# BULLETIN OF THE BINGHAM OCEANOGRAPHIC COLLECTION Volume 15

# Oceanography of Long Island Sound, 1952-1954 Issued February 1956

published by Peabody Museum of Natural History Yale University New Haven, Connecticut, USA www.peabody.yale.edu

### Contents

Harry Payne Bingham 1887–1955, pp. 4–8

I. Introduction, Gordon A. Riley, pp. 9–14

II. Physical Oceanography, Gordon A. Riley, pp. 15-46

III. Chemical Oceanography, Gordon A. Riley and Shirley A. M. Conover, pp. 47-61

IV. Phytoplankton, Shirley A. M. Conover, pp. 62–112

V. Zooplankton, Georgiana B. Deevey, pp. 113-155

VI. Biology of Acartia clausi and A. tonsa, Robert J. Conover, pp. 156-233

VII. Pelagic Fish Eggs and Larvae, Sarah B. Wheatland, pp. 234–314

VIII. Chemical Composition of the Plankton, Eugene Harris and Gordon A. Riley, pp. 315–323

IX. Production and Utilization of Organic Matter, Gordon A. Riley, pp. 324-344

X. Biology of Marine Bottom Communities, Howard L. Sanders, pp. 345-414

Publications issued by the Bingham Oceanographic Laboratory, pp. 415-419



© Peabody Museum of Natural History, Yale University. All rights reserved. Made available courtesy of the Long Island Research Center and the Yale Peabody Museum.

#### BULLETIN

1000

OF

THE BINGHAM OCEANOGRAPHIC COLLECTION Peabody Museum of Natural History Yale University

VOLUME XV

### OCEANOGRAPHY OF LONG ISLAND SOUND, 1952–1954

### By

Gordon A. Riley Shirley A. M. Conover Georgiana B. Deevey Robert J. Conover Sarah B. Wheatland Eugene Harris Howard L. Sanders

Issued February, 1956 New Haven, Conn., U. S. A.

# OCEANOGRAPHY OF LONG ISLAND SOUND, 1952–1954<sup>1</sup>

Rhv-ocean

802

By

Gordon A. Riley Shirley A. M. Conover Georgiana B. Deevey Robert J. Conover Sarah B. Wheatland Eugene Harris Howard L. Sanders

VOLUME XV

#### BULLETIN

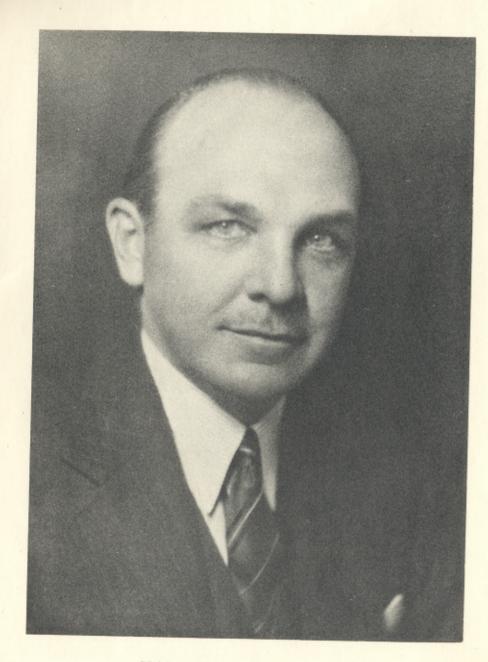
OF

#### THE BINGHAM OCEANOGRAPHIC COLLECTION

Peabody Museum of Natural History Yale University

> Issued February, 1956 New Haven, Conn., U. S. A.

<sup>1</sup>These studies were aided by a contract between the Office of Naval Research, Department of the Navy, and Yale University; reproduction in whole or in part is permitted for any purpose of the United States government.



# HARRY PAYNE BINGHAM YALE '10

# HARRY PAYNE BINGHAM 1887–1955

Harry Payne Bingham died in Palm Beach, Florida on March 25, 1955—twenty-five years almost to the day after his original endowment of the Bingham Oceanographic Laboratory at Yale University.

