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new books

QUAD SOUND, by Marvin Tepper. Hayden Book Co., Inc., 50 Essex St., Rochelle Park, NJ 07662. 128 pp. 5 1/4 x 8 1/4 in. Softcover \$4.95.

A simple, easy-to-understand explanation of how four-channel, or quadraphonic, sound differs from stereo, what constitutes it, how it is obtained and how to best use it for personal pleasure. The book starts with fundamentals like fidelity, psychoacoustics and the characteristics of both two- and four-channel sounds. Subsequent chapters explain four-channel tape and record, playback and recording, FM broadcasting, four-channel speaker systems, system selection and installation, and equipment troubleshooting, along with easy-to-use charts to help pinpoint system troubles in an easy to understand way.

HOW TO HEAR AND SPEAK CB IN A SHORT-SHORT, produced by Roland; written by Martin; designed by Gene. TAB Books, Blue Ridge Summit, PA 17214. 162 pp. 4 1/4 x 8 1/4 in. Hardcover \$6.95.

"This is Whiskerman you're cruising with, modulating on the Space Vibes. Unseen by most but copied by all. Cruise with me, Old Buddy, and in a couple of wild hours you will know enough to modulate with any ACE (a cool CB Dude.)"

We'll saddle you up in the CAT DRAGGER so you can dig our fractured chase on Interstate Niner. But if you don't know the lingo, friend, you'll be in Fog City thru Tuesday. 'Cause out here it's Crash Helmets and T-Shirts. We don't fool around!

Lay back . . . it's a 10-4 trip . . . great laughs. Might be wacky, but everybody will surely remember we've been there.

3's and 8's and a lot of great numbers I haven't even told you yet."

SOLID-STATE ELECTRONICS, by Frank P. Tedeschi and Margaret R. Taber. Van Nostrand Reinhold Co., 450 West 33 St., New York, NY 10001. 204 pp. 8 x 10 1/2 in. Hardcover \$8.95.

Provides an introduction to fundamental semiconductor and electronic principles. The book does require a familiarity with algebra and basic electricity. All information presented reflects the current state of the art in electronics technology. The book is divided into eleven self-contained sections, each concentrating on specific semiconductor components. Numerous example problems and laboratory experiments bridge the gap between theory and practice.

BASIC, by Robert L. Albrecht, LeRoy Finkel and Jerald R. Brown. John Wiley & Sons, Inc., Publishers, 605 Third Ave., New York, NY 10016. 125 pp. 6 1/2 x 10 in. Softcover \$4.95.

This is the latest printing of this programmed instruction-formatted book that teaches BASIC, one of the primary computer programming languages. At the end of each chapter, a self-test is provided to aid the reader in reviewing the material covered in the chapter and to test himself on his progress. Each chapter begins with a list of objectives—what you will be able to do after completing that chapter. If the reader has had some previous experience using BASIC and these objectives look familiar, the book can be used as both a review and guide, showing where you should start following the text. What the reader will learn from the book will be theoretical, until he can actually sit down at a computer terminal and apply his knowledge. Therefore, the publisher recommends that you and the book get together with a computer.

ADVANCED AND EXTRA CLASS AMATEUR LICENSE Q & A MANUAL, by Marvin Tepper. Hayden Book Co., Inc., 50 Essex St., Rochelle Park, NJ 07662. 160 pp. 6 x 9 in. Softcover \$5.95.

A guide for the amateur radio operator with a General Class license, who wants to upgrade his license status to the Advanced and then the Extra Class license. Based on the latest FCC syllabus-type study guide, this book asks questions and gives answers, and then explains most answers in a detailed, easy-to-understand way. It also covers Advanced and Extra class license privileges and filing fees. There is also a special section on code copying and an appendix containing the latest FCC rules and regulations.

BIG EAR, by John Kraus. Cygnus-Quasar Books, P.O. Box 85, Powell, OH 43065. 228 pp. 5 1/4 x 8 1/4 in. Softcover \$2.95; hardcover \$5.95.

An adventure story of the exploration of the universe and the search for other men. "Big Ear" is a personal, behind-the-scenes account of astronomers, engineers, inventors—their successes and failures. It is the story about the steel and aluminum structures we have raised to probe the cosmos and of our attempts to answer the question 'are we alone?'

Radio-Shack's New Computer System

A user oriented system that includes a video terminal, keyboard, cassette recorder, 4K RAM, 4K ROM and Basic.



