

## OCEANOGRAPHY

**Hydrolants Now Crackle From Radio Stations**

► EVER HEAR of a hydrolant? Neither had Uncle Sam's sailors, but hydrolants are now crackling from radio stations along the East coast to warn of hazards at sea. The U. S. Navy's Hydrographic Office has coined the term from the phrase "hydrographic messages of the Atlantic."

These Morse code messages warn of sunken wrecks, drifting mines, exploded depth charges, changes in position of lights or buoys, and other data that help protect our men from danger. This service is not a new one but has just been improved.

Each major broadcast will now carry the prefix, "Hydrolant Number." The hydrolants are numbered serially so that shipmasters can tell whether they have recorded all the important warnings. "Hydrolants Unnumbered" are not put in the series because of their local interest.

*Science News Letter, August 7, 1943*

## PLANT PHYSIOLOGY

**Vitamin B Found to Be Present in the Soil**

► RIBOFLAVIN (vitamin B<sub>2</sub>) is present in soils, tests conducted in the plant science laboratories of Syracuse University by Prof. C. C. Carpenter indicate; and further experiments apparently show that plants can absorb this vitamin through their roots.

Presence of riboflavin in soils was detected both by chemical analysis of soil extracts and by biological tests. In the latter, cultures of bacteria were fed on nutrient media containing the soil extracts; rates of bacterial growth furnished indices of the vitamin concentration.

Ability of higher plants to absorb riboflavin out of water solutions was next studied. Decapitated roots of tomato, tobacco, fuchsia and carrot were placed in the test solutions in the dark. This was done to minimize the plants' own manufacture of riboflavin. Similar roots were placed in distilled water only, as controls. Roots from the vitamin solutions were found to contain "several times the riboflavin found in the root sap where distilled water was used."

Riboflavin concentration in the soil was found to be greatest in soil types having a high organic content. Whether

the vitamin comes from the breakdown of plant tissues or whether it is synthesized by fungi, or both, Prof. Carpenter does not as yet undertake to say. Neither does he hold that it is necessary for the normal life of plants. However, in reporting his research (*Science*, July 30) he does add:

"If any of our crop plants supplement their synthesized vitamins with vitamins from the soil at different growth stages the presence or absence of vitamins in the soil immediately becomes a vital factor in crop production and soils management."

*Science News Letter, August 7, 1943*

## MEDICINE

**Saving Red Blood Cells Makes Banks Doubly Useful**

► DURING the present conflict, when so much blood is being donated for the preparation of plasma, greater use should be made of the red cells that are now discarded, Dr. Howard L. Alt of the Northwestern University Medical School explained in Science Service's Adventures in Science program over the Columbia Broadcasting System.

"The patient with anemia really only needs the red cells, while the patient with shock needs plasma," Dr. Alt pointed out.

Whole blood consists of a straw-colored portion, the plasma, and blood cells. Red blood cells, Dr. Alt said, make up slightly less than half of the volume of the whole blood. In the preparation of plasma, which has proven so successful in the treatment of shock both on the battlefield and at home, red cells have been separated in a centrifuge and thrown away. Plasma can be kept for long periods, whereas the remaining cells, suspended in a small amount of residual plasma, must be used within three to five days after being drawn from the donor.

In the case of anemia, whole blood transfusions are usually given, but it is the red blood cells that are really needed, as the patient does not have enough of his own. In the past two years in England, and more recently in our own country, transfusion of concentrated red cell suspensions has been found as effective as whole blood in raising the red-cell level in patients with anemia. Reactions to the transfusions, such as fever and chills, are less common, Dr. Alt has found, than when the whole blood is used.

*Science News Letter, August 7, 1943*

**IN SCIENCE**

## CHEMISTRY

**Waterproof Coat Invented For Crystals Used in Radio**

► QUARTZ CRYSTALS, among the bones of contention in the recent dispute between Henry Wallace and Jess Jones, may be at least partly replaced in their war-essential radio control job by crystals of other materials, hitherto considered unsuitable because of their solubility in water. This is made possible through a system of waterproof coatings for piezo-electric crystals, the invention of John H. Ream, of Cleveland, covered by U. S. patent 2,324,024.

Piezo-electric crystals are slabs of certain crystalline materials that vibrate at remarkably constant rates under the impulse of high-frequency electric currents. They are used to keep radio apparatus of many kinds accurately tuned. Quartz has been the preferred material because other available substances, notably Rochelle salts, are water-soluble.

Mr. Ream's invention consists in coating the crystals with alternating layers of metal foil and moisture-proof plastic adhesive, with the necessary electrical leads securely sealed in. These waterproof capsules are good even for quartz crystals, he claims, because they prevent the precipitation of moisture that sometimes impairs their efficiency in present setups.

Rights in the patent are assigned to the Brush Development Company.

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## METALLURGY

**Hard Beryllium Face Put On Soft Copper Plates**

► A NEW WAY to put a hard beryllium face on soft copper plates is covered by patent 2,325,041, assigned to Cooper-Wilford-Beryllium, Ltd., of Philadelphia, by its inventor, Hugh S. Cooper of Forest Hills, N. Y.

A very hard copper-beryllium alloy is reduced to a fine powder, which is spread on the face of the soft copper plate and the whole then subjected to heating at high temperature. Ordinarily, this would result in the oxidation of the beryllium and the defeat of the process; but in Mr. Cooper's method the heating is done in an atmosphere of hydrogen or other non-oxidizing gas.

