

CHEMISTRY

Ocean Waters May Yield Vital Metals

► THE OCEANS of the world may some day provide the major supply of the currently strategic metals, niobium and vanadium, just as they now provide the bulk of magnesium.

Scientists at Plymouth, England, have found appreciable quantities of both metals in the flesh and blood of ascidians, a family of sea animals represented by the familiar skate.

Evidence indicates niobium, at least, is absorbed in some way by the animals from sea water, Drs. D. B. Carlisle and L. G. Hummerstone, Marine Biological Association Laboratory, Plymouth, report in *Nature* (April 5).

Niobium, sometimes called columbium, and vanadium recently have achieved importance in hardening high-quality steel and in making aircraft steels corrosion resistant and more useful at very high temperatures.

Without predicting the possibility of large-scale extraction from sea water, the scientists reported that samples taken from Plymouth Sound and from a point about 25 miles from Plymouth contained appreciable and varying amounts of the metals.

In an earlier report to *Nature* (March 29), Dr. Carlisle suggested vanadium known to exist in petroleum deposits came from the same salt-water animals that, upon decay, may have formed the petroleum.

Science News Letter, April 19, 1958

PSYCHOLOGY

Continuous Mothering Found Unnecessary

► "CONTINUOUS mothering" is not essential for a child to develop a healthy relationship with his parents.

This is the conclusion of Dr. Albert I. Rabin, head of Michigan State University's psychological clinic, who reports some young parents may have an "exaggerated fear" of being separated from their child for even short periods of time.

The psychologist explains that "a child can grow up to have a healthy attitude toward his parents even though not continuously with them."

"In fact," says Dr. Rabin, "some children may do better if reared apart from their parents. In this way whatever resentment which might develop is drained off toward the nurses and teachers instead of the parents."

Dr. Rabin bases his findings on a year of research he conducted in the Kibbutzim, or collective settlements, in Israel.

The Kibbutzim are voluntary groups in which the parents must work for the community during the day. Young people are eligible to become full-fledged members of the community at 19 years of age.

In the settlements the children eat, sleep and grow up in the community's nurseries and schools. The only contact with their parents is usually two or three hours in

evening but at that time the parents can give undivided attention to their children.

Dr. Rabin's studies indicate that, despite limited contact with their parents, the Kibbutz children in general developed a positive attitude toward their parents. In some instances the attitude was found to be even more positive than in many ordinary families.

One possible explanation, according to Dr. Rabin, may be that in ordinary families the children may resent the demands, rules and discipline as laid down by the parents. In the Kibbutz it is the nurses and teachers, not the parents, who make the demands.

The Kibbutz children also showed a highly developed knack of teamwork and few neuroses.

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MEDICINE

"Salt Free" Foods May Contain Harmful Sodium

► "SALT FREE" foods still can be dangerous to heart patients on sodium-restricted diets.

The warning is contained in three new booklets intended for adult heart patients placed on a sodium-restricted diet by their physicians. The booklets are being made available to doctors by the American Heart Association or can be picked up at a local heart association on a doctor's prescription. They are designed to help the patient follow a strict, moderate or mild sodium restriction prescribed by a physician.

Read the fine print on the labels of food, the Association says, pointing out:

"Food identified on the label as being salt free may still contain some other sodium compound used as a preservative or as an aid to processing."

The booklets explain that sodium is not salt, but salt, known chemically as sodium chloride, is nearly half sodium.

In addition to salt, sodium compounds are often added to foods in processing or for preservation in the form of baking powder and baking soda, brine, di-sodium phosphate, monosodium glutamate, sodium alginate, sodium benzoate, sodium sulfite, sodium hydroxide and sodium propionate.

Some medicines also contain sodium, the booklets caution, and heart patients on sodium-restricted diets should check with their doctors before using any unprescribed medicine, "even a headache or cough remedy or a laxative."

The booklets also provide food lists that enable the patient to vary his meals as he becomes familiar with his basic diet plan.

Sodium is essential to life and everyone requires a certain daily amount. Normal persons have a built-in mechanism for getting rid of excess amounts of sodium. In some forms of cardiovascular disease where the body retains water, however, the extra sodium not only stays in the body but holds the water there too. To prevent this accumulation of sodium and water, sodium in the diet is kept down to approximately what the body actually needs. (See p. 247.)

