

BIOLOGY

Vitamin B-12 Needed By Marine Algae

► **WHETHER** or not there is enough available vitamin B-12 in the ocean to support crops of plankton, tiny marine plants and animals that may serve as a possible future food source, is a problem scientists are attempting to solve.

Plankton requires an outside source of the vitamin and M. R. Droop, Marine Station, Millport, Scotland, says there is a "more than sufficient" amount of B-12 in the world's seas.

Studying the marine organism *Monochrysis lutheri* in the laboratory, he reports there is a linear relation between cell numbers and concentration of vitamin B-12. On the basis of known measurements of the vitamin content in some oceans and inshore waters, there should be no deficiency of the vitamin available to plankton.

However, vitamin B-12 in the laboratory and that in the sea water are not the same, K. W. Daisley, of the Unit for Biochemical Research Bearing on Fisheries' Problems, National Institute for Research in Dairying, Shinfield, Reading, England, points out.

In a natural environment, he says, the concentration of nutrient may support "considerable cell division" yet may limit the eventual crop if the amount only compensates for loss of cells.

Furthermore, if the vitamin is bound, or present in combined forms, some plankton may not be able to use it.

"Investigators concerned with marine productivity" should not feel the relationship between the sea's vitamin B-12 and marine life is now completely understood. It remains a "subject of interest," the scientist concludes.

Both reports appear in *Nature* (Nov. 16).

Science News Letter, November 30, 1957

DERMATOLOGY

Deodorant Allergy Causes Tumor Growth

► **A SKIN REACTION** to certain deodorants has led two dermatologists, Drs. Walter B. Shelley and Harry J. Hurley, University of Pennsylvania, Philadelphia, Pa., to the discovery that tumor-like cell masses can be caused by an allergy.

The deodorants contained the metallic element zirconium and caused granulomas to form on the skin. These granulomas are the basic body changes that occur in such chronic diseases as tuberculosis, leprosy and syphilis. They are made up of a mass of closely packed cells. Very little is known about how they start.

Healthy volunteers were given injections of a zirconium compound in and under the skin, to build up sensitivity.

Six months later, one of the test subjects suddenly developed large masses at the site of all the early injections. They were found to be due to a state of allergic hypersensitivity to the zirconium.

Enough zirconium was still in the skin tissue to trigger off the allergic reaction

after sensitivity had been built up over the months.

Additional proof of the allergic basis for the granulomas came from tests on six patients who had developed the masses from zirconium deodorants. They were injected with dilute solutions of the zirconium compound and all reacted by forming granulomas at the site of the injections. Normal subjects showed no granuloma formation, since they had not been building up any sensitivity.

Zirconium was the only element that brought on the reaction. None of the other ingredients in the deodorant caused any effect.

"Although an allergic basis for granulomas has been suspected, this, to our knowledge, is the first direct demonstration that the introduction of extremely small amounts of a substance may produce a delayed allergic reaction in the form of an epithelioid cell granuloma," the dermatologists report in *Nature* (Nov. 16).

Further research should tell which of the granulomas found in disease are allergic and which are non-allergic, they conclude.

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BIOCHEMISTRY

Insanity Drug's Effects Stopped by Treatment

► **AN EXPERIMENTAL** treatment that protects normal people from the effects of the insanity-producing drug LSD-25 might be able to prevent schizophrenia, the most disabling form of mental illness.

This is reported by Drs. H. A. Abramson, B. Sklarofsky, M. O. Baron, N. Fremont-Smith, Biological Laboratory, Cold Spring Harbor, N. Y., and State Hospital, Central Islip, N. Y., in *Science* (Nov. 15).

The scientists have found humans can build up a tolerance to LSD-25 if they are first given a series of doses of a similar compound called MLD-41.

This new compound produces the same effects as LSD-25 but is only one-third as effective in creating the temporary insanity. Both drugs cause an individual to lose contact with the world around him and experience many of the symptoms of true schizophrenia.

MLD-41 was given to a group of normal volunteers for five or six days in increasing doses, and they quickly built up a tolerance to it as well as the LSD-25.

Then when the LSD-25 was tried on them, even 50 times the dose that usually brought insanity caused none of the psychotic-like effects.

The experiments lend hope to the possibility that schizophrenia, if it is produced by biochemical changes in the body, might be treated or prevented in much the same way.

