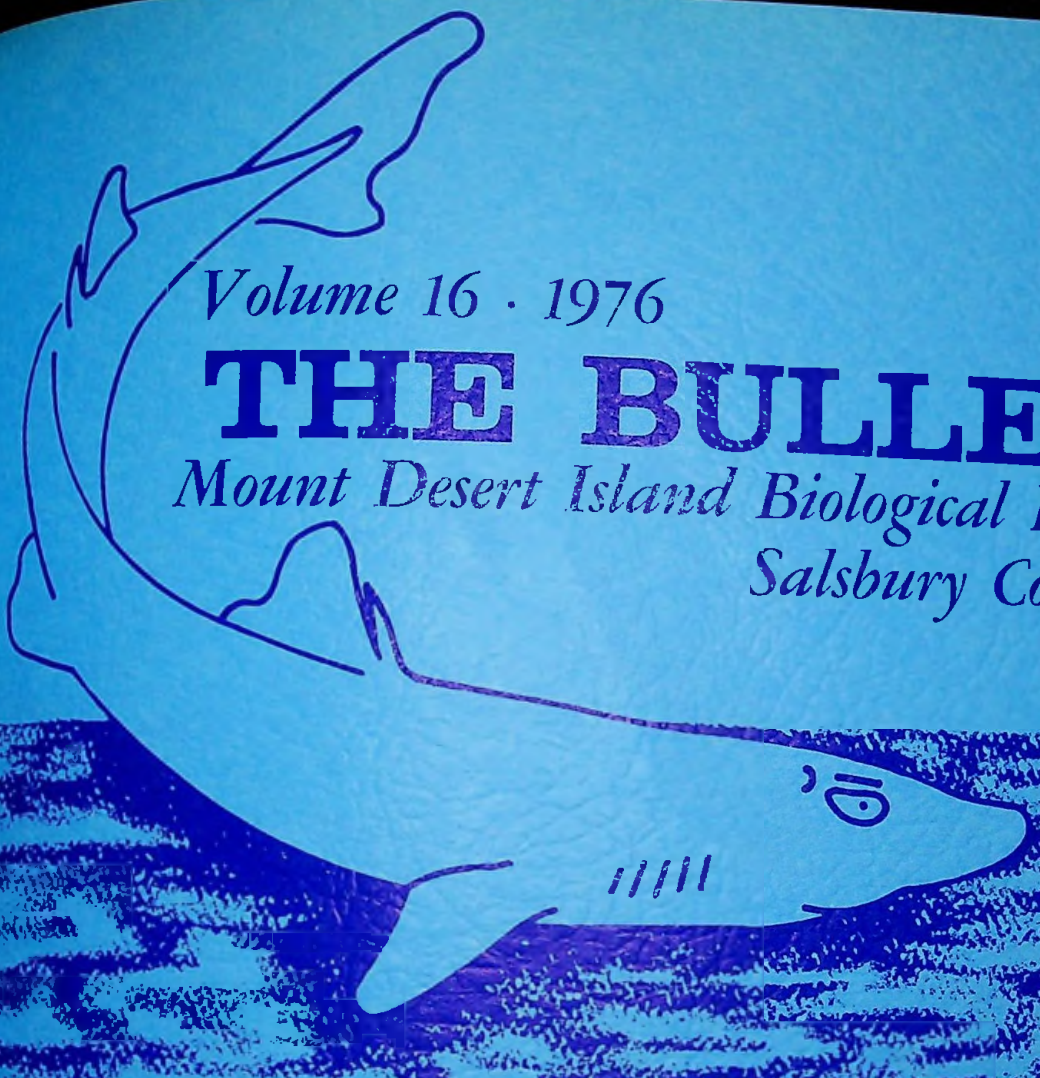
Volume 16 · 1976

THE BULLETIN

Mount Desert Island Biological Laboratory

Salsbury Cove, Maine



THE BULLETIN OF

The Mount Desert Island
Biological Laboratory
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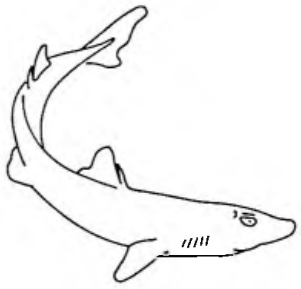

Volume 16 **Issued 1977**

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DESCRIPTION OF FACILITIES

The Mount Desert Island Biological Laboratory is an independent marine biological station on the coast of Maine near the mouth of the Bay of Fundy which provides a research facility for investigations on local flora and fauna. There is basic laboratory space for 36 research programs. Certain specialized equipment is available. During 1976 there were 117 scientific personnel in 38 research groups representing 56 institutions both here and abroad. There were 58 professional scientists and 59 students, technicians and staff in the 1976 programs. The work of the laboratory covers a broad area of biology, comparative physiology, and biochemistry.

