Dr. Tiffany appointed head of MML's Estuarine Ecology and Environmental Health Program

Dr. William J. Tiffany III has been appointed Research Associate of MML to head the Estuarine Ecology and Environmental Health Program. He will investigate the effect of pollution on bottom-dwelling marine animals and its consequent impact on the human population in the vicinity of pollution sources.

Dr. Tiffany has been active in education and research at Florida State University, Tallahassee, and Sarasota's New College (University of South Florida), in research at the University of Texas Marine Biomedical Institute (Flower Garden Ocean Research Center), and as an environmental consultant with a private firm. After receiving his BS degree in Zoology from the University of Miami, Dr. Tiffany studied at FSU where he was awarded the MS in Marine Biology (Beach Ecology) and, in 1972, a Doctorate in Physiological Ecology.

Locally, his environmental studies have included the Tampa and Sarasota Bays and Manatee County ecosystems, and the inland Sarasota County natural systems. His research on shellfish excretory systems is aimed at determining how long pollutants remain in the organisms of this commercially valuable bottom-dwelling animal. Dr. Tiffany is the author of several publications dealing with physiological, behavioral, and environmental problems of marine and estuarine animals.

MML Founder Members and Board of Directors visit new site

In November and again in late January Founder Members and the Board of Directors met to act on plans for the Marine Science Center. Elected to the Board of Directors at the Annual Meeting were T. R. Bartels, Ridgewood, N. J.; Dr. Eugenie Clark, University of Maryland; Gen. James Ferguson, Longboat Key; Dr. Perry W. Gilbert, MML Director; Robert M. Johnson, Sarasota; Wm. R. Mote, Longboat Key; R. D. O’Brien, Cornell University; Elizabeth Rose, Tampa; L. A. Vance, Sarasota; Wm. H. Vanderbilt, Williamstown, Mass.

Officers elected were: Wm. R. Mote, President; James Ferguson, Vice President; and Elizabeth M. Rose, Secretary-Treasurer.

At the January meeting, John F. Dalton of Sarasota was elected to the Board of Directors.

Some members of the Board and Founder members gathered for a "first" photograph before the new research laboratory building are: R. M. Johnson, Dr. E. Clark, Mrs. Wm. R. Mote, Mrs. E. M. Rose, Dr. Gilbert, Dr. D.G.C. Clark, Mrs. Gilbert, Wm. R. Mote. Mrs. Philip Wylie, and Alan Shaw.

DELAYED MEMBER BRIEFINGS and late Newsletters — with apologies.

Plans to hold Member Briefings in March and April at the new City Island location have reluctantly been abandoned because of the arrival and installation timing of equipment and furnishings. The prospect of MML members and guests straining to hear the briefings above the noise of carpenters, plumbers and the like, and stepping over and around the work areas seemed an inauspicious beginning for our briefings at City Island. So, the next Member Briefings are planned for the Fall when we will be well installed at City Island. Dates will be announced in the next newsletter.

When this, our January Newsletter, comes out with a March date, it may be correctly surmised that the move has our administrative staff on the move. We apologize for the delay and will be reporting on activities again in June. Thanks to all of you for your support during this busy — and exciting — time.

The Eds.
MML's Research Lab on City Island—progress report

(An inner dialogue)

"There it is, ready and waiting. So new and so much space! The electricity works, the water runs, the phones are being installed. The contractor has swept out the last of the debris from the corners, folded up his construction trailers and — inspectors satisfied and final payment in hand — has stolen away into the night. So, why aren't we moving?

'Patience, my dear. The laboratory furnishings won't be delivered until mid-April, the outdoor tanks have arrived but must be installed, the seawater system has to go in, and where would we keep the boats until the dock area is completed?

"But still, is everything at the Siesta Key lab starting to fall apart because we're leaving? Everything that has served so well for so long is suddenly too small, too old, too crowded. Last week another pump went out, the heating system is held together with bated breath, and room cannot be found for one more pamphlet on the library shelves. And every sustained wind at high tide from the southwest means a sleepless night, wondering how much more land will be lost. Three weeks ago part of the fence washed over and the tide covered the tip of the key, surrounding two of the concrete pens. What about that?

"Patience, my dear."

