INVENTION

Improved Brush Killer Hits Roots as Well as Foliage

➤ ROOTS AS well as the overground parts of woody plants are killed by spraying the foliage of the brush or shrub with a chemical mixture that contains the weed-killer known as 2,4-D and a vegetable oil with special characteristics, Technically, it is a preparation of a chlorinated phenoxyacetic acid herbicide in a non-phytotoxic horticultural oil.

Other herbicides instead of 2,4-D may be used but this is the preferred one. The important feature is the oil. Non-phytotoxic means it contains no poison of vegetable origin. It must have a boiling range of 500 to 636 degrees Fahrenheit, and an unsulfonated residue of 94%. The high boiling point prevents evaporation in hot weather to eliminate danger to nearby desirable plants.

Other sprays to kill unwanted shrubbery on lawns, in pastures and other places, and to kill seedlings and saplings growing as underbrush among forest trees, do not get into the roots under ordinary procedures, the inventor of this preparation claims. This is said to be effective without cutting into the bark or even covering the entire foliage with the spray.

Inventor is Emerson B. Stull, Sebree, Ky. He received patent 2,557,618. Rights have been transferred to Stull's Chemicals, Inc., of the same town.

Science News Letter, July 14, 1951

AERONAUTICS

Air Force Instructors Travel From Factory to Repair Crew

➤ PILOTS, CREWS and ground repairmen need constant education to know all about the new planes, new engines, new instruments and navigation aids which they are being required to understand and handle. How the U. S. Air Force is providing this education at a minimum of cost was revealed at the Wright-Patterson Air Force Base, Dayton, Ohio.

Special instructors are employed at various Air Force bases to instruct local personnel. All their time is spent either in a factory classroom assimilating knowledge or in an Air Force classroom imparting knowledge. Their main job is teaching men of the ground crews the intricacies of new equipment so that proper maintenance will result.

Some of these instructors are trained to service one piece of equipment and become specialists on that particular accessory. Others are professional teachers who make periodic visits to factories, whenever a new piece of equipment is purchased by the Air Force, and spend their time between attendance at factory schools and in instructing experimental and maintenance personnel. It costs much less to send one man to the factories to gather the necessary information than it would to send entire ground crews.

The training of this type has become increasingly important as airplanes have become more complex. The greatly increased use of electronics is an example. The field of electronics is complex and becoming more so as new developments are made and airmen get nearer the push-button stage of warfare, with planes flown by remote control.

Radar, inter-communication systems, faster firing guns, use of oxygen and pressurized planes for high-altitude flying and all the many navigational instruments in the modern plane require a host of highly-skilled technicians. This educational program is supplying them with up-to-the-minute information.

Science News Letter, July 14, 1951

PETROLEUM ENGINEERING

New Reduction Process Gets Economical Oil from Shale

➤ A NEW "gas combustion" method of extracting oil from oil shale in a continuous process, developed by the U. S. Bureau of Mines, will soon be in use in a demonstration-scale retort for which a contract has already been made. The retort will have a capacity of 150 to 400 tons of oil shale daily, and will probably be in operation in a year.

"If the new retort operates as anticipated, we have an excellent chance of producing crude shale oil at a cost competitive with natural petroleum," Boyd Guthrie, chief of the Bureau's oil-shale demonstration plant in Rifle, Colo., stated. "The grade of oil obtained will be somewhat inferior to the average petroleum, but finished products of good quality can and will be refined from it."

This new process gets its name from the fact that it uses as a source of heat for retorting a gas obtained from the shale and burned in the presence of air. Unlike other retorting processes, it requires neither water nor an elaborate system for condensing the liquid products that come from the retort in the form of mist.

Even more important, Mr. Guthrie said, investment and operating costs for the new process will be substantially lower than those for other methods tested at Rifle. This means product costs will be lower.

Crushed oil shale is fed in a continuous stream into the top of the vertical retort and moves downward by gravity against a rising stream of gas. Air is injected near the center of the vessel and the gas burned to provide heat for retorting.

As the rising gas from the combustion zone and the downward moving shale pass each other, the shale is heated and the gas is cooled. The gases leaving the retort are laden with oil-mist. An oil-collecting system removes the oil.