No formal courses are offered, but some advanced undergraduate, graduate, medical, and post doctoral students spend the summer as assistants to senior investigators, thereby gaining research training. Most of these students are selected by the investigators from their home institutions. Effective September 1971, the laboratory established year-round programs with two investigator groups.

History and Organization

The Laboratory was founded in 1898 by J. S. Kingsley of Tufts College, and its original location was at South Harpswell, Maine. The site at Salsbury Cove was donated to the Laboratory by the Wild Gardens of Acadia, a group instrumental in the establishment of Acadia National Park, and removal to this location was completed in 1921. The first laboratory buildings, the original salt water system, and some of the residential cottages were constructed or obtained by the gifts of local summer residents.

The Mount Desert Island Biological Laboratory was incorporated in 1914 under the laws of the State of Maine as a nonprofit scientific and educational institution, and it is owned and operated by the Trustees and members of the Corporation. At present there are 360 members of the Corporation. It functions with minimal full-time professional administrative personnel and in most ways it is a cooperative enterprise. Income is derived from membership dues, laboratory fees, cottage rentals, investments, 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.

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 (1959-64); William L. Doyle, University of Chicago (1964-67); Charles E. Wilde, Jr., University of Pennsylvania (1967-70); H. V. Murdaugh, Jr., University of Pittsburgh (1970-75), Richard M. Hays, Albert Einstein College of Medicine (1976-).

Location

Mount Desert Island lies in the Gulf of Maine about 150 miles northeast of Portland, Maine, and is connected to the mainland by a short bridge. Year-round air service on major airlines is available to Bangor, Maine with connecting flights on Bar Harbor Airlines, as well as direct flights from Boston to

Bar Harbor Airport. The island has an area of more than 100 square miles and is traversed east to west by a range of glaciated mountains and north to south by a narrow fjord six miles long that partially divides the east and west halves. Among the mountains lie several deep fresh water lakes and shallow ponds. Much of the mountainous area is a part of Acadia National Park. The island is separated from the mainland and adjacent island by narrow deep bays. Spring tides average 13.2 feet and neap tides 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 variety of habitats. Fresh water lakes and ponds and the mixed terrain give further diversity to the forms available. Certain of these are abundant, others are scarce. The research abstracts in past Bulletins will give a good indication of the common forms. The director will be glad to furnish an estimate of the availability of any special forms. Special arrangements may be made for collections in Acadia National Park.

Physical Plant

The Laboratory is situated on a tract of about 150 acres fronting on Frenchman Bay at Salsbury Cove in the Township of Bar Harbor. In addition to shore frontage, the Laboratory owns part of a fresh water pond and brook, and its land varies from meadow and forest to sphagnum bog. Investigation is carried on in single story buildings of frame construction located along the shore. These buildings are as follows:

(1) *Neal Laboratory.* This, the oldest and largest of the laboratory buildings, was remodeled in 1955 and now contains eight laboratories: four large rooms that will each accommodate 3 to 4 persons, and four small rooms suitable for single investigators. All rooms are provided with gas, and fresh and salt water. Water troughs, aquaria, and larger tanks are located along the north wall outside.

(2) *Halsey Laboratory* was remodeled in 1961 and consists of four rooms, each capable of accommodating 3 to 4 persons. The rooms all have gas, fresh and salt water. Refrigerators, ovens and aquaria are located on a common terrace at the entrance to the building.

(3) *Marshall Laboratory,* a new year-round facility containing four laboratories and a common instrument room, and a full basement.

(4) *The Kidney Shed* is a single large laboratory. It accommodates two research groups.

(5) *Hegner Laboratory* contains 9 laboratory rooms provided with salt and fresh water each accommodating 1 to 3 persons.

(6) *Karnofsky Laboratory,* constructed in 1970, contains 4 large laboratories, one large enough to accommodate 2 research groups. This lab has been winterized and is a year-round facility.