Marine Science Center fund-raising drive meets Selby Foundation challenge grant — site preparation is now under way

In late October 1977, a group of Sarasotans interested in MML and its research and education programs met to form a Major Gifts Committee. Their purpose was 1) to meet the $100,000 challenge grant from the Selby Foundation for construction of the Marine Science Center; and 2) to raise an additional $300,000 to furnish and equip this public building as well as complete necessary site, waterfront and interior development of the research laboratory.

By December 1977 the Committee had successfully met the Selby grant of $100,000 and by January 1978, just four months after its organization, had raised, in gifts and pledges, more than $156,000, which coupled with the Selby Grant, means that 50+ percent of its $400,000 goal has been met. The architect is preparing the working plans for the Marine Science Center and a marine exhibit specialist (Rush Studios in Chicago) has been engaged to plan the interior design and exhibits. Site preparation is under way and completion date is expected early in 1979.
Sea Urchin May Aid Disease Cure

By Allan Horton
Herald-Tribune Reporter

Scientists working in the realm of pure research often have trouble relating to the public and to their sponsors the significance of studying the sex life of the sea urchin because the gap between pure and applied science is a yawning chasm.

Such is the dilemma facing Carl J. Lauter of the National Institute of Health whose studies at Mote Marine Laboratory of enzymes in the common sea urchin practically defy explanation. Lauter is convinced, however, that studies such as he is conducting in Midnight Pass on Siesta Key may someday lead to remedies for such human diseases as epilepsy and cancer through the identification of some cell growth triggering or inhibiting mechanism which is applicable to higher organisms.

So why study sea urchins? A relatively common and nondescript marine organism, the sea urchin is remarkable for the size of its eggs and the rapidity with which they develop after fertilization.

Those natural proclivities mean that results of artificial fertilization of sea urchin eggs can be readily observed and manipulated in a fraction of the time comparable functions in high organisms can be studied, said Lauter.

Furthermore, the spiny creatures can be readily collected locally, easily maintained in aquaria and equally easily stimulated to release their sperm and eggs.

A minor problem is telling the sexes apart, which is superficially impossible, but simply solved by collecting enough specimens to insure sampling both males and females.

Lauter wants to know what mechanisms trigger cell division, growth and protein synthesis and what tells the cell to stop, that enough growth has been achieved, hoping thereby to possibly unlock the key to the rampant growth of cancerous cells.

Lauter, a biochemist, is studying two specific enzymes, adenosine triphosphatase (ATP-ase) and Nucleotidase, to determine what quantities of each are present in normal and abnormal embryos and to define what constitutes a diseased state in enzyme activity.

Always aware of a practical application for his research objectives, however, he noted that leukemia patients often display an imbalance of 5’-Nucleotidase and hopes some correlation may develop which ultimately could generate a remedy for that disease.

Meanwhile, with one eye on the functions of man and higher organisms, Lauter and his colleagues continue to use the lowly sea urchin as a model for their experiments.

Perhaps their most difficult task is explaining their mission to persons who generally regard sea urchins with benign disinterest and their students with a sense of disbelief, but who are the ultimate beneficiaries of years of such relatively sublime research.

Georgia Tech Research Scientist E.F. Greneker conducted tests in October to determine if a swimming shark emits a distinctive “signature” on Doppler sonar. If such a unique “signature” does exist, perhaps Doppler-sonar systems could be built to detect the presence of sharks along beaches and in other areas to alert swimmers. Doppler sonars are used in a variety of ways to detect underwater moving objects, including swimmers. Its possible adaptation for shark identification would be helpful not only in the surveillance of bathing areas but also in field studies designed to determine the role of sharks in reef ecosystems. The pilot project was sponsored by the R. Dorion Shark Research Fund.
VISITORS AND VISITING INVESTIGATORS

The Laboratory welcomed Dr. H. Guyford Stever, former National Science Foundation director and Presidential Science Adviser to Gerald Ford recently. Dr. Stever now heads the National Academy of Sciences Study on the UN Conference on Science and Technology for Development, organized to determine the role of US science and technology in foreign policy management. During his visit to MML, Dr. Stever toured the new City Island facility and met with MML directors and staff concerning the Laboratory's research programs.