ART KLEIMAN
MANAGING EDITOR

EVERY ONCE IN A WHILE, JUST AS THIS magazine is ready to go to press, a manufacturer will introduce a new gadget or gizmo that will make us say "stop the presses." That's exactly what happened when Radio-Shack introduced their new TRS-80 microcomputer system at a press conference held in New York City.

I'm not saying that this new microcomputer is the best system on the market. I don't know if it is or isn't since the answer to that question has to be based on what the user intends to do with the system. But what is amazing is the price—\$599

for a working system, assembled and tested.

Hardware

The system consists of three modules—keyboard (measuring 16 1/2 x 8 x 3 1/2 inches), video terminal (measuring 16 1/2 x 13 1/2 x 12 inches), and cassette recorder. Housed within the keyboard module is a single PC board that contains the Z-80 microprocessor, 4K of dynamic RAM, 4K of ROM and an interface for the cassette recorder. The memory is internally expandable to 12K of ROM

and 16K of RAM (available as an option for \$280). The keyboard is a standard 53-key ASCII unit. An external power supply comes with keyboard module.

Input and output jacks are located on the back panel of the keyboard for connecting the cassette recorder, the external power supply and the video terminal. Also provided on the back panel of the keyboard is an access port to the TRS-80 bus. This is a non-standard 44-pin bus.

The 12-inch black-and-white video terminal is capable of handling 16 lines of text. Each line has a maximum length of

SYSTEM 5000

The New Programmable Clock Kit from Digital Concepts. \$29.95

SYSTEM 5000 is the programmable clock kit that makes kit building a new experience. The system has been designed to meet a variety of particular requirements and tastes, and programming techniques are used to create a truly individualized timepiece. Numerous functions and features are provided for maximum flexibility and adaptability, and any or all can be used to construct many different types of time keeping and timing devices.

SYSTEM 5000 is not a simple LED time of day clock, but a full feature digital timing system. Programming is accomplished by connecting the appropriate jumpers and switches to produce the desired system configuration. Complete assembly and programming manuals are included.

SYSTEM 5000 has a fluorescent readout panel with four 0.5" numerals that brighten and dim automatically according to the ambient light. This unique digital display provides optimum readability at all times from almost any viewing angle.

SYSTEM 5000 can be built as a desk clock, alarm clock, calendar clock, or all of these in one full-featured timepiece. The Duplicate Time Register can monitor elapsed time or another Time Zone such as GMT. A ten minute "DZ" reminder capability is included for Radio Station use. A quartz time base is available for high precision, stability and uninterrupted operation if the AC line should fail.

SYSTEM 5000 can automatically control AC or DC accessories up



to 700 Watts by adding the optional relay. Plug in your radio or stereo to construct a full-function clock radio that puts you to sleep with gentle music and wakes you to music, a tone, or both. The system will also control TV's, small appliances, or other accessories. SYSTEM 5000 can be used to construct timers for a variety of applications. It is ideal for automatic process timers and controllers in laboratories, workshops, and engineering facilities. SYSTEM 5000 includes all components, speaker, two time setting switches, and comprehensive instructions and programming manuals. Case & switches for programming additional functions are not included but available as options. \$29.95

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Contains 4 black SPST pushbuttons, 2 black DPDT pushbuttons, and 2 black SPST slide switches. Programs all major features.

CASE OPTION — \$11.00
This deluxe, hand finished solid walnut (3/8") cabinet forms an ideal housing for the completed system. Includes rear panel and standard blue faceplate, extra faceplates (blue or green) are \$1.00 ea. Cabinet dimensions — 5" x 5" x 3".

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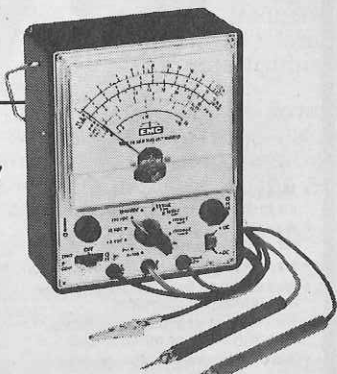
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Sensitive easy-to-read 4 1/2" 200 micro-amp meter. Zero center position available. Comprises FET transistor, 4 silicon transistors, 2 diodes. Meter and transistors protected against burnout. Etched panel for durability. High-impact bakelite case with handle useable as instrument stand. Kit has simplified step-by-step assembly instructions. Both kit and factory-wired versions shipped complete with batteries and test leads. 5 1/4" H x 6 3/4" W x 2 7/8" D. 3 lbs.