If true schizophrenia comes from chemical changes like those caused by LSD-25 and similar drugs, there is good reason to believe that comparatively harmless drugs might be given to patients to create a tolerance to the body chemicals causing the schizophrenic state, the scientists report.

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IN SCIENCE

MEDICINE

Drug Stops Body From Retaining Salt

► **A DRUG** to treat heart disease that can stop the body from retaining sodium from salt and other sources is reported by Dr. Grant W. Liddle, Vanderbilt University School of Medicine, Nashville, Tenn., in *Science* (Nov. 15).

The drug is a synthetic steroid called SC-5233 that works against aldosterone, a natural steroid in the body. Aldosterone is secreted by the adrenal glands and causes the tiny tubules in the kidneys to reabsorb sodium. This action is a necessary "conservation" measure when the body is not getting enough sodium.

But it is also believed to cause the abnormal sodium and water storage that occurs in congestive heart failure when the body becomes waterlogged.

The new synthetic drug, and a similar one named SC-8109, appear to travel into the cells of the kidney tubules and compete with natural aldosterone and other sodium-retaining steroids, Dr. Liddle reports.

Used in humans, the drug only works if the sodium-retaining steroids are present. If not, it has no effect on how much sodium is absorbed.

Another important action of the drug is that it does not cause potassium to be excreted along with the sodium. Other compounds, including cortisone, will increase sodium excretion, but at the same time they lower the concentration of potassium in the body.

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PHYSIOLOGY

Stomach Ulcers May Be From Heart Disease

► **STOMACH ULCERS** often come as the result of certain kinds of heart disease, Dr. Michael M. Klein, a radiologist from Huntington, W. Va., told the Radiological Society of North America meeting in Chicago.

In a study of 370 heart disease patients who had stomach or intestinal complaints, 115 were found to have gastric ulcers.

Since coronary heart disease is actually an arteriosclerotic disease, it is safe to say that hardening of the arteries is an important causative factor in the origin of gastric ulcer, Dr. Klein explained.

Most gastric ulcers occur in people 50 years or older and this is also the arteriosclerotic age.

The chemical changes found in ulcers are well-known but there must be other important factors causing them since ulcers are frequently found at autopsies of patients who die from seemingly unrelated causes.

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CE FIELDS

AERONAUTICS

AEC Spent More Money For A-Power Plane Engine

► THE ATOMIC Energy Commission spent 67% more money this fiscal year than last on research and development for the production of an atomic reactor to power an airplane.

In the fiscal year 1957, the AEC has disclosed in its annual Financial Report, research and development costs for aircraft propulsion reactors increased to \$86,700,000 from \$52,000,000 in fiscal 1956. Construction costs, alone, in the program to develop a working nuclear reactor to power both planes and missiles went up 158% in this same period.

The AEC, in its report, says that in order to produce such an atomic engine, "work is being performed on improved shielding techniques, extensions of technology applicable to high temperature materials and moderators, improved coolants, methods of power conversion and improvement in power density."

The Financial Report shows the total cost of AEC operations during fiscal 1957 amounted to two billion dollars. The largest share, \$788,000,000, was spent for production of special nuclear materials. The second biggest share of the AEC budget, \$402,000,000, was spent for source materials. Weapons development and fabrication cost \$337,000,000; reactor development, \$276,000,000; research in chemistry, metallurgy and physics, \$59,000,000; research in cancer, medicine and biology, \$33,000,000; and all other categories, \$73,000,000.

The cost of uranium concentrates from domestic sources decreased, but the cost of the material from abroad increased. On the whole, however, it cost less this fiscal year to obtain source materials than it did last.

Weapons design, development and fabrication expenditures increased 20%; reactor research and development, 62%; research in chemistry, metallurgy and physics, 16%; and research in cancer, medicine and biology, 10%.

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PSYCHOLOGY

The Last Word May Not Be the Most Effective

► THE LAST WORD is not always the best word in the battle for men's minds in salesmanship or propaganda.

There are certain circumstances under which the side of an issue presented first is likely to have a disproportionate influence on opinion. This is revealed in a series of studies conducted by a group of Yale psychologists headed by Dr. Carl I. Hovland.

One technique is especially effective in

making the first say most effective. This is one commonly used in totalitarian countries.

It is getting members of the audience to get up and "express" their opinion after being exposed to a propaganda message.

