

15¢

\$5.50 A YEAR

October 4, 1958

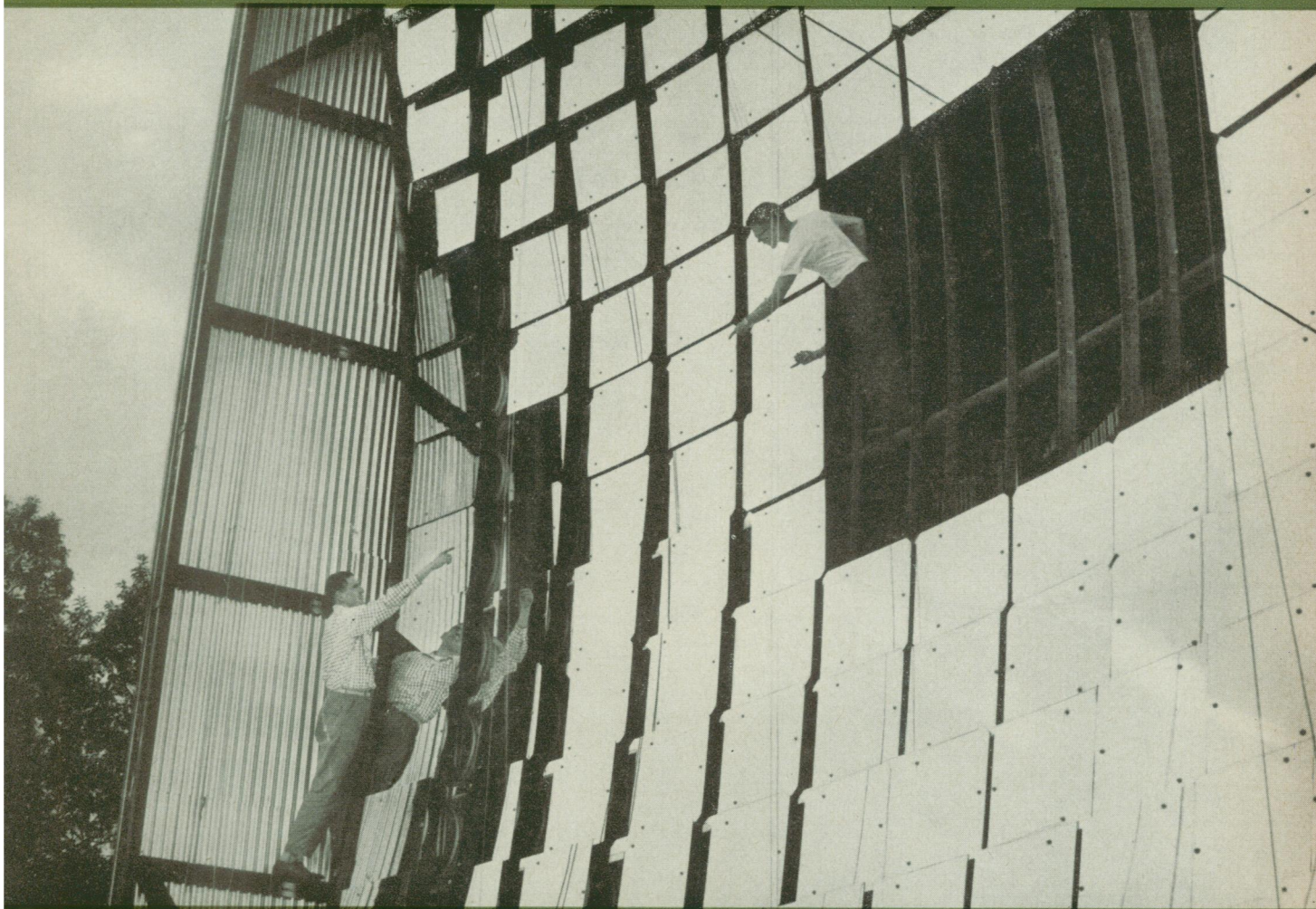
VOL. 74 NO. 14

PAGES 209-224

SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

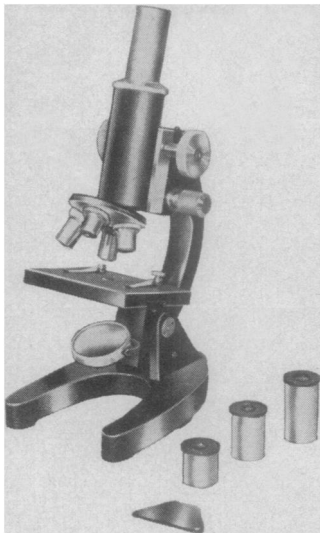


Hot Mirrors

See Page 219

A SCIENCE SERVICE PUBLICATION

IMPORTANT TOOLS for the SCIENTIST!