(7) *Union Station* erected in 1962 contains two laboratories, each suitable for 2 to 3 persons and is equipped with salt and fresh water.

(8) *The Instrument Room* was renovated in 1955 for the purpose of housing equipment used in common by members of the Laboratory. In 1969 one-half of this space was equipped as a research laboratory.

(9) *Biophysics Building.* This air-conditioned building was erected in 1965. It houses isotope counting systems, ultracentrifuges, spectrophotometers, and a chemical hood.

(10) *Shop and Stockroom.* The shop contains power and hand tools for woodworking; the stockroom has a few chemicals and analytical balances.

(11) *Business Office.* In the same building as shop and stockroom, an office staff serves both the seasonal and year-round needs of the Laboratory.

(12) *Director's Office and Library.* A separate building was constructed in 1955 to contain the Director's Office and library. The library is small, comprising reference texts for biology and medicine, a few complete journals (Biological Abstracts, Biological Bulletin, and the Journal of the Marine Biological Association), as well as monographs.

(13) *Dahlgren Hall,* the former village schoolhouse, was purchased and converted to use as a meeting hall; it houses a reprint collection. The single large room can seat about 120 persons. It is equipped with projectors for regular lantern slides, 35 mm slides, and 16 mm silent motion pictures.

(14) *The Dining Hall.* This dining hall and living room for about 20 junior investigators and students was built in 1963. It is operated by a cook-manager. A small general library of books and records and a record player have been furnished by private donation.

(15) *Bowen Hall* is one of the finest remaining examples of early 19th century Island architecture. It now serves as one of three dormitories and has a common room for young women.

(16) *Dock.* The dock consists of two floats with livewells and attached live cars for storage of specimens. It is attached to the shore by an inclined ramp and a bridge and abutment.

(17) *Collecting Boats.* A 32' gasoline powered collecting boat, the *Squalus*, was built in 1958. It is provided with a circulating water tank for the transportation of specimens. Arrangements can be made with local fishermen for offshore specimens. A Nova Scotia skiff with an outboard motor is also used for collecting and skiffs are available to investigators.

Housing

Sixteen cottages suitable for families with children stand on land owned by the Laboratory and are within easy walking distance of it. The cottages are rented by the season, or occasionally for shorter periods. Occupants must supply their own blankets and linen, as well as pay the Laboratory for the use of the cottage (which includes utilities and garbage disposal). Rent is $570 to $980 per season, depending upon the size of the cottage. A few privately owned cottages are also available for rental near the Laboratory, and in other communities on the Island. An automobile is essential for family mobility in the area.

Single investigators, student assistants, and couples without children rent rooms in the village or in laboratory dormitories and take their meals in the Laboratory Dining Hall. The weekly charge for meals is based on self-sustaining nonprofit operation.

In order to encourage private construction and ownership of cottages by workers, the Laboratory has a policy of issuing leases on certain plots of laboratory land. Provision is made for sale or rental of the cottages to other workers in case their owner finds it impossible to continue to work at the Laboratory. In this way, the Laboratory is able to encourage capital investment by individuals and at the same time ensure that the land will remain under its own jurisdiction. At present seven cottages are privately owned in this way.

Recreational Activities

Mount Desert Island has long been known to have one of America's most desirable summer climates. The ocean, rocky shores, and mountains provide scenery of unexcelled beauty. The distance from large

metropolitan areas has so far helped to keep it relatively unspoiled. Swimming, hiking, mountain climbing, picnicking, boating and sailing, tennis, golf, and other sports are readily available. Acadia National Park with its excellent naturalists' program contributes to the general interest. There are small museums of Indian and local lore, public gardens, a good public library and cultural exhibits. Proximity to the Jackson Laboratory adds scientific interest and resources. Salsbury Cove is an old fishing and farming community on the northern shore of the Island near the main road from Bar Harbor to Ellsworth. It has one general store and Post Office. The Laboratory colony comprises about 100 adults and 60 children of assorted ages, and forms a considerable portion of the summer population of the village. Bar Harbor, the largest town on Mount Desert Island, is about six miles from the Laboratory and provides many of the services of a city including excellent shopping facilities and a good hospital.

