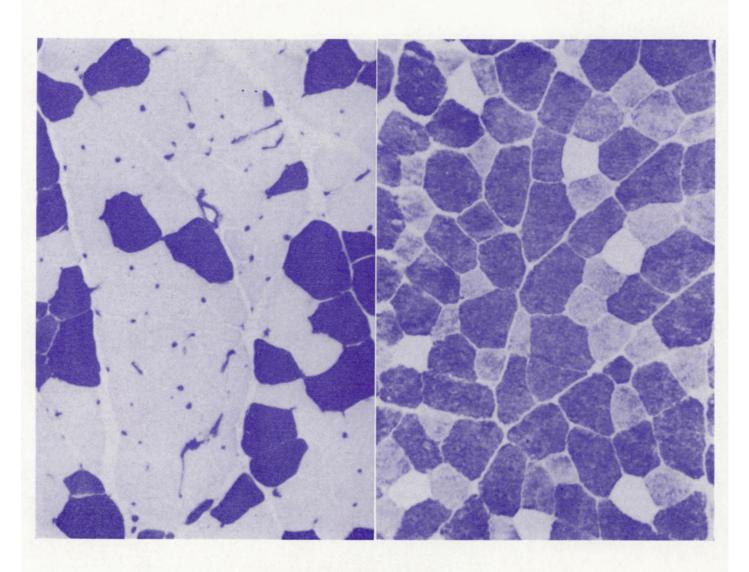
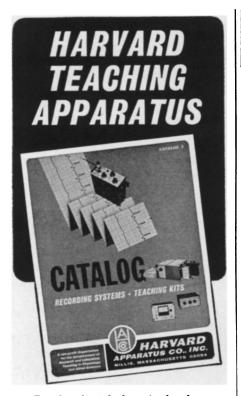




November skies



Nerves and muscle tissue: HOPE FOR SPINAL REGENERATION



#### For Student Laboratories in

- PHYSIOLOGY
- BIOLOGY
- ZOOLOGY
- PSYCHOLOGY
- PHYSICAL EDUCATION

This Catalog features a complete range of apparatus for recording such phenomena as breathing patterns, pulse and fatigue in human subjects; heart and nerve-muscle contraction in laboratory animals. Includes modular recording systems for mechanical and electronic monitoring as well as traditional kymograph equipment.

All equipment is ruggedly constructed to withstand student use and is identical to that used in medical schools. The apparatus is listed individually and in convenient kit form. Versatility of equipment encourages student and teacher alike to plan and execute a wide variety of experiments and demonstrations.

, I I I I I I I I I I I I I I I I I I I	HARVARD APPARATUS Dept. H-27, P.O. Box 24 Millis, Mass. 02054 Please send free Catalog T.	•
	NAME	
	DEPARTMENT	
i	INSTITUTION	
İ	CITY	
	STATE ZIP	

Circle No. 150 on Reader Service Card

## 1000's OF UNUSUAL SCIENTIFIC BARGAINS incli for Fun, Profit, Effects!



#### TERRIFIC BUY! TOP QUALITY! PRICE BREAKTHROUGH IN LARGE SIZE **OPAQUE PROJECTOR**

"Best Opaque of its Kind Under \$200"

Projects brilliant, sharp 4½ foot square image from 8 feet away using up to 5" x 5" color, b & w illustrations. Retains all original colors and proportions. Enlarges drawings, blueprints, watercolors, pictures, stamps, colns, other objects. Revolutionary lighting system gives maximum brightness, retains entire field in focus. Features high speed, 200mm anastignatic projection lens (13.5, 8"F.L.): powerful peanut-size quartz halogen lamp (50hr. life); unique internal reflecting system. Can be used upside down—copy held flat by magnetic platens. Turboblower cooled. Tough plastic case. 5½ ft. cord. Stock No. 71,272Q ...... (8¾" x 6" x 12½"2"—11½ lbs.) ..... \$89.75 Ppd.



