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SCIENCE NEWS LETTER

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To Save Crops

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A SCIENCE SERVICE PUBLICATION



Commercial shipping on the high seas and inland waterways is now freed by radar from delays caused by bad weather.

RCA Radar—enables ships to see through

**fog
darkness
storms**

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RADIO CORPORATION of AMERICA

ANTHROPOLOGY

Oldest Mexican To Visit

Bones of Tepexpan man are now in Washington for reassembly and study. Possibly oldest inhabitant of western hemisphere yet found.

► THE BONES of the oldest Mexican yet discovered, Tepexpan fossil man, have just arrived in Washington for reconstruction and study at the Smithsonian Institution.

When the anthropologists get the prized skeletal material assembled, we shall have a good picture of the kind of early human beings who hunted prehistoric elephants or mammoths on a Mexican lake beach not less than 10,000 and not more than 15,000 years ago.

After traveling to Washington in a suitcase, escorted by Dr. Javier Romero of the Mexican National Museum of Anthropology, the Tepexpan man bones, discovered in February, will be compared with the remains of other famous early men in the U. S. National Museum collections in charge of Dr. T. Dale Stewart.

These old bones may prove to be one of the classic discoveries of early man. Tepexpan man may be the oldest inhabitant of the western hemisphere yet found.

Dr. Hellmut De Terra, anthropologist for the Viking Foundation in New York, with Dr. A. V. R. Arellano of Mexico's Geological Institute and Dr. Hans Lundberg, Canadian geophysicist, made the discovery by using electrical prospecting apparatus to spot likely places to dig.

Even before the bones of Tepexpan man are fitted together, a picture of this early human can be sketched roughly. His bones are remarkably complete. Only his backbone, his hip bone except for a fragment, and his feet were missing when he was found lying among the bones of five mammoths, extinct ice age animals.

Dr. De Terra visualizes his ancient protegee as having a broad nose, somewhat pinched at the bridge, not very prominent cheek bones, a high domed skull and a short head, not quite what the scientists call brachycephalic.

You could meet someone who looks like Tepexpan man in parts of Mexico today, probably his descendants, just as there are people in the Dordogne region of France today who resemble and prob-

ably have Cro-Magnon man as their ancestors. In the famous primitive village of Tepoztlan, near fashionable Cuernavaca south of Mexico City, people have been picked by Dr. Henry Field, American anthropologist, whose skull types might pass for Tepexpan man.

Tepexpan, where the earliest Mexican was found, is a little town that thousands of Americans have motored through northward from Mexico City on their way to the famous pyramids of Teotihuacan, built over a thousand years ago by prehispanic Indians who are almost modern compared with Tepexpan man.

No tourists stop to see the muddy-water-filled pits from which the famous bones have come. The site is unmarked. The rainy season has stopped search for skeletons. Now it is time the scientists are writing their reports and assembling their bones.

In a few months Tepexpan man, reassembled skeletally and his bust sculptured by a famous artist, will hold receptions in Washington and New York so that the modern world may have a glimpse of the human past. Then he will be brought back to the land of his birth to take his place among Mexico's cultural treasures.

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GENERAL SCIENCE

World Faces Shortage Of Teachers of Science

► ALTHOUGH industries, colleges and secondary schools are demanding more science teachers, only three out of each 1,000 teachers of tomorrow are preparing to become science teachers.

This serious situation, revealed by a survey of 18 of America's largest teacher-training institutions made by Prof. Fletcher G. Watson of the Harvard Graduate School of Education, is causing concern in scientific, governmental and industrial circles.

Out of 120,000 teachers-in-training, only 307 are specializing in either science or mathematics, Dr. Watson found.

Many science teachers in both high schools and colleges left their class-



ATOM SPLITTING—This photographic autograph made by a speeding atom particle is possible because of a newly developed photographic plate super-sensitive to the electrical charges carried by atoms and relatively insensitive to light and X-rays. The length and curvature of the track and the grain-spacing along it tell the scientist about the particle's speed, energy and other characteristics. Thus the particle can be identified as a proton, alpha particle, or heavily charged nucleus. The new plates are the work of scientists in the laboratories of Eastman Kodak Company.

rooms during the war to join the armed forces or undertake technical tasks in production and research. Many did not return and the influx of GI and other students added teaching loads. Schools and colleges as a result are still understaffed in comparison with prewar conditions, and they are asked to carry a much heavier load.

Adding to the danger in the situation is the realization that it takes at least six years for a capable 18-year-old to train himself for effective scientific research. Estimates show that the loss to science personnel due to the war was 150,000 undergraduates who would have been granted bachelor's degrees in science and technology. Some would have gone on for doctoral degrees training to carry on original research. Now there is a shortage of 3,375 Ph. D. scientists, with the figure expected to climb to 16,870 by 1955.

Dr. Watson warns that our future voters may have less comprehension of the function of science in our civilization.

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CHEMISTRY

Makes Paints Stick

Thin layer of plastic less than thousandth inch helps in painting metal and gives better protection. Other reports from chemistry meeting.

▶ A THIN layer of plastic, less than a thousandth of an inch thick, will make paints stick better to a metal surface and give longer, more effective protection to the surface.

The coating, which is called a wash primer, is polyvinyl butyral resin, to which is added an insoluble zinc chromate pigment and phosphoric acid. L. R. Whiting of the Bakelite Corporation described the plastic to the Midwest Regional Meeting of the American Chemical Society in Kansas City, Mo.

He explained that the coating is applied to a metal surface to give temporary protection before painting and to make the paints stick to the surface better. A big advantage of the new plastic wash primer is that it produces good results in temperatures ranging from below freezing to the heat of midsummer.

Best test of the coating came on the bottom of a boat, Mr. Whiting reported. The boat ran aground after six months' service and some of the paint film was torn off. After 18 months in salt water, there was no corrosion from water getting into the coating from the break in the surface of the film.

The plastic will increase the effectiveness of most types of paint, but it performs best with a special vinyl plastic paint over the wash primer, Mr. Whiting said.

The new coating can be applied on any of the common metals, he told the chemists.

Soapy Chemical Protects

▶ A SOAPY chemical, described as similar to synthetic soaps, can help protect steel pipes and other equipment used in oil refining and drilling from strong acids, P. H. Cardwell and L. H. Eilers of Dowell, Inc. told the meeting.

They explained that when acids are used to eat out passageways in rock or remove rust scale from oil equipment, certain chemicals are added to protect the steel from corrosion by the acid. Newest method of preventing damage to the steel is to add a soapy chemical to the solution.

The inhibitors, as the protective chemicals are called, stick to the surface of the steel. They are bound to the metal by atoms of nitrogen, sulfur and oxygen, the chemists said. Best inhibitors are compounds with large molecules, tests have shown.

More Glycerine

▶ PRODUCTION of glycerine, important ingredient of cosmetics and explosives which comes mainly from fats, reached an all-time high of 69,000,000 pounds during the first four months of 1947. This represents an increase of almost 25% over the same period last year, N. N. Dalton of the Glycerine Producers' Association reported.

Mr. Dalton pointed out that glycerine is an important by-product of soap-making. It is surprising, he noted, that production climbed to this record peak, since the manufacture of synthetic soaps which yield no glycerine is increasing.

So far, declared Mr. Dalton, no economical synthetic process for making glycerine has been found. It will probably continue to come from fat-splitting industries for many years, he predicted.

Glycerine, he explained, is a substance of contradictory qualities. Although it is one of the best known solvents, some of its chemical combinations are practically insoluble. In high explosives it has taken many lives, yet it is used in medicine as a mild heat stimulant and in antiseptic dressings.

