

# Current U.S. Patents

**Weed killers capable of killing undesirable vegetation growing along highways and railroad tracks, leaving only bare ground, have been granted patents.**

➤ SEVEN patents covering new chemicals to be used as weed killers when bare ground is the desired result were awarded by the U.S. Patent Office.

Two of the herbicides are commercially available, although only the one known as Hyvar X Bromacil can be bought in this country. The other five are still in the developing stage.

The seven classes of compounds for controlling undesirable vegetation, such as that along highways or railroad tracks, resulted from research by scientists at E. I. du Pont de Nemours and Company.

The patents, numbered from 3,235,357 through 3,235,363, were awarded variously to Dr. Harvard M. Loux, Edward J. Soboczenki, Donald S. Acker, Linus M. Ellis and Raymond W. Luckenbaugh, all of whom assigned rights to Du Pont.

## Increasing Electroluminescence

A method of more than doubling the light from luminescent materials, such as those used in television tubes and watch dials, when an alternating electric current passes through them was granted patent 3,235,850.

Drs. Hartmut P. Kallmann and Eric Weissman of New York City, with Dr. Bernard Kramer of Bergenfield, N.J., assigned patent rights to New York University. Dr. Kallmann told SCIENCE SERVICE that the Rand Corporation is developing the patent idea, which is based on what scientists call "persistent internal polarization," or PIP.

## Other Interesting Patents

A kind of "wave meter" that could substitute under certain conditions for a cathode-ray tube such as used in television sets earned patent 3,235,799 for Hyman Hurvitz. He calls his device an "electroluminescent frequency sensitive visual indicator." Among other things it could be used to tell what radio stations are on the air.

A method of taking X-ray pictures in color and the light-sensitive material with which to do it were granted patent 3,235,728. Heinz Berger and Raimo Gareis of Leverkusen, Germany, assigned patent rights to Agfa Aktiengesellschaft, also of Leverkusen. Their method involves using two silver halide emulsion layers containing chemicals that, when developed, yield the desired colors.

To make radar domes for airplanes that have the same properties no matter in which direction the radar waves are transmitted, three Lockheed scientists devised an electrically homogeneous radome. It can be made to have the desired transmitting properties over a wide range of tempera-

tures. Melvin F. George Jr. and Edward H. Burkart of North Hollywood, Calif., and Eli Simon of Los Angeles assigned rights to patent 3,235,441 to Lockheed Aircraft Corporation, Burbank, Calif.

For a storage tank that will dispense propellants under the zero-gravity conditions of space, two California scientists were granted patent 3,234,728. William D. Christian of Costa Mesa and Glenn D. Nosheim of Balboa Island, assigned rights to Douglas Aircraft Company, Inc., Santa Monica, Calif.

• Science News Letter, 89:155 March 5, 1966

## CHEMISTRY

### New Chemical Separation Principle Developed

➤ A RADICALLY DIFFERENT chemical engineering principle for separating fluid mixtures has been developed and tested successfully in the laboratory.

Prof. R. H. Wilhelm, head of Princeton's chemical engineering department, is developer of the technique, called chemical parametric pumping. Research on his principle is underway to determine how it compares economically with such conventional separation processes as distillation and solvent extraction.

It has long been known that the capacity of solids to adsorb material from a solution varies with temperature. Chemical parametric pumping capitalizes on this fact. It operates by causing a continuously oscillating change in the temperature of adsorbent particles.

These temperature changes cause material to be withdrawn or ejected into the solution stream that shuttles back and forth between the particles. A strategic timing among these steps causes material to build up in concentration more in one place than in another, indicating that separation has taken place.

For example, to separate salt from ocean water, a correct time sequence between the oscillating fluid and temperature change is established as the fluid flows through an absorbent resin bed.

Two major advantages of a chemical parametric pump are that it is self regenerating and that separation can be effected in the continuous manner.

Prof. Wilhelm's work is potentially important not only to chemical engineering separations in industry and petrochemical applications, but also his research implications for basic research in biology. Current research suggests that chemical parametric pumping exhibits some of the characteristics of active diffusion in biological cells.

The study was conducted under a grant from the National Science Foundation.

• Science News Letter, 89:155 March 5, 1966

## SCIENCE BARGAINS

### NEW! SCIENCE FAIR PROJECT KITS

Edmund Kits are carefully planned to give any boy or girl the fun and excitement of discovering science facts. Such carefully planned projects can lead the student to awards or scholarships. Adults too will find them an excellent introduction to the various fields of science. Write for Free Bulletin 47-Q "Your Science Project" covering all phases of Science Fair Projects.



