NUCLEAR PHYSICS

## AEC Working on Tritium, Possible H-bomb Material

➤ NEW evidence that Los Alamos Scientific Laboratory, the Atomic Energy Commission atomic bomb installation in New Mexico, is working on tritium, possible fundamental material of the hydrogen bomb, is contained in a scientific publication just issued in New York.

"Some Calculated Properties of Tritium" is the title of a communication from E. F. Hammel which appears in the JOURNAL OF CHEMICAL PHYSICS (Feb.). This technical report compares the constants, including vapor pressure, of the three isotopes of hydrogen: ordinary hydrogen, heavy hydrogen called deuterium which is twice as heavy, and the triple weight variety which is tritium.

That tritium can be obtained as a solid at very low temperatures is made clear in the article.

Tritium is rumored to be the form of hydrogen used in the H-bomb and it is manufactured in the uranium reactor by bombarding the metal lithium. Very small quantities are understood to be available even for research.

Science News Letter, March 4, 1950

MEDICINE

## Typhus and Flu Epidemic in Japan

➤ TYPHUS fever and influenza are both epidemic in Japan, according to telegraphic reports received at the World Health Organization's regional office in Washington, D. C.

Although WHO states there is no cause for alarm, 150 confirmed or suspected cases of typhus have been reported in Tokyo during the period Jan. 15 to Feb. 15, and the number is growing weekly. Yokohama reported 26 cases during a recent week. All passengers disembarking at that port were required to present vaccination certificates.

The influenza epidemic, starting on Shikoku island last December, has now spread throughout the country. For the week ending Feb. 4, latest on which reports have been received, there were 2,125 cases. Only Kyushu in the south and the northern part of Honshu were free of the disease. The disease is mild and is due to Type B virus.

Science News Letter, March 4, 1950

CHEMISTRY

## New Process Removes Phosphorus from Sewage

➤ THE removal of phosphorus from sewage discharge to prevent contamination of lakes and streams, and to recover the valuable fertilizer material, is promised by scientists at the University of Wisconsin, Madison, Wis.

"We have developed a pilot plant which looks like it can take the phosphorus out of sewage effluent," Prof. William L. Lea and Prof. Gerard A. Rohlich, declared. The method has not yet been tried on a large scale, but it appears to be both effective and cheap. It is offered as the answer to a problem for which a solution has been sought for years.

The method is a "flocculation process" which involves the addition of about 200 parts-per-million of alum to a batch of sewage effluent. This mixing brings about the formation of a sludge which sinks to the bottom of the tank, carrying the phosphorus and alum with it.

This alum-phosphorus sludge is removed and treated with sodium hydroxide which brings the alum and the phosphorus into solution. The solution is removed and treated with another cheap chemical, calcium chloride. The phosphorus is drawn off as calcium phosphate, which is ideal for fertilizer. The alum is recovered in a form which permits re-use.

Surplus phosphorus in lakes and streams is one of the elements held responsible for nuisance growths of algae, these scientists state. Atomic-research men would no longer have to worry about danger from radioactive phosphorus in wastes where the process is used, they say. The new method is the result of experimental work carried on by them under the sponsorship, in part, of the National Institute of Health.

Science News Letter, March 4, 1950

NUTRITION

## Vitamin A in Biblical Diet of Locusts and Honey

➤ THE Biblical feast of locusts and wild honey owed some of its nourishing value to a vitamin in the locusts, it appears from research on the biochemistry of these insects.

"A handful of locusts would go far toward providing the daily requirement of vitamin A," the editor of NUTRITION REVIEWS (March), scientific journal published in New York, estimates.

His estimate is based on the amount of vitamin A's parent chemical, beta-carotene, found in a single adult African migratory locust. Carrots and other yellow vegetables are a more familiar food source of this pre-vitamin chemical. But, he points out,

"Properly prepared locusts are considered a delicacy in parts of Africa and elsewhere."

The amount of beta-carotene in locusts was reported by Drs. T. W. Goodwin and S. Srisukh in the British scientific publication, BIOCHEMICAL JOURNAL.