Other distinguished visitors in recent months include Cornell University's new president, Dr. Frank H.T. Rhodes; and Dr. Robert Josue, president of York College and his family.

Dr. Seymour Zigman, MML Research Associate and Associate Professor of Ophthalmology and Biochemistry at the University of Rochester, continued his ongoing research on the biochemistry of cataract formation in January.

Investigators working at the Laboratory in coming months are Dr. Richard Rodewald, biologist from the University of Virginia, and Dr. Malcolm Macdonnel of Rutgers University.

DAVIS LIBRARY NAMED TO HONOR BENEFACITOR

The Laboratory has been awarded $25,000 by the Arthur Vining Davis Foundations of Florida to equip the library/conference center in the new laboratory building on City Island. This is the second $25,000 grant awarded by the Foundations to the library complex. The original award in 1975 supported construction costs. The recent award will equip the library complex, consisting of a main, 20x42-foot room to house books and journals and serve as a conference room for small meetings, together with a smaller, 12x14-foot room to house the Laboratory's reprint collection of 25,000 reprints and serve as a study room for literature search.

Mrs. Philip Wylie, who has served as volunteer librarian at MML for the past four years, is in charge of the overall planning and installation of the library complex. She has recently been joined by Ms. Sarah Hartwell whose services are supported through the Sarasota Comprehensive Employment Training Act (CETA) office. With degrees in library and information science and background training in specialized libraries in Tampa and Rochester, N.Y., Ms. Hartwell will re-organize the library's catalog to conform to the Library of Congress system. The library, used by staff and visiting researchers, is also open by appointment to other academic researchers and students working in the areas of marine biology, and estuarine ecology and environmental health.

Dr. Perry Gilbert, accepting the award, noted that "At the Siesta Key location, books and reprints are scattered in several buildings and storage trailers. With the financial assistance of the Arthur Vining Davis Foundations and the opportunity afforded by CETA to organize the library in a professional manner, we will have a first-rate specialized library where our books and reprints will at last be assembled as well organized, easily accessible research tools."

Librarian Sarah Hartwell, in the library storage van at Siesta Key, ponders the task ahead of her as she prepares to integrate the library holdings in the new Davis Library.
"Sneak Preview" for members at MML/City Island attracts record turnout to see new facilities

A "sneak preview" for members and guests brought out 170 friends to City Island on one of the few sunny afternoons in February. A tour of the building and grounds consisted largely of "The chemistry laboratory is here" as everyone appreciatively looked into an as-yet unfurnished room, and "The experimental pools will be installed here" as the group gathered in the courtyard. The delight and enthusiasm of members, many of whom have supporters throughout the years, made staff members more eager than ever to move into the new location.

The main entrance, with new logo, was landscaped and waiting for our guests, thanks to long hours and much hard work by our in-house landscaping architect, President William R. Mote.

The group was seated both in the upstairs library and downstairs seminar room to hear staff briefings. Dr. William Tiffany, newly appointed head of the Estuarine Ecology and Environmental Health Program, briefed members on his plans for research at the MML in the Davis Library.

Michael Heyl, staff chemist, addressed members in the first-floor seminar room. This large room will serve as seminar/conference/lunchroom.

Members gather in the courtyard to hear plans for its development. Experimental tanks, upside down, await installation.
Perry W. Gilbert Retires as Director of Mote Marine Laboratory on June 30
To Become MML's Director Emeritus

This June, Dr. Gilbert will resign his directorship in order to pursue his own research and to assist in the conception, germination and birth (euphemisms for fund raising and building) of a sister structure dedicated to the Lab's faithful and selfless supporters, the citizens of Sarasota without whom the Mote Marine Laboratory would never have burgeoned into its present eminence. This building will assure the entertainment, education and edification of Sarasota in matters marine.

Marine scientists in Japan, South Africa, Australia, New Zealand, the Philippines and sundry of the fifty states recognize the name MOTE MARINE LABORATORY. Through the COLLECTED PAPERS of the Laboratory, they are familiar with its research: the biology and behavior of sharks, the effects of pollution on fin and shellfish, the significance of sound production in fish, the economic effects of the red tide, the formation of antibodies and innumerable other investigations of problems of the sea. Director Perry W. Gilbert has been the spur behind the increasing scope, excellence and expansion of this research. Similarly, as the Lab's research growth outpaced the Lab's capacity, Dr. Gilbert has been the spur behind its physical expansion into an exquisite new laboratory on City Island.

