

and his acts are characterized by the highest intelligence. It makes no difference what his creed may be, or his political affiliation, or his nativity. He is one of Iowa's benefactors, one whose deeds will make his memory blessed.—*Davenport Democrat*.

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## HISTORY OF THE BAHAMA EXPEDITION.

BY PROF. C. C. NUTTING, OF THE IOWA STATE UNIVERSITY.

The Bahama Biological Expedition from the State University of Iowa was largely an experiment along educational lines. It afforded the first opportunity ever enjoyed by students to engage in deep-sea dredging and to study the animal forms thus secured fresh from their native element. The enterprise differed from its predecessors in being the first attempt to do scientific dredging at any considerable depth without the use of steam either to propel the vessel or to work the dredge.

The vessel chartered for the occasion was the "Emily E. Johnson," a two-masted schooner, tonnage, 116 net. She was chartered for three months, and cheaply yet conveniently fitted up for the occasion, by flooring over the hold and placing comfortable bunks, tables, etc., in the after part. A convenient laboratory for marine biology and a good library of reference were provided by the University. The cabin was furnished with all necessary comforts for the ladies who accompanied the expedition. A cheap and effective dredging equipment, devised by Prof. L. G. Weld, furnished a means of working down to about 260 fathoms. An experienced and entirely satisfactory sailing master was secured in the person of Captain Charles Flowers, who is an expert dredger as well as sailor.

The following persons constituted the party which sailed from Baltimore, May 5, 1893: Instructors—G. L. Houser and H. F. Wickham and Professor C. C. Nutting, Executive Committee. Mrs. H. F. Wickham, Mrs. Gilman Drew, Dr. Leora Johnson, Miss Margaret Williams, Miss Bertha Wilson,

Miss Minnie Howe, Miss Edith Prouty, Professor M. F. Arey, of the State Normal, Professor Stephen Stookey, of Coe College, Professor Gilman Drew, of Oskaloosa, and Messrs. Wm. Larrabee, Jr., E. G. Decker, Henry Ditzen, A. G. Barrett, A. M. Rogers, Wm. Powell, Edwin Sabin and Webb Ballard.

After a most enjoyable sail down the Chesapeake the outward passage was an usually rough one. Most of the party suffered severely from sea sickness. In crossing the Gulf Stream an interesting study was made of the Gulf weed and its numerous animal inhabitants.

On Friday evening, May 15, the first anchorage was reached at Egg Island, Bahamas. The next day was spent in exploring this interesting place and in collecting natural history specimens, both on land and in the surrounding water. Animal life was encountered in profusion and the first day's work resulted in large collections.

Next the Great Bahama Banks were crossed. The Banks are immense submerged sandy flats, covering thousands of square miles. Here the dredging equipment was tried, largely for practice. The trial was entirely satisfactory, and a large number of interesting specimens, particularly large star fish, was secured.

Havana was reached on May 21st. Three days were spent in visiting "The Queen of the West Indies" and in transacting official business. The Spanish authorities proved extremely courteous and granted every concession necessary for our work.

About three miles from Castle Moro, which marks the entrance to Havana harbor, is the famous "Pentacrinus grounds," where the United States vessels "Blake" and "Albatross" made their famous hauls of *Pentacrinus*, a stalked crinoid or sea lily.

The S. U. I. expedition went to Havana for the purpose of dredging for these rare and beautiful animals. This was the first attempt of the kind without expensive equipment worked by steam. At the very first haul over a score of magnificent crinoids came up on the tangles. This was the most notable triumph of the cruise, and demonstrated the practicability of

our plan and the efficiency of our equipment. Dredging was successfully carried on at a depth of 260 fathoms. Aside from the *Pentacrin* many other valuable deep-water specimens were secured during the week spent at this place.

Bahia Hunda, about thirty miles west of Havana, was the next port. Here the officials were extremely suspicious, evidently taking our party for filibusterers, and refused to let any one go inland more than thirty yards from the water's edge. Fortunately the "Hawkeye" visitors were interested mainly in the water, where a rich harvest of marine forms was secured. The mosquitoes, however, were a great annoyance and kept most of the party from sleeping during the two nights spent at Bahia Hunda.