Finding vulnerable points in the insect's chemical processes in the hope of getting better methods of stopping the pests is the main object of such biochemical research. Discovery of their nutritional value is a side result.

Science News Letter, March 4, 1950

# IN SCIEN

ENGINEERING

## Tank Settlings Yield Valuable Oil and Wax

➤ THE settlings or waste materials in the bottom of petroleum storage tanks and in earthen pits yield valuable oil and wax in a process developed by the U. S. Bureau of Mines.

In a pilot plant at El Dorado, Kans., where the process is under test, 600 barrels of clean oil have been salvaged from 2,000 barrels of pit waste emulsion containing water and dirt among other things.

The recovered oil contained 15% to 18% of microcrystalline wax, a type of wax that will stand more heat without melting than regular paraffin wax. It is used in coating food containers, and is particularly valuable in packaging products sent to the tropics.

The method worked out at the pilot plant should be applicable in general principles to virtually all oil-field emulsion, Bureau officials state. Applications of the process may enable the petroleum industry to recover thousands of barrels of useful products, and also help solve the problem of the disposal of waste materials.

A description of the process in detail is given in a Bureau bulletin that may be obtained from the Superintendent of Public Documents, U. S. Government Printing Office, Washington, D. C., for 25 cents. Its title is "A Method of Resolving Oil-Field-Waste Emulsions."

Science News Letter, March 4, 1950

MINING

## Large Deposits of Coking Coal Found in Maryland

➤ NEW discoveries of large deposits of semi-smokeless coal in Western Maryland have been revealed by the U. S. Department of the Interior. The estimated reserve is more than 600,000,000 tons.

The new deposits are found in 10 beds buried below the two that have provided in the past most of the coal of the Georges Creek field in Allegany and Garrett counties. Those two have been worked for many years and are facing depletion.

The department's Bureau of Mines and the Geological Survey, with Maryland agencies cooperating, are responsible for the new discoveries. The coals found rank as low-volatile bituminous, and carbonization tests showed that they yielded strong coke. Some of the coal found is in beds too thin for economical mining, but two-thirds of it is in beds from two to over three feet thick.

Science News Letter, March 4, 1950

# CE FIELDS

ASTRONOMY

## Experts Disagree on What Makes Stars Twinkle

➤ BRITISH scientists are engaging in a controversy over what makes a star appear to twinkle. Three letters in the British scientific journal, NATURE (Jan. 28), take issue with a theory expressed recently that the twinkle of a star is really a twinkle in your eye.

These letters say that variations in the brightness of stars are caused by hot and cold air currents in our atmosphere.

British ophthalmologists H. Hartridge and R. Weale started the controversy by reporting that their experiments showed minute movements in the eye gave rise to the twinkling effect. Neither bright nor very dim lights seem to twinkle, they said, but lights of in-between strength would hit a few of the little rods and cones which receive light impressions in the eye. As the eye moves ever so slightly, the light hits first one cone and then the other, thus making it appear to twinkle.

In the NATURE article, three astronomers take issue with the two eye men. One of them, C. C. L. Gregory of the University of London Observatory, points out that star twinkling diminishes when the atmosphere is calm and gets worse when hot and cold air currents are acting up.

An American ophthalmologist, who refused to allow his name to be used, said that both sides in the British star-twinkle controversy were probably right. "Either the optical effects of the air currents or what happens to a light image inside the eye, or both of them together, might cause a star to appear to twinkle," he said. "And I'm rather sure that neither side will ever prove its case."

Science News Letter, March 4, 1950

PHYSICS

## New Color Filter Uses Three Films of Fluoride

➤ A NEW color filter, said to be the simplest means yet devised for producing color of a high degree of purity, has been revealed by Bausch and Lomb Optical Company. Possible applications will include color photography and color television.

When ordinary white light passes through the filter, one of its component pure colors emerges. These colors are red, blue, green and yellow. This new filter has three thin films of silver and magnesium fluoride applied to one side of the glass by a high-vacuum process.