Unique new game of skill and chance from the fascinating world of computers. Easily learn skills and speed of EDP. Think and talk like a computer programming expert after only two rounds. Outmaneuver your opponent with real "flow charts." Use simple math to "bug" other players or to ming career. 200 pieces

Stock No. 71,259Q \$6.95 Pm.

NOW! WATED CLIMATE TO LINE T



Amaze your friends—loads of fun—perfect for Science Fair. Water actually flows up side of glass & siphons freely into other container. To stop flow—cut with scissors—watch it snap back. Secret's in special additive with long molecular structure—½ tsp. to glass. Frietion reducing additive has industrial, makes gold fish swim faster, Stock No. 41,0860 \$2.00 Pc.

NEIL, BUZZ . . . and you



#### "FISH" WITH A MAGNET



Go treasure hunting on the bottom! Fascinating fun & sometimes profitable! Tie a line to our 5-lb. Magnet—drop it overboard in bay, river, lake or ocean. Troll it along bottom—your 'treasure' haul can be outboard motors, anchors, other metal valuables. 5-lb. Magnet is war surplus—Alnico V Type—Gov't cost \$50. Lifts over 150 lbs.

\$ 8.75 Ppd.
\$ 3.3.60 Ppd.

No. 70,571Q \_\_\_\_\_ No. 70,570Q 3½ lbs. \_ No. 85,152Q 15¾ lbs.

#### SET OF SEVEN MIGHTY MINI-LABS



SET OF SEVEN MIGHTY MINI-LABS

Seven separate science kits offered in one low-cost package even the youngest child will really enjoy. Not only lots of fun but extremely educational. Easily teaches basic scientific concepts while building actual working pinhole camera, electric motor, double - platform balance, transparent flash-Galilean telescope. Perfect for lecture series. Avail. Individually—total \$12.49. Most \$1.98 each.

\$10.50 Ppd.

### 1ST LOW-COST XENON STROBE!



OW-COST XENON STROBE!

Price breakthrough in bright, reliable electronic strobes. 50W./ Second xenon tube. Variable flash rate — 60 to 500 per minute. Long life—more than 1,000,000 flashes. Printed circuit board design. Safe, durable Bake-lite case Externally mounted bulb. plastic shield. 6'4 X 3'4 X 2''. for home light shows, parties, displays.

No. 71,342Q ————————————————\$24.95 Ppd.

14 oz. Perfect for psycheder fects for home light shows, p Stock No. 71,342Q

BUILD-IT-YOURSELF STROBE KIT

Stock No. 71,343Q \$19.95 Ppd.

#### 6 X 18 MONOCULAR FOR \$5!

6 X 18 MONOCULAR FOR \$5!

Real surplus bargain!
Tiny but powerful prismatic monocular sells elsewhere for more than twice the price. Fully coated opties. 360' field of view at 1,000 yards.
R.L.E. 12. One-finger focusing from 4' to infinity. So compact, light-weight and portable you can carry in shirt pocket . . and almost not know you have it. Sturdy 2½" lg. X 1½" w. Black, baked enamel finish. 3 oz. Lens caps incl.

Stock No. 1,5510 \_\_\_\_\_\_\_\_\_\$5.00 Ppd.

Stock No. 1,551Q \_\_\_\_\_\_\_\_\$5.00 Ppd.

NEW ROLAMITE DEMONSTRATOR KIT
Be among the first to
learn about & experiment
with "the only basic mechanical device discovered
in this century." Almost
frictionless hearing—compared in significance to
the wheel, lever, spring.
Fantastically versatile.
Can function as pump,
brake, switch, in almost
any size, Easily miniaturized. Operates without
turized. Operates without
turized. Operates without
tions—thousands more from resultant inventions. Incl.
3½" x 2½" plastic demo., 8 rolamite bands, 2 stainless rollers, 2 tracks, compl. instr.

Stock No. 60,762Q \_\_\_\_\_\_\_\_\$10.00 Ppd.



