MARINE BIOLOGY

Sea Animals Dive at Dawn

Tiny sea plankton that swim and swim but don't get anywhere are teaching scientists some of the secrets of their economically important lives.

➤ TINY SEA animals which swim and swim but don't get anywhere are helping scientists unfold some of the secrets of their queer behavior in their native habitat.

These tiny sea animals, included in which are minute jelly fish, worms, snails and miniature shrimp, are generally known as plankton and are of great economic importance to man because they provide the food for many of the fish we eat, such as herring, spratt and mackerel.

Scientists have long observed that the plankton, which live in the depths of the sea during the daytime, swim up toward the surface in the evening only to dive back down again with the crack of dawn.

To study the habits of these deep sea divers, two British scientists, Prof. A. C. Hardy and R. Bainbridge, Oxford University zoologists, constructed an ingenious vertical "race-track" for them. A hollow transparent plastic wheel made of three sections of tubing bolted together is filled with sea water through a sealable window and a single plankton is introduced.

The wheel is turned until the plankton is in the vertical portion of the wheel and then one of the scientists sits and cranks the wheel one way or the other in direction and tempo with the swimming plankton. A clever arrangement of automatically swimming gates keeps the water moving with the wheel, so that for all its swimming the poor plankton is always in the same place.

The apparatus is housed in a greenhouse whose lower half is blacked out and whose top half is covered with paper of graded degrees of shading so that, with natural daylight entering a skylight in the roof, a dome of light is achieved which simulates the lighting conditions in the plankton's natural environment.

The scientists have already discovered several interesting facts. For one thing they have found that, contrary to previous assumptions that in the morning the plankton just drop passively back into deeper water, the downward migration is just as actively a swimming maneuver as is the upward evening migration—and just as fast.

They also soon learned that the plankton had remarkable stamina and in the wheel-turning experiments it was always the scientists, not the plankton, who tired first. The longest period of observation so far carried out has been four hours, at the end of which the scientists were exhausted but the tiny plankton, which had been swimming furiously all the time, were as fresh as at the start.

These tiny animals were also observed to move at—for them—tremendous speeds. Calanus, a little shrimp-like animal not quite the size of a grain of rice, can reach speeds of over 100 yards an hour and keep going at 50 yards an hour for an hour at a time. Weight for weight, a man would have to run at hundreds of miles an hour to duplicate this performance.

Prof. Hardy and his colleague hope their studies will throw valuable light on the normal habits of these economically important sea creatures and thus help reach a better understanding of such practical fishing problems as the shoaling of the herring.

To defend their method from the criticism that the plankton in the wheel were artificially confined in that they were limited to up-down movement only, Mr. Bainbridge donned a diving suit and went down into the sea to examine the movements of the animals in their natural state. He was able to report that, with one or two exceptions, the plankton in the wheel were exhibiting the precise swimming motions of their fellows in the sea.

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MEDICINE

Altitude Affects Peoples' Resistance to Disease

➤ IF PEOPLE could live at an altitude of 20,000 feet, they might never get pneumonia.

While this may be an impractical way of avoiding pneumonia, the mouse studies suggesting it are expected to give information on the effects of altitudes on disease resistance and susceptibility that will prove useful to high altitude flyers and perhaps to earthbound humans.

The studies are being made at the School of Aviation Medicine, Randolph Field, San Antonio, Tex., by Dr. L. Joe Berry of Bryn Mawr College, Pennsylvania.

Using the altitude chamber at Randolph Field, Dr. Berry has already found that mice accustomed to high altitudes are more resistant to pneumonia but more suceptible to typhoid fever than mice living at ground level altitudes. This effect of altitude may be related to its effect on the number of red cells in the blood. Anemic mice, Dr. Berry found, are more resistant to typhoid than healthy mice. At high altitudes, however, both men and mice get the reverse of anemia, their red blood cells being increased about 50%.

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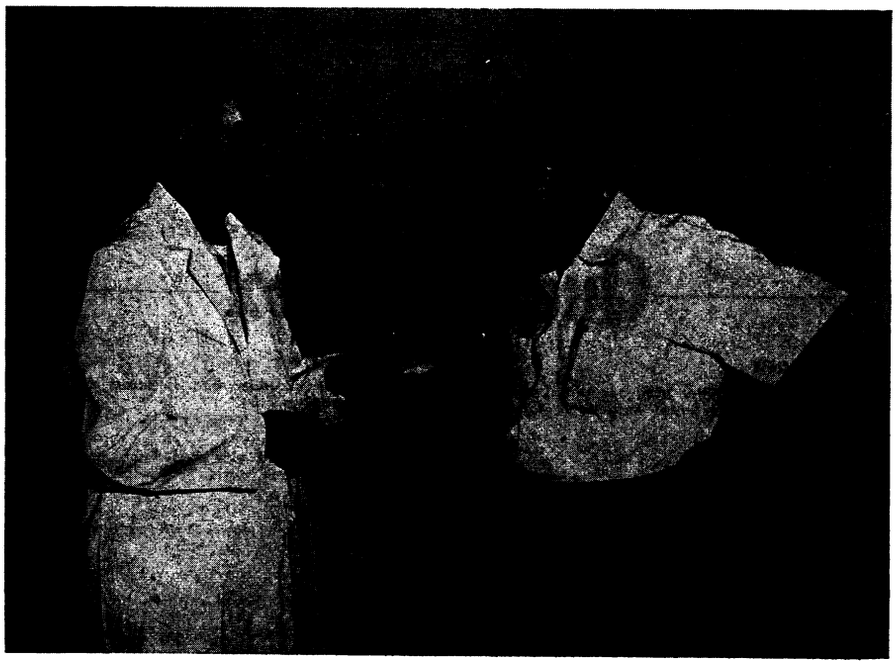

OF MICE AND MEN—Effects of altitude on disease resistance and susceptibility are being studied in mice subjected to various pressures in the altitude chamber at the School of Aviation Medicine, San Antonio, Tex. Dr. Joe E. Berry, left, of Bryn Mawr College, Pa., here shows one of the experimental mice to Dr. Roland B. Mitchell of the aeromedical school.