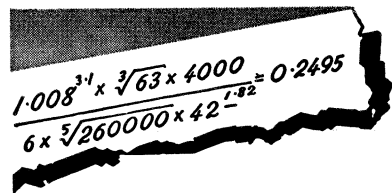


900X "MICROBE HUNTER"

- The only Microscope in its class featuring **GRADE A** optics!
- Power Range **25X, 50X, 75X, 100X, 150X, 200X, 300X, 400X, 600X, 900X**
- Full Range Fine Adjustment
- Safety Stop on Coarse Adjustment

This instrument—made to our rigid design specifications—has wide usage in schools, laboratories and law enforcement agencies. All of the most needed features have been incorporated to meet the requirements for diversified micro-studies. Highly recommended for serious hobbyist desiring exceptional quality at modest cost. Power range from 25X to 900X in 12 possible combinations. Gearing rack and pinion coarse focusing. Micro-motion fine focusing of full range—12 complete revolutions. Safety stop prevents over rise. 36mm dual surface (plano/concave) mirror. Fixed square stage, 70mm X 80mm. Rotating 5-hole, disc diaphragm. Three Huygenian eyepieces of 5X, 10X and 15X. Four achromatic objectives of 5X, 10X, 40X and 60X. Oversize base insures stability and protects objectives. Body tilts through 60°—perfectly balanced at any angle. Complete with upright, wooden carrying case.

F-338—List \$69.95.....Net \$39.95
(Add \$1.00 for postage and handling)



A 66-inch Slide-rule for your pocket, \$19.95



Slide Rule Open

The GENIAC® Calculator carries 66-inch spiral scales yet measures only ten inches fully extended and six inches when closed. Four to five figure accuracy can be relied on. It is indispensable to the scientist, research worker and student. Administrative staff and business men will find it of tremendous value for a host of estimating and checking calculations.

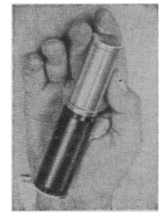
The GENIAC® Slide Rule solves multiplication, division, percentage calculation and gives 5 place logarithms.

You may use it for 30 days and if you are not satisfied repack and mail it back.

What our users say:

"It does all you claim—four or five figure accuracy without eyestrain or magnifiers. Half an hour's study is ample for its use."

A. E. B.
"I use the GENIAC® Calculator for all my slide rule work and need the extra digit which normal slide rules cannot give. I had to get one of my customers a GENIAC® Slide Rule last month, after using mine in his office." E. & G. H. Textile Manufacturers.

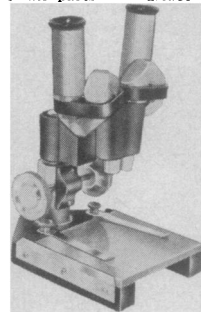


Slide Rule Closed

NEW! 30X-50X "STEREO-SCOPES"

- **STEREOSCOPIC Binocular Dissecting Microscope**
- **Wide Field 3-Dimension View** • **Two Models to Choose From**

SEMI-PRO "STEREO-SCOPE": An especially engineered instrument featuring the stereopsis and wide view field needed in biology—petrography—archeology—mineralogy—criminology—industry—agriculture—etc. Indispensable for inspection of large specimens—small parts—surface features of gross objects—dissection—etc.