#### ECOLOGY KITS FULL OF LIFE!

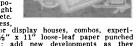
Man's survival depends upon suitable ecological balance. These 5 well planned, experiment kits explore different portions of environment—introduce factors on which natural balances rely. Perform numerous experiments with materials included (+ few avail. locally). Compl. instruct. Perfect for everyone alive.



			ROM D	EATH	\$5.00	Ppd
					\$5.00	
					\$6.00	
					\$6.00	
		 GREE	N LEA	VES	\$5.00	Pod
one	alive.					

### NEW PSYCHEDELIC LIGHTING HANDBOOK

NEW PSYCHEDELIC LIGHTING HANDBOOK
Big, new 100-page handbook packed with flats,
loaded with illustrations.
All latest developments,
applications, equipment.
Covers strobes sources,
black light, projectors,
crystal and organic slides,
color organs, mirrors, polarized color, screens, light
boxes. MusicVision, etc.
lare find for business,
home, hobby. Ideal for display houses, combos, experimenters, hobbyists. 8½" x 11" loose-leaf paper punched
for three-ring binder: add new developments as they
happen. Stock No. 91000 \_\_\_\_\_\_\_\_\$3.00 Ppd.



#### 1st LOW-COST VACUUM PUMP!

Ist LOW-COST VACUUM PUMPI

Nothing like it! Top-quality hand-held pump produces & maintains 25" of vacuum. Has instant release tab, 1%" diam. stainless gauge (0.30"). 100's of uses—siphon noxious fuids, evacuate bell jars and castings, clean, retrieve, lift sterile objects, demonstrate Magdeburg hemispheres, etc. lifts 40 lbs. with Indd. """ lifter (2½ diam. up)—more w/larger cup.

Stock No. 71,301Q \_\_\_\_\_\_\_\_\_\$12.00 Ppd.

No. 71,300Q (without gauge/lifter) \_\_\_\_\_\$5.00 Ppd.

MAIL COUPON FOR GIANT FREE CATALOG



## MAIL COUPON FOR GIANT FREE CATALOG

148 Pages! More than 4,000 UNUSUAL Huge selection of telescopes, microscopes, binoculars, magnets, magnets, flers, prisms, photo components, parts, kits, accessories—many hard to get surplus bargains. Mail coupon for FREE Catalog "Q." EDMUND SCI-ENTIFIC CO., 300 Edscorp Building, Barrington, N.J. 08007.

B	ARG	AIN	IS!
	II.	-	88
	I		2
E	BMI	IND	
	-	a milan	
200			Steel,

Address City

ORDER BY STOCK NUMBER . OPEN ACCOUNT TO RATED FIRMS . MONEY-BACK GUARANTEE 300 EDSCORP BUILDING **SCIENTIFIC** BARRINGTON, NEW JERSEY 08007

## science news

A Science Service Publication Vol. 98/Oct. 24, 1970/No. 17 Incorporating Science News Letter

Watson Davis, 1896-1967
Publisher: E. G. Sherburne Jr.

Editor: Carl Behrens, Ph.D.

Managing Editor: Kendrick Frazier

**DEPARTMENTS** 

Aerospace: Everly Driscoll

Earth Sciences: Louise Purrett

Engineering Sciences: Charles D. LaFond Environmental Sciences: Richard H. Gilluly

Life Sciences: Barbara J. Culliton

Medical Sciences: Louise Campbell

Physical Sciences: Dietrick E. Thomsen

Copy Editor: Nadine Clement Production: Robert Trotter

Production Assistant: Melinda Armistead

Books: Margit Friedrich

Editorial Assistant: Esther Gilgoff

Advertising: Scherago Associates, Inc. Circulation: Gustave T. Wescott

Copyright © 1970 by Science Service, Inc., 1719 N Street, N.W., Washington, D.C. 20036. Republication of any portion of SCIENCE NEWS is strictly prohibited.

SUBSCRIPTION DEPARTMENT 231 WEST CENTER STREET MARION, OHIO 43302

Subscription rate: 1 yr., \$7.50; 2 yrs., \$13.50; 3 yrs., \$19.50. Special trial offer: 39 weeks, \$3.97. Single copy, 25 cents. \$1.00 per year for foreign postage. Change of address: Three weeks' notice is required. Please state exactly how magazine is to be addressed. Include zip codes.