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IN SCIENCE

PHYSICS

Devise Simple Method For Measuring Fallout

► A SIMPLE METHOD for continually measuring radioactive fallout from nuclear tests, devised by a Czechoslovakian scientist, has been reported.

The method is based on the relation between the charge on a conductor and the rate this charge is lost in ionized air, a relation first set down by C. A. Coulomb in 1795. The simple measuring device, based on this relation, was developed by Dr. F. Behounek, Faculty of the Technical and Nuclear Physics, Charles University, Prague.

It consists of a piece of isolated aluminum wire screwed on the charging contact of a pocket electrometer. To measure the currents found in the vicinity of radioactive materials, the electrometer is supported by a very light wire frame in the form of two parallel "X's" connected by a cross wire.

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PALEONTOLOGY

Bird Fossil Bones Bring Pliocene Into Focus

► THE PLIOCENE period of history—1,000,000 to 3,000,000 years ago—is being brought into sharper focus by the study of fossil bird bones from San Diego County, California.

This is the conviction of Dr. Loye Holmes Miller, professor emeritus of biology at the University of California at Los Angeles, who has studied the San Diego fossil birds for the past 15 years.

"We have considerable information on the Pleistocene period, running back to 1,000,000 years ago, and we know quite a bit about the Miocene period, 3,000,000 to 5,000,000 years ago," he points out. "But the 'in-between' period—the Pliocene—has been somewhat less well known."

"Now, like the emerging lines of a photographic plate, we are beginning to learn what the picture was during the Pliocene."

In *Contributions in Science*, published by the Los Angeles County Museum, Drs. Miller and Robert I. Bowman discuss 73 Pliocene fossil bird specimens. Dr. Bowman, who took his Ph.D. degree at the University of California, Berkeley, is now at San Francisco State College.

The bones were found in rock formations east and north of the center of San Diego where highways have been cut through.

They include species resembling many modern marine birds: loons, grebes, shearwaters, boobies, cormorants, murrelets and auklets. Previously, an early relative of the barn owl was described from the same deposit.

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CE FIELDS

NATURAL RESOURCES

Expanding Population Needs More Wood

➤ HALF AS MUCH wood as we have today may be the plight of Americans living 40 years from now.

There is just so much land, 489,000,000 acres of it, on which Americans grow the wood needed for homes, industry, packaging and synthetics. With the U. S. population due to increase some 100,000,000 persons by the year 2000, we will have to double our timber production.

"If Americans are to have the timber they need in the years ahead we must begin to put our forest house in better order," Richard E. McArdle, chief of the Forest Service, warns.

"The potential of the land is adequate," he points out in a book entitled *Timber Resources for America's Future*.

The 700-page book, representing the most complete appraisal ever made of the nation's timber situation and probable timber demands for the future, contains facts and figures that point to ways we can increase our timber supplies.

The best possibilities are:

1. Plant billions of trees each year instead of millions. Some 52,000,000 acres are unemployed today where they could be producing timber. Additional millions of acres are producing below capacity.

2. Step up control of fire, insects and disease. One-fourth of the net growth in timber is destroyed each year by these agents. This is more than is cut for all timber products.

3. Use more dead and cull trees and more of the timber cut now that is being left in the woods and mills. Billions of board feet of timber are wasted. Intensified research could find uses for this wood.

4. Keep recently cut lands highly productive.

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PSYCHIATRY

Mental Hospital Has Plan For "Working Patients"

➤ A METHOD whereby recovered patients live-in at the mental hospital yet hold down daily jobs outside may help both patient and hospital.

The advantages of this scheme are many, Drs. Frederick B. Charatan, Herman C. B. Denber and John H. Travis of Manhattan State Hospital, New York, and Columbia University's College of Physicians and Surgeons, point out.

Patients can be observed while actually in the work situation. They also have a large audience—nurses, physicians and other patients—interested in their success. The change from the shelter of the hospital to

the stress of normal life is also made less abrupt, helping to forestall relapse.

Nurses are able to give more time to remaining patients and, the researchers believe, the time spent by the patients in the hospital is reduced in the long run.