Glycerine is put on the skin of the newborn baby and is used to embalm the dead.

Better Anti-Knock

▶ BETTER anti-knock gasoline can be produced by vaporizing the gas and straining it through common aluminum ore, two chemists disclosed.

G. M. Brooner and C. J. Helmers of the Phillips Petroleum Company, Bartlesville, Okla., explained that vaporizing the gasoline and straining it through

bauxite crystals removes the sulfur impurities which cause knocking in your car engine. Bauxite is the ore from which most aluminum comes.

The aluminum-bearing ore turns the knock-causing sulfur into hydrogen sulfide gas, the unpleasant smelling vapor which you can whiff from rotten eggs.

Gasoline which has been strained through the bauxite crystals requires less tetraethyl lead, anti-knock compound that is now scarce, the chemists reported.

The new process removes from 75% to 95% of the sulfur from distilled, or straight run, gasoline and from 40% to 60% of the sulfur from gas cracked from petroleum.

Octane number, one measure of the

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quality of gas, is increased by the new straining process.

Bauxite used in straining the gas becomes contaminated with carbon deposits, but a single batch of the ore will treat from 5,000 to 15,000 barrels of fuel. The cost is less than one cent for each barrel.

Oil From Safflower Seed

► OIL FROM safflower seed can help ease the shortage of linseed oils for paints and varnishes and may give Midwestern farmers a new cash crop, Harry Miller of the chemurgy project of the University of Nebraska reported.

When refined, the safflower seed oil is practically colorless and produces as good drying properties in paints as the best grade of linseed oil, Mr. Miller said. He declared safflower oil forms a film superior to that of linseed oil. White paints made with safflower oil show no tendency to turn yellow.

In India, where a million acres of safflower are raised each year, the thistle-like blossom is used to make a yellow dye. The leaves are used in salads and the oil is used for food.

A new variety of safflower which contains 35% oil has been developed at the Nebraska Chemurgy project, Mr. Miller stated. Still higher oil content varieties may be developed with seed from imported safflower, he predicted.

Bone Marrow Stores Fat

► FAT stored in the bone marrow is readily available for use in the body, Dr. H. E. Newlin, of the Midwest Research Institute, told the meeting.

Much of the fat that is eaten goes directly to the bone marrow, where it is kept in reserve until it is needed by the body, he explained. The bones, he continued, can store as much as one-fifteenth of the entire body fat, or roughly one-third as much as the liver, another important fat-storing organ.

Dr. Newlin pointed out, however, that fat stored in the liver, muscles and brain is evidently not affected at once by a change in diet.

Describing tests on rabbits, he said that they were fed in four stages: 11 to 12 days on a normal diet; 12 days on a low-fat diet; 14 days on a diet extra rich in fat and another 14 to 21 days on a restricted diet.

The first period gave a normal basis for comparison. Just after the second

stage, the bone marrow showed a greatly reduced fat content, he reported, showing that the body draws quickly on this fat reserve.

The diet enriched with cottonseed oil caused a sharp rise in bone fat, whereas the results after the final feeding period showed that the rabbits were again drawing on fat stores in the bone marrow.

Dr. Newlin noted that the amount of fat in the marrow, as well as the kind, was found by its tendency to combine with iodine. The so-called iodine number decreased during periods on low-fat diet and increased during stages of fat-enriched feeding, giving a value near that of cottonseed oil.

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AGRICULTURE

Perique Tobacco Grows Only in Ten-Mile Stretch

► PERIQUE, a strong, flavorsome, black tobacco, will grow only in a 10-square-mile stretch of southern Louisiana. It is used in many domestic tobaccos as flavoring and, in normal times, in British and French pipe tobaccos. It can be cultivated only on the east bank of the Mississippi around Convent, La Place and Lusher, La.

A curious thing about perique is that burley, bright or any other tobacco can be imported into the small perique coun-

try—and by its second year it comes up perique. Transplanted back to Virginia or another tobacco country, it does not thrive.

Agricultural specialists have no explanation for this. The soil of perique country, although rich alluvial Mississippi river mud, tests out identically with soil on the Mississippi's west bank, where perique cannot be grown.

The "Cajun" growers of Louisiana's tiny perique belt are classed as both planters and manufacturers of tobacco. Their warehouses in which perique is cured by a process antedating Columbus, must be bonded by the U. S. government.

Perique curing is essentially a process of fermentation. The "torquettes" or twists are placed in a barrel and pressed hard. Juice which is thus forced from the leaves is allowed to bathe the tobacco for several weeks. Then the twists are removed, exposed to air for a short time, and put back under more forced pressure. This process is repeated three times. Tobacco harvested in September is ready for market by January or February.

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The hoe is still the best weed-killer for ordinary home gardens; the chemical weed-killer 2,4-D is effective in destroying broad-leaved weeds in the lawn but is equally effective in killing tomatoes, beans and peas in the garden.



HAND WORK—Perique tobacco is cured by the old-fashioned method of pressing by hand.

PLANT PHYSIOLOGY

Chlorophyll Studied

Atomic pile product, radioactive carbon, useful in advancing knowledge of key to life. Making food from sun and water is two-step process.

► RESEARCH that produced the deadly atom bomb is already working in the opposite direction by producing a better knowledge of the green key of life itself. Using radioactive carbon of atomic weight 14, generated in the atomic pile, two University of California chemists, Dr. A. Benson and Dr. M. Calvin, have shown for certain that chlorophyll, the green pigment in plants that lays the foundation of all foods, does its work in a two-stage process, and that one of these stages can be carried on in the dark.

This does not render false the old statement that chlorophyll makes food out of water and carbon dioxide with the energy of sunlight. Some of the solar

energy is simply stored, and is available afterwards for use in the dark.

The research also demonstrated that the raw materials, water and carbon dioxide, are not turned immediately into the finished products, sugars and starches, as plant physiologists a generation ago thought might be the case. The radioactive carbon atoms turned up first in several intermediate compounds, including succinic, fumaric and malic acids, long known to be present in plants.

Following reactions step by step, Drs. Benson and Calvin have been able to diagram the whole process. This diagram, with a brief technical discussion of their results, is published in *Science* (June 20.)

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PHYSICS

Need Civilian Support

"Pure science" research on the mesatron is necessary to find how atom nucleus is held together but even the giant equipment used should be paid for by civilians, physicist believes.

► "BULKY metal monsters" and other scientific equipment are being used to search out the secret of what holds the heart of the atom together, but this work should be paid for by civilian funds and not by the Armed Forces or the Atomic Energy Commission, an atomic scientist stated.

A particle called the mesatron, which is produced by the cosmic rays bombarding our atmosphere from outer space, may hold the key to the stability of the atomic nuclei, Dr. Edward Teller of the University of Chicago explained in the Bulletin of the Atomic Scientists. But Dr. Teller is worried about who is to foot the bill for this research.

Money for building atom-smashers and laboratories and paying scientists now comes "with comparative ease" from only two sources, the Armed Forces and the U. S. Atomic Energy Commission, he pointed out.

"It is the business of neither to support pure research," Dr. Teller declared.

"We should be grateful for their help which must tide American science over until our public and our lawmakers realize more fully the importance and the proper place of science in our life," he added.

Dr. Teller did not advocate by name a national science foundation such as is called for in legislation which passed the Senate and is now in a committee of the House of Representatives. But he argued, "If we want to have progress and power tomorrow, we must let the men who love science and truth play today."

