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A GUIDE TO
**HOME STUDY
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in
Electronics

BUILD:

- A Digital Logic Computer
- General Purpose Alarm
- Bass Reflex Enclosure

TREASURE DETECTORS FOR LAND USE

TEST REPORTS:

- Heath IC-2008 Calculator
- Dual 1218 Automatic Turntable
- James C-7535 Intrusion Alarm
- Production Devices
Transistor Tester
- Triplet 603 VOM



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batteries—two 9-volt and one 1½-volt D cell—needed to power the instrument are supplied.

You need no tools to get inside the case to replace batteries. A rather heavy ⅝"-diameter knurled screwhead is all that holds the back on—quite solidly, we hasten to add. The entire interior of the meter case is lined with sheet brass which makes electrical contact with the ground on the printed circuit board. All high-quality components are employed, and the three batteries are securely held in place by a removable plastic bar. (Incidentally, the range/function switch also has a battery-test position

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HEATHKIT MODEL IC-2008 DIGITAL CALCULATOR

A DIGITAL electronic calculator is an excellent device to have around for solving mathematical problems and calculating parameters in circuit design. Having used a number of calculators with different capabilities in the past, we were especially interested in the new Heathkit Model IC-2008 calculator kit which lists for \$129.95.

The IC-2008 is a desk-top calculator, but it is very compact and lightweight, measuring 10¼" × 6" × 3½" overall and weighing 3½ pounds. Since it is so light, four non-skid pads are attached to the bottom of the case to hold it in place.

The usual complement of 11 keys is provided for feeding in the numbers from 0 through 9 and the decimal point. Five arithmetic function keys are to the right of the number keyboard: add, subtract, multiply, divide, and equals. To the left of the number keyboard are four more keys. One clears the logic at the start of calculations. A second clears only an erroneous entry (obviating the need for re-doing an entire equation when only the last entry is incorrect). The third key programs the logic for constant-factor calculations. The fourth key, though not unique, is not often found on arithmetic calculators; it is used to change the display from positive to negative and vice versa.

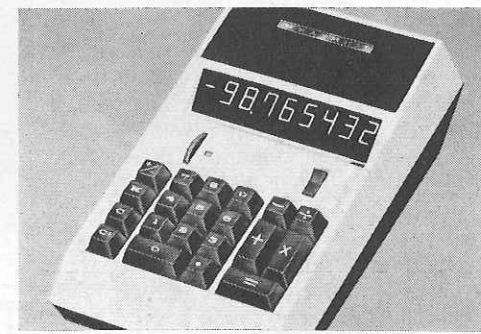
Two controls are provided. One is a rocker-type power switch. The other is a thumb-wheel switch which is used to set the decimal point (up to seven trailing decimal positions). The decimal point can also be left floating.

With the IC-2008, calculations can be chained or done in sequence. A fixed constant can be used when performing long calculations.

which allows the user to keep tabs on the condition of the batteries.)

The manual which accompanies the Model 603 FET VOM is very complete. Not only does it contain the usual information on how to use and maintain the instrument, but it also outlines the calibration procedure to use if and when the need for it arises.

After using the Model 603 for a couple of weeks, we can state that it is a first-class solid-state VOM which is certain to find favor as the workhorse instrument for the busy bench technician and electronics hobbyist.



The overall range of the calculator is from 0.0000001 to 99999999. If the instrument's capability is exceeded—either during entry or during totalling—the keyboard automatically locks out, and the extreme left readout displays an E.

The seven-segment gas-discharge readout display in the IC-2008 is one of the most legible and largest we have seen. Even with the dense, polarized filter placed in front of it, the display is very bright. While the calculator is operating, there is no zero blanking. Instead, a series of lower-case leading zeroes is displayed to indicate unused readouts.

We assembled the IC-2008 in about seven hours. The work consists essentially in wiring two printed circuit boards: a small one for mounting the readouts and a mother board for the rest of the electronics. Carefully following the instructions given in the well-illustrated assembly/operating manual supplied with the kit, we encountered no difficulties. Extreme care must be exercised when inserting the 28-pin LSI chip into its socket.

The various switches which make up the

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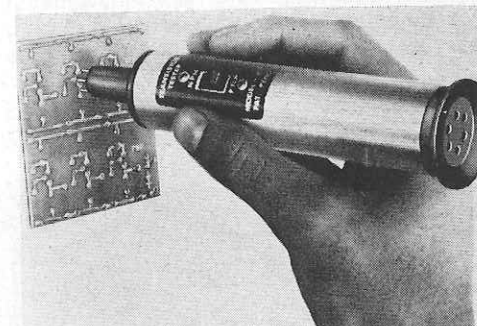
keyboards are mounted in a novel manner. The operation makes mechanical alignment between the switch pushrods and metal mounting bracket a sure-fire thing.

Heath supplies with the kit a small neon-lamp tester for checking out the various high-voltage points to insure that the voltages are present when needed but absent at other points. Hence, the assembler does not have to have a VOM or VTVM on hand when working on the calculator. We turned on our calculator immediately after it was assembled; and it worked beautifully.

The assembly/operating manual does not spend much time discussing the amazing 28-pin American-made LSI chip which does all the work. But it must be pretty complex to perform as it does.

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PRODUCTION DEVICES MODEL 85 TRANSISTOR TESTER



LIKE a lot of you, we dread the thought of having to find a malfunction on a printed circuit board assembly containing dozens of transistors. Just the idea of having to unsolder a number of leads—and possibly doing more damage with the soldering iron—leaves us cold. It is either unsolder the suspected transistor and test it off the board, or use an in-circuit tester while performing an acrobatic-like balancing act to keep the probes on the appropriate transistor solder pads while observing a meter.

One day a few months ago, there came in the mail a package from Production Devices. Opening the box, we found the company's new Model 85 in-circuit transistor tester which has, in just a short time, dispelled most of the distaste we used to have for troubleshooting a transistor circuit.

The Model 85 is a handy little self-powered tester. It is about the size of an overstuffed scope probe. Inside is a complete

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