. Limes may be obtained at most of the settlements for $9d$ per hundred. Fresh meat cannot be kept even if it is obtainable. The native beef and mutton are vile and nothing else can be obtained in summer. On the other hand, the fish which abound about all the reefs and in the channels are very good indeed. We might mention especially the grouper, the various snappers and grunts, and turtle meat which can usually be had in Nassau. Some of the fishes are poisonous. The barracuda, parrot fishes, and the amber-jacks in some places are said to have a very bitter taste and to cause severe sickness. A good general rule is to avoid the bright, showy fishes, although exceptions may often be made. In Nassau canned goods may be obtained but in quality they are far inferior to those which might be brought from the North.

After provisioning our craft and getting our apparatus safely stowed, we set sail at 5 p. m., of July 2, for Hopetown, Elbow Cay,

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98 miles north of New Providence. This passage was rather rough, owing to a heavy sou'west wind and we were all glad to cross Little Harbor Bar and to enter the still water behind the outlying fringe of cays off Great Abaco. Hopetown is one of the few white settlements in the Bahamas and boasts about 1000 inhabitants. Here is the large lighthouse that warns mariners from the dreaded Elbow Reef, which in the old days was such a profitable collecting ground for the wreckers.

For two days we did shore-collecting here but did not find it particularly productive. The rocks along the shore yielded a considerable number of shells and we found large colonies of the rock-boring barnacle, *Lithotrya*. A good deal of collecting we did in five or six feet of water, using a waterglass to examine the bottom. The abundance of sharks was somewhat of a drawback. Although we were assured by the natives that these were very timid yet they sometimes came within 15 feet of us. Though we did not see any very large ones on the Abaco side of Elbow Cay, we did see several monsters in the surf on the ocean side. After two days spent here we went to Marsh Harbor on the "mainland" of Great Abaco, and from this point we made several excursions among the intricate waterways of "The Marls." Here we saw one splendid band of fifty-four flamingoes as well as a few scattered individuals. Formerly these birds nested here in great flocks but owing to the great destruction of the eggs and young birds by the people of Marsh Harbor, a mere remnant now remains. Their nesting site has not been discovered for two years and if it can be kept hidden for a few years more their number may increase. In the Bahamas the craving of the people for fresh meat can only be satisfied by using gulls, terns, cormorants, and flamingoes for food. A crying need of the islands is a good set of game laws for none whatever exist to-day. We were forced on several occasions to try these various birds as food and cannot recommend persons to rely on them. The wild pigeon which occurs in thousands on some of the cays is, however, delicious.

About noon of July 8th we set out for Great Guana Cay, where we spent several days in shore-collecting and dredging in Guana Cay channel. Of our dredging apparatus we purpose to speak later. We made good use here of the snapnet in collecting small reef fishes, baiting and setting it in from 10-30 feet of water and

watching it with a waterglass, until, when a number of specimens were busy about the bait, it was closed with a jerk of the line and hauled to the surface.

At the kind invitation of Mr. Arthur H. Nield, of the Sisal Fiber Company, we spent two most pleasant days at the extensive plantation on Little Abaco. Here we had an opportunity to observe the preparation of the fiber and to collect a number of land animals and plants in the vicinity of the village of Cooling Temper. Not far away, near the village of Tar Bottom is a large, almost circular lake, of great depth whose water, fresh at the surface, is salty at a slight distance down. There is supposed to be some subterranean connection with the sea; for it is not unusual to find large sea fish and sometimes turtles in the lake.

Leaving Little Abaco on July 11th, after making a short stop near Cedar Harbor to examine a series of caves, we stood off for the Pensacola Cays. Here we spent several days in dredging and shore-collecting. We made Moraine Cay our headquarters and from here we made several short excursions to neighboring islets. This island is a great roosting place for the pigeons and numbers also nest among the bushes. They feed during the day on the nearby islands and return to Moraine Cay to spend the night. This bird is the common West Indian white-crowned pigeon (*Columba leucocephala*).