The "play" of scientists, he explained, includes the study of the mesatron. Unlocking the secrets of the mesatron, also called the meson by some scientists, may not mean more comfort or power, he warned. However it will increase our understanding of nature.

"This, to a physicist," Dr. Teller added, "is a matter of supreme importance."

Tools for the attack on the mesatron include the famous cyclotron, the syn-

chrotron, a combination of the two called a synchro-cyclotron, the betatron and the linear accelerator, the scientist said.

Study of the mesatron with these "bulky metal monsters" may revise our thinking on the smallest pieces of matter, Dr. Teller suggested. Particles we call elementary may be broken down into even smaller particles.

We may learn much more about the bits of matter which make up the earth by studying particles from the cosmic rays which come to us from outer space.

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PLANT PHYSIOLOGY

Carbon Action Rapid

► CARBON ATOMS do not linger long in the first-formed compounds into which they are built by green plants. Within the first hour, they can be found not only in these first simple acids and sugars, but also in the more elaborate molecules of celluloses, lignins, carotenoid pigments, amino acids and proteins.

These facts of plant life have been discovered by four scientists in University of California laboratories. They used radioactive carbon 14, made in atomic piles at Oak Ridge, to replace ordinary carbon 12 in the carbon dioxide which is the starting-point of all food-making by plants.

This radioactive carbon dioxide was "fed" to barley seedlings in glass-topped chambers, with electric light substituted for sunlight. After an hour's exposure, the plants were plunged into liquid nitrogen to freeze them instantly, then ground to powder and separated into 12 classes of compounds. Tests for radioactivity showed that the C¹⁴ atoms had been taken into the structure of all 12, though to varying degrees.

The research was conducted by Drs. S. Aronof, A. Benson, W. Z. Hassid and M. Calvin. Details are published in *Science* (June 27).

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FOOD TECHNOLOGY

Dried Fruit Paste Made

► FROM REHOBOTH, in troubled Palestine, comes a method for making dried fruit paste in leathery sheets, later to be soaked up and prepared for the table. The outer rind is grated off citrus fruits, the rest ground to pulp and dehydrated. A little of the grated rind may be returned for flavoring if desired. This procedure, developed by Zdenka Samisch, is protected by patent 2,422,588.

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METEOROLOGY-PUBLIC HEALTH

Flood Problems Remain

Even after waters have receded, communities must combat threats to health in drinking water supplies, breeding places of disease-carrying flies, etc.

➤ FLOOD TROUBLES will not be ended when the rivers recede into their normal channels and displaced populations have scrubbed the mud out of their houses and hosed it off their sidewalks and streets. Some quite serious problems in health and sanitation will require attention all the rest of the summer.

Necessity to protect city water supplies is obvious, and the cleanup and chlorination programs are for the most part well taken care of as soon as reoccupation of flooded pumping stations is possible. But many bottomland farmsteads depend on wells. The water left in these after inundation is unsafe, and the wells should not be used until they have been pumped empty and thoroughly cleaned.

Insects, especially flies and mosquitoes, will complicate the disease situation. Ponds and puddles left behind as flood

waters recede will greatly increase the number of possible breeding-places for mosquitoes, and hence boost the incidence of malaria unless they are promptly drained or given an oil-and-DDT treatment. Fortunately, treatment of such temporary bodies of water is of no significance so far as fish are concerned, so no protests will be heard from wildlife interests.

Flies will present an even more difficult set of problems. Their ordinary breeding and feeding places — farm manure piles, city garbage dumps, open privies — will in many instances have been swept away by the waters. Their dangerous contents will have found lodgment in the innumerable masses of debris, which flies will unerringly find. Some of the filth will be mingled with the ill-smelling mud deposited by the stagnating water, especially behind pro-

tective levees that may have to be breached to let it out. Carcasses of drowned animals may not be located by human searchers, but blowflies will spot every one of them, whether big as a cow or small as a kitten, and will breed in the decaying flesh.

Both houseflies, which breed in filth, and blowflies, which breed in carrion, also like to hang around human habitations, crawling over food and investigating milk-bottles. Both classes of flies are capable of carrying typhoid fever, diarrhea and the dysenteries. Therefore all communities that have suffered flooding, or are located near flooded areas, need to blanket themselves with DDT spray or fog, as one essential means of protecting their people against insect-borne diseases.

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SEISMOLOGY

Navy Builds Seismographs To Record Man-Made Blasts

➤ HELGOLAND ceased to be a fortress nearly two months ago, but echoes of the blast of 4,600 tons of high explosive are still reverberating in scientific circles. At a meeting of the Seismological Society of America on the campus of Fordham University, two groups of scientists from the U. S. Naval Ordnance Laboratory in Washington, D. C., told of this man-made earthquake and of the instruments used in recording its effects. B. Perkins, Jr., of the Office of Naval Research, headed the group who told of the explosion itself; J. V. Atanasiuk headed the team that demonstrated the special instruments.

There were 18 of these instruments all told, set up at 10 stations on a line across Europe from the German coastal town of Cuxhaven to Gorizia, Italy, near the head of the Adriatic.

The instruments had to be more sensitive than those commonly used by oil and mineral prospectors, yet they had to be more portable than the heavy yet delicate seismographs of permanent observatories. So a compromise was worked out.

Each instrument consisted of a pendulum "standing on its tail," its motion controlled by light springs attached to its upper end. Slight movements caused a flickering of a very small electric current, which after amplification in an electronic hookup actuated the recording mechanism.

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FLOOD STUDY—The U. S. Army Air Forces photographers are taking pictures like this of flood areas to aid in evaluating flood control measures. About 2,000 to 3,000 photographs are taken daily. These can be fitted together to form mosaic maps.

BACTERIOLOGY

**Plague Can't Be Used
In Bacteriological War**

► YOU CAN scratch plague, the "Black Death" of the Middle Ages, off your list of horrors to be feared if nations ever start fighting each other with germs as well as atom bombs and more ordinary weapons.

Removal of plague from the list of bacterial warfare agents is implied by the discovery that streptomycin, earth mold chemical, is effective against the most deadly form of plague.

Streptomycin controlled pneumonic plague in 90% of mice given the chemical, Dr. Karl Meyer, University of California epidemiologist, announced.

"There is every reason to believe streptomycin will be equally effective in man if given early in the attack of plague," he stated. "The findings indicate the last threat of this disease has been removed in modern nations."

Plague is still a routinely occurring disease in China and India.

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AGRICULTURE

**Quackgrass Conquered by
New Chemical Powder**

► QUACKGRASS, long unconquerable, has at last met its Waterloo. A British-originated chemical, isopropyl-N-phenyl carbamate, shortened for convenience to IPC, has been used experimentally at the U. S. Department of Agriculture's great experiment station at Beltsville, Md., near Washington, with such promising results that it can be recommended for general use.

In the Beltsville experiments, conducted by John W. Mitchell, P. C. Marth and L. W. Kephart, the chemical was applied as a fine, dry powder at rates of from five to 60 pounds per acre, using sand as a carrier. Even at the lowest rate the quackgrass growth was first checked, and finally it died completely.

First effect noticed was stoppage of growth of new shoots from the stolons or runners that are the plant's most effective means of spreading. Later the runners themselves die. It is not a quick-acting poison, but it seems to be deadly sure.

IPC seems to be a kind of opposite number to 2,4-D. Like 2,4-D, it belongs to the large group of organic compounds that act as growth hormones in small quantities, but kill plants in higher concentrations. Whereas 2,4-D

kills broad-leaved plants but is harmless to most grasses, IPC is a grass-killer but has not harmed the broad-leaved plants on which it has thus far been tried.