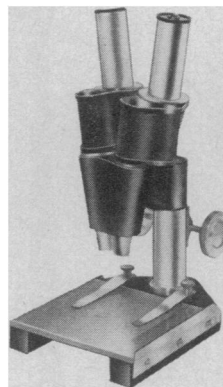


Fixed objective lenses and interchangeable eyepieces for a choice of either 30X or 50X. Prismatic binocular head with full interpupillary adjustment. Ground glass stage 3 3/16" x 3 5/16". Oversize modified horseshoe base. Rack and pinion focusing. Automatic stop prevents over rise. Overall height 9 1/2". Complete with fitted wooden carrying case.

F-337.....Net \$29.95
(Add 83¢ for postage and handling)

STUDENT "STEREO-SCOPE": A 30X stereoscopic binocular microscope—designed primarily for the student and serious hobbyist. Includes most of the features of our "Semi-Pro" model shown on this page. Fixed objective lenses and non-interchangeable eyepieces. All optics are achromatic. Ground glass stage measures 2 7/8" x 2 13/16". Overall height 7 3/4". Complete with fitted wooden carrying case.

F-335.....Net \$19.95
(Add 83¢ for postage and handling)



6259. THE SPLENDOR THAT WAS EGYPT. By Dr. Margaret Murray, F.S.A., F.R.A.I. A comprehensive, colorful survey of the grandeur that was Egypt, covering both its history and prehistory, its social conditions, religion, arts and sciences, language and literature. End-paper maps; over 200 illustrations in line, halftone, color. Pub. at \$10.00. **Only 7.88**

6262. LIGHTEST AFRICA. By F. Spenser Chapman. The famed naturalist and his family travel for nearly a year in a caravan over 17,000 miles of Africa. Everyday experiences include giraffes, hippos, rhinos, and lions; Pygmies hunting in the Ituri Forest; Victoria Falls and Kilimanjaro—a list as long as it is exotic. 60 enthralling photographs, half of them in full color. Pub. at \$5.00. **Only 4.39**

6249. THE CHILDREN'S ILLUSTRATED ENCYCLOPAEDIA OF GENERAL KNOWLEDGE. Compiled by 13 expert contributors. This new and lavishly illustrated Encyclopaedia for children up to sixteen and seventeen is a reference book for practically every topic of general knowledge. Nearly 5,000 separate alphabetical entries have been divided into ten self-contained sections. "It should be in every family where there are children—with parents who must answer questions."—Daniel A. Poling in the *Christian Herald*. 480 pp. **Special 6.88**

5331. PREHISTORIC ANIMALS. By Dr. J. Augusta and Z. Burian. The great and fearsome beasts of prey, extinct flowers, strange sea creatures—recognizable ancestors of many of today's animals, birds and fish—from earliest plant life to the emergence of Man—captured in 55 full-color paintings. The extensive text brilliantly blends the artist's skill with up-to-date scientific knowledge. This unique, absorbing, imported book served as the basis for a film that won the Grand Prix at the Venice Film Festival. 10 1/4" x 13 3/4". Pub. at \$12.50. **Only 9.95**

5947. FIELD BOOK OF INSECTS. By Frank E. Lutz. All of the principal families, many of the genera and most of the commonly observed species of insects in the U.S. and Canada, recorded in a way to make recognition relatively easy. Much information regarding the habits of air, water, earth and underground insects. 100 plates illustrating almost 800 specimens, many in color. **4.50**

4786. IN SEARCH OF ADAM. By Herbert Wendt. The greatest detective story of all time—the search for the truth about the origins of Man in the mists of the unrecorded past. Here, in one 550-page volume, is everything that is known about the kinship between humans and apes, the "missing link," and the mysterious lost races who may have been our first human ancestors. 48 pages of photos. Pub. at \$6.50. **Only 5.00**

6397. ANOMALIES AND CURIOSITIES OF MEDICINE. By George M. Gould, M.D. & Walter L. Frie, M.D. An encyclopedic collection of rare and extraordinary cases, and of the most striking instances of abnormality in all branches of medicine and surgery, derived from an exhaustive research of medical literature from its origin to the present, abstracted, annotated and indexed. 12 halftone plates & 235 illustrations in the text. 982 pp. Pub. at \$12.50. **Only 8.99**