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64 characters, upper-case only. In the graphics mode, the screen converts to 48 lines by 128 horizontal line-segments. Text and graphics can be interspersed by software.

The cassette recorder is a standard audio unit. Connecting the remote input of the recorder to the keyboard permits the CPU to turn the recorder on and off.

Software

The TRS-80 comes complete with a high-level language stored in the ROM—Radio-Shack's own version of Basic, which they have termed Level I Basic. This Basic features floating-point arithmetic; numeric, array and string variables; video graphic commands and cassette save and load commands.

Included are such commands as NEW, LIST, RUN, CONTINUE, REMARK, LET, FOR-NEXT-STEP, GOSUB-RETURN, STOP, END, GOTO, IF-THEN, ON..GOTO, ON..GOSUB, PRINT, CSAVE, CLOAD, DATA, READ, and RESTORE.

There are also functions that include MEM, TAB, INT, ABS, RND, and math operations such as add, subtract, multiply, divide, less than, greater than and equals.

Special commands include graphic statements such as CLS (clear screen), SET(x,y), RESET(x,y), POINT(x,y), and formatted PRINT. Array and string capa-

bility, data storage and retrieval are all part of the Basic.

A high-level language, such as Basic, is great for those readers that know something about how to program. But what about those that have had no computer experience at all? What do they do when they take the TRS-80 home, unpack it and plug it in? In answer to this, Radio-Shack will be selling applications software packages. These fall into five categories—games, business, education, home and personal finance. Initially available in the game category is a single cassette containing programs for Blackjack and Backgammon, available free with the TRS-80. A payroll cassette that can handle 15 people will sell for \$19.95. An education in basic math will cost \$19.95. For the home, a kitchen program that includes menus, conversion tables and a message center is \$4.95. In the personal finance category is a seven-cassette portfolio for \$14.95.

Expansion

As already stated, all of the computer electronics is contained on a single PC board housed within the keyboard module. This may be a disappointment to the avid computer hobbyists who commonly expand their system by dropping PC boards into slots on the motherboard. You can't do it with the TRS-80 since there are no slots and no motherboard.

You can add a slotted motherboard by connecting it to the TRS-80 bus through the access port in the keyboard module. However, the TRS-80 has a non-standard 44-pin bus. So, if you want to be able to use all those 100-pin S100-bus compatible PC boards that are available on the market, you'll need a bus converter. The bus converter is not available, so you'll have to design your own. Not an overly difficult task.

What about memory expansion? The lack of a slotted motherboard means that you can't simply purchase a memory board and drop it into the TRS-80. If you purchase the basic system with 4K of ROM and 4K of RAM and decide at a later time that you need more, you'll have to return the keyboard module to Radio-Shack for a retrofit. Of course, if you're not interested in S100 expansion, the TRS-80 bus will not be a drawback.

Radio-Shack also plans on expanding their system as they go along. Plans call for the introduction of a floppy disc with provisions for an additional 16K of IC memory. Also planned is the introduction of an extended Basic, printer, MODEM, Serial I/O, and an expansion unit for PC boards that is not S100 compatible.

That's the TRS-80. Quite a system for the price. Oh, before I forget, the modules are also available separately. The keyboard sells for \$399, the terminal for \$199 and the cassette deck for \$50. **R-E**

next month

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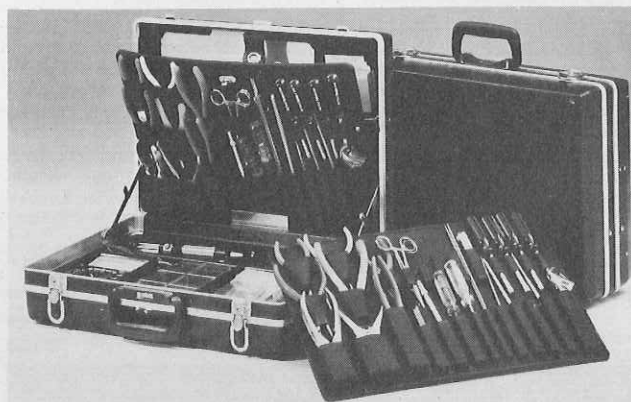
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