Acknowledgments

The Mount Desert Island Biological Laboratory is indebted to the National Science Foundation for substantial support during the past decade. Funds for renovations of buildings and new construction have permitted the laboratory to expand and upgrade its facilities. Contributions to operating costs and for specialized research equipment have greatly improved the efficiency of research activities. The individual research projects which have been served by this laboratory are variously funded by private and government agencies and by individuals and all of these projects have benefited from the National Science Foundation grants to the Laboratory. Current support under grant BM575-03098 is gratefully acknowledged.

Applications

Fees for research space vary according to the demand made on the facilities. They range from $220 to $1045 depending on the space assigned and the number of workers. Special arrangements may be made for facilities beyond the summer season (June 15 - September 15). All investigators have the use of the general facilities, but special arrangements are necessary if unusual demands are anticipated. Investigators are urged to bring their own specialized equipment and chemicals. On occasion, the Laboratory may be able to provide apparatus which would have long-term usefulness for other workers. Isotope counting systems and ultracentrifuges are available on a fee basis. Persons planning to use isotopes must make prior arrangements in conformity with our Radiation Safety Committee requirements.

In an effort to make our specimen collecting facilities as self-supporting as possible, fees change almost annually. This year's fees ranged from $3 for dogfish, skates, and flounder, to $50 per trip for unusual specimens. Some of the commonly used organisms include:

Pisces: *Myxine glutinosa*, hagfish; *Squalus acanthias*, spiny dogfish; *Raja erinacea*, little skate; *Anguilla rostrata*, eel; *Fundulus heteroclitus*, killifish; *Lophius americanus*, goosefish; *Myxocephalus sp*, sculpins; *Pholis gunnellus*, rock eel; *Pseudopleuronectes americanus*, winter flounder.

Invertebrates: Echinarachnius *parma*, sand dollar; *Pagurus sp*, hermit crabs; *Homarus americanus*, lobster; *Boltenia ovifera*, sea potato.

Other native fauna under investigation include:

echinoderms, gastropods, frogs and salamanders, and marine birds.

Limited fellowships are supported by funds from the Ulrich Dahlgren Memorial fund (a gift from the American Philosophical Society) and other memorial funds.

Application and inquiries should be addressed to the Laboratory Director:

July 1 - August 31

Dr. Richard M. Hays
Mount Desert Island Biological Laboratory
Salsbury Cove, ME 04672

September 1 - June 30

Dr. Richard M. Hays
Albert Einstein College of Medicine
1300 Morris Park Avenue
Bronx, NY 10461

Inquiries regarding specific matters such as laboratory charges and facilities can also be directed to:

Mr. Jonathan S. Gormley
Business Manager
Mount Desert Island Biological Laboratory
Salsbury Cove, ME 04672

Joe Fenstermacher has also kindly agreed to take on the important area of our species collection. I have asked him to continue his interest in this phase of our operation, both in terms of short-term improvements and a long term upgrading of our collecting. At the conclusion of this report, Joe will have some things to say about collecting and about our salt water system.

Looking ahead, the executive Committee is giving serious consideration to the reutilization of space and possible construction of new space, that will permit us to have a library, conference room, and additional office space. Other items on our agenda include the repair of the Beaver Pond Dam, and, most important of all, the continuation of the efforts of all of us to bring outstanding scientists, new and old, to this best of all possible worlds.

Richard M. Hays

OFFICERS: 1976-77

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Vice-President	Charles E. Wilde, Jr.*
Treasurer	Dwight L. Eaton*
Secretary	Stanley E. Bradley
Clerk	Roger Chagnon
Director	Richard M. Hays*

Elected Members of the Executive Committee: Helen F. Cserr
Thomas H. Maren

*Ex Officio member of the Executive Committee

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PERSONNEL 1976

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Director	Richard M. Hays	Albert Einstein Collete of Med.

