

25c

October 14, 1967

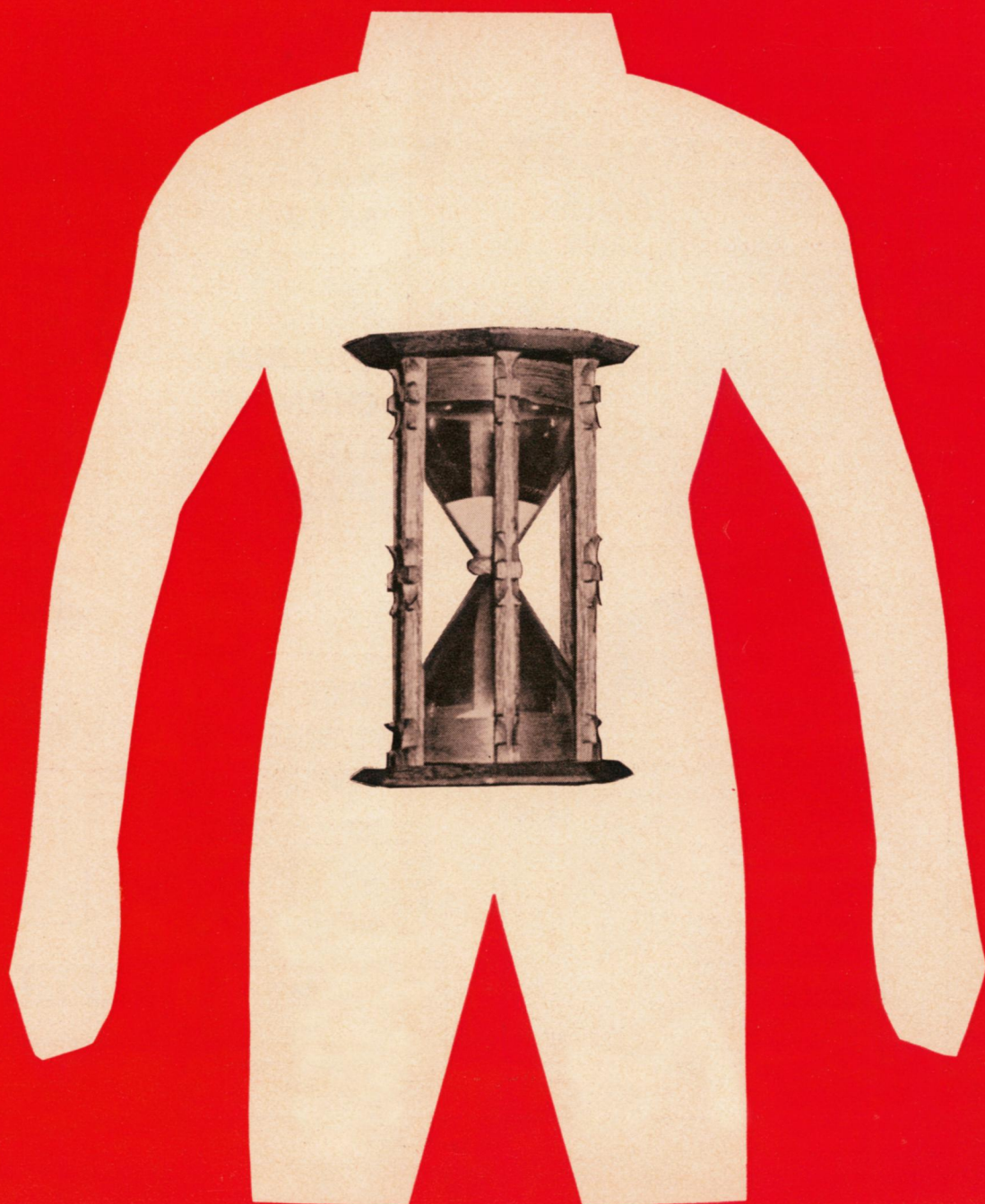
VOL. 92 NO. 16

Pages 361-384

SCIENCE NEWS

SCIENCE NEWS LETTER®

*Biochemistry
of the
Bioclock
p. 380*



SCIENCE PROJECT MATERIALS

EXCITING! STIMULATING!

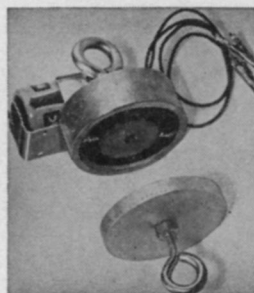


Easily assembled kit for constructing 500,000 Volt, 36" high, electrostatic generator. Requires 1/4 h.p. motor.

