# THE BULLETIN

# MOUNT DESERT ISLAND BIOLOGICAL LABORATORY

1959

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#### JULY 1959

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Volume IV of the Contributions of the Mt. Desert Island Biological Laboratory consists of: part 1, the 1953 Bulletin; part 2, the 1956 Bulletin and part 3, the 1959 Bulletin. No Bulletin was issued in 1957 and 1958.

Aerial photograph by George C. McKay, Jr., Bar Harbor, Me. Submitted for publication July 31, 1959.

Raymond Rappaport, Jr . Director



Laboratory Point At Ebb Tide

### THE MOUNT DESERT ISLAND BIOLOGICAL LABORATORY

#### 1959

The Mount Desert Island Biological Laboratory is a marine biological laboratory situated on the coast of Maine near the mouth of the Bay of Fundy. It is usually open from June 15 to September 15 and during that period furnishes laboratory space, basic chemicals and glassware and certain equipment for investigations on local organisms or other organisms that the Laboratory is uniquely fitted to maintain.

Although this institution has, in the past, successfully offered formal courses in marine biology, it is presently felt that our best educational work can be accomplished by the incorporation of graduate, undergraduate and medical students into the various research projects. Such students are usually selected by senior investigators from the student bodies of their home institutions.

#### History and Organization

The Laboratory was originally founded at South Harpswell Maine in 1898 by J. S. Kingsley, then of Tufts College. The site at Salisbury Cove was donated to the Laboratory by the Wild Gardens of Acadia, a group instrumental in the establishment of Acadia National Park. Removal to the present location was completed in 1921. The first laboratory buildings, the salt water system and one of the cottages usually occupied by summer investigators were constructed or obtained with the generous gifts of local summer residents.

The Mount Desert Island Biological Laboratory was incorporated in 1913 under the laws of the State of Maine as a non-profit scientific and educational institution and it is owned and operated by the body of scientists whose names appear elsewhere in this publication. It functions without full time professional administrative personnel and in some ways is a cooperative enterprise. Income is derived from membership dues, laboratory fees, cottage rentals, income from investments and private and corporate donations and grants. The business and scientific management of the Laboratory is in the hands of the Director and the Board of Trustees. Separately printed copies of the by-laws of the Corporation are distributed to the members and may be seen by others upon request.

The Directors have been: Ulrich Dahlgren, Princeton University (1920-26), H. V. Neal, Tufts College (1926-31), William H. Cole, Rutgers University (1931-40), Roy P. Forster, Dartmouth College (1940-47), J. Wendell Burger, Trinity College (1947-50), Warner F. Sheldon, University of Pennsylvania (1950-56), Raymond Rappaport Jr., Union College (1956-59), Alvin F. Rieck, Marquette University (1959- date)

#### Location

Mount Desert Island has long been famous for its scenic beauty and agreeable summer climate. It lies in the Gulf of Maine about 150 miles east

of Portland, Me. and is connected to the mainland by a short bridge. The land area of more than 100 square miles is featured by a range of ice eroded mountains that form a belt across the center and a narrow fiord six miles long that partially divides the east and west halves. Between the mountains lie numerous deep fresh water lakes and shallow ponds. Much of the mountainous area is a part of Acadia National Park and is protected against human depredations. The Island is separated from the mainland and adjacent islands by narrow deep bays. Spring tides average 13.2 feet and the mean tide is 10.6 feet. The average neap tide is 8.7 feet.

The many varied biological resources of the Acadian area are readily available. In summer, the cold waters of the Gulf of Maine are rich in marine life. The rocky shores, mud flats and strong tidal currents provide a large variety of forms. Proximity to fresh water lakes and ponds and the mixed terrain give further diversity to the forms available for investigation. As in every region certain forms are abundant, others are scarce or absent. Perusal of the research abstracts in past Bulletins will often give a good indication of forms that are readily available. The Director will be glad to furnish a candid estimate of the availability of any special forms that investigators may propose to use.