It is not a kill-all for grasses, however. Certain weed grasses, such as crabgrass, appear to be immune to it.

Because far less work has been done on IPC than on 2,4-D, the Department of Agriculture scientists recommend reasonable caution in using it. It seems to have no ill effects on human beings or domestic animals, but they believe it is just as well to play safe until more is known about its possible toxicity.

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CHEMISTRY

**Plastic Floor Cover
Requires No Waxing**

► A NEW floor covering that requires no waxing and polishing was displayed in New York at the combined furniture and floor covering manufacturers' show of new materials and styles.

It is a plastic flooring, made of vinylite material, and is a product of Delaware Floor Products, Wilmington, Del. It will be known under the trade name of Flor-Ever; production will begin this month.

It is claimed to combine linoleum's advantages with ease of laying, greater flexibility, resistance to wear, lack of porosity, resistance to chemicals, ease of cleaning, as well as the elimination of the need of waxing.

Because the material used is a vinylite plastic, it will not chip or crack. Designs run through the entire thickness of the wearing material. Its waterproof felt back makes it easy to lay.

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AGRICULTURE

**Don't Make Tracks That
Create Moisture in Hay**

► MAKE HAY while the sun shines, but don't make tracks in it by driving or walking over freshly mown hay is the latest advice to farmers.

If you walk or drive over the freshly mown hay, Prof. H. D. Bruhn of the University of Wisconsin agricultural engineering department explains, it creates dense areas of moisture, because freshly cut hay has about 80% moisture content.

Dense areas prevent air from circulating through the hay. If the air doesn't circulate in the fresh hay, it spoils.

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IN SCIENCE

PHOTOGRAPHY

**Eastman Home to House
Photographic Institute**

► A NEW institute, planned as a world historical center for photography, is being established in the home of George Eastman, American photographic pioneer, who died in 1932.

The Eastman House, which since his death has served as the home of University of Rochester presidents, will contain the largest and most complete photographic collection in the world.

The institute, announced jointly by the University of Rochester and the Eastman Kodak Company, is expected to be in operation within two years.

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NUTRITION

**Japanese Go Whaling
To Relieve Food Crisis**

► JAPAN'S renewed Antarctic whaling activities, which have provoked British and Australian protests, are motivated primarily by Japan's dire need for meat. The Japanese whalers do not take their oil home; they sell it, and it presumably finds its way eventually to European tables as margarine. But the meat they process and take home as food.

Whale meat has little appeal to the Occidental palate. It has been described as tasting "like coarse beef boiled in spoiled codliver oil." But in a war-ravaged country that is chronically only a half-jump ahead of famine it is acceptable.

Part of the reason for the British-Australian protest against Japanese whaling is believed to be based on the claimed inefficiency of oil extraction on the two Japanese factory ships. Figures on record indicate that in Japan hands a blue whale unit yields on an average only about 85 barrels, as against 110 barrels per unit obtained by British whalers, and 116.5 barrels by the Norwegians.

In allocating permitted catches, the unit of measurement is the blue whale, largest of whale species. A blue whale unit is equal to two finback whales or six sei whales, smallest of the Antarctic whales.

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E FIELDS

AERONAUTICS-AGRICULTURE

Special Model Helicopter For Dusting of Crops

See Front Cover

► NEW WEAPON for laying down a barrage against insect enemies is the helicopter made especially for crop dusting shown on the front cover of this week's SCIENCE NEWS LETTER.

Because of the low speeds possible with the helicopter, it is possible to lay the agricultural dust at any desired rate—or to hover in one spot for special attention to a heavily infested area. No need to go back to the airport for re-loading with dust; the helicopter can land on any reasonably level area that is free of obstructions for 45 feet.

The new crop duster is being used in Argentina to battle the hordes of locusts invading that country. It has also been used against the gypsy moth in New England cranberry bogs where DDT has reportedly made a 100 per cent kill.

Science News Letter, July 5, 1947

ENGINEERING

New Demolitions Tape Saves Tedious Figuring

► A DEMOLITIONS tape which measures an object in pounds of explosive needed for blasting instead of in inches and feet has been developed by the U. S. Army Corps of Engineers. (*The Military Engineer*, June.)

The new tape will be a big time-saver for engineers. When blasting timber, steel, concrete or some other material, the engineer would measure it with an ordinary tape. Then, using his measurements, he would work out the several steps of mathematical formulas to determine how much explosive to use. Or maybe he just guessed the amount of explosive needed for the job.

Now, with the new tape, the engineer can measure the object and read the number of pounds of explosive to use right off the tape.

The tape consists of two different tapes with four sides. There are sides for masonry and concrete, concrete beams, steel and timber. Each scale is adjusted to the type of material. In addition to

the number of pounds of explosive needed, the tape has standard directions for blasting different types of materials.

Idea for the new demolitions tape came from Lt. John E. Nickols of the Engineering School two years ago. He heard GIs back from overseas declare:

"No, I didn't use the formulas to calculate my charges, I just used a hell of a lot of explosives."

To meet the need for a quick, simple means of finding out how much explosive was needed for blasting an object, Lt. Nickols suggested the demolitions tape. He and Capt. William B. Sinnickson, assistant chief of the demolitions branch of the Engineer Board, developed the tape.

The tape, which gives the answers to the formulas, is a sort of direct-reading slide rule for blasting operations.

Science News Letter, July 5, 1947

MEDICINE

Sensitivity Returning To Skin Can Be Measured

► A DEVICE for measuring returning sensitivity to skin areas whose nerve supply has been cut by war injuries or accidents is covered by patent 2,422,520, granted to Dr. S. H. Bartley of Dartmouth Medical School. A mounting somewhat like that of a microscope applies an electrically controlled stylus to the skin area to be tested. "Plus" or "minus" responses are recorded on a sheet of paper, at spots indicated by an automatic light-carrying pointer.

Science News Letter, July 5, 1947

INVENTION

Wind Tunnel Device Tests Dust-Storm Resistance

► IF NOT the proverbial tempest in a teapot, then at least a sealed-in sandstorm, is provided by the machine on which patent 2,422,179 was issued to L. A. Brewster of Dayton, Ohio. It is intended for testing machines and other things that are to be used in regions where sand and dust storms occur. Essentially, it is a windowed box containing a small wind tunnel with a hopper that delivers sand or dust into the blast before it strikes the test object. Special care has been taken to prevent leakage to the outside or the fouling of bearings, etc., with destructive grit. Rights are assigned royalty-free to the government.

Science News Letter, July 5, 1947

ANTHROPOLOGY-CHEMISTRY

Chemical Analysis May Show Age of Ancient Bones

► CHEMICAL analysis may reveal the age of ancient bones, which have been buried perhaps thousands of years.

Dr. S. F. Cook, physiologist, and R. F. Heizer, anthropologist, both of the University of California, base the new method on analyses of 42 bone samples removed from various locations in the lower Sacramento Valley in California. These bones are known to come from different ages in California's prehistory.

In older bones, the average amount of nitrogen, the element which also makes up four-fifths of the air we breathe, was much less than in more recent specimens. The ratio of calcium to phosphorus became greater as the age of the bones increased. Phosphorus, an element important for healthy teeth, had gradually formed soluble compounds and been washed away.

Although the foods eaten by these prehistoric people, as well as the soil in which they were buried, might also have had some influence on the analyses, the scientists considered the time element by far the most important.