*Science News Letter, August 7, 1943*

# CE FIELDS

## METALLURGY

### Iron Salvaged from Slag As It Runs from Furnace

► SALVAGING IRON that is mixed in blast furnace slag in present-day production practice, and thereby lost, is the aim of a new device on which U. S. patent 2,324,938 has just been granted to Harry J. Love of Washington, D. C. In effect, the method is literally to shake the iron out of the slag.

As slag pours from the blast furnace, it normally carries with it a certain percentage of iron. The iron particles are heavier than the molten artificial lava, but due to its viscosity remain suspended in it. As the slag hardens they are imprisoned beyond any hope of practicable recovery.

Instead of draining off the slag through the conventional simple trough or runner now in use, Mr. Love uses a runner with a larger number of depressions or pockets in its floor, shaped more or less like cup-cake tins. The runner is built in linked sections, with mechanisms to give them a lively shaking as the slag runs through. This encourages the iron to settle out. Further encouragement is provided by another mechanism, which swings the whole runner sharply to and fro in a cradle movement, thereby bringing centrifugal force into play.

After the slag has been run off and the iron in the cups has solidified, the whole thing is turned upside down, and the miniature iron pigs drop out.

*Science News Letter, August 7, 1943*

## ENGINEERING

### Coal Dust Controlled By Chemical Wetting Agents

► WETTING coal dust with chemicals to prevent explosions is more effective than the older methods of water sprinkling or the use of rock dust, Rodney

Honaker, Safety Director of the Guyan Eagle Coal Company, Amherstdale, W. Va., reported to the American Mining Congress. Although Mr. Honaker did not specify the wetting agents, some of those in use are compounds of sulphonated alcohol or by-products of organic manufacture which can be obtained cheaply from the large chemical companies.

Coal dust is thickest where cutting, drilling, blasting and loading of the coal is done. The removal of the dust at this point is beneficial to the health of the miner and reduces the chance of explosion to a minimum. The Bureau of Mines recommends that less than 20 million particles per cubic foot of air be maintained. This concentration will not explode and will not cause any harmful effects on breathing.

Spraying of the wetting agent should be done during the operation, before loading and during loading of the coal. The wetting agent's usefulness is in its ability to cause a clumping together of the particles of coal dust, by wetting them and trapping them in solution where they drop to the floor before they have a chance to disperse in the air.

Comparative tests have shown that these wetting agents have reduced the dust count by more than 60%.

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## ENGINEERING

### Light in Future May Cost Tenth of What It Does

► ELECTRIC LIGHT costing only a tenth of what it does today and used lavishly in our homes is foreseen as a practical possibility for 30 years hence by Ward Harrison of the General Electric Company, in a report to the Illuminating Engineering Society. (July)

Our lighting of tomorrow may be as different from present day lighting as Edison's first incandescent lamp differs from present lamps. A 100-watt lamp of today gives us five times the light of a lamp of the same wattage in 1913 and at one-half the cost of the current.

The best artificial light source of today, the fluorescent lamp, is less than one-quarter efficient. Improvement in its efficiency will mean more and better light. Maintenance of candlepower and eliminating the starters now used on fluorescent lamps are only two of the refinements which the future may bring.

Greatest advantage of the fluorescent lamp, according to Mr. Harrison, is its superior quality of high-level local lighting, but future lighting promises to be many times brighter. Conquering glare and heat, still largely untouched by illuminating engineers, will be another step forward.

Since light is expected to be cheaper, future building designs will include light as part of the whole construction plan.

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## GENERAL SCIENCE

### Thousands of Scientific Books Sent to Prisoners

► THOUSANDS of scientific books are being sent to prisoners of war at their own request by the War Prisoners' Aid of the Young Men's Christian Association.

A total of 3,179 volumes were mailed during the five months from last December to May, officials report, and expansion of the service is foreseen since shipping space is now provided more regularly.

Each book is sent free of charge through the "Men of Science-Prisoners of War" Service, as the YMCA has termed it, to fill the needs of the individual. Due to the great number of prisoners desiring serious literature and the growing shortage of books in Europe, requests are continually received from the international YMCA organization in Geneva, Switzerland, and from the British Red Cross.

Shipments have run the gamut of sciences from astronomy to zoology, plus the classics, philosophical and legal tomes, and the other humanities as well. Agriculture topped the list with 422 requests; the social sciences were a close runner up with a total of 413.

Language problems of men interned in a nation of foreign tongue may be reflected in the 385 volumes on languages mailed during the months just reported. Medicine and biology were also high on the list with 372 requests.

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## BOTANY-PUBLIC HEALTH

### Stop Weeds After Harvest Or Hay Fever Will Follow

► KEEP DOWN the weeds in your Victory Garden after you have harvested your main crop of vegetables, warns Oren C. Durham, chief botanist of the Abbott Laboratories at North Chicago, Ill. Ragweeds and other bearers of sneeze-provoking pollens thrive on gardens in a state of late-summer neglect.

The Victory Garden movement, Mr. Durham has found, resulted in the breaking of a really considerable acreage of vacant land this year, and it is in such newly disturbed soil that weeds take readiest hold. While the Victory Garden acreage is not great as compared with the total in ragweed, it puts numerous new pollen sources within city limits.

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