

SCIENCE BARGAINS

Order by Stock No.—Send Check or M.O.—
Satisfaction or Money Back!

NEW! SCIENCE FAIR PROJECT KITS



What better way to say "Merry Christmas" to any science minded youngster than to give him one of these new Edmund Kits. They 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.



MOLECULE KIT—This low-priced kit can be used to make many molecular and crystal models. Consists of 50 sponge-rubber balls, 1 inch in diameter and 50 wooden sticks $6" \times \frac{1}{8}"$ that can be cut to any desired length. Balls may be painted, after assembly, to standard molecular colors. With this one kit, molecules with up to 50 atoms can be made. Several kits can be used to make up more complex models.

Stock No. 30,413-Q.....\$2.50 Postpaid

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 nickel sulfate (purple), potassium nickel sulfate hexahydrate (blue green), or heptahydrate (green), potassium ferricyanide (red), and copper acetate (blue green).

Stock No. 70,336-Q.....\$9.50 Postpaid

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.....\$5.00 Postpaid
DeLuxe Chest—Stock No. 70,343-Q.....\$10 Postpaid

NEW LOW PRICE FLASHLIGHT POINTER

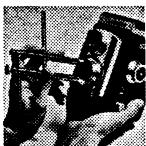


... Point It Out With Projected Arrow

Ideal for pointing out interesting features on movie and slide projection screens. Excellent lecture tool. For teacher use on map, etc. Flashlight focuses an arrow where you point it.

Stock No. 60,117-Q.....\$5.95 Postpaid

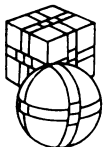
NEW—LOW PRICED ADJUSTABLE SPANNER WRENCH



Exceptional value for hobbyists, photographers, anyone who works with lenses. Precise quality, chrome plated steel, handles retaining rings $\frac{1}{4}"$ to $4\frac{7}{16}"$ dia. Points held in place by spring-held ball bearings—easily, quickly changed. Hand set screw controls adjusting bars. Vertical bar size $3\text{-}15/16"$ dia. $\frac{3}{4}"$. Includes as additional points, Offset Flat Blade— $\frac{1}{4}"$, Straight Pencil Point and Straight Flat Blade.

Stock No. 50,356-Q.....\$4.50 Postpaid
Extra additional points available for.....\$1.00 ea.

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 or old, to test skill, patience, and, best of all, to stimulate ability to think and reason while having lots of fun. Order yours now.

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

FREE CATALOG - Q

160 Pages! Over 1000 Bargains!

America's No. 1 source of supply for Science experimenters, hobbyists. Complete line of Astronomical Telescope parts and assembled Telescopes. Also huge selection of lenses, prisms, and surplus optical instruments, parts and accessories—Telescopes, microscopes, binoculars, infrared sniperscopes... items for making "Science Fair" projects, math learning and teaching aids. Request Catalog Q.



TEACHERS! Write for Educational Catalog Q-2

EDMUND SCIENTIFIC CO.
BARRINGTON, NEW JERSEY

INVENTIONS

Patents of the Week

► A MINING DEVICE that detects the difference between coal and rock has been patented.

The coal-rock sensing device won patent No. 3,015,477 for Sten I. Persson and Charles H. Reynolds of Rochester, N. Y., who assigned rights to General Dynamics Corporation. Coal is usually found in flat horizontal layers, or seams, of various depths. The seam is entered from one edge with cutting tools or drills to break, loosen and remove the coal.

The seam's floor and roof are usually of minerals much harder to cut than coal. When either floor or roof is accidentally entered by the cutting tools, the useful life of the tools is seriously shortened.

To provide an improved method of finding the boundary between rock formations and coal seams, Mr. Persson and Mr. Reynolds mounted one or two test probes next to the cutting bits of a coal mining machine. The probes are made to follow the bits and alternately contact the coal and rock during cutting operations. The probes are electrically connected in such a fashion that the resistance of the minerals between the probes causes the circuit to assume one of two possible stable states.

For a new method of forming color photographs, Howard G. Rogers of Weston, Mass., won patent No. 3,015,561, rights to which he assigned to Polaroid Corporation, Cambridge, Mass. His invention is an improvement on the color photographic process developed and patented by Edwin H. Land.

The improvement consists of controlling the spread of the coloring chemicals by a material that can be reduced by the unreacted developing agent.

Walkley B. Ewing of East Grand Rapids, Mich., was awarded patent No. 3,015,156 for his improved method of making a shade screen. The screen consists of flat, ribbon-like metal strips that form horizontal louvers. Mr. Ewing's improvement, rights to which were assigned to the Ewing Development Company of Grand Rapids, Mich., is in the forming of the vertical, or warp, wires, which consist of two interlocked wavy wires.

A bicycle that folds into a compact unit won patent No. 3,015,498 for Shoji Tanaka and Yoshiyuki Katori of Tokyo. The bicycle is hinged together so that the front, middle and rear sections can be collapsed down to a size only half again as large as one wheel.

Richard J. Rosa of Reading, Mass., assigned rights to patent No. 3,015,250 to the U. S. Government. He was awarded the patent for developing a spectrograph capable of recording the radiation from a luminous object moving at a very high speed. The luminous radiation is produced by shock waves and is difficult to photograph because the speed at which shock waves travel does not permit sufficient time for a proper exposure.

Mr. Rosa developed a method to provide adequate exposure by moving the film on which the spectrograph is recorded at the same rate as the moving shock wave.

Automobile drivers who park in a metered place using the unexpired time left on the meter by the previous occupant may not like the device that won patent No. 3,015,208 for Rollin A. Armer of Berkeley, Calif., who assigned rights to Calpat Products, Inc. Whenever a vehicle leaves the parking space provided with the meter he developed, the meter returns to its "zero" position, wiping out any time remaining on the meter. The departing vehicle trips an air tube on the pavement as it leaves, throwing the meter back to "zero."

A star-tracking telescope particularly useful in airplanes won patent No. 3,015,249 for Philip H. Taylor of Los Angeles, who assigned rights to Northrop Corporation.

A device to warn drivers that the tires on their trucks are underinflated earned patent No. 3,015,803, awarded to Wallace I. Neu of Alpine, Texas. Truck tires, which can cost as much as \$100 apiece, can be easily damaged beyond repair if used when underinflated, and losses from this cause can run as high as one tire per truck per year. His device measures the degree of inflation in terms of temperature, using an electrical element sensitive to infrared radiation.

• Science News Letter, 81:46 January 20, 1962

MATHEMATICS

Ancient Chinese Theory Aids Modern Computer

► A KIND of arithmetic taken from a 2,000-year-old Chinese theorem is being developed by scientists to help make computer operations 20 times faster than now possible.

In so-called "modular arithmetic," numbers need not be "carried" over from one column to the next as in regular addition and subtraction. This means that calculations can go just as fast as the computer can run. With ordinary arithmetic, the computer must "wait" for the "carries" to catch up with the main calculation.

"Modular arithmetic," a new way of presenting and manipulating information, is being developed by scientists at Lockheed Missiles and Space Company, Palo Alto, Calif.

• Science News Letter, 81:46 January 20, 1962

A simple, rapid method for estimating the stage of the sunspot cycle has been developed.

Evidence indicates that poorer students, directing their interests away from school, are more apt to become car owners.

Treatment and prevention of four major diseases, pneumonia, tuberculosis, influenza and syphilis, with prescription drugs has been responsible for an increase in annual American income of 7.5 billion dollars.

The commercial feed industry volume has grown from 19 million tons in 1950 to 40 million tons in 1960.