### MINIATURE WATER PUMP



Wonderful for experiments, miniature waterfalls, fountains, HO gage railroad backdrops, etc. Tiny (2 3/4" x 1 3/4") electric motor and pump, ideal for hobbyists, labs, schools. Pumps continuous flow of water at rate of one pint per minute at a 12" head. With 2 D Batteries in series will pump to 24" high. Runs 48 hours on battery. Works in either direction. Self-priming.

Stock No. 50,345-Q ..... \$2.25 Postpaid

### Power Experiments, Models, Displays with

#### NEW SOLAR DRIVE MOTOR

Sunlight can now be used as power source for precision miniature motor by International Rectifier. Attach to our Silicon Solar Cell or use 2 standard "D" flashlight batteries, or our Nickel Cadmium Cell No. 40,798 (Catalog page 147). Motor operates on 0.35 V to 1.5 V. Antifriction sleeve bearings. .078 diam. shaft extends 7/16" from housing. Has V-groove pulley. Copper brushes, metal and plastic housing. 1 1/2" diam., 1 5/16" high, wt. 2 oz.

Stock No. 40,872-Q ..... (Motor) \$3.95 Ppd.

Stock No. 30,538-Q ..... (Solar Cell) .. \$7.50 Ppd.

### CRYSTAL-GROWING KIT

Do a crystallography project illustrated with large beautiful crystals you grow yourself. Kit includes the book "Crystals and Crystal Growing" and a generous supply of the chemicals you need to grow large display crystals of potassium aluminum sulfate (clear), potassium chromium sulfate (purple), potassium sodium tartrate (clear), nickel sulfate hexahydrate (blue-green) or heptahydrate (green), potassium ferrihydride (red), and copper acetate (blue-green).

Stock No. 70,338-Q ..... \$9.50 Postpaid

### WAR SURPLUS ELECTRIC GENERATOR

Brand-new Signal Corps Generator for endless experiments, electrical uses, demonstrations. Generates up to 90 volts by turning crank. Use in high impedance relays. Charge ground and bring up night crawlers for fishing bait. Has 2 Alnico Magnets. Wt. 2 lbs. Cost Govt. \$15.

Stock No. 50,225-Q ..... \$6.95 Ppd.

Same type generator, mounted with light, as electricity demonstrator. Stock No. 50,385-Q ..... \$11.95 Ppd.

### Make Your Own Astronomical Telescope GRIND YOUR OWN MIRROR



Kits contain mirror blank, tool, abrasives, diagonal mirror and eyepiece lenses. You build instruments ranging in value from \$75.00 to hundreds of dollars.

Stock No.	Diam.	Mirror Thickness	Price
70,003-Q	4 1/4"	3/4"	\$ 7.50 Ppd.
70,004-Q	6"	1"	11.95 Ppd.
70,005-Q	8"	1 3/8"	19.50 Ppd.
70,006-Q	10"	1 3/4"	30.75 f.o.b.
70,007-Q	12 1/2"	2 1/8"	59.95 Barrington

### SCIENCE TREASURE CHESTS

#### For Boys—Girls—Adults!

Science Treasure Chest—Extra-powerful magnets, polarizing filters, compass, one-way-mirror film, prism, diffraction grating and lots of other items for hundreds of thrilling experiments, plus a Ten-Lens Kit for making telescopes, microscopes, etc. Full instructions included.

Stock No. 70,342-Q ..... \$5.50 Pstpd.

Science Treasure Chest Deluxe—Everything in Chest above plus exciting additional items for more advanced experiments. Stock No. 70,343-Q ..... \$10.50 Pstpd.

### WOODEN SOLID PUZZLES



12 Different puzzles that will stimulate your ability to think and reason. Here is a fascinating assortment of wood puzzles that will provide hours of pleasure. Twelve different puzzles, animals, and geometric forms to take apart and reassemble, give a chance for all the family, young and old, to test skill, patience and, best of all, to stimulate ability to think and reason.

Stock No. 70,205-Q ..... \$3.00 Pstpd.

Order by Stock No.—Send Check or M.O. Shipment same day received—Satisfaction or money back.

TEACHERS: Write for Educational Catalog Q-2 Edmund Scientific Co., Barrington, N. J.

### MAIL COUPON for FREE CATALOG "Q"

EDMUND SCIENTIFIC CO.  
Barrington, New Jersey 08007  
Completely new 1966 Edition. 148 pages. Nearly 4500 BARGAINS.

Please Rush Free Catalog "Q"

Name .....

Address .....

City ..... State ..... Zip .....