6135. THE COLUMBUS ATLAS. By John Bartholomew. Prepared by one of the world's finest cartographers, this new regional atlas of the world contains 160 pages of fully colored maps and an index of nearly 50,000 place names, with populations, keyed to the maps. All the plates have been handmailed by a highly intricate special color process, and their clarity, precision and complete accuracy make this atlas invaluable for everyone wishing to keep up with the complex affairs of today's world. 8 1/2" x 11". Pub. at \$10.00. **Only 8.98**

COSMOTRON

- **MINIATURE ATOM SMASHER**
- **PRODUCES 75,000 VOLTS**
- **ABSOLUTELY SAFE**



In no sense of the word a toy or a gadget. The COSMOTRON is a scientific instrument capable of producing 75,000 volts—makes sparks up to 2" long—yet is absolutely safe because the current is infinitesimal. The science teacher—science lover—or hobbyist can perform experiments to astound students—friends—family. Makes smoke disappear—defy gravity—turns propellers at a distance—transforms atomic energy into light—makes artificial lightning—smashes atoms—demonstrates ionic space ship drive—and many other experiments. Constructed of the finest materials. Will do exactly—for instruction purposes—what generators that cost 3 to 10 times more will do. The perfect device to teach the secrets of atomic physics and electricity. Will hold an audience spellbound as it performs trick after amazing trick. Includes an experiment kit and illustrated experiment manual. Manual explains the "how" and "why." You will invent many new experiments of your own. A fine research tool that will give years of beneficial service to the institution or individual who owns one. In kit form or assembled.

Kit Form.....\$14.95
Assembled.....\$19.95

All Equipment Protected by 10-Day Return Guarantee & 90-Day Warranty

OLIVER GARFIELD CO., Inc. DEPT. SL-108-A, 108 East 16th St., New York 3, N. Y.

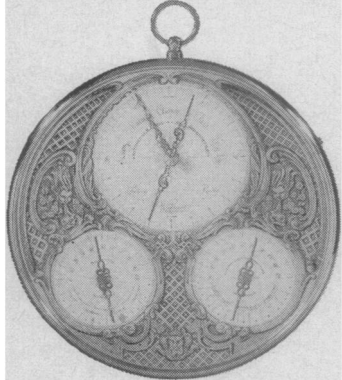
Please send me the following:

900X "Microbe Hunter" F338 @ \$39.95 (plus \$1.00 for postage & handling)..... 50X "Stereoscope" F337 @ \$29.95.....
30X "Stereoscope" F335 @ \$19.95 (Add 83¢ each)..... GENIAC Slide Rule @ \$19.95..... COSMOTRON: Assembled
@ \$19.95..... Kit Form @ \$14.95..... The books I have circled (Add 35¢ postage and handling on orders under
\$5.00) 6259 - 6262 - 6249 - 5331 - 5947 - 4786 - 6397 - 6135 -

NAME..... STREET..... CITY..... STATE.....

Save Money On These Prized Exclusive Gifts!

Famous Wittnauer Empire BAROMETER and HUMID-THERM

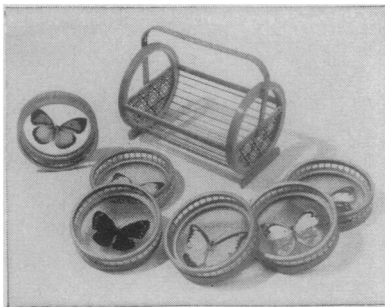


No finer nor more magnificent instrument made anywhere in the world—regardless of cost. A veritable collector's item that will enhance the decor of any man's office, home or den. Three different gauges give super sensitive, accurate Barometer readings, Humidity and Temperature. Measures 7 1/4" in diameter. Entire unit is richly engraved with gold stamped pearl finished dials. Has a hook for hanging on mantel or wall or it can be set on table or desk via tastefully wrought pedestal. Gift boxed. **\$21.95**

6 for \$123.00 ppd.

GUARANTEED WITTAUER WEATHER "KEY" INSTRUMENTS

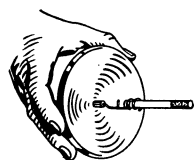
An Exotic Offering from the Orient "Live" Butterfly & Bamboo COASTER SET



Not just another coaster set, but a symphony of natural beauty and oriental craftsmanship. Decorative Holder and 6 Coasters are completely hand-made of select pieces of highly polished genuine bamboo. Base of each coaster contains a richly hued, attractive, "live" butterfly perfectly laminated between two pieces of glass. Roughest usage, in water or out, will not harm the gorgeous "live" butterflies. Complete Set **\$5.95**

(6 Sets \$32.70 ppd.) ppd.

