

PHYSICS

Pictures Grow on Film From Tiny Flecks of Silver

► PICTURES grow on photographic films like seeds in a garden throwing out roots. Light, striking the silver salt in the emulsion, causes the formation of "nuclei," which are submicroscopic bits of silver. During development, these stimulate some of the remaining silver to form long, rapidly growing filaments, Dr. T. H. James, of the Kodak Research Laboratories, reports (*Journal of Chemical Physics*, July).

The silver specks act as a catalyst to speed up the chemical process of developing the photos, the scientist believes. At the point of contact between the specks and the silver bromide which coats the film, new silver emerges as long, slender strands. These are true crystals although they grow in only one direction instead of in all directions as many crystals do.

Bromide ions released from the crystals may leave a pitted surface around the growing silver strands. These pits form new centers which send forth new silver filaments. Thus are formed the "sea-weed" clusters observed in electron microscope photographs of developed silver grains.

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PUBLIC HEALTH

Use All Insect Sprays With Greater Care Than Ever

► A DANGER to life and property which is too often forgotten exists in the dusts, sprays and gases used to protect growing fruits, vegetables and field crops from insects and fungi, and stored commodities from insects and molds. The danger this season is greater than usual for two reasons: 1. Large numbers of inexperienced persons may be using some of these fumigants in Victory gardens or on farms where they are working for the first time; 2. Certain chemicals formerly used are now classed as critical materials, making necessary the substitution of more dangerous chemicals, so that even experienced farmers may endanger themselves, other persons and their property.

The health dangers from fumigants are pointed out by Charles M. Ferguson, safety specialist of the U. S. Department of Agriculture, as follows:

Exposure to the fumes and vapors produced by fumigants may kill you if you come up against high concentrations of

them, or even if the concentration is low but encountered over a considerable period of time. Hydrocyanic gas is one of the most efficient fumigants, but breathing even minute amounts of it is usually fatal.

Even if the vapors from fumigants do not kill, they may irritate the lining of the nose, throat and lungs, causing weakness of these parts of the body and greater susceptibility to disease.

Symptoms which appear from contact with poisonous concentrations of vapor may include giddiness, headache, vomiting, difficulty in breathing and lassitude or a tired, peppy feeling. Prolonged exposure may damage internal organs such as the liver and kidneys, on account of the poison taken into the body through inhalation. Inhalation itself may not cause discomfort as some of the poisons have no disagreeable odor. Some have no odor at all.

Improper handling of fumigants in either gaseous or liquid state, through carelessness or poor equipment, may cause skin trouble.

Science News Letter, July 24, 1943

GENERAL SCIENCE

Industrial Museums Record Role of American Industry

► ACHIEVEMENTS of American industry to help win the war and to push peacetime progress are being recorded in at least 80 company museums, and the movement promises to be widely expanded throughout the country.

Foreseeing the need for hundreds, even thousands, of industrial museums, the American Association of Museums has just issued a report (*Company Museums*), the result of a study supported by the Carnegie Corporation of New York.

Through such collections future generations may piece together the vast record of industry and commerce.

"Now that World War II has overturned the business world, as well as the geographic world," writes Laurence Vail Coleman, author of the report, "there is infinitely more of history that companies are making and that companies alone can adequately record."

"Only through specialized collecting in many different lines can the story be put down fully enough to be clear for the reading of generations to come."

Although museum making is now being held in check by war activities, Mr. Coleman sees signs of rapid expansion of such projects after the war.

Science News Letter, July 24, 1943

IN SCIENCE

MILITARY SCIENCE

Fishermen Are Warned on Hauling in Derelict Mines

► FISHERMEN are warned by the Navy's Hydrographic Office against their natural tendency to salvage any large cylindrical or spherical objects that might be derelict buoys in normal times but are now more likely to be stray mines or other containers of high explosives.

Some of these objects are doubly dangerous: it's dangerous to haul them in, but more so to let them go again because on sinking a second time they might explode, blowing the small boat out of the water. Finders are instructed to haul aboard any such undesired iron fish as they may catch in their nets or bottom drags, handle them very gently, lash them securely to the deck and bring them as soon as possible to the nearest Coast Guard or Naval station. On no account are any projecting mechanisms to be tampered with.

Objects of this kind found floating on the surface are not to be picked up. Finders are instructed to keep clear, and report location immediately to a Coast Guard or Naval station.

Science News Letter, July 24, 1943

AGRICULTURE

Tree Seedling Transplanted By Celery-Planting Machine

► MECHANIZED mass transplanting of tree seedlings has been successfully carried out in Michigan, using a machine originally designed for setting out celery seedlings which was slightly modified to accommodate the differently shaped and rooted young trees. During the past season nearly a million and a quarter pine seedlings were set out by the new method, at an over-all cost of 46.8 cents a thousand.

Machine transplanting promises to do a great deal toward keeping up the necessary propagation of new forest stock in spite of lack of labor needed for setting out the seedlings by the old hand method. Each machine is operated by a crew of three, one man and two women.

Details on the new machine and its operation are presented in the *Journal of Forestry* (July).