A previous estimate had dated the earliest of these bones at about 5,000 years ago. But the new method, reported in the *American Journal of Physical Anthropology* (June), indicated that they may be some 11,000 years old. The scientists said archaeologists should study the possibility of a greater age of the bones.

Science News Letter, July 5, 1947

SEISMOLOGY

Pacific Bottom Shaken By Strong Earthquake

► THE PACIFIC ocean bottom near the northern Marianas, 600 miles north of Guam, was shaken by a strong earthquake June 19. Seismologists of the U. S. Coast and Geodetic Survey, using data transmitted by Science Service, fixed the epicenter at latitude 22 degrees north, longitude 143 degrees east, and time of origin at 3:24.5 a.m., EDT.⁵

Observatories reporting were those of the U. S. Navy at Guam, of the Jesuit Seismological Association at Georgetown, Fordham and St. Louis universities, and of the U. S. Coast and Geodetic Survey at Tucson, Ariz.

Science News Letter, July 5, 1947

MEDICINE

New Hayfever Weapons

Three chemicals to join the relief methods now in use. Will take another season to evaluate them. Attacking weeds is another approach.

By JANE STAFFORD

➤ MOST of the nation's 3,000,000 hayfeverites, whether they know it or not, will be playing the role of scientific guinea pigs this summer. Many of them are going to have a happier, less sneezy summer than ever before.

The reason: Chemists have developed a number of weapons for fighting the annual crop of sneezes, sniffles and general misery that starts with the first wind-tossed tree pollens in March and drags on until frost kills off the ragweed in the late fall.

Chief of the new chemicals are pyribenzamine, antergan also called 2339 RP, and benadryl. Any day now, there may be some others, because chemists and drug manufacturers are still busy creating new anti-hayfever and anti-allergy weapons.

Pyribenzamine, antergan and benadryl (sorry, but those are the simplest names for them) were tried to some extent last summer. They had previously been tested on relatively small groups of patients with hayfever and other allergies. These tests showed the new drugs to be pretty effective. From 82% to 95% of the patients were said to have had their symptoms relieved. Doctors and patients were enthusiastic. Then came the ragweed season. Ragweed can cause more trouble than practically any other substance that causes hayfever or other allergies.

The new drugs did not give relief to the extent observed in the studies on small groups of persons, states the editor of the *Annals of Allergy*, official journal of the American College of Allergists.

Mild Cases Aided

Hayfever patients with mild symptoms got good results but these patients are often relieved by sedatives, hot drinks or rest.

"Some patients with a moderate amount of hayfever have done well but the results are not consistent," the editorial continues. "Some days the drugs have blocked symptoms, other days there has been no response. This has probably

been due to the fact that there is a tendency to great fluctuation in the pollen counts. When they are high, more drug is necessary, and when they are low, less is necessary; but if the patient forgets to make this decrease in dosage, then side reactions are apt to occur. This feature alone makes use of the drug impracticable in some individuals.

"Severe cases of hayfever benefit very little from the anti-histaminic drugs. Often there is a tendency to increase the dosage until levels twice those recommended are reached. These large amounts of benadryl and pyribenzamine are apt to cause side reactions in so many instances that a recent study, which will soon be published, reveals that four out of every five subjects had unpleasant results leading up to a discontinuance of the drugs."

The unpleasant side reactions were nausea, vomiting, headaches, disorientation and drowsiness. About one-fourth of the patients had such trouble with the drugs. As a result, there is considerable confusion as to the merits of the drugs and the basis for their use, the editor points out.

Confusion Explained

Some of the confusion comes from the fact that the drugs were introduced as anti-histamine chemicals. The theory behind this is that the primary cause of allergic reactions, such as hayfever, hives and so on, is the release of histamine, a chemical normally present in body tissues. Authorities do not agree on this theory, and some question whether pyribenzamine and benadryl give relief because of their anti-histamine actions or because of some other action, such as their sedative effect.

"One ray of hope" is offered by the editor of the *Annals of Allergy*. This is to combine the new drugs with the old-established desensitization or immunization method of treating hayfever. By this method, patients are given tiny, gradually increasing doses of an extract of the pollen that causes their hayfever. The idea is to get their bodies used to the offending substance before the season

starts. Most patients with mild and moderately severe hayfever are helped by this. The ones with more severe hayfever often are not. They are so sensitive to the ragweed pollen that when the desensitizing doses are increased, they get severe reactions to them and not enough can be given to finish the desensitizing job. Benadryl and pyribenzamine, however, control these reactions. So they might be used to help make the desensitizing procedure a success even for patients with severe hayfever.

It will take another hayfever season or two, the *Annals of Allergy* editor states, before the new drugs are finally evaluated. So hayfeverites this summer can expect to be guinea pigs for this evaluation, and many of them will probably be relieved of much of their misery in the process.

Treat Weeds

Giving the chemicals to the weeds instead of the patients is another modern way of fighting hayfever, particularly the kind due to ragweed. This is one of the peacetime benefits we can have from our biological warfare research which included potential chemical warfare on food crops as well as germ warfare on humans and domestic animals.

The new weed-killer, 2,4-D, which was studied in these researches, can be a peaceful weapon to free millions of hayfever sufferers now and in the future. All that is necessary is to lay down a fog of this chemical on roadsides, empty lots and other areas infested with ragweed—the chief cause of hayfever. The fogging, when done at a very early stage of flower development, will kill the plants before they shed any pollen.

While this is a measure for community hayfever fighting, there are a number of things the hayfever sufferer can do and avoid doing which will add to his comfort during the pollen season. His doctor will tell him about these, but repeating them here may help patients who are forgetful.

Before the desensitization treatments were used, hayfever sufferers found their only relief by going away during the pollen season to regions free of the troublesome pollens. Those who had to stay at home found that it helped to keep doors and windows closed. Undisturbed by drafts and breezes, the pollen



FOR HAYFEVER—New hope for relief of the misery of hayfever is offered by these two new drugs—benadryl and pyribenzamine.

grains settled to the floor and caused less trouble. Mechanical devices in windows to filter the pollens out of the air of the patient's sleeping room are also helpful, enabling him at least to get a sound night's sleep. Filters like those used in modern gas masks should be helpful.

Hayfever sufferers should keep away from drafts and be careful how they use electric fans, not only because these blow the pollen grains about but because of their chilling effect on the body. The ability to react to chilling processes is altered in hayfever sufferers. In them, loss of body heat causes an abnormal swelling of tissues in the nose, with consequent constant sniffing and sneezing. People who do not have hayfever may occasionally experience this sneezing or stuffiness of the nose after a sudden drop in temperature, for example on going into an air-cooled store or theater on a hot day. To the healthy person the nose stuffiness, if he does feel it, is only a temporary and minor discomfort. To the hayfever sufferer it may mean 24 or 48 hours of severe discomfort. Air-conditioning, which keeps the air free of pollens, will help the hayfever sufferer, but air-cooling is likely to cause trouble. Electric fans should not blow directly on the hayfeverite and should not be used

to cool the air to the point of chilling the body.

Iced drinks are also likely to cause trouble for hayfever sufferers because of their chilling effects. Hot drinks, on the other hand, are recommended by one authority who states that they are especially helpful when taken soon after awakening in the morning.