Before 5 A. M. of the 14th we were off for Stranger Cay. The wind fell to an almost dead calm and before long a terrific tropical thunder squall was on us. The rain came down in blinding sheets and the wind blew a gale. Just as the storm abated we made out two waterspouts some miles to seaward. The wind held favorable and as we ran along before it we passed Fish Cays where a great multitude of sea birds rose and circled about shrilly screaming. This is a favorite place for the spongers to "egg up" before a cruise; and it was evident that the birds had no love for intruders. About the middle of the afternoon we arrived at Stranger Cay, where owing to extensive shoals we had to lie off about half a mile from shore. Here there was a deserted house, the only sign of human habitation since leaving Little Abaco. On this island, moreover, the soil seemed to be better suited for cultivation than the meager bit of sand on most of the other "Leeward Cays." The mosquitoes were very troublesome and as the island was not a particularly rich collecting field we were not sorry when

at noon of the 15th we turned south and made for Great Sale Cay. We might add that on the sand flats we had good sport from our small boat spearing the large "sting-a-rees," giant skate-like creatures. The way in which they rushed the boat off, often rising from the water and flapping their great wing-like fins, added much to the excitement. When finally killed and hoisted aboard the schooner they were useful as shark bait.

At Great Sale Cay we met several boats, the last of the sponging schooners, homeward bound. All the crews boarded us, asking what we were doing and where we were going. Perhaps it was their advice that made our crew so shy of approaching the shore of Great Bahama; for the following morning after our visitors had left, the captain and mate asked us to omit this stage of our trip. We insisted, however, and after some excitement incidental to the harpooning of a large leopard shark (*Galeocerdo tigrinum*) from our deck, set sail for an anchorage some distance off Riding Point, "Grand Bah'ma." The bottom all about here is very hard and the on-shore winds roll up heavy seas, so that we dared not run within several miles of the outlying flats. Only one of our crew had ever been here before; for this shore, aside from its other unpleasant features, is not a profitable sponging ground. From our anchorage it was a matter of several hours of alternately sailing and hauling our small boats over series of shoals and mud flats, before reaching shore. Even here a long stretch of excessively difficult walking lay between us and tree growth. The entire surface of the ground, except where it was covered with a layer of fine, sticky mud from an inch to several feet in depth, was curiously eroded, and everywhere sharp points of limestone rock and ridges keen and hard as knife blades rendered our progress slow and painful. Once among the trees, conditions were even more unfavorable for an extended survey of the land, since the ground was everywhere covered with a thick tangle perhaps six feet high of the thorniest of xerophytes.

After leaving Great Bahama, where we had been able to spend but a couple of days, we retraced our course, stopping only at Marsh Harbor, Hopetown, and Sweeting's Village. This return passage was rendered more difficult by the increasing number of squalls, now of daily occurrence, and the intervening periods of calm weather. Moreover, our stores had become very low, as unforeseen delays prevented our replenishing them at Hopetown, about the only place where food could be obtained.

Near Sweeting's Village, on July 22d, we went ashore on "the main" in order to visit the caves at Hurricane Hole,—one of which had been inhabited for many years by a large colony of bats (*Phyllostonycteris planifrons*). At 1 P. M. of the same day we left for Nassau. The wind was shifty and sometimes almost dead ahead, and it was not until midnight that we passed the light at Hole-in-the-Wall. At about 3:15 P. M. of July 23d we again tied up to the quay at Nassau.

In some of the cuts appended, are shown the main types of vege-



Pine woods and undergrowth. Great Bahama.

tation among the Bahamas. The text figure illustrates the open pine woods with tangled undergrowth, characteristic of the large islands, as Great Bahama, Great Abaco, Little Abaco, and New Providence. The outskirts of these main islands are frequently bordered with low mangrove swamps, or more open stretches (pl. 2, fig. 1) where the broken surface of the limestone offers little foothold for any but straggling bushes. The wicket-like method in which the mangrove branches grow is well shown in figure 2 (pl. 2). Still another type

of vegetation is seen among the cays. This is a tangle of palmettos

of several species, bushes, and vines, and is known as "coppet" (pl. 3, fig. 3). On many of the islands cocoanut palms are introduced and thrive well. Royal palms, date palms, pawpaws, breadfruit and almond trees are also commonly cultivated at Nassau as well as other tropical varieties. Quantities of pineapples are grown, but the soil is so poor that it is soon exhausted.