Dr. William H. Taft Named as the New Director at Mote Marine Lab
Presently Director of Research and Graduate Studies at the University of South Florida, Tampa.

Dr. William H. Taft will succeed Dr. Perry Gilbert as Director of Mote Marine Laboratory. Dr. Taft, professor of geology, is Director of Research and Graduate Studies at the University of South Florida in Tampa. Active in environmental concerns of the area, he was named Outstanding Conservationist in 1971 by the Florida Audubon Society.

A native of San Mateo, California, Dr. Taft received his B.S. and degrees at Stanford University, and his M.S. at the University of South Dakota. During his 15 year tenure at USF Dr. Taft has been responsible for the establishment of the Division of Sponsored Research and a Research and Development Center for the development of multi-disciplinary academic and research programs, including the degree program in Marine Science.

Dr. Taft and his family moved to Sarasota in June, and he will assume the directorship on July 1 when Dr. Gilbert's resignation becomes effective.
After 11 Years On The Job, Perry Gilbert Returns To His "First Love" — Shark Research And Writing

With administrative responsibility passed on to the new Director, Perry Gilbert will return to the field that has remained closest to his heart — research on the biology and behavior of sharks. Educated at Dartmouth College (A.B. degree) and Cornell University (Ph.D.), Dr. Gilbert joined the Cornell faculty in 1940, was named Professor there in 1952, and in 1967 became Director of MML. Numerous honors for his research and teaching mark his career: Carnegie Fellow in Embryology at the Carnegie Institute of Washington, Baltimore (1949-1950), Guggenheim Fellow at the Lerner Marine Laboratory, Bimini (1957) and again at Scripps Institution of Oceanography, La Jolla (1963). A Fellow of the American Association for the Advancement of Science, the Academy of Zoology (India) and the American Institute of Fisheries Research Biologists, he is also a member of several scientific organizations; and is listed in American Men and Women of Science, Who's Who in America and in the Dictionary of International Biography. In May 1978 Dr. Gilbert received an honorary doctorate (Doctor of Humane Letters) from York College of Pennsylvania.

Dr. Gilbert's research on sharks during the past 40 years has taken him to study sites in many parts of the world including Hawaii, French Polynesia, Eniwetok, Japan, Australia, Sri Lanka (Ceylon), India, South Africa, Cuba, Puerto Rico and the Bahamas. In 1954 he led an expedition from Tahiti to the tiny coral atoll of Tikehau in the Tuamotu Archipelago, where his research team studied shark behavior. In 1969 he served as Chief Scientist on the British Honduras Expedition, sponsored by MML and the Smithsonian Institution.

Perry Gilbert has served as Chairman of the Shark Research Panel of the American Institute of Biological Sciences since 1958, Research Associate of the Lerner Marine Laboratory since 1964, and during 1959-1963 was a member of the Panel on Biological and Medical Sciences, National Academy of Sciences. He has also served as Scientific Consultant to the Office of Naval Research for many years.

The editor of two books (Sharks and Survival, D.C. Heath & Co., 1963; Sharks, Skates and Rays, Johns Hopkins University Press, 1967), Dr. Gilbert is also the author of more than 100 technical papers.

After June 30, Dr. Gilbert and his wife, Claire Gilbert, also a biologist, will divide their studies between the Cornell campus, where he is Professor Emeritus, and MML. In early 1979 he plans to work at the Heron Island Laboratory on the Great Barrier Reef in Australia. In May 1979 the Gilberts will go to the Hebrides off Scotland to study the basking sharks (up to 30 feet in length) that congregate near the surface of the sea for their annual mating ritual.

MML Director also retires from Cornell faculty

When Perry W. Gilbert joined MML as Director in 1967, his reputation as researcher and teacher for 30 years at Cornell University was well established. While Director at MML, he retained his chair as Professor of Neurobiology and Behavior and regularly returned to Cornell to present his lectures on the structure and evolution of the nervous system.