Science News Letter, July 5, 1947

CHEMISTRY

Plasticized Punch-Cards For Business Machines

► SINCE TREMENDOUS volumes of business and statistical operations are transacted by automatic machines that respond to holes, notches, etc., in punch-cards, it is essential that these keep their original dimensions. To prevent paper's liability to alignment-destroying shrinking, swelling and warping, Dr. H. M. Kvalnes of the Du Pont Experimental Station, Wilmington, Del., impregnates it with methylol urea, a thermoplastic resin, then "sets" it by pressure and heat. Patent 2,422,423, issued on his formula, is assigned to his employing firm.

Science News Letter, July 5, 1947

Seven states require that pasteurized milk be used in making cheeses.

AGRONOMY

Worms Need Blankets To Keep Out Winter

► WORMS need blankets to keep them from getting killed by sudden cold spells. This doesn't mean that the worms are applying for relief; they earn their livings and are decidedly worth keeping on the farm.

Earthworms, as Darwin first pointed out long ago, improve both chemical and physical conditions in the soil. So a large, healthy worm population is a good thing for any farm to have.

Dr. Henry Hopp and Paul J. Linder of the U. S. Soil Conservation Service have been trying to do something about the decline in earthworm populations of fields that is especially bad when clean-cultivated crops, such as corn, are being grown. They found that the biggest numbers of earthworms congregated under the grassroots in sodded fields.

Any kind of surface protection seemed to encourage the worms. Under a mulch of mowed lespedeza, a member of the clover family, a sampling indicated an earthworm population of 1,610,000 per acre. Soybean stalks and leaves were also good protection. Second-best was common burlap sacking. It sheltered 995,000 worms to the acre.

Science News Letter, July 5, 1947



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Do You Know?

A thin protein film of the gelatin type is now being applied to glass fiber yarns as they are formed; this makes it possible to dye the yarns with ordinary dyes.

Avocado trees, the fruits of which are known as alligator pears, were brought from Nicaragua to California 90 years ago, although little was done to establish commercial growing for many years.

There are about 400,000 oil wells in the United States and they produce 4,800,000 barrels daily; the average production per well is therefore about 12 barrels.

Butcher birds, also called shrikes, catch insects or small mammals and impale them on the thorns of such trees as the Osage orange or honey locust until they need them for food.

Pure de-gassed iron can effectively be used to replace molybdenum and nickel in the construction of electrodes and other metal parts of electron tubes, according to the U. S. Department of Commerce.

Eclipses of the sun are still greeted in parts of the world with noisy religious services to frighten away the monster devouring the sun.

On exhibit at Stanford University, California, is the shell of a giant clam weighing 300 pounds and an oyster shell a foot long.

Bamboo clumps rarely bear seed until many years after planting; new clumps are usually started by dividing old ones.

How to buy a FARM

"Too many mistakes are made in buying farms," is the opinion of our staff of farm managers charged with the management of hundreds of farms, ranches and plantations. At today's inflated prices of farm land, the number will be much larger.

OUR YARDSTICK in buying a farm consists of five main points. Professional advice on "How to Buy a Farm" and pitfalls to avoid are covered in detail in a report prepared by the DOANE AGRICULTURAL SERVICE, the oldest and largest farm management and appraisal service in the United States; editors of the widely read "Doane Agricultural Digest" and "Doane Rural Appraisal Handbook"; This report contains material from both of these services.

If you are interested in buying a farm or want to check up on the farm you own, send \$1 for "How to Buy a Farm".

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RESOURCES

Coal Strike Would Hurt

Would not only mean chilly homes next winter, but would result in delay of recovery in Europe and consequent need for U. S. assistance.

➤ A COAL strike now or during the rest of the year, coupled with the growing shortage of fuel oil, would mean uncomfortable homes next winter.

It means also a further delay in the recovery of Europe—and a continued need of American dollars for food for the destitute in the devastated countries.

European recovery depends upon a supply of coal for factory power. European coal mines are as yet far from normal production. America is now sending overseas some 2,500,000 tons of coal a month. It may be years before Europe again can supply its own fuel needs. Without fuel, industry is at a standstill. When European labor is again receiving regular wages, the need for American free food will no longer exist.

Present stock piles of coal in the United States are satisfactory under normal conditions. During the year to date some 300,000,000 tons have been mined. This production equals top wartime mining. However, the season is close at hand when northern factories must lay in stockpiles for the winter months and when foresighted home-owners put in their winter supplies.

The present threatened fuel oil shortage is not a matter of strikes. It is due largely to increased use without new refineries and transport facilities to meet the increased demand. Enough crude oil can be mined to meet the needs of the coming months, but the necessary new refineries will not be ready for many months.

The increased demand for petroleum products is double headed. More automobiles are on the road and they need more gasoline. One automobile manufacturer states that the average car will be driven 1,000 miles farther this year than last. To meet increased demands for gasoline, the petroleum industry is "cracking" crude more closely, which leaves less for fuel oil.

Meanwhile, fuel oil consumption is increasing. Diesel engines are coming into far wider use than formerly. More trucks, tractors, power shovels and buses are diesel-powered. Diesel locomotives are becoming more common. One reason for the increased use of diesels in power-

plants is to get away from a fuel shortage due to coal strikes.

During the coming winter many more homes than ever before will want oil for heating. It is estimated that with installations made this year the number of oil-heated homes is 50% greater than in 1945. Makers of equipment are urging installations, but the oil industry is reported to be suggesting a delay because of a possible fuel shortage.

Fuel oil for the eastern states may be more plentiful than in the central areas. Transportation to the Atlantic coast area is largely by ocean tankers. To the Midwest, it is largely by pipelines. The eastern supply will depend upon the continuation in service of government-owned tankers operated by private oil companies. The matter rests with the government.

Pipelines to the Midwest from Oklahoma and Texas oil fields, even at full capacity, can not meet the expected demands of the coming months. One Midwestern company has already announced plans to allocate its available gasoline to dealers in proportion to deliveries before this year's increased demand arose.

Railroad transportation could help the Midwest situation if sufficient tank cars were available to handle cartage from oil fields to refineries, and handle also distribution from refineries to the thousands of centers to which petroleum products must now travel by rail.

Science News Letter, July 5, 1947

AERONAUTICS

Major Gardner Awarded Guggenheim Medal

➤ MAJOR Lester D. Gardner, publisher and aviation leader, has been awarded the 1947 Daniel Guggenheim Medal for achievement in the advancement of aeronautics.

Major Gardner, a veteran of the first World War, organized the Institute of Aeronautical Sciences and was chairman of its council until his retirement this year. The award particularly cited Major Gardner for his role in the Institute.

Science News Letter, July 5, 1947

PSYCHIATRY

Epilepsy Can Be Cured

This disease presents a challenge to doctors. Four drugs can successfully fight epilepsy, and four fifths of those suffering with it could be cured.

► A CHALLENGE to doctors to rescue the victims of a "forgotten disorder" was issued by Dr. Frederick A. Gibbs of the University of Illinois College of Medicine at the meeting in Chicago of the American College of Physicians.

The "forgotten disorder" is epilepsy. It is as important a disease as tuberculosis or diabetes. Half a million persons in the United States suffer from it. Four-fifths of them could be perfectly well all the time if they were given one of the four "exceedingly useful" drugs now available for treatment of epilepsy.

But most doctors are not interested in treating epilepsy, Dr. Gibbs charged. A large number of the patients are given a "run-around." They are referred to this, that and the other specialist and end up in the hands of non-medical practitioners or "members of the medical profession who are, on the lower fringe of competence."

The four useful drugs for controlling the fits and seizures of epilepsy are dilantin, phenobarbital, which is a sleeping medicine, mesantoin and tridione. The first three give good results in the kind of epilepsy called grand mal. Patients with this form of the disease have convulsions or fits. But these three drugs are not for the patient with petit mal epilepsy, who does not have fits but has brief periods of "absence."