As described by Dr. Arthur F. Turner, of the company, silver is introduced into an evaporator on a heated metal strip. Under vacuum, the silver particles fly off and bombard the glass. A coating of magnesium fluoride is applied in the same manner, then another film of silver. A cover glass is cemented on to protect the films.

"The thickness of the magnesium fluoride film determines which color will pass through the filter," Dr. Turner stated. "If a uniform coating is applied, a uniform color will appear over the entire surface of the filter. If the fluoride coating is applied thinner at the center and thicker toward the edges, different colors will appear as concentric rings."

Science News Letter, March 4, 1950

AGRICULTURE

## Weed-Killer Speeds Fruit, May Give Peaches in April

➤ A WEED-KILLING chemical that also has the ability to hasten fruit to maturity may pave the way for peaches in April and apples in August.

Although all talk of using the chemical, the synthetic plant hormone 2,4,5-T, in commercial orchards is still highly speculative at this time, recent experiments have given promising results.

When 2,4,5-T, chemically 2,4,5-trichlorophenoxyacetic acid, is applied to apple trees, the fruit matures sometimes as much as 30 days earlier than usual. This 30-day extreme was achieved with Rome Beauty apples, but since this is a fall variety, it is not as significant as less spectacular results with summer apples.

In experiments conducted at the Department of Agriculture's experiment station at Beltsville, Md., treatment with 2,4,5-T caused the summer types to mature from 5 to 13 days early. Any fruit grower who could get his apples to market that much sooner would have a competitive edge over growers whose apples matured naturally.

Experiments with peaches have shown similar hastening of the fruit, but the eating quality of the peaches is not all it could be.

Although the Department has been experimenting with plant hormones for 20 years, the present work is only two years old, and there are still many unknowns. The three scientists on the project, Dr. Paul C. Marth (hormones), Dr. C. P. Harley (apples), and Dr. A. Leon Havis (peaches), can not explain just why the hormones have this quick maturing effect.

One effect 2,4,5-T has when sprayed on fruit trees, aside from speeding up maturation, is to kill some of the leaves. The scientists are still not sure what effect this will have on further experiments or on possible commercial applications.

Science News Letter, March 4, 1950

INVENTION

## Burning Coal Underground Heats Water for Power

➤ A NEW wrinkle in burning coal underground in its natural layers, to obtain gases for combustion or for use in making liquid fuels, is added in a process for which a Swedish inventor received an American patent.

In his process he utilizes the underground fire to heat water to use for power or other purposes. A few extra holes are drilled down into the layer of coal to be burned and circulatory pipes are put in the holes through which water is forced.

The inventor is David Dalin of Sodertalje, Sweden. He was awarded patent 2,497,868.

His method of obtaining combustible gases from the underground coal is similar to processes already in experimental use in various parts of the world. The American experiment is at Gorgas, Ala., conducted as a joint project of the U. S. Bureau of Mines and the Alabama Power Company.

Holes are drilled from the surface down through a layer of coal. A fire from an ignition bomb is started at the bottom of one. Air under pressure is forced down the hole to assist the burning. The same air pressure forces the gases of combustion into the other holes, at the tops of which they are collected.

Science News Letter, March 4, 1950

ZOOLOGY

## Oregon Crab Walks 90 Miles

➤ AT least one Oregon crab would qualify for membership in any hiking club, having walked 90 miles. Tagged off the Alsea, this crab was captured off Cape Blanco—90 miles away—five months later. This and other examples of similar long "walks" by crabs have been discovered by aquatic biologists of the shellfish laboratory of the Oregon State Fish Commission.

This is the second year of a study to determine whether crabs along the Oregon coast are one population or a series of small populations. This research has now shifted to Newport where biologists are tagging 1,000 crabs. Already this season 1,600 crabs have been tagged in the Coos bay area and 1,000 in the Columbia river. The scientists also hope to find the degree of travel by crabs between bays and the ocean.

The crabs are marked with celluloid tags about the size of a dime, fixed to the right corner of the shell. The research men go out with commercial fishermen, buy crabs that they wish to mark which have been caught in the gear, and then release the shellfish to the ocean bottom.

Science News Letter, March 4, 1950