Since August, 1957, the researchers report in the *American Journal of Psychiatry* (April), ten selected female patients from Manhattan State Hospital have been encouraged to work in the city while continuing to reside at the hospital. Three of the patients, among whom were schizophrenics, psychopaths and alcoholics, have left the hospital and are still at work. Two continue to live-in while going to work daily, two have lost their jobs, two have relapsed and one is still seeking work.

The researchers plan to start a "sheltered workshop" at the hospital where patients may be trained in good work habits against the time of their eventual discharge.

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GEOPHYSICS

Need Do-It-Yourself Moon Tracking Stations

➤ A CHAIN of small, do-it-yourself satellite tracking stations scattered across the United States is needed to photograph and record data on present and future satellites.

This is the belief of William Culver, a 30-year-old graduate student in physics at the University of California at Los Angeles, who has shown how it can be done.

Using a second-hand 35mm. camera, Mr. Culver made his photographic mark in the early days of sputnik I when he took some of the most accurate photographic sightings in the country, according to Dr. Fred Whipple, director of the Smithsonian Astrophysical Observatory.

"The powerful cameras of the observatories are excellent, but they are too far apart to catch everything," Mr. Culver said.

"Small scattered stations might well catch the final plunge of a satellite or rocket into the atmosphere which would probably be missed by a distant observatory.

"It is somewhat like air defense—we have radar nets but we still need men and women to scan the sky."

A basic station can be set up for less than \$300 with some ingenuity and judicious second-hand buying, Mr. Culver said, and points to his own backyard station.

His home-made camera consists of a plain wooden box surmounted by a war surplus aerial reconnaissance lens (\$40), a plate holder in back (\$25), a cardboard viewer attached with Scotch tape in front, and a three-quarter-inch pipe on either side of the box. The pipes screw into a gimbal (\$10), a contrivance that allows the camera to swing in any direction. The whole invention is attached to two stout posts behind his home.

The major expenses are a second-hand shortwave receiver (\$70) to pick up the continuous time signals from the National Bureau of Standards time station and a tape recorder (about \$150), which can record the exact time that the satellite's picture is taken.

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MANPOWER

Suggests Baseball Farm System for Engineers

➤ A BASEBALL farm system for young engineers has been recommended.

If engineering companies used baseball's farm system, they would go a long way in solving some of their manpower problems, Prof. John H. Flynn, assistant professor and director of student personnel services at Boston University's College of Industrial Technology, declared.

"Adoption of the present major league baseball farm system, whereby major companies would farm out young, promising engineering personnel to subcontracting smaller companies for general seasoning, has distinct possibilities.

"Such a system would permit a step-by-step advancement in scientific maturity, as well as provide continuous information on an individual's research and laboratory capabilities," he said.

The manpower expert suggested American industry needs to stress better methods of recruiting new scientists, as well as stemming the high turnover once it has employed them.

"The answer to our lack of trained scientific minds is not really how to push more young men through college, but rather how to properly pull results from the many talents we already have available to our national economy," Prof. Flynn said.

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ICHTHYOLOGY

Sunburned Salmon Helped by Vitamin

➤ A SUNBURNED salmon, skin peeling and discolored, with "blisters" and lesions on its back, can be helped. A daily diet that includes niacin can put the sick salmon back on the road to recovery within two months.

Successful hatchery operation is extremely important for the continuation of the Columbia River salmon fishery and other fisheries, including trout. However, sunburn has been plaguing the fish biologists for a long time, accounting for a high death rate among young salmon.

Experiments conducted by the Fish and Wildlife Service's nutrition laboratory at Cook, Wash., indicate that diets deficient in niacin are correlated with sunburn in salmon. Scientists found fish fed a niacin-deficient diet for 30 days developed bad sunburns. Fish already sunburned which were fed a diet that included niacin for 60 days recovered almost completely, although they were kept under the same light conditions.

In the wild, fish are protected from sunburn by stream cover, deep pools and a niacin-rich diet.

Recognition of the cause of sunburning in fish will have "far-reaching benefits" in hatcheries throughout the country, as well as in the salmon restoration program, the Fish and Wildlife Service said.

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