

15¢

\$5.50 A YEAR

June 6, 1959

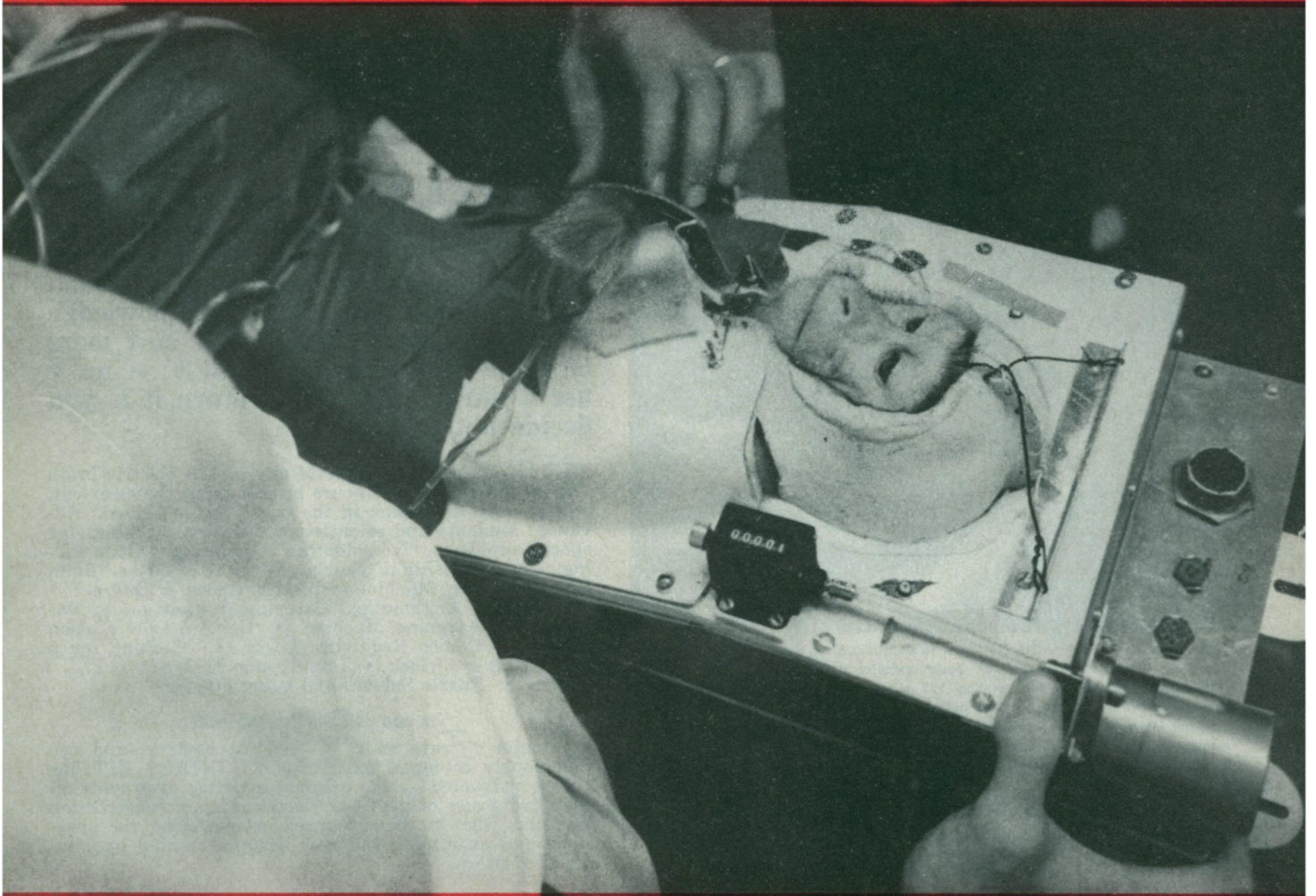
VOL. 75 NO. 23

PAGES 353-368

# SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Space Traveler

See Page 355

A SCIENCE SERVICE PUBLICATION

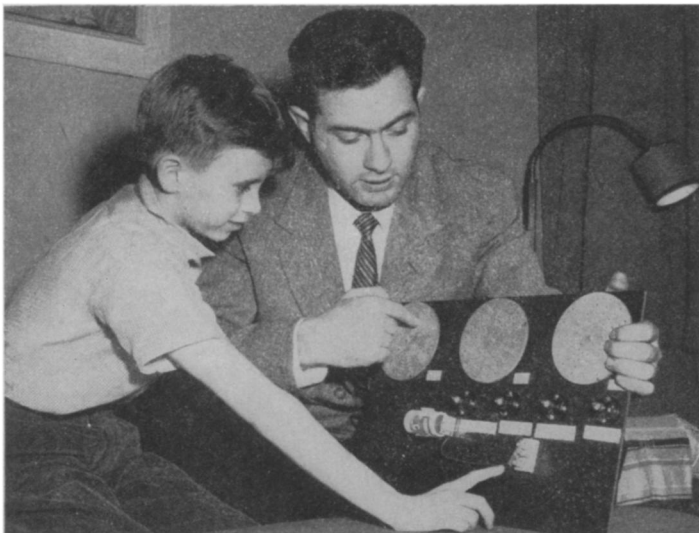
For Problem-Solving...Experimentation...Teaching...or Just Fun

# BUILD YOUR OWN ELECTRIC BRAIN MACHINE

**IN JUST A FEW HOURS!**

Remarkable 400-Component Construction Kit Enables You to Create Any of 125 Brain Machines! Build **LOGIC MACHINES** that Compare, Reason, Test Intelligence; **ARITHMETICAL MACHINES** (Binary & Decimal); **GAME-PLAYING MACHINES** (Tic-Tac-Toe, Nim, Etc.)

**Teachers and Scientists: *Design Your Own Machines!***



1959 GENIAC KIT CONTAINS (1) "How to Construct Electrical Brains at Home" —a fully illustrated text book on basic computer design theory and circuits with specific instructions for building 125 circuits. (2) "DESIGN-O-MAT," a special booklet with instructions for designing your own computers. (3) Wiring Diagram Manual. A special booklet with full scale diagrams. (4) Beginners' Manual—fifteen extra experiments to teach the basic symbols of electric circuits. (5) Over 400 components and parts.

**GENIAC®** is the only kit and text combination that presents the basic ideas of cybernetics, boolean algebra, symbolic logic and computer circuitry for all levels of knowledge and intelligence. Sold to all customers on a one-week return guarantee; actually use it during that time, return it if you decide not to keep it.

WITH GENIAC® you build any of 125 electric brain machines in a few hours by following the clear-cut, step-by-step directions in the basic text provided. Advanced students and scientists can design machines for special problems. No soldering required, and little wiring. Change design of your machines in minutes! Build Binary Adding Machine • Secret Coder & Decoder • Machine for Arithmetical Carrying • Comparing Machine • Reasoning Machine • General Combination Locks • Games Requiring Logic • Machine for a Space Ship's Airlock • Intelligence Tester • Burglar Alarm • Puzzle Solvers and many others.

