

HORTICULTURE

Flowers Bloom Year Round With Chemicals, Lighting

► FLOWERS BLOOM regardless of season—chrysanthemums in spring, Easter lilies at Christmas—in the experimental greenhouses of the U. S. Department of Agriculture at Beltsville, Md. It's done by a combination of soilless gardening and controlled lighting, in a technique developed by Dr. Neil W. Stuart, plant physiologist.

The plants grow in greenhouse benches that are really shallow concrete troughs filled with sterile gravel or other nutrientless substitute for soil. Necessary fertilizer salts are supplied in water solution. Juggling the ratios of the various chemical elements can speed up or slow down the plants' tendency to produce flowers.

Further control is obtained by artificially increasing or decreasing the length of time the plants receive light each day. Some plants will not form buds and flowers until the days are growing shorter, others bloom under the stimulus of an increasing length of day. Lengthening of the day need not be continuous, it has been found; a few minutes of artificial light at midnight may have as much blossoming-control effect as full illumination from sunset onward. In commercial greenhouses this is naturally a great money-saver.

Another money-saving discovery is the use of ground-up crude phosphate rock instead of gravel as the soilless-gardening "soil." The plants get as much phosphorus as they need, without the necessity of adding costly phosphates to the nutrient solution.

Science News Letter, November 30, 1946

CHEMISTRY

German Acetylene Uses Worth Millions to U. S.

► TOP ACHIEVEMENT of Hitler's chemists was producing hundreds of synthetics from acetylene gas. That is the opinion of Dr. Oliver J. Grummitt, assistant professor of chemistry at Western Reserve University, who recently returned from an inspection of German chemical plants.

The German processes for using acetylene will be worth millions of dollars to this country. The United States has produced synthetics for plastics, rubber and other organic chemical compounds from petroleum rather than coal, because

acetylene when compressed explodes.

German chemists, led by Dr. Walter Reppe, learned to prevent the explosion and were able to produce a great variety of valuable chemicals.

More raw materials for DDT and synthetic resins were predicted by the American chemist through use of German discoveries in the manufacture of phthalic anhydride for synthetic resins and chloral for DDT.

German chemists were described as now "marking time" until treaties settle the fate of Germany. They have only a limited knowledge of American chemical achievements during the war, Dr. Grummitt said.

Science News Letter, November 30, 1946

ENGINEERING

Water Added to Mixture To Get Water from Oil

► TO GET water out of crude oil, J. A. Guyer of Bartlesville, Okla., paradoxically adds water. He also adds methane or other gas, under pressure. Release of the pressure brings out the fine water droplets, as well as tiny salt crystals, that make trouble in refining. Rights in the patent, No. 2,410,970, are assigned to the Phillips Petroleum Company.

Science News Letter, November 30, 1946

ENTOMOLOGY

Geiger-Muller Counter Tracks Down Beetles

► THE GEIGER-MULLER counter, the radiation-detecting instrument that came to prominence in connection with the Bikini bomb tests, has been put to use in England in tracking down beetles whose larvae are the crop pests known as wireworms. The technique is described in *Nature* (Oct. 19) by G. A. R. Tomes of Twentieth Century Electronics and M. V. Brian of the Rothamsted Experimental Station.

The adult beetles seldom fly, but do migrate by walking on the ground or burrowing beneath it. To study the rate and distances of such migrations, tiny disks of radioactive material were glued beneath the wing-covers of captured specimens, which were then released. The Geiger-Muller counter, of a special type, was carried over the ground, its ticking indicating where the radioactively "tagged" beetles were. It could spot them even when they had burrowed as much as four inches deep.

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IN SCIENCE

CHEMISTRY

N-Propoxy Is 4,000 Times Sweeter than Sugar

► NEW SWEETNESS has come to a world troubled with a sugar shortage. It is a new compound 4,000 times as sweet as canesugar.

By far the sweetest substance known to man, the sugar substitute was developed in the Netherlands during the war, Prof. Pieter Eduard Verkade of Delft Technical University reported to the Chicago section of the American Chemical Society. The sweetening agent is now being manufactured in Europe, and an application for an American patent has been filed.

The new sweetening agent is derived from benzene and chemically is 1-n-propoxy-2-amino-4-nitrobenzene or n-propoxy for short. On your tongue, the tiniest pinch of the substance would still be tasted a half hour later.

Saccharin, the common sugar substitute derived from coal tar, is only 200 to 700 times as sweet as sugar, compared with the new compound's 4,000 times as sweet. Another substitute, dulcine, is 70 to 250 times as sweet. At your dinner table, the new benzene derivative could be diluted with lactose or milk sugar down to only 500 times the sweetness of cane sugar.

Easily obtained in the pure state, the new compound is in the form of orange crystals. The sweetener is only slightly soluble in water, but Prof. Verkade said its great sweetness made it satisfactory.

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INVENTION

Sealed Beam Spotlight Developed for Cars, Boats

► WITH A RAY four times more powerful than a sealed beam automobile headlamp, a new sealed beam spotlight for cars and boats has been demonstrated.