Windproof, Waterproof, Flameless, Fuelless Pocket Size SOLAR CIGARETTE LIGHTER



Lights Every Cigarette Under the Sun

The most practical outdoor cigarette lighter ever created! A precision instrument that utilizes the power of the sun to light your cigarette. Forget about fuels, matches, wicks, danger of fire. Merely insert a cigarette in scientifically designed parabolic pocket-sized reflector and in just a few seconds your cigarette is lit. No PUFFING IS REQUIRED! Perfect for all outdoors—camping, fishing, beach and boats. Guaranteed to amaze and amuse you—and your friends! Also works thru sunny windows indoors **\$1.00**

(3 for \$2.75) ppd.

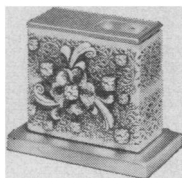


Hand Wrought Silver Tone Letter Opener & Paper Weight

Authentic Replicas of Michelangelo's DAVID

Created for us by skilled artisans at a little foundry in Florence, Italy. The letter opener, 7 1/2" long, is topped by a replica of the original statue of DAVID as sculptured by the famed Michelangelo in 1499. Opener fits snugly into carved metal sheath. Ingenious silver tone hand finishing makes the entire piece look and feel like pure sterling. Accompanying paper weight, 4" in diameter, has a heavily embossed head of Michelangelo's DAVID with the words "David by Michelangelo, Florence, Italy." The set is almost completely hand made and no two sets are ever exactly alike. Packed in attractive gift box with authenticating certificate and gift card.

Complete Set—\$4.95 ppd.
(6 Sets Above—\$26.70 ppd.)



World's Most Unusual — Most Dependable Lighter

LIGHT-O-MATIC

Lift Up — It's Lit! Set Down — It's Out!

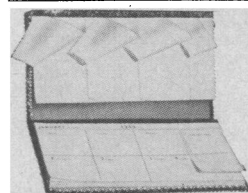
Unique and striking in appearance—styled for the connoisseur. A "conversational piece" to decorate the executive desk or home coffee table—really practical, too! Merely lift it and IT'S LIT—place it back and IT'S OUT! One filling lasts a full 6 months or more. Precision made by skilled craftsmen to last a lifetime. Beautifully gift boxed. Measures 3" x 2 1/2" x 1 1/2".

THE FLOWER JEWEL—Enchanting silver filigree with raised floral design and 20 multi-colored faceted gems that cast a glorious rainbow reflection. A veritable heirloom piece. **\$18.95 ppd.**

(6 for \$107.70 ppd.)

THE COACHMAN—In nickel or gold—heavily embossed classic design. . . . **\$14.95 ppd.**

(6 for \$83.70)



The Perfect Organizer for the Busy Executive!

CALENDAR MEMO PAD

In Hand-made, Embossed Florentine Leather Folder

- Florentine Leather Cover
- Over 200 "Live" Memo Slips
- Dated Page for Every Day of Week
- Weekly Expense Record

PLUS 2 EXTRA "LIVE" MEMO PADS—a total of well over 600 slips

You can only appreciate the beauty and value of this complete Organizer when you have it before you. Measuring a "desk handy" 11" x 11 1/2" when open, it folds to lend a distinctive touch on desk at office or home. Full cover is Hand Crafted in Italy of embossed Florentine Leather. Edges are perforated and hand stitched. The cover is moire lined with full width pockets in top and bottom flaps for handy storage of memos. A really wonderful gift to give or get. Each . . . **\$5.95**

ppd.

(6 for \$32.70 — 12 for \$60 ppd.)

FREE—Individual imprinting of names in gold on quantities of 12 or more.

IMPORTANT

Order Today and Save. Send Check or M.O. C.O.D. orders plus fee. Money Back Guarantee. Protects you against risk.