**OVER 400 COMPONENTS AND PARTS**

Circuits operate on one flashlight battery, and use ingeniously designed parts. 1959 GENIAC® KIT has been constructed by the original inventor to provide all the advantages of previous electrical brain construction kits plus what we have learned in answering the questions and examining the new designs created by hundreds of users.

**SELF-CONTAINED COURSE IN COMPUTER DESIGN**

Each GENIAC® comes as a self-contained course in computer design. All instructions are so simple that we have records of intelligent twelve-year-olds designing factoring machines and puzzle-solving circuits—while hundreds of schools and industrial training programs have incorporated our kits in their curricula.

**YOUR COST FOR GENIAC KIT: ONLY \$19.95 POSTPAID**

The coupon will bring your GENIAC® Electric Brain Construction Kit and Manuals for only \$19.95 postpaid. You may return the Kit within 7 days if you are not completely satisfied. For schools we offer bulk rates on extra texts and parts; for teachers, we offer 10% deduction on GENIAC® if ordered for use in institutions. Send for your Kit today!

SCIENCE KITS, Dept. SL-69-A

Oliver Garfield Co., Inc., 108 E. 16th St., New York 3, N. Y.

**SOME INSTITUTIONS AND FIRMS NOW USING GENIAC®**

- |   |  |   |
|---|--|---|
| Allis-Chalmers<br>Remington-Rand<br>International Business<br>Machines<br>Wheeldex Mfg. Co.<br>Manuel Missionary<br>College<br>Walter V. Clarke<br>Associates<br>Barnard College<br>Westinghouse Electric<br>Phillips Laboratories<br>General Insurance Co.<br>of America | Lafayette Radio<br>Rohr Aircraft Co.<br>Southwest Missouri<br>State College<br>Albert Einstein<br>Medical College<br>Naval Research<br>Laboratories<br>Board of Education,<br>Tecumseh, Nebraska<br>Marshfield Public<br>Schools | Los Angeles Public<br>Schools<br>Jefferson Union High<br>School<br>Oklahoma A & M<br>Kansas State University<br>Duke University<br>Coral Gables Senior<br>High School<br>Courtland Jr. High<br>School<br>Bell Telephone<br>Laboratories |
|---|--|---|

**ORDER  
GENIAC  
ON OUR  
MONEY  
BACK  
Guarantee!**

SCIENCE KITS, Dept. SL-69-A  
Oliver Garfield Co., Inc., 108 E. 16th St., New York 3, N. Y.