**200,000 VOLTS
ELECTRO-STATIC GEN. KIT**
17" high, can be assembled with screw driver and pliers.
\$26.50 p.p.
200,000 V. generator, completely assembled—
\$39.50 p.p.

AN EXCELLENT
SCIENCE PROJECT &
TEACHING AID!

LIFTING MAGNET

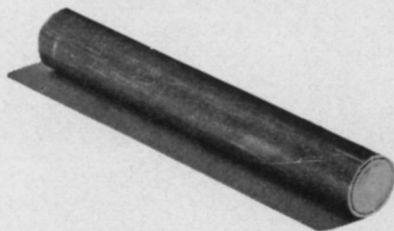


\$9.50
postpaid

Weighs only 1 lb., yet can lift up to 200 lbs. Same principle as scrap metal lifter. Single flashlight cell (1 watt electricity) will operate this astounding lifter. (Hold in palm of your hand.)

DENSITY FLOAT

Mystify your friends!



DF-1 Sinks in Hot Water, floats in Cold Water

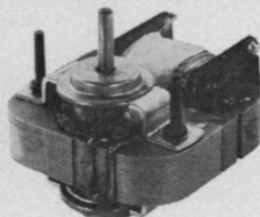
DF-2 Floats in Hot Water, sinks in Cold Water

\$2.50 each—Both for **\$4.50**

BOOKS

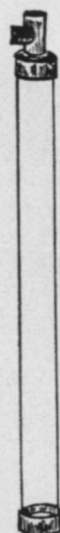
Experiments in Electrostatics	50¢
Tesla Coil—Plans and Experiments	\$1.00
Conversion of Refrigerator Compressors into Vacuum pumps	\$2.00
Vacuum Gauge Booklet	35¢
Diffusion Pump Booklet	35¢
Experiments in High Vacuum	\$1.00
PROCEDURES IN EXPERIMENTAL PHYSICS	\$11.00

SMALL POWERFUL ELECTRIC MOTOR



\$1.75

Brand new motors, mf. by ALLIANCE ELEC. CO.—approx. 2 1/2" x 3" x 2" 3/16" shaft, 110 V. AC. PERFECT FOR SCIENCE PROJECTS. \$1.75 plus 20¢ post-age.



HIGH VACUUM \$6.00

Vacuum system kit, consists of essential materials for converting refrigerator compressor into a vacuum system.

VACUUM CHAMBER KIT \$12.00

Includes 24" long, 2" diam. glass tube, brass and aluminum end covers. Can be used as discharge, cathode ray or electron accelerator tube.

SYNTHETIC DIAMONDS PROJECT

Sand only \$2.00 for small diamonds (about 1/20 carat) and booklets on diamond experiments and practical uses.

SCIENCE TEACHERS FREE

Send for free school catalog of low priced physics equipment.

High Voltage \$75.00

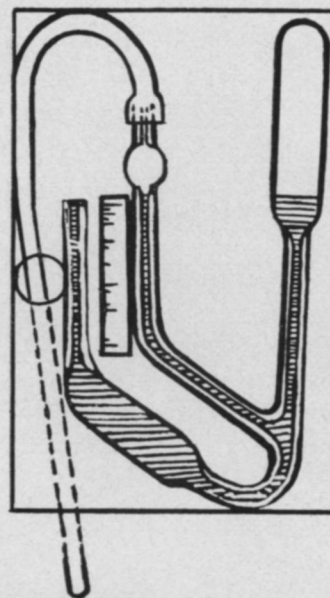
Giant Spark-gap system. Delivers power in short bursts of 10 k.w. or more. Coil secondary is 40" long, spark discharges are over 12" long. Send for plans, theory & experiments—\$1.00.



TESLA COIL (smaller)

Completely assembled, especially designed for spectacular experiments in high frequency. Complete manual instructions included.

\$36.70 p.p.



McLEOD GAUGE VACUUM KIT

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—

\$15.00

FREE CATALOGS—
SEND 15¢ for postage

MORRIS and LEE

Dept. SN-10-67
1685 Elmwood Avenue, Buffalo, N.Y. 14207

SCIENCE NEWS . . .

Vol. 92

October 14, 1967

No. 16

. . . OF THE WEEK

- 367 The earth-like moon
- 368 Fifty murky years from now
- 369 Sunken tankers: oil-filled time bombs
- 370 Surgeons study cholesterol, transplants
Radio antennas a continent wide
- 371 Capitol knife threatens science budgets
- 372 **New Briefs:** Mexican archaeologists strike; Fruit flies win a battle; New Soviet comsat; Trans-Arctic expedition; Mariner due at Venus; Heroin causes lung disease; New spleens for bleeders.

