Research Laboratory ship construction begun

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Construction of a special research ship designed to serve the United States as a floating laboratory for experimental biology has begun in Tacoma, Washington.

The 133-foot laboratory ship, as yet unnamed, is planned as the focal point of unique facilities for experimental oceanic biological studies now being built at the University of California's Scripps Institution of Oceanography. Construction on those facilities, a three-story physiological laboratory building and adjacent seawater pools, began this fall on the Scripps campus.

Since it is unlikely that a single institution could profitably man the ship throughout the year, it will be operated as a nation-wide facility from Scripps.

The ship is under construction at the J. M. Martinac Shipbuilding Corporation in Tacoma at a contract cost of $1,272,021 and is scheduled for delivery next summer. It was designed by the naval architectural firm of L. R. Glosten and Associates of Seattle. Funds for its design and construction were provided by a grant from the National Science Foundation.

It is expected that the ship, under the direction of Dr. P. F. Scholander, Professor of Physiology and Director of Scripps' Physiological Research Laboratory, will perform many research programs that will be of international importance. According to Dr. Scholander, scientists of various universities throughout the world are taking part in the planning of these programs which will later be assembled under the guidance of a seven-member National Advisory Board.

The Advisory Board consists of: Dr. A. Baird Hastings, Scripps Clinic and Research Foundation (chairman); Dr. Eric G. Ball, Harvard Medical School; Dr. Lawrence R. Blinks, Stanford University; Dr. Knut Schmidt-Nielsen, Duke University; Dr. Wallace O. Fenn, University of Rochester; Dr. H. Burr Steinbach, University of Chicago; and Dr. Theodore H. Bullock, UCLA.

The ship is designed for biological research, both at sea and at remote anchorages. Operations will be carried out in all parts of the world, including Arctic and tropical regions, in ice and in fresh water rivers. The vessel will be of welded steel construction transversely framed.

It will be of modest size, about 500 tons displacement at design draft, and will be 133 feet long with a 31-foot beam. It will have a reinforced steel hull with the bow reinforced with heavy steel plates for moderate ice work.

Propulsion will be by means of a variable pitch propeller driven through reduction gears by an 820 horsepower diesel engine. It will have an estimated speed, at full power, of 12.25 knots and a cruising speed of 11 knots. The propeller and shaft, rudder and steering gear will have the increased strength required for ice operations.

The ship will carry more than 29,000 gallons of diesel oil giving it a cruising range of 6,500 miles. The ship will carry the normal complement of navigational instruments, radar, gyro compass system, radio telephone, echo sounder, and electrical log and will carry 22 persons, about half of which will comprise the ship's officers and crew.

Due to the ship's scientific purpose, several areas of its design will differ from traditional naval design. The main deck within the superstructure will have no camber and the usual steep ship ladders will be replaced by ladders with flatter slopes wherever possible. Special fittings will be provided in the hull to which working platforms may be fastened near the waterline from the bow to the stern on one side of the ship.

There will be a chemical laboratory, a physiology laboratory, a wet laboratory, a freeze laboratory, a photo laboratory, and a scientific storeroom all of which will be thermally insulated and air-conditioned for operations in the Arctic as well as tropical waters. All machinery will be specially mounted in an effort to keep the noise level and the vibrations in the laboratories at a minimum.

The chemistry laboratory and the wet laboratory will be located side-by-side about mid-ship on the main deck. The wet laboratory will carry aquaria and will be served by a special non-toxic and refrigerated sea-water system. Directly below, on the lower deck, will be the freeze, photo, and physiology laboratories. These laboratories are designed to be as complete as any scientific laboratories on shore.

The ship will also carry a fully equipped machine shop on the lower deck which will include power tools as well as welding and glass-blowing areas operated by a professional mechanic on the scientific staff. A scientific library room will be located on the upper deck and will include study areas, a blackboard, book storage, and a drafting table.

Plans call for the ship to carry a 24-foot half-decked work boat that will serve as a shore boat and collecting craft and a 5,000-pound capacity hydraulic crane with an articulated boom.

According to Dr. Scholander, one of the major deterrents to the work of experimental biologists at sea has been that the United States has had no oceanic vessel which is suitably equipped for their work. Mos t biological work at sea is now limited to collecting material when such collecting can be fitted into physical oceanography programs. Scientists have found, however, that it is often not possible to bring live animals or plants safely to the base laboratory for study.

Sometimes needed laboratory facilities are established on land in buildings or tents. In most cases, a ship has provided the ideal solution to both temporary living quarters and laboratory.

However, Dr. Scholander said, vast areas of the biology of the sea cannot be handled in this manner but require special facilities for experimental approach. With a floating laboratory, the scientist is free to seek out interesting areas of investigation. In fair weather a great deal of experimental work can be done on living organisms in the open sea, a field that has barely been touched. In other cases the vessel can be anchored in an interesting area and used as a floating biological station.

In contrast to the conventional expedition in which the scientist must return to his home laboratory for further study, a ship has the fundamental advantage of maintaining, at the site, a fully equipped laboratory.

On expeditions, Dr. Scholander said, both senior and junior scientists work together and can, without distraction, fully concentrate on their work. This togetherness breeds discussions and ideas, but only when backed by a well equipped laboratory and machine shop can new leads be taken up on the spot. New technical approaches can be devised and manufactured right on the ship.

In some cases, he said, it may be advantageous for the scientists to fly to and from the area where the ship is stationed, but the return voyage on the ship presents invaluable opportunity to work up the gathered data into preliminary manuscripts. The scientific team may stay together with practically no distractions during this critical phase of the work, instead of being scattered all over.

The very opportunity for scientists to be able to take off from the daily routine, with nothing else to do but observe, investigate, and breed new ideas with other fortunate colleagues carries in itself great potentialities,

he said. There is an element of adventure in expeditionary work which strongly appeals to many people. This "explorer" drive is a valuable asset indeed, but it can be fully exploited only in a setting of adequate research facilities, he said.