On May 13, 1978 Dr. Gilbert retired from the Cornell faculty. In his honor colleagues and former students gathered to present a day-long symposium on anatomical and behavioral subjects. At a banquet held in his honor that evening, a Perry W. Gilbert Endowed Lectureship in Comparative Anatomy and Behavior was announced.

The loss of two good friends has saddened the Laboratory.

Eligio del Guercio, sportsman and Founder member died February 24, 1978.


To their families, who shared with them their love of the sea, our deepest sympathies.
THIS IS IT, MML'S NEW HOME. The two-story, concrete main building as it looked just before moving day. Two mobile laboratories for the microbiology and biomedical programs have since been moved into place adjacent to the large natural pen. The Marine Science Center will be constructed in the cleared area to the left of the main building near the top of the photograph.

Oh! The "joys" of moving from Siesta Key to City Island!

MOVING REPORT

As the rented truck made its daily shuttle between the old and new labs over the past few weeks, the Siesta Key lab took on a more and more desolate air. First the library disappeared, then major non-essentials which quickly became essential as soon as they were moved. Finally, the last week of May, the office staff, with the most precious files carefully carried in cars, moved into their new quarters. The following week the lab staff moved until, at week's end, our much-loved secretary, Lynn Erdoesy - who will not make the move with us — was left alone at the old laboratory to hold the fort until our lease expires at the end of June.

The first sensation at City Island was one of space; the new building is three times larger than the old. But as glassware, instruments, gear and files were unpacked, the amazement was not the amount of space in the new building, but "How did it ever fit into the old lab?" Much remains to be done: countertops are still at the factory; the 15-foot experimental pools have to be installed, and the saltwater system is still in construction. But we're here and we're delighted.

A REAL MOVER. Six months ago, Bob Smith, MML volunteer for four years, made the mistake of saying, "Not to worry; we can handle this move ourselves." Before he could back out, he was put on salary and placed in charge of the move. With his 6-page "Moving Guide" ever at hand, he has solved all concerns by the smoothness of the operation. Helped by Peter Hull and Randy Wells, former student interns, Bob has everything on schedule despite the countless crises inevitable in such a move.

LARGER QUARTERS. Dr. David Johns, Dr. Vincent Oliverio and Mr. Michael Goldrich came from the National Institutes of Health, Bethesda, Md. to set up their new, larger mobile lab at City Island. Two outfitted mobile labs were moved from Siesta Key to the new location to be used until they are gradually phased out.

UP GOES THE DRYING OVEN as Randy Wells, Peter Hull and Bob Smith put the new hoist to work. To the left on the first floor is the walk-in freezer, a welcome replacement for the varied assortment of freezers at the old lab.

SPECIMEN STUDY COLLECTION finally finds a home after being moved at least every two years as space requirements crowded them from lab to trailer to cardboard cartons.
LIBRARIANS NEED MUSCLES. The Riverview High School Marine Science Class taught by Mr. Ed Taylor descended 12-strong on the Siesta Key library one afternoon and two hours later the shelves were bare, with all books and journals packed and ready for removal to City Island. Our thanks to Tom Bourque, Laurie Drexel, Linda Loiacono, Erin Simms, Janet Knoblock, Steve Giordano, Lissa Johnson, Terry Howell, Jo-Ann Lill, Don Schmeling, Bill Heiden, Joel Jebb, and especially to Mr. Taylor for offering their help and so quickly rendering it.

Sarah Hartwell, librarian (right), has been busy restoring order at City Island as she unpacks, sorts and catalogues the holdings in the new Davis Library.

... as research studies still go on at the Mote Lab.

VISITING IN VESTIGATOR Richard Rodewald, biologist at the University of Virginia, worked with sharks and rays in March to prepare histological samples of kidney tissue for his comparative study of kidney structure and function. Sandy Burchill, student intern from St. Paul’s School, Concord, N.H. (left) and Pat Bird, staff biologist, assisted Dr. Rodewald.

MANGROVE STUDY SPONSORED BY SARASOTA’S WOMAN’S EXCHANGE

To our Sarasota readers: The Woman’s Exchange of Sarasota is a major source of support for area cultural programs. This year they awarded more than $40,000 to such diverse community activities as ballet, band, theater, and library organizations as well as MML. Funds are derived from The Woman’s Exchange at 539 South Orange Street, a thrift shop operated by volunteers. They need new volunteers. If you’re looking for a worthwhile group to which to contribute your time and talents, they’d be happy to hear from you.