When a listener has committed himself publicly or has been persuaded to sign a written statement after hearing only one side of the argument, he is reluctant to change his views after hearing the other side. In fact, he may stop attending to other points of view after he has accepted the first.

Report of the studies is published in a book, "The Order of Presentation in Persuasion" (Yale University Press). Other members of the research team in addition to Dr. Hovland include Irving L. Janis, Arthur R. Cohen, Norman H. Anderson, all of the Yale department of psychology.

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PUBLIC HEALTH

MD Gives Simple Diet For Fast Weight Loss

► IF FAST weight loss is desired without hunger or weakness, a diet of meat, fat and water will help. The diet should only be followed under a doctor's supervision, however.

This is the advice of Dr. George L. Thorpe, Wichita, Kan., who states that the total amount eaten is not important but the ratio of three parts of lean to one part fat must be kept up. Black coffee, clear tea or water can be used as desired.

Reporting in the *Journal of the American Medical Association* (Nov. 16), Dr. Thorpe says his diet is the simplest to prepare and does its work without the starvation caused by low-calorie diets.

Starvation results in nothing but failure because the whole body wastes away, not just the fatty areas, and this causes loss of energy plus other unpleasant side reactions. It also does nothing to correct the original cause of overweight.

Patients on Dr. Thorpe's diet have all they want to eat. Salt reduction is not required, although it does increase the speed of weight loss.

"I have yet to find a patient on this diet who complained of not having enough to eat, of tiredness, weakness, or constipation. The type of meat and method of cooking are immaterial, although cured or so-called luncheon meats are less effective," he reports.

Since few meats have enough fat for the diet, fried suet is used to maintain the ratio.

The average patient will only take the diet from two to four weeks, so, at the first complaint, Dr. Thorpe allows the addition of a few fruits and vegetables. This keeps the patient cooperative for a long time, he has found.

He purposely does not discuss how fast weight will be lost on his diet. On any diet, there may be several days of weight gain before the diet's effect is seen. The pounds disappear in bursts and the loss should average six to eight pounds per month.

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ANTHROPOLOGY

Pigweed Seeds Dated Oldest U. S. Food Grain

► PIGWEED or amaranth seeds may be the oldest known wild grain used for food in North America.

George A. Agogino, who first discovered the 100 tiny pigweed or amaranth seeds on an ancient Indian campsite some 75 miles west of Albuquerque, N. Mex., in 1953, announced that a radiocarbon dating report received from the University of Michigan establishes the age of the seeds at 6,800 years.

Although the dating report specified a possible error of 400 years in either direction, the pigweed seeds are at least 2,400 years older than samples of corn found on 4,000-year-old sites.

Grinding stones found near the pigweed seeds makes Mr. Agogino, an anthropology instructor at Syracuse University, "almost certain" the early Plains Indians of the San Jose Valley used the seeds for food.

The seeds are the size and color of coarse ground pepper grains. The charcoal crust that had formed around them was used for radiocarbon dating.

This same charcoal coating, probably acquired in a fireplace, gave the pigweed seeds protection against decomposition over the centuries. Added protection was given them by a foot-thick layer of hard-packed sand on the site near the community of Grants, about half way between Albuquerque and the Arizona border.

"This dating of the seeds is particularly significant because it fixes the first exact dates for the withdrawal of the ice sheets from North America and the beginning of an arid climate in the Southwest," Mr. Agogino said.

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PHYSIOLOGY

Test Antarctic Men For Stress Effects

► AN INTERNATIONAL team of scientists has left Berkeley, Calif., for Antarctica to study the physiological effects of stress on the human body.

The scientists will make detailed physiological studies of a party of Britishers who are to be led by Sir Edmund Hillary on the first attempted land crossing of the Antarctic continent. They will also study American personnel, who have wintered over, to learn the effects of long exposure to the cold environment.

The expedition, financed by the Office of Naval Research, includes Dr. Nello Pace, Lt. Comdr. Jack W. Millar, MC USN, and William E. Siri, all of the University of California, and Dr. L. G. C. Pugh and Maj. James Adam, Great Britain, and Dr. Gerhard J. Hildebrand, West Germany.

The international team will make detailed physiological observations of subjects in Antarctica, and will send samples of body fluids back to Berkeley for analysis in the Environmental Research Laboratory.

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