Bingham was born in Cleveland, Ohio on December 9, 1887. He received his formal education at the Taft School and at Yale, where he was a prominent athlete, participating in football (varsity Y), hockey, baseball and golf, and where he roomed with Adrian Van Sinderen and the late Senator Robert A. Taft. He returned to Cleveland after graduation and became associated with the Upson Nut Company, manufacturers in steel and iron.

In the fall of 1916, on the eve of our entry into World War I, Bingham wrote, "My plans are to go to the military camp at Plattsburg, and to do all I can to elect Hughes." He was secretary of the General Munitions Board and the War Industries Board in Washington from March to December 1917. Commissioned a First Lieutenant of Ordnance, he was later transferred to the 4th Field Artillery Brigade, serving as its operations officer and taking part in the Chateau-Thierry, St.-Mihiel, and Argonne campaigns. He was promoted to Captain in October 1918 and was discharged in March 1919. Following the war he moved to New York, where he became associated with various corporations.

It is difficult to determine what first aroused Bingham's interest in marine biology. For the *History of the Class of 1910*, *Yale College* (Vol. III, 1926) he wrote: "Since 1923 I have devoted my time largely to scientific research work connected with marine life, and have added some few facts to the science of Ichthyology. I make yearly trips to southern waters in boats especially equipped for deep-sea fishing as well as with all necessary equipment for surface fishing. The specimens I am accumulating in a private museum for further study and reference." And the editor of Volume IV (1935) writes about Bingham: "When he first became active in this field, it was not with the mere intention of establishing a private collection of marine curios, but in the much broader scheme of sponsoring a program of scientific research into the life and natural laws of the sea. For this

### 6 Bulletin of the Bingham Oceanographic Collection

purpose three separate oceanographic expeditions were planned, equipped and conducted under Bingham's personal supervision and leadership on his yachts, the Pawnee I and the Pawnee II, which had been specially fitted with the apparatus necessary for deep-sea work. During the first and third expeditions, in 1925 and 1927. the marine life, particularly that of the relatively unexplored great depths, in the Caribbean and Bahamian waters was investigated. The second expedition, in 1926, worked chiefly in the Gulf of California, from which a wealth of new material was also obtained. To analyze and preserve the scientific results of these explorations, a staff of scientists, artists, and technicians was engaged and given a free hand with the valuable collections. When the results of these studies began to become available. Bingham also arranged for their publication in a scientific series which continues to date, and which. while still under Bingham's private sponsorship alone, was immediately accepted in exchange by all the leading institutions in this field in the world. When, in 1930, he gave to Yale the Bingham Oceanographic Collection, it was therefore not only a gift of a rare and valuable collection of more than 3,000 items, among which nearly 200 species have been found to be entirely new to science, it was also a going concern in marine research and publication. And to provide for its continuation he established the Bingham Oceanographic Foundation."

One of the early members of Bingham's staff was a young Norwegian, Albert Eide Parr, of whom the New Yorker (July 18, 1942, p. 10) wrote at the time he became Director of the American Museum of Natural History: "In 1926 he came to this country to find wider opportunities. These opened up dimly at the Aquarium, where he got a job at \$110 a month cleaning spittoons, feeding fish, and washing the windows. A year or so later Harry Pavne Bingham put him in charge of the collection at New Haven." Over the years Parr and Bingham became close friends, each admiring the other's particular talents and abilities. Their correspondence in the 1930's, when Parr was Director of the new laboratory at Yale, shows that they remained on formal terms; it was always "Dear Mr. Bingham" and "Dear Parr." But there is an intimacy in the letters themselves which belies the salutations. Thus Parr wrote to Bingham on March 29, 1930 about the moving of equipment from "Tebo's" yacht-yard to New Haven:

1956]