Dr. William J. Tiffany, head of MML Environmental Health and Estuarine Ecology Program (above), will conduct a comparison study of benthic (bottom-dwelling) mangrove communities in and around Sarasota Bay this summer. As an essential element in the normal functioning of South Florida estuaries, mangroves provide fish and wildlife habitats and storm protection, and serve as the major source of detritus (decayed material) which insures the productivity of shallow estuaries. The study, to begin 1 July will involve student interns from the local Sarasota community. Dr. Tiffany’s work is supported by a $5,000 grant from the Woman’s Exchange of Sarasota.
"Thank you, Dr. Gilbert, for all you have done for MML."

William R. Mote, President.

MML President Bill Mote and retiring Director Perry Gilbert in a rare moment of quiet satisfaction as they stand before the entrance to the new research building.

DEDICATION PLANS. November 11, 1978 has been selected for dedication of the research building. Look for more details in the Fall newsletter.

THE NEXT STEP. With a fine new building for research activities completed, the next goal is construction of the Marine Science Center, a community facility. The Center will feature displays of the Laboratory’s research programs and its auditorium will be the site of seminars and programs in local and general environmental topics.
'MORE THAN JUST THAT SHARK PLACE'

St. Petersburg Times

ST. PETERSBURG, FLORIDA

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The Floridian
MORE THAN JUST "THAT SHARK PLACE"
A west coast lab wins renown for its research into marine life.

By Marian Murray / Photographs: Fraser Hale

Tucked away on the edge of Siesta Key's Midnight Pass, at the end of a narrow, bumpy, sandy, very private road, is an institution sometimes known to the public as "that shark place."

The Mote Marine Laboratory is in truth a shark place. Sharks were one of the major concerns of the original laboratory Mr. and Mrs. William H. Vanderbilt established in 1955 at Cape Haze. Those terrifying monsters continued to be a center of attention after the lab's home, and later its name, changed. Today large and small specimens of six species of shark swim in its pools, and the laboratory is internationally famous for its intense study of sharks.

Scientists have also expanded their work to cover more and more marine life - plant and animal; dangerous and harmless. And, little by little, man himself has become the focus of the experiments.

Research programs fall under such headings as: Microbiology, Biomedical Studies, Neurobiology and Behavior, the Biology of Sharks and Estuarine Studies.

The permanent staff consists of 16 scientists, 12 backup workers including boat operators, collectors and marine engineers and several volunteers. Many famous scientists and would-be-famous students visit the lab and help the staff. All of them are trying to discover how marine life may be induced to divulge its secrets in the interest of human beings. Specialists speak of such mysteries as the blood brain barrier and pesticide residue in estuaries.

The lab used this two-part pond in its shark-porpoise work. The porpoise was kept in the rear pond; the sharks in the front pond.

Jeffrey Lincer of Cornell is a research associate at the lab. He is studying marine pollution.

Lincer and research assistant Marian Klein dig for crabs on the laboratory grounds.

FLORIDA THE SEA

FLOIDIAN, April 29, 1973

Aid in lifting a shark captured in the Gulf from that high vantage point, one may also keep track of what is happening in the various pools and canals that link the area to open water. At present, brown, lemon, bull, tiger, nurse and dusky sharks are available for study.

In one pool, a baby shark swims, while a stingray (also a cartilaginous fish) gracefully flips and banks around the edge. In another tank, Missy, a very special individual, swims with a number of adults. She is one of 33 babies born by Caesarean section performed on a dying shark by one of the scientists. Each baby got a name, and all seemed to be thriving. Then suddenly, for reasons as yet undetermined, every one but Missy died.

Sharks locate food in three ways: by sight, smell and by sensing waterborne vibrations through the lateral system. It has been established not only that species vary in their reactions to the three types of stimuli, but that individuals within a species also vary a great deal. And the same shark may respond differently in different temperatures at different times of day and when confined in a pool rather than swimming in open water.

Laboratory studies must be supplemented by field work. Most recently, Gilbert headed a team that conducted studies at Lighthouse Reef, off British Honduras.