The light was developed from the landing lights of wartime aircraft and has a parasol-shaped filament shield to eliminate stray light and prevent a blinding glare. The lamp, built by Westinghouse engineers, has a half-mile range.

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E FIELDS

ENGINEERING

Aluminum Shortage Delays Housing Program

► ALUMINUM shortage is delaying the housing program. Houses made largely of this light metal were expected to help others of lumber and brick meet America's present needs. Now it looks as if aluminum-house production this winter will fall below expectations.

Aluminum production in the United States will approximate 800,000,000 pounds this year, government officials estimate. Additional aluminum will be obtained from other countries. But the needs are some 40% greater than the total probable supply.

Canada produces considerable aluminum. The present production, however, is being stockpiled for shipment to England in the spring. American producers are hoping that part of it can be obtained now for use in the United States by a three-way agreement of the countries. Under the plan America would ship early 1947 production to the United Kingdom in repayment.

Plants are operating now near full present capacity but will soon be prepared for greater output. A limited supply of commercial aluminum for some purposes is obtainable from scrapped airplanes by melting down the metal in furnaces at a temperature of about 1,350 degrees Fahrenheit. Recovery is about 80 percent.

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MEDICINE

Silicosis Is Not Threat To Workers' Health

► SILICOSIS, once great hazard to the health of industrial workers, is no longer a threat.

In one research project involving 28 plants, having operations using millions of tons of dangerous silica, only three plants were found to have silicosis hazards, and these hazards were readily overcome.

This triumph of scientific research to protect workers' health was announced by Dr. F. R. Holden, W. C. L. Hemeon and T. F. Hatch of the Industrial Hy-

giene Foundation at its meeting in Pittsburgh.

"The dangerous trades of our fathers have all but disappeared," they reported.

Potentially poisonous dusts, fumes and gases can and are being used every day in modern industry without danger.

"Dust control continues to occupy the major place in the entire array of industrial health problems with which we are concerned," the scientists stated. "It is necessary to distinguish between the silicosis dust problem in industry and the far more common nuisance dust problem. Not infrequently we find nuisance dust exposures to be more injurious to the mechanical equipment than to workmen. Good progress has been made in research directed toward more exact measurement and identification of different kinds of dust."

Science News Letter, November 30, 1946

PHOTOGRAPHY

Army Camera Photographs Ten Miles Above Surface

► THE FACE of the earth will hide few secrets from a new Army camera. It is the largest ever built for aerial photography, and will catch details even when airborne 10 miles above the surface.

The 575-pound instrument, with a 100-inch focal length, has unique features to reduce it in size to four feet in height and five in width. It has two mirrors in its optical system to bend the light after it enters the lens. The light enters the lens, is reflected from the first mirror to the second, then to the film, completing the 100-inch light path which forms a figure "4" in a comparatively small, compact area.

Heat control is another feature. It has an interior hot-air circulating system, thermostatically controlled, and a large electrically heated blanket covering its entire exterior. These protections are necessary because of the extreme cold in the very high altitudes at which the camera will be used.

The new camera, now completed and undergoing tests by the Army Air Forces' photographic laboratory, is larger in size and greater in focal length than even the Big Bertha used in the Bikini atomic bomb tests. It will provide 9x18-inch pictures with two and a half times more photographic detail from altitudes up to 10 miles than can be obtained with the best of the older standard cameras now in use.

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CHEMISTRY

Improved Cellulose Gum Is Produced for Many Uses

► IMPROVED water-soluble cellulose gum, with hundreds of manufacturing uses ranging from tooth paste and paints to chinaware and rubber, enters commercial production in a new plant of the Hercules Powder Company.

Cellulose gum is not a new product; it has been made in Europe for many years where it is known as sodium cellulose glycolate. Little, however, has been made in America until now, but it will become plentiful as a result of processes developed by Hercules.

The new Hercules cellulose gum will be known as CMC. It is the sodium salt of carboxymethyl-cellulose formed by the reaction of monochloroacetic acid with alkali cellulose. It is adhesive but not sticky. It is insoluble in organic solvents; it not only acts as an emulsifying agent in oil-in-water emulsions, but also protects the emulsion.

Science News Letter, November 30, 1946

CHEMISTRY

Plastic Coating Makes Fabrics Easy to Clean

► HOUSEWIVES will welcome new table covers that can be cleaned on the table with a damp cloth. Office girls will rejoice in a half-pound raincoat that can be tucked away in a corner of their handbag. Both, to be available soon, use a tough and flexible plastic, called vinyl butyral, made by the Monsanto Chemical Company.

The plastic is not a new material. For ten years it has served as an interlayer material for safety glass. Its application as a coating to textiles, however, is new. It affords water and stain resistance without impairing the fabric's original appearance, feel and utility to any measurable extent. It can be applied to most fabrics other than ordinary wearing apparel. The raincoat is made of combined nylon and the vinyl butyral.

The fabric coating applied is a super-thin layer of tightly adhering transparent plastic, doctored with sub-microscopic particles to scatter light rays. It will not chip or peel under normal usage, and is relatively unaffected by heat.

While the treated surface can be kept clean with a damp cloth, the fabric itself may need occasional laundering.

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