SCIENCE NEWS

OCEANOGRAPHIC SURVEY BY THE HYDROGRAPHIC OFFICE

Science Service

PLANS for the most complete survey of the ocean from top to bottom ever attempted have been inaugurated by a conference representing scientific branches of the government and allied institutions held at Washington under the auspices of the Hydrographic Office of the U. S. Navy.

Definite routes and areas have not yet been chosen, but the preliminary discussion indicates that instead of a globe-girdling expedition, a comparatively small section of the seas will be selected for intensive study. The Aleutian Islands region of Bering Sea and the Caribbean Sea are under consideration as offering unusual opportunities for scientific investigation, with the latter most favored.

One or more ships will probably be fitted out with a complete laboratory and equipped with the latest scientific apparatus for the first cruise. The sea bottom will not only be mapped, but the composition of the water, its density, temperature and currents which affect the distribution of marine plant and animal life will be studied at all depths. Beside the investigation of the water and the life in it, specialists in various sciences will probably be landed on oceanic islands within the area covered by the ship.

In emphasizing the importance of this investigation, it was pointed out that five sevenths of the surface of our globe is covered by the waters of the seas. This water area can produce far more food than all the land can ever be made to yield, and one of the purposes of the expedition will probably be to take an inventory of such food possibilities which will be needed if our population continues to increase. Fish, mollusks and marine animals are dependent upon the microscopic plants that grow in the sea as far down as the sunlight penetrates. The floating mass of minute forms of vegetable and animal life, collectively called "plankton," varies greatly with slight changes in the temperature and composition of the sea water, according to laws not yet discovered, but which the proposed expedition may aid in understanding.

The exploring ship will map the ocean bottom by means of the new sonic finder which determines depths by measuring the lapsed time between sending down a sound and getting back the echo from the bottom. By this instrument, soundings can be made by a ship in motion and much more easily and quickly than by the old way of heaving the lead.

"WHITE INDIANS"

Science Service

So very little is known of the working of the laws of heredity among albinos that an opportunity to study a whole community of these strange human beings is exceedingly alluring to anthropologists. Dr. Clark Wissler, curator of anthropology of the American Museum of Natural History, says that the colonies of "White Indians," discovered along a tributary of the Chucunaque River in Panama by the Richard O. Marsh expedition, should prove to be a sort of laboratory.

Dr. Wissler inclines to the opinion that albinism will account for these human puzzles, who are arousing keen interest in New York City, where they have just arrived. Other anthropologists, however, point out that albinism would not explain the fact that they are round-headed, large-headed and large-boned, unlike other Indians of the San Blas tribes. Indeed, this is the one inexplicable thing about the new arrivals. Their skeletal peculiarities have led to many ingenious attempts to supply them with a history.

All the anthropologists agree that they can not be half-breeds. The crossing of dark with light races results in a smooth-toned skin, of whatever shade, and not in "this inhuman complexion," as Dr. Wissler calls it. To compare these white Indians with Swedes or other northern races is most unobservant, since the latter have ruddy and pronounced coloring, not a spectral pallor.

What, then, are the other possibilities? First, that they may be a separate and ancient race. Of this the anthropologists are skeptical. They recall, however, that in Central America as in Mexico the legend of a "white redeemer" who once dwelt among the people and would some day return, is common. Also it must be remembered that "white Indians" are the subject of old and authoritative mention. They have existed in the Zuni pueblo as far back as the records go. Columbus wrote of seeing white people in Darien. Von Humboldt related that they were to be found in Panama.

Circumstances might well have favored the development of an albino race. That is the second possibility, and the one best supported by known facts. The white Indians have always been ostracized by their San Blas neighbors, who fear racial contamination and drive them off into the jungle. The enforced segregation might easily have perpetuated albino traits. But then the skeletal differences remain to be accounted for. They also mar the third possibility, suggested by a scientist who has studied native African races—that these white Indians may be affected by a disease which prevents the nerves from supplying coloring matter (melanin) to the skin, hair and iris of the eyes.

THE ARMY WORM OUTBREAK

Science Service

THE outbreak of the army worm in Illinois has been brought under control, according to Professor George A. Dean, of the U. S. Department of Agriculture, who declared that the pest will not prove as damaging as was feared, not reaching the extent or severity of the attack ten years ago. A similar outbreak in Iowa is reported by W. P. Flint, state entomologist of Iowa, to have been checked before it got well under way.