The land fauna is in a large measure made up of West Indian species, and in part also of continental species, while a few forms are wide ranging. Mr. F. M. Chapman has reviewed the origin of the Bahaman avifauna in an important paper in the *American Naturalist* several years ago (vol. 25, 1891, p. 528-539). The indigenous mammals of the Bahamas are few. A racoon (*Procyon maynardi*) is found on New Providence Island and is distinct from the mainland variety. Several species of bats also occur. A species of *Capromys* is found on the Plana Cays, in the southern part of the group. We were informed by Mr. Robert Johnstone, of Nassau, that a manatee was captured at the Bimini Islands about a year or more since. The animal was killed by some negroes about the time of one of Mr. Johnstone's visits as circuit magistrate.

Through the kindness of Mr. Alexander Agassiz we were permitted to make use of a hand-winch and 350 fathoms of steel cable. By means of this apparatus and a twenty-inch Blake dredge or four foot tangle-bar we made a number of hauls along our route. Dredging from a sailing vessel is difficult work at any time but it is particularly so when the weather conditions are unfavorable. We set our winch up on the starboard side of the schooner, rather far aft. The cable we ran forward and through a set of blocks made fast to a boom on the foremast. This extra boom was rigged under the regular foreboom. In this way we were enabled to dredge over the beam, a method which is far more convenient than dredging over the stern. To the end of this boom was attached one of the ship's runners, which served to hoist the load on deck, and a guy, which was carried forward and made fast to one of the cat-heads. This arrangement is shown in fig. 4 (pl. 3) which gives one an idea of how the whole apparatus appeared from the bow. With this apparatus we made a number of successful hauls in from three to twenty fathoms. But in deeper water, say fifty fathoms, the work becomes very difficult as well as precarious. The lack of a spring accumulator and the character of the bottom were our main dif-

faculties, and caused us the loss of several dredges. We were also unfortunate in having heavy squalls come up almost every time we ran out to sea to make the deeper hauls.

Persons who contemplate dredging in the Bahamas should apply to the Colonial Secretary for a permit, preferably through their Consul, as dredging is forbidden by law owing to the damage to the sponge industry.

Several interesting species of fishes were taken while dredging off the island of Abaco, among which may be mentioned the rare eel, *Sphagebranchus anguiformis*. Young Monocanthi were taken in every haul on grassy bottom; and in rather coarse white sand we obtained *Asymmetron lucayanum*.

We may fittingly close this brief sketch with a few remarks on the general conditions of several of the more important islands which we visited. The "out islands" are strangely little known even to the people of Nassau, to say nothing of the average American. Much of our information has been obtained from the Annual Report for 1902, by Sir G. T. Carter lately of the Bahamas and now Governor of Barbadoe. This is illustrated and is far more interesting than the average blue-book; in fact every person who contemplates a visit to the Bahamas should certainly send for a copy and read it carefully. We will take up the several islands here in the order in which we visited them and remark shortly upon each.

New Providence, the most important island in the group, contains the capital, Nassau. The island is about twenty miles long and nine miles broad. The population of the whole island (1901) is about 12,500 persons. The city is now frequently visited in the winter season and the island is therefore well known to Americans.

Abaco and the Northern Cays: The main islands are Great and Little Abaco; according to Gov. Sir G. T. Carter they have an area of 776 square miles. They extend for 94 miles and yet the population is only 3300 people, and is decreasing. The principal settlements are Cherokee Sound, Hopetown on Elbow Cay, and Green Turtle Cay. The first of these settlements is a mere fishing village; the second is a port of entry and an important sponging center. Green Turtle Cay, once a flourishing town, is now fast declining; the people are said to be moving to Key West, Fla. The poverty outside of Hopetown is extreme; indeed the revenue of Cherokee Sound in 1901 is stated to have been £4 7s. There is some valu-

able timber on Abaco and a concession has been granted to exploit the forests. A large amount of sisal is grown on Little Abaco and a lesser amount about Hopetown. Off the Abaco coast to the Matanilla reefs (lat. $27^{\circ} 23' N.$, long. $78^{\circ} 50' W.$) extends an unbroken fringe of cays and reefs, once the abode of the unscrupulous wreckers, who now have little to do as their favorite trade has been destroyed by the lighthouse at Elbow Cay.