STAFF

Assistant Director	Richard Crawford	Trinity College
Plant Manager	Robert Dolliver	Bar Harbor
Associate Plant Manager	Donald Ellis	MDIBL
Business Manager	Gordon Torrey*	Salsbury Cove
	Jonathan Gormley #	Bar Harbor
Grounds Crew	Jeffrey Dolliver	Bar Harbor
	Guy Torrey	Salsbury Cove
Collecting Crew	William Sylvia	Bar Harbor
	Philip Eichenholz	Duke University
Co-op Manager	Sharon Peterson	MDIBL
Co-op Assistant	David Rieck	MDIBL
Isotope Technician	Anne Bogar	University of R.I.
Flame Spectrometer Tech.	Bill Shaw	Bar Harbor
Secretaries	Margaret Bailey	Swans Island
	Peggy Buckley	Bar Harbor
	Chris Crawford	MDIBL
Office Assistant	Tom Guarino	MDIBL

*Until June 11, 1976
As of June 14, 1976

YEAR ROUND SCIENTIFIC PERSONNEL

NAME	INSTITUTION	LABORATORY
Harold Church	MDIBL	Marshall 1 Karnofsky 3
Jill Eveloff	MDIBL	Marshall 1 Karnofsky 3
Christine Fraley	MDIBL	Marshall 4 Karnofsky 2
Elizabeth Haas	MDIBL	Marshall 4
Karl Karnaky	MDIBL	Marshall 1 Karnofsky 3
William B. Kinter	MDIBL	Marshall 1 Karnofsky 3
Ann Lacy	MDIBL	Marshall 4
Eric Lacy	MDIBL	Marshall 4 Karnofsky 2
David Miller	MDIBL	Marshall 1 Karnofsky 3
Bodil Schmidt-Nielsen	MDIBL	Marshall 4 Karnofsky 2
Phyllis Sylvia		Marshall 1 Karnofsky 3

SEASONAL SCIENTIFIC PERSONNEL

NAME	INSTITUTION	LABORATORY
William Armstrong	Indiana University	Hegner 2
Susan Arnold	Wilson College	Karn 4
John Ashby	Brown University	Neal 2
John Bend	NIEHS	Marshall 2
Dale Blasier	Wayne St. Univ. School of Medicine	Neal 5
Jennifer Bolton	Beth Israel Hospital	Hegner 1
James L. Boyer	University of Chicago	Union St. 1
Joan Boylan	Brown University	Halsey 4
Stanley E. Bradley	Columbia University	Neal 1
Gary Bright	Kansas State University	Union St. 1
Cheryl Bunker	Wellesley College	Mar 1 Karn 3
Elaine Burnham		Mar 1 Karn 3
Russell Chavey		Neal 5
Monique Churchill	Wayne St. Univ. School of Medicine	Neal 5
Paul Churchill	Wayne St. Univ. School of Medicine	Neal 5
Severino Cioli	New York University Medical Center	Kidney Shed
Lars Cleeman	University of Pennsylvania	Marshall 3
Kim Colton	University of Pennsylvania	Marshall 3
Gary Conrad	Kansas St. University	Union St. 1
Peter Cornell	Brown University	Neal 2
Kathy Crawford	Wethersfield High School	Union St. 2
Richard Crawford	Trinity College	Halsey 2

NAME	INSTITUTION	LABORATORY
Helen Cserr	Brown University	Neal 2
Patrick Dansette	Institut de Biochemie, Universite Paris	Marshall 2
Susan Davis	Kansas St. University	Union St. 1
Hugh Davson	Univ. College of London	Study
Kevin Degnan	N.Y. University Medical Center	Kidney Shed
Stephen Dillon		Marshall 3
Charles Dinsmore	Rush Medical Collete	Neal 5
William L. Doyle	University of Chicago	Hegner 7
George Dubyak	University of Pennsylvania	Hegner 5
Jean-Francois Eid	Brown University	Hegner 6
Keith Engel	Bowdoin College	Neal 7 & 8
Franklin Epstein	Harvard Medical School	Inst. Shed
Jon Epstein	Brookline High School	Inst. Shed
Sara Epstein	Wesleyan University	Union St. 2
David Fenstermacher	Walter Johnson High School	Neal 7 & 8
Joseph D. Fenstermacher	NIH	Neal 7 & 8
Paul Fenstermacher	Montgomery College	Karn. 4
Michael Field	Beth Israel Hospital	Hegner 1
John Forrest	Yale University School of Medicine	Inst. Shed
Roy P. Forster	Dartmouth Collete	Halsey 3
Gary Foureman	NIEHS	Marshall 2
James R. Fouts	NIEHS	Marshall 2
Leon Garretson	N.Y.U. Medical Center	Kidney Shed
Fran Gold	Duke University	Neal 7 & 8
Jonathan Goldstein		Hegner 5
Leon Goldstein	Brown University	Halsey 4
Anthony M. Guarino	National Cancer Institutes	Karn 4
Elizabeth Guarino	Walter Johnson High School	Karn 4
Peter Hall	University of Maine at Orono	Marshall 2
JoAnn Hannafin	Brown University	Halsey 4
David Hays	Westminster	Kidney Shed
Laurie Hays	Radcliffe Collete	Hegner 1
Richard M. Hays	Albert Einstein College of Medicine	Neal 6
Anthony W. Higgins	University of Maine at Orono	Halsey 1
C. Adrian Hogben	University of Iowa	Halsey 1
Randall Holcomb	Duke University	Hegner 8
Susan Gosterman	Medical Univ. of S. Carolina	Hegner 4
Roosevelt Hyman	NIH	Neal 7 & 8
Barbara Kent	Mt. Sinai School of Medicine	Hegner 6