During these momentary but often frequent periods, the patient does not know what is going on. He may not faint but apparently is "out," though persons around him may not notice the

seizure. For these patients the new drug, tridione, gives good results. Tridione, however, makes grand mal epilepsy worse. So doctors must recognize the type of epilepsy the patient has and treat him accordingly.

A third type of epilepsy rarely responds to treatment. This is called psychomotor epilepsy. In this type, the patient is confused and though he temporarily loses his memory, he usually is not unconscious.

"His general manner," said Dr. Gibbs, "is that of a person acting in a bad dream."

A characteristic brain wave record appears only when the patient is asleep. It shows even when the patient is sleeping under the influence of powerful sedative and sleeping drugs.

Science News Letter, July 5, 1947

ORDNANCE

Latest Airborne Weapon Is Howitzer on Parachute

► LATEST AIRBORNE weapon of the Army is the 75 millimeter howitzer, weighing 2,240 pounds, which has been successfully lowered to the ground using a series of two ribbon parachutes.

The ribbon parachutes, introduced by the Germans during the war, have been developed for heavy duty from high altitudes for the Army Ground Forces and Air Forces by engineers of the Air Materiel Command at Wright Field.

Record-breaking drop of the howitzer from an AAF C-82 transport plane was

made with a small 14-foot parachute to pull the cargo out of the rear doors of the plane. This small extraction chute is trailed behind the plane, and pulls the howitzer out of the plane when released by a mechanism in the fuselage.

As the artillery piece is pulled from the plane, a huge 90-foot parachute is opened to lower the cargo to the ground. The howitzer is believed to be the heaviest equipment ever lowered from a plane without damage.

The Germans thought their wartime experiments with the ribbon chutes showed that the top altitude from which they could be used was 150,000 feet, but instruments have been safely lowered from 360,000 feet from a captured V-2 rocket fired recently at White Sands, N. Mex., by Army Ordnance.

In earlier Army experiments, tests were made from a height of 180,000 feet with an Army WAC Corporal rocket.

The howitzer is placed on a wooden skid in the plane and can be loaded in 15 minutes.

Science News Letter, July 5, 1947

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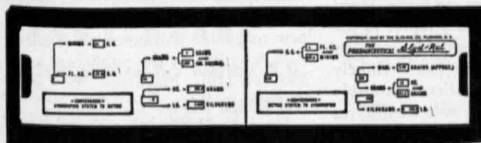
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Land Alive!

▶ THAT "dirt under your feet", of which you are accustomed to think as the lowermost thing in the scale of values, is vitally necessary to you, if only because the things that come out of it keep you alive. Without it you could not eat, or clothe yourself, or live in a house, because from the earth beneath come, directly or indirectly, all food, all fiber, all timber and bricks and building stone.

But the soil is not only vitally necessary, it is vital in itself. It literally swarms with life; so much so, that of some soils at least it can be fairly said they are alive. Indeed, if each living entity is counted as one life, (and why not?) one single grain of soil may well be more alive than a whole apartment house full of human tenants—there are many times more individual organisms on it.

You will not see much of this soil life without a microscope. A handful of soil that has had plants growing in it may show a few root fragments, a few seeds, two or three small ants, perhaps an earthworm or a white grub, and if you

look very closely a number of tiny mites or other lesser many-legged creatures that scuttle into crevices to shun the unfriendly light.

But if someone who knows how to coax microorganisms away from their wonted homes gets to work on the soil, what a metropolis of hidden tiny life he will turn up eventually under his microscope! There will be innumerable bacteria of a dozen or more distinguishable kinds, nearly as many different kinds of fungi, very likely a few slime-molds, and near the surface some cells of green or blue-green algae. These represent the plant kingdom. The animal kingdom will be well represented, too, with swarms of protozoa and considerable numbers of nematodes or roundworms. There are

also many spores, eggs, larvae and other propagative and resting stages of both plant and animal life.

These swarming populations of every spoonful of fertile soil work sometimes together, sometimes against each other, even as men and tigers, crop plants and weeds, trees and toadstools and other living things in the familiar visible world. Some bacteria and fungi return dead things to the soil, enriching it with nitrogen, phosphorus and humus; others as hungrily devour and dissipate this wealth. Some of the slime-molds and protozoa and nematodes are harmless, others attack roots and cause destructive plant diseases. It takes a lot of knowing, to tell friend from foe down there in the invisible dark.

Science News Letter, July 5, 1947

MEDICINE

Q Fever Holds Questions

▶ HERE'S A Q story. It has some queer, even quaint features, but Q is the name of a disease. Q fever. Just that. The Q stands for question mark.

Q hit 55 stockhandlers, slaughterhouse workers and trainmen in Amarillo, Texas, killing two of them, in March, 1946. The 55 did not know what had hit them. Neither did their doctors. That is not queer, because it was the first naturally occurring outbreak of the disease in the United States. Previous outbreaks in this country had been in laboratories among scientists working with the germs and in troops who got the disease while overseas. The second naturally occurring outbreak struck about 30 packinghouse workers in Chicago last summer. (See *SNL*, Oct. 19, 1946.)

Drs. Norman H. Topping and Charles C. Shepard, with Dr. J. V. Irons and J. N. Murphy, Jr., of the Texas State Health Department and Dr. John M. Hooper of the Amarillo Health Department and Dr. Don M. Wolfe of Lederle Laboratories, Pearl River, N. Y., studied the history of the outbreak, the records of the illnesses and the blood serum of the patients. They report in the *Journal of the American Medical Association* that the disease was definitely Q fever and that the patients probably got it from cattle. The cattle themselves did not seem to be ill or to have anything the matter that could be detected while they were being handled in the stockyards at auction and in the packing house.

There is no specific treatment for the

disease. Penicillin and sulfa drugs were tried in Amarillo, but the doctors do not think these had any effect. PABA (short name for para aminobenzoic acid) might help, because it has been effective in other diseases caused by the same kind of germs. These germs are named rickettsia for an American scientist, Howard Taylor Ricketts, who first discovered this kind of germ, though not the Q fever rickettsia. PABA was not tried in Amarillo because the disease was not identified until the outbreak was all over.

Science News Letter, July 5, 1947

PHYSICS

Atomic Energy Power Felt in Magazine World

▶ ATOMIC power may not be turning wheels in industry yet, but the magazine publishing business is about to get a test of the money-power of the atom.

A new magazine, announced for publication in September and devoted to atomic matters, will command an annual subscription fee half again as much as the high-class monthly, *Fortune*. The new magazine will be called *Nucleonics*. It is described by the publishers as "The McGraw-Hill Magazine of Nuclear Technology."

Dr. John R. Dunning, Columbia University nuclear physicist, will serve as consulting editor of *Nucleonics*, which will be edited by Keith Henney, consulting editor of the magazine, *Electronics*.

Science News Letter, July 5, 1947

ATOMS, PLANETS AND STARS

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Books of the Week

MINING

U. S. Coal Reserves Are Enough for 1,500 Years

► THE UNITED STATES has enough coal reserves to supply all this country's requirements in heat, light, power and other uses for 1,500 years, an engineer reported at the meeting of the American Society of Mechanical Engineers.

Dr. Harold J. Rose, vice president and director of research for Bituminous Coal Research, Inc., Pittsburgh, said that at our present rate of consumption, there will be enough coal for another one and one-half millennia.