One project at the laboratory is the search for a satisfactory shark deterrent. Dr. H. David Baldridge is looking for physical and chemical answers to the problem of shark attacks on man. Baldridge has worked on this problem for the U.S. Navy. His theoretical studies of the shark's delicate hydrostatic balance led to the development of a "gas gun." This device upsets the shark's balance, causing it to float helplessly upside down. The Navy frogmen who recovered the Apollo astronauts carried the guns.

Some practical warnings to bathers: sharks lunge at men more frequently than at women (13 to 1, in fact); shallow water is no haven; that odd types of food are found in the stomachs of these predatory animals, with tiger sharks apparently least discriminating in their tastes. Among stomach contents have been such objects as 20 feet of roofing paper, a six-pack of beer, 90 feet of rope and a hambone. And, of course, sometimes there are human bones.

Some shark deterrents have a mind of their own - in the case of porpoises, a highly intelligent mind. There are no porpoises now at the Mote Marine Lab. A special program funded by the Navy has run out of money, but not until after a porpoise named Simo (snub-nosed) had been trained to attack a dangerous shark on command. (Of the 250 known species of sharks, only 30 have been implicated in attacks on human beings.)

The Mote Lab's porpoise-shark project has held much interest. In 1971 the BBC visited the lab and filmed a 15-minute movie that was...
received enthusiastically by the British public. More recently, at the invitation of Universite Radiophoni- que Television Internationale, Gilbert and his wife prepared a script on the shark-poo-pore project for French radio. Ultimately, it was translated into eight languages and broadcast in several countries. A variety of potential uses of porpoises trained to protect man are fascinating. Specialists envision a porpoise accompanying a diver, not only driving off predators but helping him find his way if he gets lost.

Biomedical studies at the Mote Lab involve sharks, skates, rays and sea urchins. Scientists from the National Cancer Institute and other early-evolving creatures, biologists, algologists, marine biologists are trying to find out just what combinations of water conditions favors the Mote Laboratory’s studies of the bush, and organs. That could be related to treatment of the brain barrier. In the brain, the exchange of nutrients, waste products and chemicals is controlled by specialized membranes, or barriers, between blood, cerebrospinal fluid and the brain. Understanding the exchange process may help man deal with drugs and disease.

Tumors of any kind—malignant or benign—occur most infrequently on the brain. Can a study of the shark contribute to the control of cancer in humans? Dr. Michael J. Tavolga, on leave from the National Cancer Institute, is notified that the lab’s collecting crew brought in an abnormal growth. Tissue from the tumor of a female bull shark brought into the lab in 1968 was excised by Walter and is still being studied.

Sea urchin embryos interest scientists from the National Institute of Neurological Diseases and Blindness because of their cell membrane formation. Cell membranes, once considered to be impenetrable coverings, have in recent years been found to perform a wide range of physiological tasks. Investigators hope to learn how this single biological entity can have so many functions.

As part of the microbiology program, the Mote Lab also studies an- alyses. Dr. Edward Evans, se- nior research microbiologist at the lab, points out that when during the process of evolution, genes “coded for immunoglobulins” first appeared on the human kingdom. The shark, which evolved far earlier than man, has only one variety of immunoglobulin. From studies in one of the tiny working laboratories inside the Mote’s main building, there, Susan Wescott, a marine biologist, has gathered, dried and mounted hundreds of different varieties of algae from all over the country. In New England and the Galapagos Islands, her algae “library” is considered one of the best in the world. Physicians envision a porpoise as a medical assistant in the future.

The living forms of those lowly plants known to many merely as “that slimy-looking green stuff in the water,” are used for the potassium, iodine, potash, 4-arsenic or al- acine and may contain, Fossilized microscopically, they are abrasive and useful in such pro- ducts as scouring powders. And the remains of blue-green algae have helped paleontologists, learn that life existed on this planet about 4 billion years ago.

Some algae are used directly as food. Nutritive flour is made from a freshwater species and used by the Layne oxygenation plant in space stations. Our grandmothers used to cook in many organisms they called “Irish Moss” to make a gelatin dessert called blanc-mange which is mentioned in literature as early as the 18th century. New uses for algae continue to be discovered. Above all, algae is a vital link in the food chain that leads to man.