NAME	INSTITUTION	LABORATORY
George W. Kidder	Univ. of Maryland Sch. of Dentistry	Hegner 9
Arnost Kleinzeller	University of Pennsylvania	Hegner 5
Melanie Knutson	UCLA	Karn 4
Michael Levy		Hegner 6
John Lossing	NIH	Neal 7 & 8
Thomas Maren	University of Florida	Karn 1
Martin Morad	University of Pennsylvania	Marshall 3
Anne Murdaugh		Neal 3
Beth Murdaugh		Neal 3
Victor H. Murdaugh	University of S. Carolina	Neal 3
Marion Murray	Medical College of Pennsylvania	Neal 4
Betsy Myers		Neal 3
Jack D. Myers	University of Pittsburgh	Neal 3
Liz Myers		Neal 3
Maggy Myers		Neal 3
Bennett Ojserkis	Univ. of Rochester, Sch. of Med. and Dent.	Neal 3
David Opdyke	New Jersey Medical School	Hegner 8
Paula M. Orkand	University of Pennsylvania	Marshall 3
Richard Orkand	University of Pennsylvania	Marshall 3
Barbara Panessa		Kidney Shed
Clifford Patlak	NIH	Neal 7 & 8
David Peakall		Hegner 3
Susan Pendell	Kansas State University	Union St. 1
John Pritchard	Medical Univ. of S. Carolina	Hegner 4
George Rieck	University of Vermont	Karn 4
Andres Roomet	University of Vermont	Neal 7 & 8
Robert Rosa	Beth Israel Hospital	Union St. 2
Adrian J. Ryan	NIEHS	Marshall 2
Bruce W. Sherman	Brown University	Halsey 4
Jeffrey Shiffrin	Dartmouth College	Halsey 3
Abraham L. Siegel	University of Alabama Med. School	Neal 3
Patricio Silva	Beth Israel Hospital	Union St. 2
Neil Smith	Duke University	Union St. 1
Philip Smith	Beth Israel Hospital	Hegner 1
Katherine Spokes	Beth Israel Hospital	Union St. 2
Jeffrey Stoff	Harvard Medical School	Inst. Shed
Hilmar Stolte	Medical School of Hannover, W. Germany	Marshall 1
Erik Swenson	UCSD School of Medicine	Karn 1
Nicola Travoloni	University of Rome, Italy	Union St. 1

NAME	INSTITUTION	LABORATORY
Joan Welch		Kidney Shed
Wita Wojtkowski		Hegner 2
Charles E. Wilde, Jr.	University of Rhode Island	Halsey 2
Avril Woodhead	Brookhaven National Laboratory	Neal 4
Edward Zadunaisky	New Rochelle High School	Neal 6
Jose A. Zadunaisky	New York University Medical School	Kidney Shed

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Sugar Transport in Flounder Kidney

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Silva, Patricio

Mechanism of Chloride Transport in the Rectal Gland of *Squalus acanthias*

Stolte, Hilmar

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Wilde, Charles E., Jr.

Continued Studies on the Relationship of Macromolecular Synthesis and Morphogenesis During Early Embryogenesis of *Fundulus*

Woodhead, A.

Reproductive Ecology and Endocrinology of the Spiny Dogfish

Zadunaisky, Jose A.

Transport Phenomena in Ocular Tissues of Marine Animals

*Figure 1 of report by Churchill and Churchill, p. 6.