IXV

#### Harry Payne Bingham 1887-1955

I am very sorry that the moving proved to be such an expensive affair, but after having seen what it meant I am convinced that the price was quite decent nevertheless. They started loading in the morning with 6 men, got 8 men in the afternoon and were not through until after seven at night. It was just like opening a warm soda bottle, it seemed to grow and flow out endlessly. It was, incidentally, a quite entertaining undertaking. They had, for instance, been carrying out the smaller nets and came to our 300 feet seine, not knowing what it was, and began loading it on the strongest man, who highhandedly refused any weaker assistance-in the beginning. When he had got about 50 feet on another man had to take up position behind him. Nobody knew how long it was to the end, and it developed into a conjurers' show accompanied by some of the most assorted swearing I have ever listened to. When the net finally came out all eight men were under it, providing great entertainment for the entire building, particularly the strong man, who had wanted to carry it alone. Then there was a youth who innocently wanted to tip a loose coil of steel rope on to his hand truck to wheel it out to the elevator. His arms almost left his shoulders, and his face assumed its most puzzled expression. After four men had tipped, not lifted, the peaceful looking coil onto the truck it was decided that it weighed around 1000 pounds. This was the way it went. Then one truck broke down under the weight before starting from New York the next morning, a reloading had to be done, and they were not through unloading it here until after eight that night.

To this Bingham replied in part:

Your very amusing letter about the moving to New Haven was much enjoyed. I should love to have been there and seen the fun.

In 1950 the *History of the Class of 1910*, *Yale College* quotes Mr. Bingham as follows: "I have kept a continuing interest in the Bingham Oceanographic Laboratory, which has been given favorable support by the university." The author of the class history goes on to write: "The foregoing modest statement hardly tells the story. The laboratory was started by Bingham twenty years ago. It now has an international reputation. Two important oceanographic journals are published from its offices, and the researches of its staff on the biology and physics of the sea have attracted wide attention. In the last decade the laboratory has also attracted top flight graduate students. From a small beginning it has given the University prominence in a subject of increasing importance, and Yale takes great pride in Bingham's Oceanographic Laboratory."

Research is the primary business of the laboratory, and one measure of its productivity is the output of scientific papers. With this issue the Bulletin of the Bingham Oceanographic Collection has

XV

published since its inception nearly 6,000 pages, and in the past ten years the papers published by the staff in journals outside the Bulletin number 132 and cover 1,360 pages. The laboratory has more than lived up to its original statement of intent, "Founded for the purpose of oceanographic research."

Mr. Bingham's generosity to his university was by no means confined to things oceanographic. On February 22, 1926, President Angell announced to the graduates assembled for Alumni Day a gift of \$1,000,000 made in honor of Mr. Bingham's father by the four children of Charles W. Bingham, '68. From this fund Bingham Hall on the Old Campus was built, the balance of the gift being held for maintenance and general endowment. Mr. Bingham's more recent benefactions to Yale included major contributions to the new Art Gallery and Design Center.

Mr. Bingham seldom visited "his" laboratory at Yale. Yet, when asked, and only if he thought it right, he gave extras: a new truck, the cost of another Bingham Bulletin, even salaries under certain circumstances. When he did come to New Haven, he brought with him warmth, infectious enthusiasm, an inquisitive probing mind, and thoughtfulness. On his last visit to the laboratory in May 1954 he quite characteristically arrived earlier than anticipated. Finding no one available in the front offices, he made his way to one of the younger staff members. "I'm Bingham of the Bingham Laboratory," he said. "What are you working at?" "At the moment I'm describing a new species of fish," came the answer, and Mr. Bingham was instantly fascinated; he asked incisive questions and was as eager as if he had collected the specimen himself. On this occasion, as on all others when he came to New Haven, for each of us who saw him it was a joy.

It is of considerable interest, I think, that Bingham's fascination for the sea preceded by some years the great burst of oceanographic activity which characterized the late '20's and early '30's in this country. His understanding of the contribution to scientific progress that a generously supported though small laboratory could make in the broad field of oceanographic research, as well as his unfailing interest in *results* through a quarter of a century, were characteristic of the man.

Our gratitude to him knows no bounds, and in that spirit this volume is dedicated to his memory.—D. M.

8