One of the Mote Marine Laborato- tory’s stars is Dr. Charles B. Bred- der, a world authority on fish. For 22 years he worked with the New York Aquarium (the last three as its director) and for 20 years was curator and chairman of the depart- ment of fishes and aquatic biology at the American Museum of Natural History in New York. His impressive expeditions include six months in the Darlen jungles of the Darien. Every budding student of ichthyology depends on his Field Book of Marine Fishes of the Atlantic Coast.

In 1964, Bredrer headed south to make his home on Manasota Key. At the Mote Lab, he heads a pro- gram which is studying seahorses and the schooling habits of fish. Opening a door labeled a 47-foot yacht by Mr. and Mrs. Quentin Just of Sarasota, groups from the lab can go out on pro- projected expeditions. William Mote, who is president of the board of di- rectors, is in charge of such expedi- tions, which already have taken teams to the Dry Tortugas to study sharks and to Loggerhead Key to study coral reefs. A team has looked into the “mud boils” off Fort Myers and has returned with marine geologists from the De- partment of the Interior. Mote scien- tists have also gone 100 miles out into the Gulf to learn more about the loop current. The Florida Insti- tute of Oceanography at St. Peters- burg has responsibility for coordi- nation of this project, of practical in- terest to the whole west coast.

The loop current runs north in the Gulf of Mexico off the Yucatan Peninsula to Louisiana, swinging east and then south about 100 miles off the Florida coast. Big fish swim in the loop current and the U.S. Bureau of Sports Fisheries as well as Florida fishermen want to know more about it.

It may seem a far cry from those groups which look to the microbe to grow cirr very quickly. Cirr is feather-like projections that may sprout or be reabsorbed rapidly at any body point. Two local species (growing to and seven inches) are being encouraged to grow cirr.

Here again, the ultimate object is stability. It may prove better to breed the extra tissue with great speed, how useful that ability would be in the healing of wounds.

Bredrer’s program has received a grant of $14,400 from the National Science Foundation. The second big concern of the program is the social behavior of fishes. Though many kinds of fishes gather into schools, no one has ever figured out how they pass the word to get together.

It is well known that many species of fish produce audible sounds. Last summer Dr. William Tavolga of the Florida Institute of Technology in New York, his impressive expeditions include six months in the Darlen jungles of the Darien. Every budding student of ichthyology depends on his Field Book of Marine Fishes of the Atlantic Coast.

In 1964, Bredrer headed south to make his home on Manasota Key. At the Mote Lab, he heads a pro- gram which is studying seahorses and the schooling habits of fish. Opening a door labeled a 47-foot yacht by Mr. and Mrs. Quentin Just of Sarasota, groups from the lab can go out on pro-
Dr. H. David Baldridge, chemist, wears two hats at the Mote Marine Lab. He studies the physical and chemical approaches to the problem of shark attack on man which are a continuation of his years of research as an active Naval officer - and he is also program director for MML’s Red Tide study.

Several times a year the MML is host to distinguished foreign visitors. Recently W. R. Mote (President) and Mrs. Elizabeth Mote Rose (Secretary-Treasurer) greeted the Ambassador from Iceland (center).

Stewart Springerger heads the MML’s Placida Station, 40 miles south of Sarasota. He is an acknowledged authority on the taxonomy and natural history of sharks of the world.

Dr. Perry W. Gilbert is MML’s scientific and administrative director. His research interests include the study of the biology and behavior of sharks, skates and rays. Dr. Gilbert also holds a professorship in Neurobiology and Behavior at Cornell University.

Dr. E. Edward Evans studies bacteria associated with the Red Tide organism, Gymnodinium breve, and their possible implication in its rapid proliferation. He is former head of the Department of Microbiology of the University of Alabama Medical School.

Dr. Oliver Hewitt, MML’s eminent ornithologist, is currently conducting a study of the bird populations of the Charlotte Harbor area, a bird watcher’s paradise, inhabited by more than 300 different species of birds.

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Aerial view of the shark-porpoise facility at the Mote Marine Laboratory, Sarasota, Florida. Laboratory is located in upper left, Sea Van mobile laboratory in center, and facility in lower right.

View of 80-foot diameter channel, connected by gated flume with 50-foot diameter pool. Note observation platform and monorail with electric hoist above, and shark retriever to left of flume.