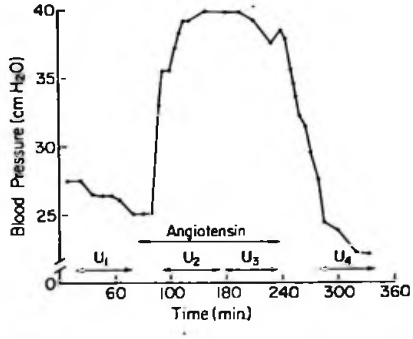

Figure 1. Pressor response to intravenous infusion of angiotensin II. U_1 through U_4 in this figure were the time periods during which urine was collected.

EVENING SEMINARS 1976 - Dahlgren Hall, Salsbury Cove

July 6	William L.Doyle; University of Chicago "Fine Structure and Saline Secretion"
July 13	Hugh Davson; University College, London "The Blood Brain Barrier"
July 20	Eric Newsholme; Oxford University "Substrate Cycles in Metabolic Regulation and Heat Regulation"
July 27	Rodolpho Llinaas; New York University "The Role of Calcium in Synaptic Transmission"
August 2	Martin Morad; University of Pennsylvania "Excitation-Contraction Coupling in Heart Muscle: Molecular Mechanisms for the Transport of Calcium"
August 10	Don Jerina; National Institute of Arthritis, Metabolism and Digestive Diseases, NIH "Mutagenicity and Carcinogenicity of Metabolites of the Environmental Contaminant, Benzo(a)pyrene"
August 17	Sam Gurin: Whitney Marine Research Laboratory of the University of Florida "Some Experiments in Chemoreception"
August 24	David Erlig; Downstate Medical Center, New York "Epithelial Transport"

LUNCHHOUR SEMINARS 1976

July 19	Eric A. Newsholme, Oxford University "Molecules, Messengers and Metabolism: the Control of Cyclic AMP Levels"
July 29	Avril Woodhead, Brookhaven National Laboratory "Reproductive Ecology of the Spiny Dogfish"
August 2	Henry Edelhauser, Medical College of Wisconsin "The Use of Sulphydryl Agents to Characterize Corneal Endothelial Function"
August 5	Adrian Hogben, University of Iowa "An Histamine Inhibitor: Oh the Agony and Antagony of it All"!
August 11	Helen Cserr, Brown University "The Functional Significance of Cerebrospinal Fluid"
August 19	Jeffrey Stoff, Beth Israel Hospital, Boston "A Late Summer Seminar on the Rectal Gland"
August 26	George Kidder, University of Maryland "Studies on *Squalus* Gastric Mucosa with Sufficient Oxygen"
	Leon Goldstein, Brown University "Reflections on Sodium Dependent Amino Acid Transport in Skate Tissues"
August 27	Heini Murer, Max Planck Institute for Biophysics "Polarity and Coupling in Epithelial Transport"

LABORATORIES- Characteristics

LABORATORY ROOM #	AREA sq ft.	Width feet	Length feet	CONCRETE FLOOR	SEA WATER IN LAB
HALSEY 1	184	10.3	18	yes	no
" 2	187	10.4	18	yes	yes
" 3	184	10.3	18	yes	no
" 4	184	10.3	18	yes	nO
HEGNER 1	173	8	21.6	yes	yes
" 2	80	8	10	yes	yes
" 3	64	8	8	yes	no
" 4	96	8	12	yes	no
" 5	120	8	15	yes	yes
" 6	112	8	14	yes	yes
" 7	76	8	9.6	yes	yes
" 8	108	8	13.6	yes	yes
" 9	64	8	8	yes	yes
Inst. Shed	180	9	20	yes	nO
KARNOFSKY 1	333	14	23.8	yes	no
" 2	238	10	23.8	yes	no
" 3	238	10	23.8	yes	no
" 4	333	14	23.8	yes	no
Kidney Shed	354	15	23.6	no	yes
MARSHALL 1	247	10.5	23.5	yes	no
" 2	247	10.5	23.5	yes	no
" 3	247	10.5	23.5	yes	no
" 4	247	10.5	23.5	yes	no
NEAL 1	64	8	8	no	yes
" 2	187	11.8	16	no	yes
" 3	187	11.8	16	no	yes
" 4	64	8	8	no	yes
" 5	64	8	8	no	yes
" 6	187	11.8	16	no	yes
" 7	187	11.8	16	no	yes
" 8	64	8	8	no	yes
UNION ST. 1	160	14.6	11	yes	yes
" 2	143	14.6	9.8	yes	yes