#### Physical Plant

The Laboratory is situated on a tract of about 150 acres fronting on Frenchmans Bay at Salisbury Cove in the Township of Bar Harbor. This rural village is in the more level open part of the north shore of the Island. Besides shore frontage, the Laboratory owns part of a fresh water pond and brook and its land varies from meadow to forest to sphagnum bog.

Investigations are carried on in single story buildings of frame construction which are located along the shore. Descriptions of individual buildings are as follows:

1. Neal Laboratory. The oldest and largest of the Laboratory buildings was completely remodeled in 1955 with funds provided by the National Science Foundation. There are now eight modern laboratories four large rooms will each accommodate 3-4 persons and four small rooms each with space for 1-2 persons. Rooms are provided with gas and salt and fresh water. Water troughs with racks and salt and fresh water aquaria and large stone sinks are located along the north wall of the building.

2. Halsey Laboratory. This building contains four large rooms, each capable of providing working space for 2-4 people. Rooms are provided with gas and salt and fresh water.

3. Lewis Laboratory. This structure consists of two adjacent one room buildings each large enough to accommodate 3-4 people.

4. Kidney Shed — A single large laboratory which has been used for many years by Dr. Homer Smith and his group.

5. Hegner Laboratory. The building contains ten separate laboratory rooms capable of accommodating 1-3 persons. Rooms are provided with salt and fresh water.

6. Darkroom Laboratory. A one room structure with running salt and fresh water.

7. Instrument Room. This building was renovated in 1955 for the purpose of housing equipment used in common by members of the laboratory. It contains a refrigerated centrifuge (International PR2), Warburgh apparatus (circular), Baird flame photometer, pH meters, Coleman spectrophotometer (Junior), Beckman spectrophotometer DU, muffle furnace, clinical centrifuges, small autoclave, deep freeze, refrigerators and stills.

8. Shop and Stockroom Building. The shop contains power and hand tools for woodworking. In the stockroom are chemicals, glassware, analytical balances, a fume hood and an area for glassworking.

9. Office and Library. A separate building, newly built in 1955 with funds provided by the National Science Foundation contains the Director's Office and houses the business records and library. The library is small comprising reference texts for biology and medicine with only a few complete journals (notably Biological Abstracts, Biological Bulletin and the Journal of the Marine Biological Association) as well as monographs and a sizeable reprint collection.

10. Dahlgren Hall. The former village school has been purchased and converted to use as a meeting hall. The single large room is capable of seating more than 120 people. Projectors for regular lantern slides, 35 mm. slides and 16 mm. silent motion pictures are available.

11. Bowen Hall. This building is one of the finest remaining examples of early 19th century island architecture. It is used as a recreation center and dining hall by the Co-op group, those who occupy rooms in the village. It contains lavatories and showers.

12. Dock. Consists of two floats with livewells and attached livecars. It is attached to the shore by an inclined ramp and a permanent bridge and abutment.

13. A 32'6" gasoline powered collecting boat, the Squalus was constructed in 1958 with the support of the National Science Foundation. It contains a circulating sea water tank for transportation of specimens. Hand powered skiffs are also available for investigators.

Investigators are urged to bring their own specialized equipment and chemicals. In special cases the laboratory may be able to provide apparatus which would have long term usefulness for other workers. Since the Laboratory is closed for nine months of each year, the general policy has been to maintain as little delicate or especially valuable equipment as possible.

#### Housing

Eighteen cottages suitable for families with children stand on land owned by the Laboratory. All are within easy walking distance of the Laboratory area proper. The cottages are available for rent to workers by the season, or occasionally for shorter periods. Occupants supply their own blankets linen and silver and pay for utilities (electricity, gas water, and rubbish removal).