. . . FROM ABROAD

- 377 **Geneva:** Diuretics questioned in obesity
- 379 **Mexico:** Snail's pace for nuclear progress
- Wales:** Students have poor vocabularies

. . . IN SCIENCE FIELDS

- 380 **Biochemistry:** Second hands for biological clocks
- 381 **Political Science:** Violence studies: few answers.

DEPARTMENTS

- | | |
|---------------------------------|-----------------------------|
| 374 Aerospace Notes | 376 Life Sciences Notes |
| 378 Books of the Week | 364 Nature Note |
| 373 Earth and Environment Notes | 382 New Ideas |
| 365 Films of the Week | 383 Patents |
| 364 Letters to the Editor | 375 Physical Sciences Notes |



COVER—The human body's phenomenal ability to tell time may be regulated by enzymes that keep its biological clocks running smoothly. P. 380.

Subscription rate: 1 yr., \$6.50; 2 yrs., \$11.50; 3 yrs., \$16.50. Special trial offer for new subscribers only: 39 weeks, \$3.43. Single copy, 25 cents. No charge for foreign postage. Change of address: Three weeks' notice is required. Please state exactly how magazine is addressed. Include zip code.

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 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.

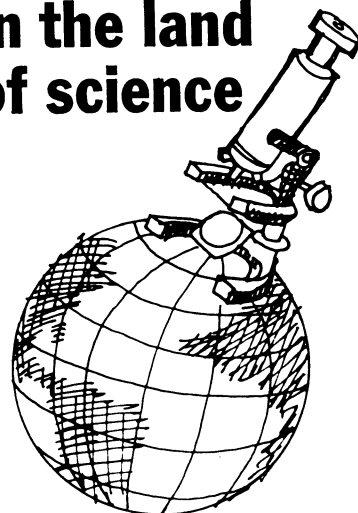
Published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington, D. C. 20036. North 7-2255. Cable Address: SCIENSERV.

ADVERTISING

L. D. Young, Advertising Director, SCIENCE NEWS, 1719 N St., N.W., Washington, D. C. 20036, Phone 202-667-8945.

Advertising Representatives: SCRIPPS-HOWARD NEWSPAPERS. General Advertising Department: 200 Park Ave., New York, N.Y., TN 7-5000; 400 N. Michigan Ave., Chicago, Ill., SU 7-3355; 800 Broadway, Suite 1100, Cincinnati, Ohio, 721-1254; Suite 211, Braniff Building, Dallas, Tex., FL 7-3847; 908 E. Northland Tower, Southfield, Mich., 444-4595; 6363 Wilshire Blvd., Los Angeles, Calif., OL 3-0026; Room 1522, Philadelphia National Bank Building, Philadelphia, Pa., LO 3-6275; 100 California St., San Francisco, Calif., 989-5570; Suite 417, 3384 Peachtree Rd., N.E., Atlanta, Ga. 261-5171.

High adventure in the land of science



THE ELEGANT SOLUTION

Jean Ford Brennan. Here are the stories behind some of the most exciting engineering breakthroughs of our time—from the laying of the first trans-Atlantic telephone cable to the creation of the *Nautilus*. A mixture of science and economics that captures all the drama of the unexpected setbacks and the sheer persistence of scientific adventurers in the solution of seemingly insoluble problems. Photographs. \$4.50

AS I REMEMBER

Stephen P. Timoshenko. "This fascinating autobiography of 'the father of engineering mechanics'... provides a glimpse of life in Czarist Russia... Professor Timoshenko is an amazing man with an equally amazing life story... Highly recommended."—*Library Journal*. \$9.75

LIFE IN THE UNIVERSE

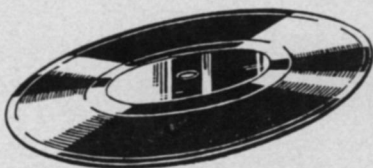
Dr. Alvin Silverstein and Virginia B. Silverstein. Illustrated by Lee Ames. In simple terms for young readers, this book answers the questions every earth-person—young or old—asks today about life in outer space. \$3.95

MATHEMATICS

Its Magic and Mastery

Aaron Bakst. THIRD EDITION. In business and industry, in science and warfare, mathematics is a source of fascination and profit. Here's the book that poses and works out hundreds of problems and explains their solution in an interesting way. \$8.50

Van Nostrand
120 Alexander St.
Princeton, N.J. 08540



LEARN GEOMETRY & CHEMISTRY DEFINITIONS BY RECORD

Accelerate your learning of basic plane geometry and chemistry terms, definitions, rules, etc., by using recordings prepared by qualified teachers in these fields. An extremely effective method that saves you a great deal of preparation and time. Approximately 22 pages of typewritten material. These records are of vinyl quality.

