



SEE-THRU MIRROR

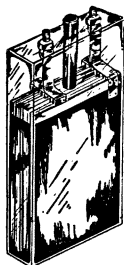
Reflects as well as transmits light (half and half). Optical glass. Size 2 1/4" x 4", about 1/4" thick. Mounted in removable metal frame with window in back. Excellent if you wish to "see without being seen," as thru peephole. Each \$5.00

HARRY ROSS

Scientific & Lab Apparatus
61-L Reade St., N.Y. 7, N.Y.

The Battery That's Used in Guided Missiles Now Released as Government Surplus

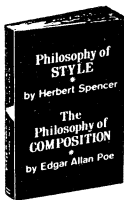
For Photography, Aircraft, Models, Searchlights, Radios, etc. \$1.95 ea. Postpaid



Sintered-plate Nickel-Cadmium alkaline storage batteries designed for "NIKE" Missile and now surplus due to design change. A lifetime battery with no known limit of service (over 5000 recharges on test without loss of capacity). Other features: Virtually indestructible, compact & lightweight, withstands heavy shock and vibration. Flat voltage curve during discharge retains charge year or more, high discharge rate up to 50 amps. for this cell, no corrosion fumes to harm clothing or equipment, spill-proof construction, discharge in any position, indefinite storage without deterioration, operates in temperatures -60°F to +200°F. Each cell is approx. 4 ampere hour capacity. Nominal voltage per cell is 1.2 volts. (A 6 V. battery requires 5 cells.) Cell size 6" H. x 2" W. x 1/2" T. Wt. 6 oz. ea. Uses Potassium-Hydroxide (30%) electrolyte. Negligible loss during lifetime service. Add only distilled water once a year. A fraction of Government cost. **Used Test Cells...\$1.95 ea. Postpaid Brand New Cells...\$2.95 ea. Postpaid**

30 A.H. Motor Starting Cells—Nickel-Cad. steel cased with 1/2" screw terminals for mom. current drains to 1000 amps Size 8 1/2" h. x 3" W. x 1 3/16" T. Wt. approx. 3 1/2 lb. Need no filling. **New cells...\$5.95 ea. (not shipped prepaid) Used cells...\$2.95 ea. (not shipped prepaid)** All cells guaranteed to your satisfaction or money refunded (less postage).

ESSE RADIO COMPANY, Dept. SNL
42 W. South St. Indianapolis 25, Indiana



WRITE FOR MONEY!

Enrich your style through Herbert Spencer's and Edgar Allan Poe's classic principles that have influenced many of the world's great authors. Indispensable for writers eager to get published! Send \$1.00 to PAGEANT PRESS, 101 5th AVE., N. Y. 3, Dept. SN.

FREE BOOK!

"Dover Science Sampler," 64-page book, with entertaining, instructive selections from Mach, Galileo, Newton, Poincare, Hubble, Steinman, etc. Island universes, fata morgana, genetics, phase rule, etc. Entirely free, no strings attached. No obligation, no salesmen will call. Supply limited. Write now. Dept. SNL, Dover, 180 Varick St., N.Y. 14, N.Y.

MICRO-ADS

Equipment, supplies and services of special interest to scientists, science teachers and students, science-minded laymen and hobbyists. 25¢ per word, payable in advance. Closing date 3 weeks prior to publication (Saturday).

SNL, 1719 N St., N.W., Washington 6, D. C.

BINDERS FOR SNL—BUFF-COLORED BUCKRAM. Snap-in metal strips hold 52 copies. \$4.00 pp. Send order with remittance to Science News Letter, 1719 N Street, N.W., Washington 6, D. C.

GOVERNMENT SURPLUS RADIOS, AIRCRAFT cameras, lenses, microscopes, 50 page illustrated catalog, 10¢. Meshna, Malden 48, Mass.

INDEPENDENT THINKERS—INVESTIGATE Humanism, the scientific personal philosophy! Ethical, humanitarian, nonpolitical, nonsupernatural. Free literature. American Humanist Association, Dept. SNL-1, Yellow Springs, Ohio.