Science News Letter, July 14, 1951

IN SCIENC

MEDICINE

Relaxing Drug Helps Hangovers and Jitters

➤ ALCOHOLICS WITH a severe hangover can be helped to get over the jitters and depression and to get back their appetite for food within 48 hours through a muscle-relaxing drug, mephenesin. Its trade names are Myanesin and Tolserol.

Drs. Morris Herman and Abraham S. Effron of New York University-Bellevue Medical Center gave it to 50 alcoholics who were admitted to Bellevue Psychiatric Division at the end of prolonged sprees.

The drug was given by mouth, either as an elixir or in capsules. Most of the patients got it every three hours for five or six daily doses.

Of the 50 patients, 37 were eating, quite a few "better than usual," by the next day. In a control group of 10 untreated patients, only two were markedly improved in the same time and four of the 10 did not begin to eat voluntarily until the third, fourth or fifth day.

In 33 patients, Tolserol was especially good in overcoming the jitters or tremulousness. Only two did not improve in this respect in 48 hours. Many patients said that not only was the "outward shaking better" but "it felt better inside, too."

The drug did not help much toward sleeping. Only 12 got a full night's sleep within 48 hours.

Science News Letter, July 14, 1951

MEDICINE

ACTH Keeps Nerves Functioning Their Best

➤ ACTH, PITUITARY gland hormone famous for relieving crippled, painful joints in arthritis, has still another effect on the body. It keeps nerves functioning at their best.

Studies which suggest this were reported by Drs. Clara Torda and Harold G. Wolff of New York Hospital-Cornell Medical Center and the Kingsbridge (Veterans Administration) Hospital, Bronx, N. Y., at the meeting of the Association for the Study of Internal Secretions in Atlantic City, N. J.

They tested the effects of ACTH and five other hormones from the pituitary gland. The tests were made on rats that had their pituitary glands removed. Of all these and thyroxin, the thyroid gland hormone, only ACTH was able to restore nerve function to normal as measured by its action potential and its ability to create the nerve chemical, acetylcholine.

Science News Letter, July 14, 1951

E FIELDS

AERONAUTICS

U. S. Needs 5,000 New Or Better Airports

➤ NEARLY 5,000 new or improved civilian airports in American territory are needed to meet the demands of aviation now and during the next three years, it is stated in a report of the Civil Aeronautics Administration. The report is the annual summary on landing field needs entitled the National Airport Plan.

It lists 4,945 locations by states and local areas at which airports should be constructed or improved to meet present and early anticipated needs. Of these 4,815 are within the continental limits and 130 are in the territories. New airports needed total 2,288, while 2,657 require improvements. CAA estimates that $662,000,000 is required to carry out this national airport plan. Approximately one-half of this would come from the federal government and half from local sponsors. The great majority of the ports listed for construction or improvements are for the smaller planes. But included are 444 for trunk airports, express airports and continental airfields. Also in the list are 304 seaplane bases and 83 heliports.

Copies of the 1951 National Airport Plan may be obtained from the U. S. Government Printing Office, Washington, D. C., at $1.25 each. (See page 30.)

Science News Letter, July 14, 1951

ENGINEERING

Battery-Trolley Combination Proposed for Locomotives

➤ A COMBINATION of trolley power and battery power to operate railway locomotives was proposed to the American Institute of Electrical Engineers meeting in Toronto, Canada, by Llewellyn Evans, consulting electrical engineer of the Tennessee Valley Authority.

Silver-zinc storage batteries would be used, he said. They weigh one fifth as much per kilowatt-hour stored as conventional batteries. Their use will await development of the battery to include heavy duty items.

Sections of the railway using the combination would be equipped with trollies to deliver power to the locomotive, and other sections would rely on power from the batteries. There would be enough trolley sections to keep the batteries charged without layups, he stated. A rectifier charger aboard the locomotive, making both 25- and 60-cycle power equally usable, would add to the flexibility.

Relative economy of the diesel-electric locomotive, now becoming popular with American railroads, and electric locomotives was discussed by T. M. C. Martin of the Bonneville Power Administration. Over a period of years, he indicated, the electric locomotive might prove a money saver in regions where hydroelectric power is available.