CHEMISTRY RECORDING

PART I. Contains the name, spelling, atomic weight, atomic number and valence of forty-two chemical elements.

PART II. Contains the name, spelling and correct pronunciation of eighty-six important terms used in chemistry.

PART III. Contains the name and identification of ninety-eight technical terms used in atomic science.

12" 33 R.P.M. (over 40 minutes) Order No. C 123 \$3.65

PLANE GEOMETRY RECORDING

PART I. Contains 9 basic axioms and 14 postulates.

PART II. Contains 61 theorems with a statement suggesting how one may PROVE the theorem.

PART III. Contains 66 theorems arranged in groups according to the geometric figure with which they are concerned. This is useful in SOLVING geometry problems. Also there are 30 key definitions given throughout Part III relating to the theorems.

12" 33 R.P.M. (over 40 minutes) Order No. G 121 \$3.65

SPECIAL OFFER—10% discount on any combination of 25 or more records. We pay postage inside continental U.S.A.

AUDIO EDUCATIONAL AID

Dept. 60 • Box 250 • Butler, Missouri



Is this
any way to treat
your children's
playground?

Litter doesn't throw
itself away; litter
doesn't just happen.
People cause it—and
only people can prevent
it. "People" means you.
Keep America Beautiful.



A Science Service Publication

Vol. 92

October 14, 1967

No. 16

Watson Davis, 1896-1967

E. G. Sherburne Jr., Editor

Warren Kornberg, Managing Editor

Frank Sartwell, News Editor

DEPARTMENTS

Aerospace:

Jonathan Eberhart

Earth and Environment:

John Ludwigson

Life Sciences:

Barbara J. Culliton

Medicine:

Faye Marley

Physical Sciences and Astronomy:

Ann Ewing

Physical Sciences and Technology:

Carl Behrens

Social Sciences:

Patricia McBroom

Contributing Writer:

Barbara Tufty

New Ideas and Gadgets:

Ruby Yoshioka

Production Editor:

Marilyn Raleigh

Copy Desk:

Nadine Clement

Books:

Margit Friedrich

Advertising Director:

Louis D. Young

Circulation Manager:

Marcia Nelson

SCIENCE SERVICE

The Institution for the Popularization of Science
organized 1921 as a non-profit corporation

Board of Trustees—Nominated by the American Association for the Advancement of Science: Athelstan F. Spilhaus, Franklin Institute; Wallace R. Brode,*** Washington, D.C.; Bowen C. Dees, University of Arizona. Nominated by the National Academy of Sciences: Henry Allen Moe, The Clark Foundation; Harlow Shapley, Harvard College Observatory; Allen V. Astin, Department of Commerce. Nominated by the National Research Council: Glenn T. Seaborg,* U.S. Atomic Energy Commission; Leonard Carmichael, National Geographic Society; John R. Whinnery, University of California, Berkeley. Nominated by the Journalistic Profession: O. W. Riegel, ****Washington and Lee University; Gordon B. Fister, Call-Chronicle Newspapers; Eugene Patterson, Atlanta Constitution. Nominated by the Scripps Estate: John Troan, Pittsburgh Press; Ludwell Denny, Scripps-Howard Newspapers; Edward W. Scripps II,** Edward W. Scripps Trust. * President, ** Vice President, *** Treasurer, **** Secretary.

Director: E. G. Sherburne Jr.
Assistant Director: Dorothy Schriver.

Staff: Science Youth Division: Howard Weisbrod.
Photography: Fremont Davis. Syndicate Sales: Forrest L. Snakenberg.

Copyright © 1967 by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS is strictly prohibited.



WFF'N PROOF

The GAME for THINKERS



Can you solve
this problem?

1. There are three numbered statements in this box.
2. Two of these numbered statements are not true.
3. The average increase in I.Q. scores of those who learn to play WFF 'N PROOF is more than 20 points.

Is statement No. 3 true?

A NEW DIMENSION IN EDUCATIONAL GAMES

WFF 'N PROOF: The GAME of MODERN LOGIC \$6.00 (plus \$.50 postage and handling)

EQUATIONS: The GAME of CREATIVE MATHEMATICS \$3.00 (plus \$.50 postage and handling)

ON-SETS: The GAME of SET THEORY \$4.00 (plus \$.50 postage and handling)

by Professor Layman E. Allen

Box 71-PJ

New Haven,
Conn.

Please send me WFF 'N PROOF
..... ON-SETS EQUATIONS
I enclose \$ and understand
that if I am not completely satisfied, I
can return the games in 10 days for a full
refund of the purchase price.

Name

Address

City State Zip

Refund and return privileges guaranteed!
Dealer Inquiries Invited

WFF'N PROOF