This caterpillar of an insignificant moth or "miller" has been represented as moving very rapidly over several

counties when in full action. An army worm has been known, according to Professor Dean, to cross an 80 acre field, a distance of one fourth of a mile, in 24 hours, which may be regarded as rapid for a caterpillar. But as the length of life of an army worm is from seven to ten days, depending upon the temperature, the distance an "army" can travel is limited. The distance a worm army travels depends largely upon the amount of food it finds. If, upon emerging from the eggs, the worms find only a thin covering of vegetation, the urge of hunger will compel migration and they will turn to grasses, young wheat, alfalfa and other tender plants. If there is sufficient food to carry them through the worm or caterpillar stage, they travel no farther.

The rapidity with which a field may be devoured is surprising. Professor Dean recalled a farmer who woke to find his 60-acre potato field of the night before a barren waste. There are many records of fields of wheat, corn and alfalfa disappearing between sunrise and sunset.

The worms undergo metamorphosis in the ground or under such shelter as they can find. The moths then emerge and fly considerable distances, and, by laying their eggs, prepare the way for another army worm outbreak. An army worm attack seems sudden because the extremely small young eat comparatively little and remain near the ground. With increasing size their appetite grows rapidly and their migratory search for food suddenly reveals their presence.

The last attack preceding the current army-worm attack in Illinois and Iowa occurred in each case ten years ago. The cold backward spring caused entomologists to expect the present attack.

THE ARTIFICIAL KIDNEY

Science Service

AN artificial kidney invented by Dr. John J. Abel, professor of pharmacology at the Medical School of Johns Hopkins University, is shortly to be tested on human beings according to word received by him from a German scientific man. Before Dr. Abel's discovery could be applied at the Johns Hopkins Hospital the war broke out and disorganized the source of supply of hirudin, an extract from Hungarian leeches necessary to the operation of the artificial kidney.

Dr. Abel's researches resulted in the discovery of the pure principle of adrenalin, and recently he and his collaborators, Drs. Chas. A. Rouiller and E. M. K. Geiling, have isolated a very powerfully acting hormone from the pituitary gland, an organ controlling the functions of growth.

To the uninitiated eye the artificial kidney looks very much as though it had been built after the general design of a steam boiler, but in reality it is made in imitation of the filtering mechanism in the kidneys of higher animals which is known as the glomerulus. On the interior of the artificial kidney are tubes of celloidin, a substance that lets the impurities and poisons strain through but retains in the blood the vital corpuscles and proteins. The leech extract, hirudin, is used to keep the blood from clotting as it flows through the tubes.

The apparatus is attached outside the body to an artery and the blood flows back again to another connection further along on the artery or to a vein. Any filterable constituent of the blood which must not be removed, such as blood sugar, is prevented from escaping through the walls of the celloidin tubes by the fact that they are submerged in a solution that contains the same amount of this substance as the blood.

Already the kidney has been tested on dogs with the result that it was found to operate so rapidly and efficiently that the living kidneys did not secrete and were relieved of their work so they could rest. The hope of applying it to the relief of human suffering lies chiefly in the field of cases where the kidneys break down in fatal cases of acute nephritis, scarlet fever, corrosive sublimate poisoning and similar toxic states. In many instances the life of the patient probably could be saved if his inflamed kidneys were given a few hours rest each day by artificial means.

ITEMS

Science Service

ANIMALS and plants while living give off rays similar to those emitted by the metal radium, according to reports made to the French Academy of Sciences by Albert Nodon. In his most recent experiments he used three photographic plates, placing on one of them a particle of a radioactive mineral, on another a living insect, and on the third plate a green leaf. A coarse cloth was laid between the object and the emulsion side of the plate. On developing the plates he found that not only had the mineral made a strong impression but that the insect had made a weaker impression and the leaf a slight impression. He calculates that the insect has a radioactivity per unit of weight from 8 to 13 times that of the uranium standard of radioactivity, and the green leaf 2 to 3 times. Dead organisms, on the contrary, exhibit no appreciable radioactivity, and M. Nodon concludes that radioactivity due to decomposition of atoms is a common accompaniment of living processes and may be regarded as a measure of the degree of vitality. On the contrary, Daniel Berthelot reported to the French Academy of Sciences that many experiments were made in 1909–10 to discover if plants and animals were radioactive, but no such effect was found.

THE maidenhair tree, introduced into America and Europe from China and Japan, but now not known to be growing wild anywhere, is the only survivor of an extensive family of prehistoric plants. It grows to be 100 feet tall and has leaves like the maidenhair fern. The most unique thing about it, however, is the way it gets its start in life. The flowers appear in April or early May and the pollen is distributed to the female flower. But sometimes the embryo is not formed until the seed has become full grown and fallen to the ground.

GREAT BRITAIN has $489,000,000 invested in rubber plantations. Holland has $130,000,000; Japan $40,000,000; while the United States, which uses three quarters of the world's rubber, has only $32,000,000 in plantations.