Single investigators and couples without children rent rooms in homes in the village and take their meals in the Laboratory Co-operative Dining Association in Bowen Hall. A manager-cook is hired by the Laboratory Director. Other household chores (cleaning, table setting, dishwashing, etc.) are apportioned equally among the members of the group which usually numbers 20-25.

#### Land Lease Policy

In order to encourage private construction and ownership of cottages by workers, the Laboratory has a policy of issuing leases on certain plots of valuable laboratory land at a nominal charge. Provision is made for sale or rental of the cottage to other workers in case the owner should find it impossible to continue to work in the Laboratory. In this way, the Laboratory is able to encourage capital investments by individual laboratory workers and at the same time insure that the land will remain under Laboratory jurisdiction. Five privately owned cottages now stand on leased land. These are held by Drs. Bevelander, Forster, Rappaport. Sheldon and Zubrod.

#### **Recreational Activities**

Besides notable scientific resources the Island provides many other features of interest for laboratory workers. Mt. Desert Island has long been known as one of America's most desirable summer regions. The cold waters of the Gulf of Maine make the summer climate superb. The ocean, rocky shores and mountains give unexcelled scenic beauty. The rather considerable distances from large metropolitan areas have helped to keep it relatively unspoiled.

Swimming, hiking, mountain climbing, picnicking, boating and sailing, ocean or fresh water fishing and many other sports are easily available. Acadia National Park with its excellent naturalist's program contributes to the general interest. In addition there are small museums of Indian and local lore, public gardens and cultural exhibits. The Island and adjacent coast serve as summer home or vacation sites for many well known scientists. Proximity to the two divisions of the larger year-around Jackson Laboratory adds scientific interest and resources.

Salisbury Cove itself is an old fishing and farming hamlet on the north shore of the Island. It lies on the main road between Bar Harbor and Ellsworth. The atmosphere here is quietly rural. The Laboratory colony comprises about 80 adults and 60 children of assorted ages, the whole numbering a considerable portion of the summer population of the village.

Bar Harbor proper, about six miles from the Laboratory, contains most of the services of a city including excellent shopping facilities and a good hospital. The widely publicized fire of 1947 did no damage to the Laboratory area, nor were its visible effects on the Island as marked as might be supposed. For biologists, the ecological changes produced by this fire are of great interest.







#### APPLICATIONS

Fees for research space vary according to the size of the space and the number of occupants. Each full season investigator is asked to pay a laboratory fee of \$100 if possible. This fee is ordinarily paid by the investigator's home university, department, or from a grant. In special circumstances reduced rates or fellowships can be arranged. Each worker is entitled to the general facilities of the Laboratory but special arrangements are necessary if unusual demands are anticipated. All workers are requested to bring their own specialized equipment.

Eighteen cottages owned by the Laboratory are rented to families by the season or occasionally for shorter periods. Several other privately owned cottages are usually available to laboratory workers. Rates for cottage rental are usually about \$300-\$350 per season depending on size and location. Distant cottages may often be rented through realtors at somewhat greater cost.

Single investigators or couples without children may rent rooms in nearby private homes. This group (usually 20-25) comprises the Cooperative Dining Hall Association in Bowen Hall. A competent cookmanager is hired by the Laboratory Director. The domestic chores are apportioned equally among the participants.

Several Fellowships supported by income from the Ulrich Dahlgren Memorial Fund (a gift of the American Philosophical Society) and by the National Science Foundation are awarded annually to research workers or their assistants.

All applications and inquiries should be addressed to the Laboratory Director:

Dr. Alvin F. Rieck Department of Physiology Marquette University School of Medicine Milwaukee 3, Wisconsin

#### **Scientific Activities**

The following sections of the Bulletin are devoted to recording the scientific activities of the Laboratory during the years 1956, 1957 and 1958. Each section contains a list of scientific personnel, staff, seminar program and brief reports of the results of investigations. These have been edited to insure uniformity of arrangement but otherwise are essentially in the form in which they were submitted by the author.