Pointing out that coal can now be used to make almost any type of fuel or synthetic chemical product, Dr. Rose said that coal is the one bright spot amid threats of shortages in many minerals.

If petroleum and natural gas could be produced fast enough to supply both their present markets and the present uses of coal, the supply of the two products would last only eight and one-half years, Dr. Rose declared.

Science News Letter, July 5, 1947

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THE AMERICANA ANNUAL: An Encyclopedia of the Events of 1946—A. H. McDannald, ed.—Americana Corp., 800 p., illus., \$10. A compilation of information concerning outstanding developments in all branches of knowledge.

APPROACHES TO GROUP UNDERSTANDING—Lyman Bryson, Louis Finkelstein, R. M. MacIver, eds.—Conference on Science, Philosophy, and Religion, 858 p., \$5. The Sixth Symposium of the Conference on Science, Philosophy, and Religion in Their Relation to the Democratic Way of Life.

ARCHAEOLOGY OF THE HIGH WESTERN PLAINS: SEVENTEEN YEARS OF ARCHAEOLOGICAL RESEARCH—Étienne B. Renaud—Univ. of Denver, 135 p., paper, \$1.70. Dealing exclusively with the work of the Department of Anthropology of the University of Denver, it is a summary of their work presenting the main features of the material culture of the populations which inhabited this area during an indefinite prehistoric time and early historic time.

CAMPING AND OUTDOOR EDUCATION—L. B. Sharp and E. De Alton Partridge, eds.—Nat. Assn. of Secondary School Principals, Bull. Vol. 31, No. 137, 197 p., illus., paper, \$1. A discussion of the need for this type of education and how to make it work together, with an annotated bibliography.

CHEMICAL COMPOUNDS FORMED FROM SUGARS BY MOLDS—Bernard S. Gould—Sugar Res. Found., Sc. Rept. Series 7, 17 p., paper, free. Demonstrates the potentialities existing in this field of transforming sugars into other chemically useful compounds.

DAHLIAS: What Is Known About Them—Morgan T. Riley—Orange-Judd, 213 p., illus., \$2.50. For all dahlia fanciers, this book answers questions concerning planting, cultivation, and propagation.

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FLORA OF DELAWARE AND THE EASTERN SHORE: An Annotated List of the Ferns and Flowering Plants of the Peninsula of Delaware, Maryland, and Virginia—Robert R. Tatnall—Soc. of Nat. Hist. of Del., 313 p., \$3.50. A catalogue of flora of a geographic unit which is of exceptional interest botanically because of the make up of the Peninsula, both Coastal Plain and Piedmont Plateau.

FOOD PRODUCTS—Saul Blumenthal—Chemical Pub., 986 p., \$12. For anyone interested in the preparation of food, this book presents the manufacture of food as a series of operations governed by physical, chemical, and bacteriological principles. The most modern methods of all types of food processing are here discussed.

INTER-AMERICAN UNDERSTANDING AND THE PREPARATION OF TEACHERS—Effie G. Bathurst—Fed. Sec. Agency, Office of Ed., Govt. Printing Office, Bull. 1946 No. 15, 100 p., illus., paper, 30 cents. A description of work carried on by 22 experimental centers aided by Office of the Coordinator of Inter-American Affairs to promote understanding by way of public-school systems, teacher-preparing institutions, and State and county education departments.

LOWER PERMIAN INSECTS FROM OKLAHOMA. PART II. INTRODUCTION AND THE ORDERS MEGASECTERA PROTODONATA AND ODONATA—Frank M. Carpenter—Am. Acad. of Arts and Science, Vol. 76, No. 2, 29 p., illus., paper, \$1.25. Insects collected in Wellington strata in Noble County, Okla., a recently discovered bed of an equivalent age to the previously unique Elmo limestone bed.

STRATEGIC MATERIALS: A Summary of Uses, World Output, Stockpiles, Procurement—John B. DeMille—McGraw-Hill, 626 p., \$7.50. Detailed information on 76 strategic metals and minerals, chemical, physical, world supply and production, regulations concerning, and old and new uses are included in this comprehensive manual.

VARNISHED CLOTHS FOR ELECTRICAL INSULATION—H. W. Chatfield and J. H. Wredde—Chemical Pub., 233 p., illus., \$6. To correlate the work of the three fields that go into this product, textile, varnish making, and electrical engineering, this book has collected a scattered literature and should aid in the choice and use of varnish insulation.

Science News Letter, July 5, 1947

Steam is especially good to blanch asparagus, corn and some other vegetables before preservation by freezing.

Harvesting avocados is done with a long pole with a knife and suspended bag on the end; the fruit cut off the limb by the knife drops into the bag.

• New Machines And Gadgets •

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 369. To receive this Gadget Bulletin without special request each week, remit \$1.50 for one year's subscription.

✿ **HOLDERS** for skirts and slacks are a pair of wire clamps that are easily attached to any wire coat hanger and positioned to fit the belt of the garment. The belt is inserted in a loop on each holder, the spring of the wire being sufficient to hold it firmly.

Science News Letter, July 5, 1947

✿ **DUCK DECOY** for marsh-duck shooting is made of plastic and rights itself if upset because its keeled bottom is ballasted with cast iron. The light-weight 15-ounce life-like "bird" is made of a plastic that does not splinter or tear if shot; shot-holes can be easily mended with a cement.

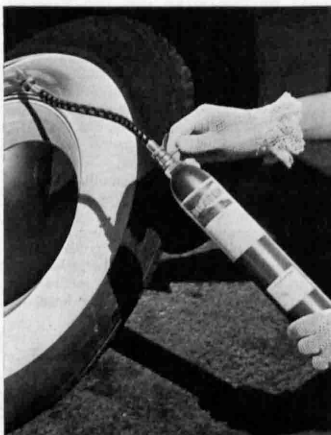
Science News Letter, July 5, 1947

✿ **WATERLESS HAND CLEANER** is a paste, supplied in tubes or cans, that quickly removes paints, greases, stains and dirt without the use of water. It can be used on tender skins because it contains no grit, abrasives or harsh alkalis, and does contain lanolin and vegetable oils for skin conditioning.

Science News Letter, July 5, 1947

✿ **CABINET STAND**, usable by the home seamstress or for nuts, bolts, brads and rivets on the mechanic's bench, has trays for tools and supplies attached to the ends of the cabinet that swing out as the hinged ends are opened. The opening of one door exposes all trays to view.

Science News Letter, July 5, 1947



✿ **CARBON DIOXIDE holder** can be used to inflate a flat tire on the road or to extinguish a fire in the car. Its steel tank has a short delivery hose, shown in the picture, which is easily coupled to the intake valve on the tire, or used to direct the gas against a flame. A full tank will inflate three tires.

Science News Letter, July 5, 1947

✿ **CONVEYOR BELTS** that will actually turn corners are made of parallel cross wires linked together at each end, thus forming an open steel belt or broad chain. They can carry packages from

place to place in stores or factories, and are already in use conveying bread from baking ovens to cooling chambers.

Science News Letter, July 5, 1947

✿ **ELECTRONIC permanent-wave machine** requires five to ten seconds per curl and imparts almost no heat to customer or operator. Six permanent waves can be given each hour by a single machine. The heaters are light-weight insulated plastic.

Science News Letter, July 5, 1947

✿ **LABOR-SAVING auto jack**, recently patented, is simply a foldable ramp up which the flat-tired wheel is slowly run. A block is then inserted under the axle and the ramp removed. It is used again, after the tire is changed, to lift the car.

Science News Letter, July 5, 1947

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