Printed in U.S.A. Second class postage paid at Washington, D.C. Established as Science News Letter ® in mimeograph form March 13, 1922. Title registered as trademark U.S. and Canadian Patent Offices. Indexed in last Science News of June and December, in Reader's Guide to Periodical Literature, Abridged Guide and the Engineering Index. Member of Audit Bureau of Circulation. UNSOLICITED MANUSCRIPTS will not be returned unless accompanied by a stamped, self-addressed envelope.

Published every Saturday by SCIENCE SER-VICE, Inc., 1719 N St., N.W., Washington, D.C. 20036. NOrth 7-2255. Cable Address: SCIEN-SERV.

> ADVERTISING STAFF Director: EARL J. SCHERAGO Advertising Sales Manager: RICHARD L. CHARLES

Address all advertising to Scherago Associates, 11 W. 42nd St., New York, N.Y. 10036.

Sales: New York, N.Y. 10036: Robert S. Bugbee, 11 W. 42 St. (212-PE-6-1858); Scotch Plains, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873); Medfield, Mass. 02052: Richard M. Ezequelle, 4 Rolling Lane (617-444-1439); Chicago, III. 60611: Herbert L. Burklund, Room 2107, 919 N. Michigan Ave. (312-DE-7-4973); Beverly Hills, Calif. 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772).

#### OF THE WEEK

331 Neurobiologists get Nobels

Weakening the Mansfield Amendment Environmental danger of PCB's Finale on new drug bill

333 Evidence for partons

335 Engineering Sciences: Cooling missiles; External combustion and battery power; Remote-control parachutes; Measuring minute winds

Medical Sciences: Genetic defects; Hepatitis suit; Herpes virus findings; Dangers of Spanish fly; Protecting a new cornea; Mycoplasma in various diseases

#### IN SCIENCE FIELDS

337 Neurobiology: Reg

Regenerating the spinal cord

334 Astronomy:

Saturn brightens

330 Films of the Week

Books of the Week

340 New Products



Advances in molecular biology and biochemistry in the last 20 years have convinced some scientists that the time is ripe to initiate fundamental studies of spinal cord regeneration. In one experiment, NIH workers showed that when a normal cat muscle containing both fast and slow muscle fibers (I) is innervated by nerves from slow muscles, the nerves stimulate greater production of the enzyme characteristic of slow muscle (r). See page 337. (Photos: Dr. Lloyd Guth)

### SCIENCE SERVICE

Institution for the Popularization of Science founded 1921; a non-profit corporation

Board of Trustees—Nominated by the American Association for the Advancement of Science: Athelstan F. Spilhaus, West Palm Beach, Fla.; Wallace R. Brode (Treasurer), American Chemical Society, Washington, D. C.; Bowen C. Dees, Franklin Institute, Philadelphia, Pa. Nominated by the National Academy of Sciences: Henry Allen Moe, The Clark Foundation; Harlow Shapley, Cambridge, Mass.; Allen V. Astin, Bethesda, Md. Nominated by the National Research Council: Glenn T. Seaborg (President), U.S. Atomic Energy Commission; Leonard Carmichael, National Geographic Society. Nominated by the Journalistic Profession: O. W. Riegel (Secretary), Washington and Lee University; Gordon B. Fister, Call-Chronical Newspapers. Nominated by the Edward W. Scripps Trust; John Troan, Pittsburgh Pres; Edward W. Scripps II (Vice President), Edward W. Scripps Trust.

Director: E. G. Sherburne Jr.; Assistant Director: Dorothy Schriver; Staff, Youth Division, Howard Weisbrod; Things of Science, Ruby Yoshioka.

#### FILMS on SCIENCE and MEDICINE for RENTAL

\$6.00 each—F.A.C.S.E.A.

