

75. Lilly, John C. 1962. A New Laboratory for Research on Delphinids. Assoc. of Southeastern Biologists Bul. Vol. 9, P. 3-4

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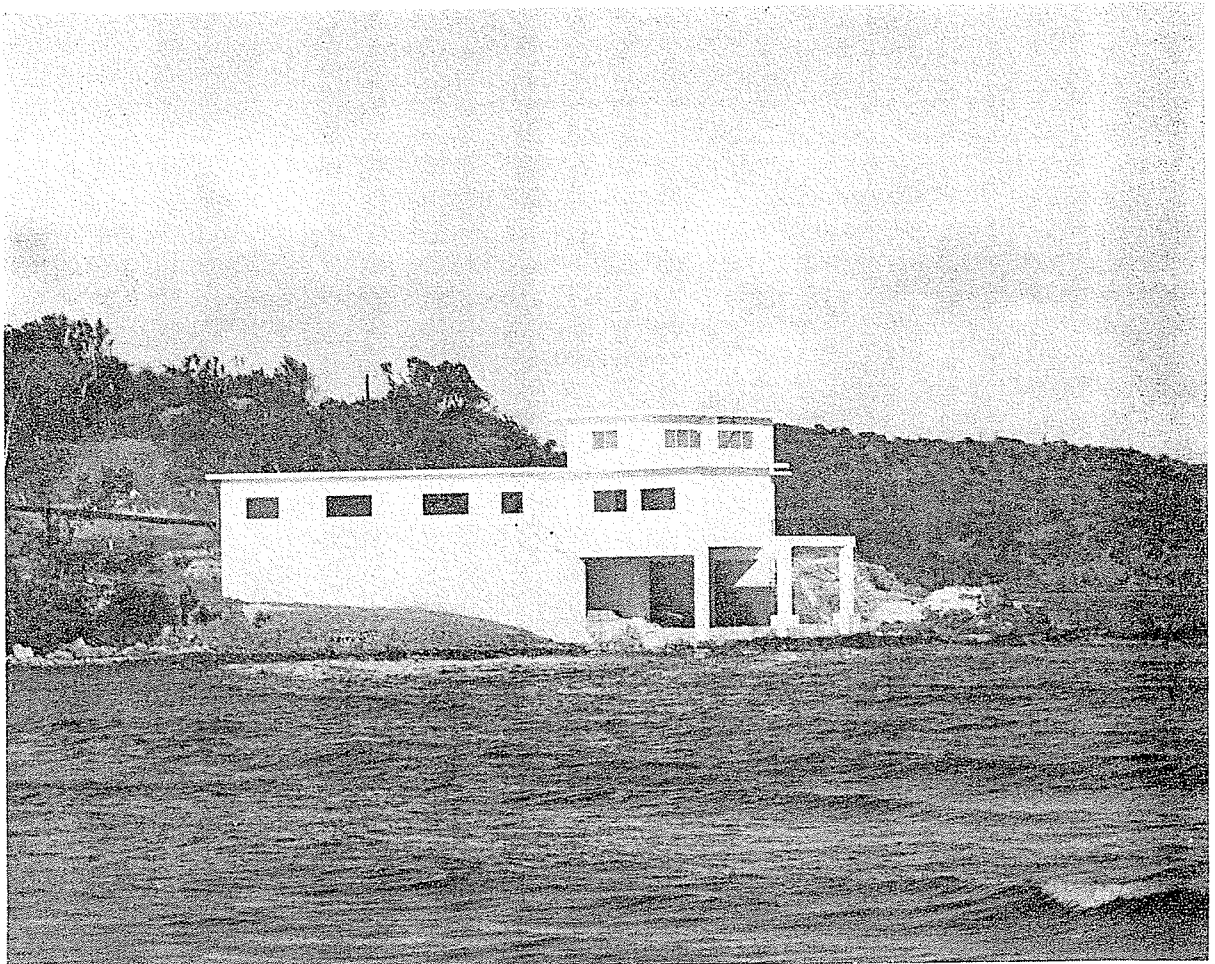
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# The ASB

# BULLETIN

Volume 9, Number 1

January, 1962



NEW LABORATORY FOR DELPHINID RESEARCH—ST. THOMAS, VIRGIN ISLANDS

*The Official Quarterly Publication of  
The Association of Southeastern Biologists*

The ASB BULLETIN is the official quarterly publication of the Association of Southeastern Biologists, Inc., and is published at Philadelphia, Penna., in January, April, July and October. Letters, news items, other contributions, and all communications about editorial matters should be addressed to C. W. Hart, Jr., Editor, The Academy of Natural Sciences of Philadelphia, 19th and The Parkway, Philadelphia, Penna. Changes of address should be sent promptly to the Secretary of the ASB, Dr. Harry J. Bennett, Department of Zoology, Louisiana State University, Baton Rouge, La. Subscription orders from libraries and other institutions should be sent to the Business Manager, Dr. Elsie Quarterman, Department of Biology, Vanderbilt University, Nashville, Tenn. Subscription rate for non-members of the ASB: \$2.00 per year. Printing and typography by the Wickersham Printing Co., Lancaster, Penna.