Arriving at Key West on June 5th, the expedition was refused permission to land, because yellow fever might have been brought over from Cuba. The "Emily E. Johnson" was ordered to the Dry Tortugas to be fumigated. Dr. Robert Murray, the physician in charge of the fumigating plant, exerted himself to make our enforced quarantine at Fort Jefferson delightful. The party was given full run of the old fort, now abandoned as a military post, and this turned out to be perhaps the pleasantest part of the whole cruise. The Tortugas proved a splendid place for the collecting and study of marine forms of all sorts. Sharks, sea birds, crustaceans, mollusks, sea urchins, serpent stars and corals almost without limit gave plenty of material for work and study. For once, at least, a party left the dreaded quarantine station and its yellow flag with real regret.

Returning to Key West on June 16, our stores were replenished and preparations made for two weeks of hard work on the "Pourtales Plateau," a submarine shelf stretching out toward the gulf stream from the Florida Keys. While dredging over this plateau an accident occurred which might have resulted in a tragedy. The dredge caught suddenly on the bottom and the guys and lashing of the dredging spar broke, the spar itself, with a heavy iron block at its end, falling to the deck, the block just missing a young lady's head. No

damage was done, however, that could not be promptly mended. At this time a dead calm of several days' duration was accompanied by almost insufferable heat. The tar boiled from the deck, and awnings gave but little relief. The nights, however, were delightful, and all hands secured refreshing sleep.

The quantity of valuable material dredged on the Pourtales Plateau exceeded the most sanguine expectations. Among other things were several species of crinoids, many rare deep-sea corals, flexible corals of novel forms, basket fish, sea urchins, and a great variety of exquisitely graceful plume-like hydroids, marvels of delicate beauty. During the calm several sharks and dolphins were added to our collections. A magnificent series of madripore coral was secured and bleached near Sand Key light.

On July 1st the expedition cleared from Key West for Harbor Island, British West Indies. The "Fourth" was passed at sea, but was duly observed with appropriate ceremonies.

Arriving at Harbor Island, our vessel was run aground by a careless or ignorant native pilot. She floated off, however, the next day, and the vessel entered the port, to clear the same day for Spanish Wells, Eleuthera, where an excellent opportunity was afforded to study the coral reefs with all their accompanying forms of life and beauty. Realizing that the time approached for turning homeward, the party worked with a will and secured probably a greater quantity of material than at any other station, particularly of corals, of which many superb specimens were collected.

After leaving Spanish Wells, on July 15th, three days were spent in beating around to the southeastern end of Eleuthera. One day was spent in dredging between this island and Little San Salvador, with good results.

The homeward passage of eight days was spent in packing collections and equipment.

The expedition landed at Baltimore on the morning of July 27th, having enjoyed a wonderful immunity from storms, sickness, accident or misfortune of any kind. As an educational experiment it was a marked success. The collections

secured amounted to a car load and all arrived safe at Iowa City. This was probably the largest amount of marine natural history specimens ever shipped at one time into the interior of the United States.

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MAJOR-GENERAL G. M. DODGE.

BY EX-GOV. CYRUS C. CARPENTER.

(Concluded from October Number.)

During the progress of the events which closed the chapter in the last number of *THE ANNALS*, General Grant wrote to General Sherman a letter, from which the following is an extract:

"It is not my intention to have any portion of your army to guard roads in the Department of the Cumberland, when an advance is made, and particularly not Dodge, who has been kept constantly in that duty since he was subject to my orders. He is too valuable an officer to be anywhere except in front, and one that you can rely upon in any and every emergency."

In conformity with this opinion, in March, 1864, he wrote General Halleck suggesting that Missouri, Kansas and Arkansas be added to the Department of the Gulf and that General Dodge be assigned to the command, with a view of increasing the order and efficiency of the Department, and also moving against Mobile. But as General Sherman was about to begin the Atlanta campaign he was unwilling to spare him from the command of the Sixteenth Corps. Accordingly on the 29th of April, General Sweeney, commanding the Second Division, moved from Pulaski, Tennessee, and General Veatch, commanding the Fourth Division, moved from Decatur, Alabama, with orders to concentrate at Huntsville. From Huntsville the two divisions marched eastward towards Stevenson until May 4, when they embarked on the cars for Chattanooga, the Second Division at Larkinsville and the Fourth at Woodville. The transportation and artillery, under escort of Colonel J. J. Phillips, 9th Illinois Mounted Infantry, and a portion of the 1st Alabama Cavalry moved by the wagon road to Chattanooga *via* Bridgeport. General Dodge and his com-

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