Hand Painted, Genuine Imported China MALLARD LIGHTER & ASHTRAYS SET
A Gift to Give or Get at Office or Home

Here's an opportunity to do away with the dull and ordinary—to add charm and beauty to normally mundane ash trays and cigarette lighter—so essential to office and home. Genuine, rich, gleaming white China lighter stands 4" high with both sides tastefully hand painted in lustrous color with scenes of mallards in flight. The two deep ashtrays with fluted ends to hold cigarettes carry same hand painted designs. A really beautiful set worth far more than its exceedingly low price **\$3.95**

(6 Sets \$20.70 ppd.) ppd.

Water ON or OFF at SAME TEMPERATURE — SAME PRESSURE



with Elgin SHOWER ECONOMIZER Saves Water, Fuel, Money!

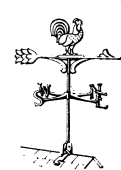


Set your shower to temperature and pressure desired—then shut it off by a slight tug of the "Economizer" chain. After you're all soaped up, another gentle tug of the chain restores the EXACT same temperature and pressure as before! Fits all showers, screws on in a minute. Made of solid brass—heavy chrome plated. Unconditionally guaranteed for 2 years—precision made to last a lifetime! Perfect for homes, resorts, schools, hotels, motels, apartment houses, institutions, trailers. . . . **\$3.95**

plus 35¢ pp. & hdg.

(3 for \$10.85—plus 50¢ pp. & hdg.)

Extra Large, Sensitive, Cast Aluminum Remington WEATHER VANE



Not only designed to give precise wind direction, but adds a distinctive note of beauty to every American home. Newly designed and precision engineered from strong cast, non-rusting aluminum. Has full 21" classic arrow with your choice of 5 eye-catching three-dimensional ornaments. Wind direction indicators—N—E—S—W—are all three-dimensional.



Exclusive Universal Mount provides for sturdy permanent attachment of vane to any shape roof in a jiffy. All vanes finished in gleaming black. Height of vanes vary from 27 3/4" to 30". When ordering, specify ornament desired **\$9.98**

Any 6 for \$56.88 ppd. ppd.

SCOTT-MITCHELL HOUSE, Inc.

Dept. 24-J — 415 South Broadway, Yonkers, New York

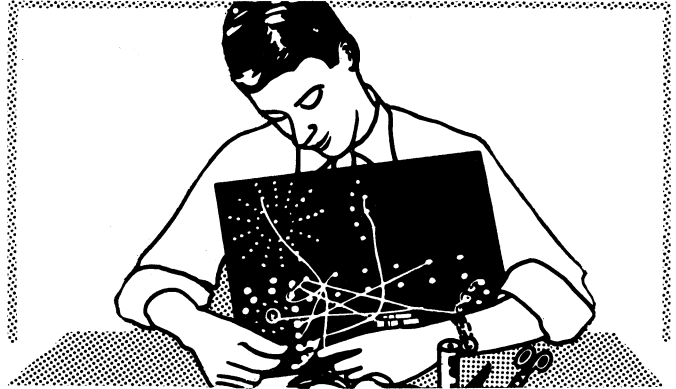
Make over 150 Small
Computing and Reasoning
Machines with . . .

BRAINIAC®

A BETTER ELECTRIC BRAIN CONSTRUCTION KIT

EQUALS THE ORIGINAL GENIAC® electric brain construction kit (1955) PLUS many improvements and additions: over 600 parts—including 116 improved patented wipers so that all switches work well. Instead of covering only 33 machines, BRAINIAC gives full specifications for 151 computing, reasoning, arithmetical, logical puzzle-solving and game-playing machines . . . all 33 GENIACS (1955), 13 TYNIACS (1956), and 105 BRAINIACS (1957-58), etc.