Second-class postage paid at Philadelphia, Pennsylvania.

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# ASSOCIATION AFFAIRS

## Library subscriptions . . .

In the call for papers and list of important deadlines mailed out earlier this month, a tabulation, by states, of the number of library subscriptions to the ASB Bulletin was published. A list of these libraries appears on page 21 of this issue.

But it is not these libraries that should concern us. It is, instead, the *absence* from this list of many of the major southeastern libraries that should be our concern. Indeed, the absence of three entire states supposedly represented by us is not a thing to be proud of.

In the past year, two libraries have purchased complete runs of the Bulletin, and another has asked for a quotation on a complete run—but these libraries were not in the southeast. Sadly enough, there are now fewer than ten complete sets still available. They should logically find their way to southeastern libraries.

It is up to you to see that they do.  
C. W. H., Jr.

October ASB Bulletins sent to the following addresses were returned because the addressees had moved without leaving forwarding information.

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If anyone knows the whereabouts of any of these people, please communicate with *Dr. Harry J. Bennett, Secretary, Dept. of Zoology, Louisiana State University, Baton Rouge, La.*

# A New Laboratory

## For Research On Delphinids

—John C. Lilly

OF ALL of the cetacea, those which are available for proper experimental scientific research are the smaller members of the delphinid group. Some limited experimental work has been done on *Phocoena communis* (the harbor porpoise), on *Delphinus delphis* (the common dolphin), *Stenella plagiodon* (the spotted dolphin), *Lagenorhynchus obliquidens* (the striped dolphin), *Tursiops truncatus* (the bottlenose dolphin) and *Globicephala scamonni* (the pilot whale). The suitability of these various species for experimental work in captivity varies greatly between the species. Their reactions to capture, to captivity, and to the personnel maintaining them are also different.

One factor of importance in setting up facilities for research on these animals is cost. In general, one can say that the larger the animal the higher the cost of the facilities and of the maintenance. The smaller animals eat less than do the larger ones. The tanks can be smaller for certain species than for others, depending not only upon size, but on the adaptability of the animals to a confined situation. The cost of the water supply for the larger tank can be considerable and, to date, prohibitively expensive for a purely scientific organization. (Pumping a million gallons of sea water a day through tanks 12 feet deep and 75 feet in diameter—as in certain oceanaria—adds considerably to the overhead.)

Surprisingly enough the smallest of the delphinids, *Phocoena*, has not yet been shown to be adaptable to a captive situation. Several investigators have reported deaths within a few days or weeks of capture. Generally these deaths are associated with descriptions of very high speed swimming behavior continuing to exhaustion and/or impact damage against the walls of the container. It is not known yet whether this is characteristic of the animal or is caused by unknown factors in the catching procedures.

Dr. Lilly—whose controversial book, *MAN AND DOLPHIN*, was recently published by Doubleday—is the Director of the Communication Research Institute of St. Thomas. He was graduated from the California Institute of Technology in 1938; received his M.D. from the University of Pennsylvania in 1942; and has worked in the fields of electrophysiological amplifiers, perception, and reward and punishment systems within the brain of delphinids.

*Delphinus delphis* and *Stenella plagiodon* have been maintained successfully for several months in fairly large tanks. However, they are reported to be hyperexcitable and much more difficult to deal with than other species.

*Lagenorhynchus obliquidens*, *Tursiops truncatus*, and *Globicephala scamonni* have all been maintained for many, many months in captivity. *Lagenorhynchus* and *Globicephala* both need fairly large tanks: *Lagenorhynchus*, because of its tendency to swim at high speeds and to jump to great heights, and *Globicephala* because of its very large body length. Deep sea techniques of capture are used with both of these species. For ease of continued work with any one of the delphinids, the warm-water species are preferable for research for 12 months of the year.

This leaves *Tursiops truncatus* as the present choice for the least expensive and most convenient experimental animal. More is known of this species than of any other of the delphinids. It is available in shallow water in the southeastern United States. Capture by netting in shoal water is the usual technique. If properly caught and maintained, it can live for years in captivity and it survives extremely well in very small tanks. It does not become inordinately large: individuals can be carried by two to four men quite easily. The cost of feeding such animals is not as great as it is for the pilot whale. Experience shows that 10 to 20 pounds of whole frozen fish per animal, on the average, per day is adequate. The diet includes butterfish, blue-runner, thread-herring, and mullet. In our experience, animals can be maintained for months on butterfish alone.

