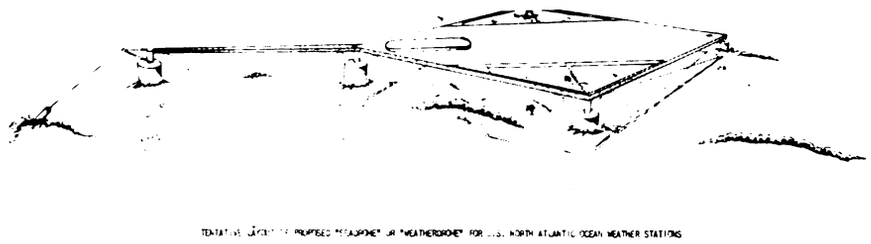

OCEAN WEATHER STATION—This is an artist's conception of a 2,000-ton, 450-foot proposed weatherdrome for weather observations in the Atlantic.

PHYSIOLOGY

Cell Details Studied

Researchers of three countries are using electrons and X-rays to discover facts about cells. Methods for slicing cross-sections of bacteria have been developed.

➤ NEW peeks at living cells of which you and all other living things are made have been taken by scientists of three countries.

Their findings, reported in the British journal, NATURE (Feb. 19), show that:

The heart, or nucleus of the living cell has a double-layer coat.

Whip-like propelling organs, called flagella, are like hair or muscle on the cells of bacteria.

Two new methods of slicing out cross-sections of the tiniest of living cells, those of bacteria, have been developed.

Four teams of scientists from the U. S., Britain and Sweden have made these new studies of the building blocks of living things.

The nuclear membrane, which holds the materials that dominate the cell's life activities and the genes that pass hereditary qualities on to the next generation, was peeled off large reproductive nuclei of tailed amphibian species and examined under the electron microscope. This was done by H. G. Callan of the Institute of Animal Genetics at Edinburgh, and J. T. Randall and S. G. Tomlin of King's College, London.

Preparation required a very delicate dissecting operation with minute instruments, conducted under an ordinary microscope. The peeled membrane was stretched on a copper holder and dried before the electron beam was turned on it.

Photographs made under the electron microscope show the nuclear membrane to have a double structure. One layer is like a colander, full of exceedingly minute holes arranged in a hexagonal pattern. The other layer has no discernible structure. The three scientists believe that the latter layer is the one that controls transfusion, or the passage of dissolved substances, into and out of the nucleus. The layer with the holes, they believe, serves only for mechanical support of this structureless layer.

International cooperation between Britain and Sweden was involved in the X-ray analysis of exceedingly minute, whip-like propelling organs, or flagella, of bacterial cells. This study was conducted by W. T. Astbury of the University of Leeds and C. Weibull of the University of Uppsala. They were able to get the flagella separated from the bacterial cells and stretched out in a thin film. From the X-ray point of view, they state, these minute cell-organs are comparable to hairs or muscles, since they contain protein groups common to the two larger structures.

Two different methods of making cross-sections of the minutest of all cells, those of bacteria, are reported. Richard F. Baker and Daniel C. Pease of the University of Southern California School of Medicine embed large bacterial cells in paraffin and slice them to a thinness of a quarter-millionth of an inch, in preparation for electron-microscope examination and photography.

In Stockholm, A. Helge F. Laurell of the Physical Research Institute first glues bacteria to a glass slide. He then covers them with an ultra-thin beryllium film and strips off the film, bringing parts of the bacterial structure with it. Repetitions of this process obtain sections deeper into the cells.

Science News Letter, March 26, 1949

METEOROLOGY

Floating Weatherdromes Proposed for Atlantic

➤ FLOATING anchored weatherdromes are suggested by the U. S. Coast Guard to be used instead of vessels as weather stations in the Atlantic and other waters. Authorizing legislation has been requested from Congress. Economy is the objective.

These proposed seadromes are somewhat similar to those suggested when planes were learning to fly the Atlantic, but these will not be used for landing fields. Each would hold a weather station and quarters for a crew of 80 men. They would provide continuous information on weather conditions to shore stations by radio.

The platform of the "drome" would be supported on five pylons extending 175 feet downward into the water. These, according to inventor Edward R. Armstrong, Sun Shipbuilding and Dry Dock Corporation, would offer but little wave resistance, keeping the platform stable at sea.

It takes three vessels with a crew of 120 officers and men each to man continuously one ocean station, officials of the Coast Guard say. The use of seadromes would save the need for about 200 men. Also, there would be a decrease in the cost of operating because the weatherdrome has no means of propulsion and, when once positioned, remains anchored. If Congress approves the idea, money for construction will be requested later.

Science News Letter, March 26, 1949

INVENTION

Auto-Skidding Prevented With Spiked Rollers

➤ WITH one of the "skiddiest" winters in weather history just receding into the past (maybe) in the West and Midwest, more than passing interest attaches to devices intended to prevent automobiles from skidding. An appliance of this kind is the subject of U. S. patent 2,463,634, just issued to Ernest L. Martinis of Southgate, Ky.

It consists of a pair of cylinders some eight or 10 inches in diameter, with short spikes to bite into the slippery road surface. These are mounted directly back of the rear wheels, but are kept swung up out of sight in the streamlined rear portions of the rear fenders when not needed.

When an emergency arises, quick pressure on a pedal swings them down until they bear on the road surface. At the same time, a pair of smaller rollers interposed between them and the wheels transmits power from the tires to the spiked rollers, causing them to turn in the same direction as the wheels. The spikes automatically claw for a firmer hold on the road, and the skid is brought to an end.

Science News Letter, March 26, 1949