NEW LIQUID CASTING PLASTIC, CLEAR, colors. Embed real flowers, minerals, biological specimens, delicate instruments, electronic parts. Also cold-setting resin and fiberglass for laminating, casting, molding, coating. Manual 25¢. Castolite Company, Dept. C-130, Woodstock, Illinois.

INVENTION

Patents of the Week

Two designs for air vehicles that are propelled over water on self-supplied blankets of gas that flow against the outer edge of the craft were awarded patents.

➤ **TWO EARTH-SKIMMING** air vehicle designs that are propelled over water on self-supplied blankets of gas earned patents for Carl W. Bollum Sr., Bethesda, Md.

Patent 3,078,939 provides for a beetle-shaped craft or platform with cockpit facilities for four persons. A compression chamber underneath works against the platform so that gas flows against its outer edge, propelling the craft along as directed by a steering device.

Patent 3,078,938 utilizes the same propelling principle to a larger platform that comes in several easily assembled sections. The overall design is square, except for the bow, which is V-shaped.

Rights to both were assigned to Carwil Enterprises, Inc., Daytona Beach, Fla.

Anti-Skid Device for Tires

An anti-skid device that can be easily installed without raising a car wheel off the ground has gained patent 3,078,902 for Irving Scheidlinger, Freeport, N. Y. The device consists of a base plate on the wheel, to which a pair of fixed engaging claws are secured.

TECHNOLOGY

Computer to Make Paper

➤ A **COMPUTER-CONTROLLED** paper-making machine as long as a football field converts wood fiber and water to paper of varying thickness and quality.

A 16-foot scale model Foudrinier paper machine was demonstrated at the pulp and paper industry convention in New York. The process takes place with numerous machine adjustments made automatically under the direction of an IBM 1710 computer control system.

Instead of producing a many-ton roll of paper every 20 minutes, the working model Foudrinier paper machine produces about 40 yards of finished paper during the same period.

The control of variables in the paper making process has challenged paper makers' ingenuity for thousands of years. Using a computer is the latest step taken to help assure uniform, predictable results.

With few exceptions, making paper currently requires operators to monitor measurement instruments at regular intervals to check on the state of the product in various stages.

In the past two years, the paper industry has started using IBM 1710 computer control systems to help operators in a number of ways. These include:

1. **Computing acceptable control ranges** of variables such as flow rates, temperatures,

Fluid-Driven Gyroscope

A gyro motor that automatically compensates for the declination angle of missiles in flight earned patent 3,078,728 for Carleton H. Schlesman, Washington, D. C., who has assigned rights to the Navy.

The invention is a major one in that telemetering devices have previously lost instantaneous contact with the declination angle and rotational position of a missile in flight.

Better Transmission of Speech

An invention that allows the transmittal of several speech signals, rather than one, has gained patent 3,079,464 for Irwin D. Baumel, Jericho, N. Y. He assigned rights to Crosby Laboratories, Inc., Syosset, N. Y.

Normally, a telephone line allows only one system of speech signals to be carried. The new invention will allow two pairs of conversations to take place simultaneously, without any loss of understanding. The technique used is to make the speech pitch have one frequency.

• Science News Letter, 83:174 March 16, 1963

pressures, levels, moisture content, tensions and speeds.

2. **Detecting and signalling off-limit conditions** as they occur, so that rapid adjustments can be made.

After calculating and storing acceptable control ranges for each variable, the 1710 can then continually monitor and control the process. It can do this because readings taken automatically from measurement instruments affixed to the paper machine are converted by the 1710 into digital computer language.

By comparing the readings with the "acceptable" limits stored in its memory, the 1710 detects "unacceptable" conditions at any point in the process and issues the electronic commands for necessary machine adjustment.

Meanwhile, throughout this operation the 1710 logs all the process variables and permanently records the information for later evaluation and research.

Without computer control papermakers must take physical samples of finished paper at regular intervals, transport them to a laboratory for quality analysis, and return the information to the mill. This process can involve a time lag of up to an hour, during which time the paper machine could have produced off-grade paper at 2,000 feet a minute, or better.

• Science News Letter, 83:174 March 16, 1963