Please send me:  
1 GENIAC Electric Brain Construction Kit and Manuals.  
\$19.95 (East of Mississippi) .....  
\$20.95 (Elsewhere in United States) .....  
\$21.95 (Outside the United States) .....

Returnable in seven days for full refund if not satisfied. I enclose \$..... in full payment.

Name .....

Address .....

City ..... Zone..... State.....

NOW—FOR THE FIRST TIME—YOU CAN EASILY



# Build and Operate "CALCULO" Your Own Analog Computer

★ A Basic Course in Computer Theory ★ A Fascinating New Way to Learn the Principles of Mathematics, Physics and Mechanical Drawing



What is the fourth root of 7.1 to the eighteenth power? If production increases at the rate of 2.3% per year, how long would it take to double the national output? What is the range of a projectile whose initial velocity is 1200 feet per second at an angle of 40 degrees with the ground?

These are typical of the interesting problems you can solve simply by setting the dials and observing an easy-to-read meter on this remarkable new analog computer. An analog computer gives a *continuous* picture, really an electrical "graph", of the change that occurs in one quantity as one or more other quantities are changing. For this reason analog computers are particularly useful in solving problems of airplane design, electronic parts, radio antennas, engines, hydraulic devices, guidance systems, and many other problems involving complex mathematical formulas.

Designed by Hy Ruchlis, educational director of the Science Materials Center, and Alfred Bender, instructor in physics at the Brooklyn Polytechnical Institute, your CALCULO Analog Computer can be easily assembled in about two hours with screwdriver and pliers (no solder required), and is powered by a pair of ordinary flashlight cells. Accompanied by a simply written, profusely illustrated, explanatory booklet, here is a kit that offers to bright young people from 12 up, as well as adults and professionals, many stimulating hours of experiment that open doors to the basic elements of computer theory.

As assembly lines shift increasingly to automatic operation, as records are kept more and more by computer machinery, as airplanes can now be guided by automatic systems—a growing number of scientists, mathematicians and technicians are needed to design and operate new computing devices.

**ORDER TODAY — SAVE \$3**  
Your unique CALCULO, an exciting introduction to these young, opportunity-rich fields, will regularly cost \$16.95. By ordering your kit now, you pay only the special advance price of \$13.95—and you must be delighted or return the kit and your money will be refunded.

### Some of the interesting problems you can solve and formulas you can apply with your CALCULO Analog Computer Kit

- Multiplication
- Division
- Ohm's Law
- Work
- Pressure Under a Liquid
- Powers
- Roots
- Compound Interest
- Range of a Projectile
- Calculating Height and Distance
- Index of Refraction
- Linear Functions
- Area of a Parabola
- Horsepower
- Volume of a Pyramid
- Inductive Reactance
- Arithmetic Progression
- Illumination Caused by a Source of Light
- Electrical Power
- Area of a Sector of a Circle
- Distance Travelled by a Uniformly Accelerating Object
- Final Velocity of a Uniformly Accelerating Object
- Circular Motion
- Kinetic Energy
- Volume of a Cylinder
- Volume of an Oblate Spheroid
- Volume of a Cone
- Volume of a Spherical Sector
- Volume of a Torus
- Area of a Torus
- Velocity of a Molecule of Gas
- Trigonometric Formulas
- Area of a Regular Polygon

**Science Materials Center** 59 Fourth Avenue  
New York 3, N. Y.

Science Materials Center, Dept. M-34,  
59 Fourth Avenue, New York 3, N. Y.

Please send me postpaid the CALCULO Analog Computer Kit, for which I enclose the special advance price of \$13.95 as payment in full. Also include a Free copy of the Science Materials Catalog.

Check here if you wish only to receive a Free copy of the Science Materials Catalog.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

## FREE CATALOG



Hundreds of pre-tested and age-graded science kits, instruments, records, toys, etc.—to fascinate and inform young people from 4-16—are described in the illustrated Catalog of the Science Materials Center, a division of The Library of Science. Here is the first *central* source of expertly selected yet reasonably priced science materials for the teacher, scientist and science-minded parent. Check and return coupon to receive your Free Catalog.