Science News Letter, July 24, 1943

ICE FIELDS

INVENTION

Rollers Designed to De-Ice Airplane Leading Edges

➤ A NOVEL ATTACK on the life-and-death problem of icing on airplane leading edges is represented in the device on which patent 2,324,303 has been granted to C. J. Johnson of Encino, Calif., assignor to the Lockheed Aircraft Corporation.

Present de-icers, the inventor points out, are built on one of two principles: either the alternating expansion and contraction of a rubber "boot" along the surfaces involved, or the application of engine exhaust or other source of heat. Simpler, lighter and less costly, he claims, is his method of installing cylinders along leading edges, in wing slots and at other critical places. These cylinders are slowly rotated, so that fresh surfaces are constantly being presented, and at the same time the already formed ice and slush are being scraped off against sharp blades.

Science News Letter, July 24, 1943

MEDICINE

Study of Sprained Ankles Shows They Should Be Used

➤ SPRAINED ANKLES should not be pampered or spared, it appears from a report by Lieut. Commander Paul E. McMaster, U. S. Navy surgeon, of his experience with 500 cases of this condition at the U. S. Marine Corps Base Dispensary at San Diego, Calif.

"Immediate and continued active motion and use of a sprained ankle and foot almost irrespective of any local treatment definitely hastens recovery," he states (*Journal of the American Medical Association*, July 3).

Some of the patients were put to bed for a few days with cold and then hot applications. Others had their ankles taped and were told to keep off the affected foot as much as possible and to use crutches or a cane to spare it in necessary walking. Such patients were often disabled for periods from a few days to two or three weeks, in one case for eight weeks, and usually the ankles remained swollen, painful, stiff and tender and the trouble only gradually subsided.

By contrast, patients who were given no local treatment or only an elastic bandage or taping and immediately returned to duty and told to use and move the sprained ankle and foot had remarkably little disability lasting only a few days at most.

The most satisfactory aid to treatment of sprained ankles, Commander McMaster found, was injection of a local anesthetic into the injured ligaments. This completely eliminated the pain and thus enabled the patient to move and use the sprained ankle.

A person with a sprained ankle should of course see a physician as soon as possible. There may be a broken bone needing to be set, or a pulled muscle or some condition other than sprain requiring special attention. Underlying chronic arthritis of the ankle would complicate a sprain and delay recovery. But once your doctor has examined and treated your sprained ankle, you need not hesitate to go ahead and walk on it if he tells you to do so. If you don't follow that advice, it appears from Commander McMaster's report, you will only be slowing down your recovery.

Science News Letter, July 24, 1943

INVENTION

Flooring Made Sparkproof By Use of Flat Metal Studs

➤ SPARKPROOF flooring has come very widely into use now that a considerable proportion of our industrial acreage is devoted to the handling of powder and other extremely inflammable or explosive substances. A kind of rubber matting that conducts instead of insulating has been much favored for this; it is impregnated with materials that give it this property.

This rubber is expensive at any time, and at present of course is hard to get at any price. For this reason, W. W. Donelson of Boston has devised a two-layered floor covering, the lower layer consisting of a very thin coating of conductive rubber, properly grounded, and the upper of a more conventional material like linoleum or asphalt in which are embedded flat studs of bronze or other non-ferrous metal, at close intervals. These serve to conduct static charges from the shoes of workers, wheels of trucks and other objects on the floor down to the conducting layer.

Rights in Mr. Donelson's patent, No. 2,323,461, have been assigned to the Federal Flooring Corporation.

Science News Letter, July 24, 1943

PHYSICS

Largest Prism Ever Made Cast for Telescope

➤ A HUGE optical glass disk, the largest prism ever made, measuring 26 inches in diameter and graduated in thickness from one and one-half inches to three and one-quarter inches, has been cast successfully at the plant of the Bausch & Lomb Company in Rochester. It is for use in the Burrell astronomical telescope at the Case School of Applied Science, Cleveland.

This big lump of optical glass, weighing 260 pounds, is reported to be not only the largest prism ever cast, but also one of the most perfect pieces ever produced. When ground and finished it will be used as a spectrographic wedge plate for a large camera-telescope now in the astronomical observatory at the Case School.

The Schmidt telescope in which this prism will be used is one of the largest of this type in the world. It has a 24-inch lens and a 36-inch reflecting mirror. It has a sharp definition over a wide field and great speed, which enables it to photograph many distant stars in a short period of time.

This large prism will separate light from the stars into spectrum lines, by means of which astronomers determine the nature of the radiations, surface temperatures, stellar motion and velocity, and the mass and density of stars.

Science News Letter, July 24, 1943

AGRICULTURE

Fertilizer In Furrow Bottom Increases Corn Yield

➤ CORN YIELDS in bad years, when the weather is either too wet or too dry, can be materially increased by putting commercial fertilizer in the bottom of the furrow as the field is plowed, instead of spreading it broadcast as is now the practice. This discovery was made by agricultural engineers at the Indiana State College of Agriculture in Lafayette (*Agricultural Engineering*, May).

The problem, it is explained, was to get into place for most efficient use the second, or "sustaining" application of fertilizer. The "starting" fertilizer is already placed in strips at the right distance from the seed as planted. A mechanical attachment for use with plows has been developed, which drops the fertilizer at properly spaced intervals in every second furrow.

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