Great Bahama: This island contains 430 square miles, is 66 miles long and from 5 to 12 miles wide. The population is stated to be 1780 people. The inhabitants are mainly engaged in sponging and fishing. The character of the land seems particularly unfit for agriculture or cattle raising.

The people of these northern islands do not take kindly to the mild vocations now open to them. Their ancestors have for generations been very little better than pirates; and as they often told us, they consider the lighthouses a curse instead of a mark of progressive development.

The writers returned to New York arriving about the first of August, but Mr. Bryant remained behind for a visit to Andros Island. He went to Mangrove Cay and there made some most interesting collections, particularly of reptiles and molluscs.

Andros Island is the largest of all the Bahamas being really a more or less connected aggregate of many islands, the whole land mass having an area of about 1600 square miles. As only part of this has been explored it still offers a fruitful field for biological work. The entire population is only a little over 5000 persons. This island is the only one with running fresh water but unfortunately the stream is useless to the settlers as it is situated in swampy and uninhabitable land. There is valuable timber on Andros as well as on some of the other islands, but as there are no roads nor good harbors it cannot be worked successfully. The colony is so poor that no improvements can be made and consequently there is little or no encouragement for settlers to emigrate thither.

The pleasure of our stay in Nassau was largely due to the very kind attention shown us by the American Consul, Mr. Julian Potter, and by Mr. Young, chairman of the Sponge Fisheries Board; both of these gentlemen assisted us in many ways. To the Administrator, Colonial Secretary, and Executive Council of the Bahamas our thanks are due for permission to import and use our dredge within

the jurisdiction of the colony. Finally, we have the pleasure of acknowledging our deep obligation to Robert Johnstone, Esq., the Colonial Magistrate, for his many kindnesses and for his generous hospitality.



FIG. 1.—ERODED LIMESTONE ALONG SHORE. GREAT BAHAMA.



FIG. 2.—OUTER EDGE OF MANGROVE SWAMP. GREAT BAHAMA.



FIG. 3.—CAY VEGETATION. GREAT GUANA CAY.

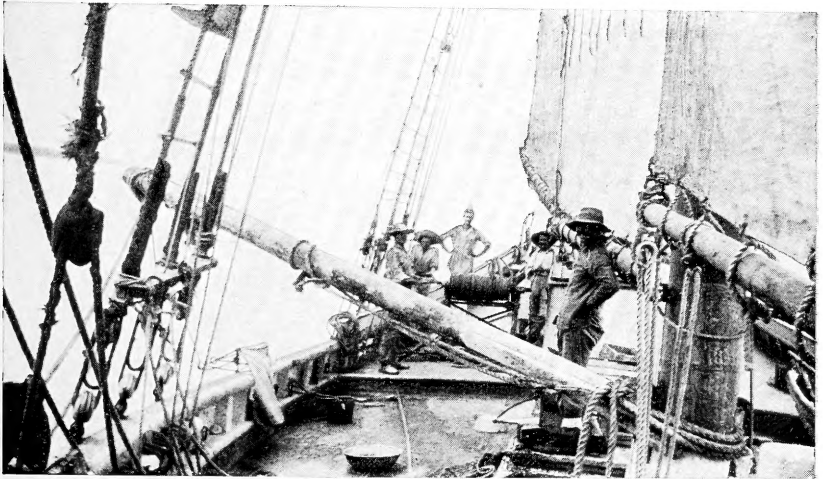


FIG. 4.—DREDGING OPERATIONS ABOARD THE 'ALBURY.'

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