THIS IS BRAINIAC! With our Brainiac Kit K17, you can build over 150 small electric brain machines and toys which "think," compute, reason, and display intelligent behavior. Each one works on a single flashlight battery . . . is FUN to make, FUN to use and play with, and TEACHES you something new about electrical computing and reasoning circuits. All connections with nuts and bolts—no soldering required. Originated and produced exclusively by Berkeley Enterprises, Brainiac is the result of 8 years' design and development work with miniature mechanical brains including: Geniac (see "Geniacs: Small Electric Brain Machines and How to Make them" by Edmund C. Berkeley, 64 pp., published by Geniac Project, a partnership with Oliver Garfield discontinued September 1955), Tyniac (1956), Relay Moe (automatic relay machine playing tit-tat-toe—pictured in Life Magazine, March 19, 1956), Simon (miniature automatic digital computer with 129 relays—see "Simple Simon" by E. C. Berkeley in Scientific American, November 1, 1950), Squee (electronic robot squirrel—see "Light Sensitive Electronic Beast" by E. C. Berkeley in Radio Electronics, Dec. 1951), etc.



WHAT CAN YOU MAKE WITH BRAINIAC KIT K17? Over 150 machines including—**LOGIC MACHINES:** Syllogism Prover, Intelligence Test, Boolean Algebra Circuits, Douglas MacDonald's Will Analyzer, A Simple Kalin-Burkhart Logical Truth Calculator, etc. **GAME-PLAYING MACHINES:** Tit-Tat-Toe, Nim, Wheeled Bandit, Black Match, Sundorra 21, etc. **COMPUTERS:** To add, subtract, multiply or divide using decimal or binary numbers, Forty-Year Calendar, Prime Number Indicator, Money-Changing Machine, etc. **CRYPTOGRAPHIC MACHINES:** Coders, Decoders, Lock with 15,000,000 Combinations, etc. **PUZZLE-SOLVING MACHINES:** The Missionaries and the Cannibals, Age-Guessing Machine, Submarine Rescue Chamber, Daisy Petal Machine, Fox-Hen-Corn & Hired Man, Uranium Space Ship and the Space Pirates, The Three Monkeys Who Spurned Evil, General Alarm at the Fortress of Dreadreerie, etc. **QUIZ MACHINES:** History, geography, trigonometry, grammar, statistics, calculus, etc.

WHO IS EDMUND C. BERKELEY? Author of "Giant Brains or Machines That Think," Wiley, 1949, 270 pp. (13,000 copies sold); author of "Computers: Their Operation and Applications," Reinhold, 1956, 366 pp.; Editor & Publisher of the magazine, *Computers and Automation*; Maker and Developer of small robots; Fellow of the Society of Actuaries; Secretary (1947-53) of the Association for Computing Machinery; Designer of all the Tyniacs and Brainiacs, more than half of the 33 Geniacs (1955); Designer of the Multiple Switch Disc and other features in the 1955 Geniac kit.

WHAT COMES WITH YOUR BRAINIAC KIT . . .

Complete Plans, Instructions, Explanations & Hardware:

- Every part needed to build Geniacs, Tyniacs, Brainiacs—over 600 pieces including control panel, multiple switch discs, jumpers, improved wipers, bulbs, sockets, washers, wire, battery and special tools.
- Complete descriptions of 151 experiments and machines.
- Over 160 circuit diagrams including 46 exact wiring templates.
- Manual "Tyniacs: Small Electric Brain Machines and How to Make Them" by Edmund C. Berkeley, 1956, 48 pages—includes Introduction to Boolean Algebra for Designing Circuits.
- "How to Go from Brainiacs and Geniacs to Automatic Computers" by Edmund C. Berkeley.
- Dr. Claude E. Shannon's historic 1938 paper given before the American Institute of Electrical Engineers: "A Symbolic Analysis of Relay and Switching Circuits," 12 pages.
- List of references to computer literature including "Minds and Machines" by W. Sluckin, published by Penguin Books (Baltimore), 1954, 233 pages and other references.

only **\$17.95** . . . why pay more?

BRAINIAC KIT (1958 Model) K17 . . . the kit with limitless possibilities—backed by an organization of 10 years standing in the computer field—\$17.95 (For shipment west of Mississippi, add 80¢; outside U. S. add \$1.80)

7-Day Full Refund Guarantee If Not Satisfactory

MAIL THIS COUPON

BERKELEY ENTERPRISES, Inc.
815 Washington St., R159, Newtonville 60, Mass.

Please send me Brainiac Kit K17. (Returnable in 7 days for full refund if not satisfactory—if in good condition.) I enclose \$_____ in full payment.

Name _____
Address _____
City _____ State _____