972 5th Avenue, New York City 10021 Catalogue upon request



#### SLIDE RECORD-

for the efficiency-minded executive. Controls up to 106 accounts, salesmen, projects, etc., using contrasting, superposed celluloid bands running freely in plexiglass channels. Show darget, attainment, difference figures. Striking performance picture. Self-contained, decorative — an asset to any operation. Free lit. SL15:

DIVISION ULTRADEX Intercontinental Service, Box 615 Washington C. H., Ohio 43160





IS THERE A CHEMIST IN THE HOUSE????
Only \$4.00 Plus \$1.25 p.p.

Will bring 49 "PLUS" indi-Will bring 49 "PLUS" individual, assorted, items of standard quality laboratory apparatus: glassware, porcelain, rubber, plastic, etc., etc. Value? 2 to 3 times our offer. None dangerous. No junk. Surprise items. Pyrex Advanced Student Assort.

@ \$10 plus \$2

HARRY ROSS Scientific & Lab. Projects 61-L Reade St. N.Y. 10007

#### **ORGANIZE & PROTECT** Your Valuable Color Slides **SLIDE HOLDER VIEWER**

Holds 20 cardboard mount 2" x 2" slides safe from damage or dust, in flexible vinyl pockets. Toselectslide hold viewer to light. Stock No. 49910. Package of 25 - holds 500 slides \$8.75

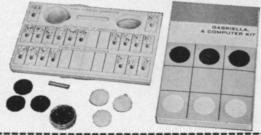
Forestry Suppliers, Inc.

BOX 8397 / JACKSON, MISSISSIPPI 39204

# JARRIFI She teaches by learning!

Student plays series of exciting games of "mini-checkers" with his own Gabriella Computer Kit. As they play, Gabriella stores all moves and countermoves in her "memory," finally learns to be unbeatable! Unique way to teach computer programming basics. Clears up mystery of abstract concepts, relates them to everyday experience, using elements that can actually be touched and seen. Simplifies learning and teaching, keeps pace with rate of comprehension.

GABRIELLA COMPUTER KIT is complete with all equipment and step-by-step instructions that explain all concepts — ready for immediate use by an individual student.

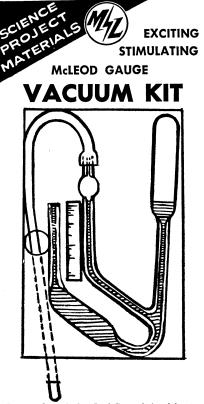


ORDER NOW Only **\$7**95 per kit; 6 for \$1495

ppd.\* LAB-AIDS INC., 160 Rome St., Dept. N, Farmingdale, N.Y. 11735 Please send me \_ \_ GABRIELLA COMPUTER KITS QUANTITY ☐ Check ☐ M.O. No C.O.D.t I enclose \$ Name. Schoolt Address\_ City\_ \_State\_ Zip \*N.Y. State Residents add State & Local sales tax.

Circle No. 1 on Reader Service Card

†Purchase orders accepted from educational institutions.



Construct low priced McLeod Gauge designed for student and amateur use. Includes pyrex gauge with case, plastic tubing, hardware and seal. Directions for calibration.

Less Mercury—

Experiments in Electrostatics—a book of experiments you can do ... send 50¢. Low priced physics equipment for schools and science projects. Free catalogs—send 15¢ for postage.

#### 0 and

Dept. SN12A69 1685 Elmwood Ave., Buffalo, N.Y. 14207



Picking a telescope to fit your needs and your pocketbook is simple when you select a DYNASCOPE — the same instruments used by more than 150 schools, colleges and observatories. Prices begin as low as \$49.95, and your satisfaction is guaranteed by a fullrefund warranty.

FASCINATING GUIDE YOURS FREE!
Read these valuable facts before buying any telescope. Mail coupon or postcard for your complimentary copy of this helnful guide. helpful guide.

Criterion Manufacturing Co. 331 Church St., Hartford, Conn. 06101 ® TM Registered U.S. Pat. Office

331 Church St., Hart Please send your fr		4
Name		
Address		
City	State	