Each electric locomotive costs more than double as much as the diesel-electric but the cost of operating, where electric power is not too costly, is less. Speaking of the American Northwest, he stated that the cost of operating 20 diesels would be $5,520,000 a year, while 20 electric locomotives would cost $3,900,000 to operate. The principal saving is in the cost of diesel oil vs. electricity. In a 10-year period this saving would be equal to the additional cost of electrics over diesels.

Science News Letter, July 14, 1951

MEDICINE

Sweet Potato Disease Threatens Far East

➤ SWEET POTATOES are under attack. Americans in this country will probably have enough for dinner next Thanksgiving, but in the Far East the situation appears to be serious.

The attacker is a new virus disease, the world's worst virus disease of sweet potatoes. It has appeared in the Ryukyu Islands since the close of the war and has already caused so much destruction that sweet-potato culture there has been discontinued in large areas. Scientists there think it was brought back by natives repatriated from Tinian or Saipan but there is some doubt about this.

The disease is a "definite threat to sweet-potato growing in other parts of the world, particularly Japan," Eaton M. Summers, agriculturist of the U. S. Civil Administration of the Ryukyu Islands, reports to the Department of Agriculture.

This could readily prove to be a major disaster, he points out, because the sweet potato is an important crop there, furnishing 13% of the native food production.

The disease is called "ishuku-byo" in the Ryukyu Islands, which Mr. Summers translates as "dwarf." No edible sweet potatoes are produced on diseased vines and little or no latex is present in diseased plants or roots.

Attempts to control the disease by roguing have been only partly successful and cannot be expected to provide any permanent benefit. Mr. Summers advises sending all Japanese varieties of sweet potatoes to the Ryukyus to learn whether any are resistant to this disease. Resistant varieties, if any, should then be used in future breeding programs to provide a practical means of stopping the threat to Japanese sweet potato production.

Science News Letter, July 14, 1951

MEDICINE

Big Appendix Tumor Found by Accident

➤ THE PATIENT, a 54-year-old man, called the doctor because he had mumps and a bad sore throat. But the doctor found on examination that, in addition to the mumps and throat inflammation, the patient had a tumor of the appendix so big it filled the lower half of the abdomen from wall to wall.

The patient had never, recently or in the past, had any pain, distress or abnormal feeling in the abdomen.

This is "most uncommon," Drs. David Stanley Likely and Condict Walker Cutler, Jr., of New York, point out in reporting this unusual case to the NEW YORK STATE JOURNAL OF MEDICINE (May 1).

Usually patients with such a tumor will have recurring, vague or not too severe pain in the right lower fourth of the abdomen, but without the fever, high white blood cell count, vomiting and rigid muscles of acute appendicitis.

When Dr. Cutler operated, he found a large cyst, known technically as a mucocele. Operation, he and Dr. Likely point out, is the only satisfactory treatment for this condition. They warn doctors to suspect it in cases where a mass that is not tender can be felt in the right lower quadrant with the symptoms that are not typical of acute appendicitis.

Science News Letter, July 14, 1951

TECHNOLOGY

New Bonding Material Holds Silicone Rubber to Metals

➤ A GLUE-LIKE bonding material, developed by General Electric chemists in Pittsfield, Mass., promises to increase greatly the use of silicone rubbers because it makes a firm union between them and such materials as steel, glass, aluminum, ceramics, tin, copper and other metals.

There are many applications for which this war-developed synthetic rubber is particularly suitable, even more suitable than natural rubbers and other synthetics. It withstands relatively high and low temperatures. It is little affected by ultraviolet radiation. Like other silicones, it is a chemical compound of organic material with silicon, such as found in ordinary sand.

To produce the bond, this new liquid material, is brushed or sprayed on the glass or metal surface to which the silicone rubber is to be attached. After drying, the surfaces are placed together under light pressure at about 250 degrees Fahrenheit. The resulting bond withstands temperatures from 85 degrees below zero to 500 degrees above, and is said to make a bond with a strength of about 700 pounds per square inch of holding area.

Science News Letter, July 14, 1951