*Tursiops truncatus* functions very well in water from 60° to about 88° F. At the upper end of this range the animals become extremely sluggish and at the lower end extremely active: an optimal temperature range lies between about 76°

and 84°. In this range the animals are interested and curious and actively participate in any program set up for them, whether in the laboratory or in a "circus" setting.

The Communication Research Institute of St. Thomas has started an organization for delphinid research. Two laboratories are being established, one in Miami, Florida, and one at St. Thomas in the United States Virgin Islands. The animal chosen as the current experimental one in these two laboratories is *Tursiops truncatus* for the reasons given above. Insofar as is known by the author, this is the first organization in the world to be founded for research exclusively on these interesting marine mammals.

The facilities at Miami include three holding tanks constructed of fiberglass and plexiglas, with observation and photographic windows. These tanks are fed continuously with new sea water pumped from a sea-water well (62 feet deep) at the rate of 100 gallons per minute. The water from the well runs 76° F. in the winter and 78° F. in the summer. Each tank is 7 x 8 feet and 30 inches deep. We have shown that *Tursiops* can be kept at least a year in water no deeper than 22 inches. Associated with these tanks are two plexiglas arms into which the animals can be conducted for detailed observations and experimental procedures. These transparent tanks allow observation of the whole body of the animal, and confine it for the collection of urine, measurement of body temperatures, measurement of respiration, etc. By means of a removable gate between two of the tanks, animals can be transferred back and forth without removing them from the water. Various shipping boxes to allow the animals to be carried in water while on a truck or in an airplane or on board a ship are also available. Various slings, confinement apparatus, and so forth are also available in this laboratory. Facilities also include several tape recorders, hydrophones, air microphones, underwater loud speakers, air loud speakers, amplifiers, and graphical recorders needed in research on the vocalization and the brain activity of these animals. In addition there are rooms for analyses of data, photographic dark room, and so forth. This laboratory also has a small school bus for the transportation of captured animals and for carrying the equipment for field studies in the waters of southeastern Florida.

The laboratory in St. Thomas is larger and more elaborate and its sea water facilities are unique. The island of St. Thomas is in the trade winds belt; the location of the laboratory was chosen so that a constant supply of waves approaches the coast at that point from the southeast. These waves are piled up on a reef outboard from a wave ramp up which the water travels and falls through a gate into a pool. This

pool is the residence pool for a future colony of *Tursiops*. It is about 70 feet long, 20 feet wide, and 10 feet deep. The laboratory is built partly over this pool. An elevator carries a water box containing a given animal from the pool into the laboratory. In the dolphin laboratory room it is planned to construct an octagonal tank 8 feet in diameter with plexiglas sides for isolation of an individual or a pair of animals. In addition plexiglas confinement boxes as used in Miami are planned for this laboratory. This laboratory has a large wide aluminum door through which a truck can be backed for delivering of animals directly to the octagonal pool. The carrying boxes will be lifted off the truck, transported across the laboratory on an overhead trolley system for delivery into the main tank outside or for confinement in the dolphin lab. Immediately to the south of this dolphin laboratory is an observation roof from which the behavior of the animals in the pool below can be photographed. Beside this roof there is an electronics laboratory and immediately to the south there is a photographic dark room. To the north of the dolphin lab is the immediately adjacent store room and chemistry laboratory. Beside the chemistry laboratory is the histology lab, a shower room, and ward room.

The building is so constructed that several stories can be added at future dates. The present second floor consists of one large room for record analysis and office space. There are three large cisterns for the storage of fresh water and sea water pumps for supplying water to the laboratories upstairs. There is sufficient land owned by the Institute around the laboratory for future expansion and for the construction of housing for the scientific personnel in the future. Immediately southeast of the laboratory is Jersey Bay and south of that the Caribbean Sea. Nearby there are shallow lagoons, reefs, keys, and deep ocean. St. John Island is about 3 miles from the laboratory.

The island of St. Thomas has deep water port facilities and an airport. The town on the island is Charlotte Amalie, the capital of the U. S. Territory of the Virgin Islands.

It is expected that the St. Thomas Laboratory will be in full operation by December 1961.

This laboratory is built with funds from a grant from the National Science Foundation in cooperation with the Office of Naval Research and the Department of Defense. It will be used primarily for research and teaching purposes. Summer student programs have been run for two summers and are expected to continue in 1962. A limited number of graduate students are desired as the staff is expanded. Currently there are 12 employees of the Institute. The Scientific Staff has room for several additional investigators.