

Commodore's PET is a factory-assembled personal computer based on a 6502 microprocessor. The original PET, model 2001-8, is a \$795 system that includes a keyboard, cassette tape unit, built-in TV screen, some graphics, upper and lower case, extended 8K BASIC, and 8K of user memory.

SPOT is devoted to the host of applications—routine and wild—which PET users have found for their machines, as well as to the nitty-gritty of repairs and modifications. In other words, almost anything relating to the PET is fit material for this column.

When Editor Harry Saal isn't tracking down hot items for these pages, he serves as president of Nestar Systems, Inc. in Palo Alto, Calif. Nestar's first product is Cluster/One, a BASIC timesharing system which connects up to 15 micro-computers via a high-speed parallel data

SPOT

The Society of PET Owners and Trainers

EDITED BY HARRY SAAL

bus. Fifteen members of PUG (Pet Users Group, Palo Alto area) plugged into Cluster/One at their January meeting and computed away happily for two hours. Obviously, the creator of this revolutionary system knows a lot about micro-computers, particularly the PET. So send Harry your questions and ideas c/o PCC. He'll give each of them his careful attention—LB

HEARD AROUND THE QUAYSIDE . . .

It looks like the PET family is growing. Commodore was scheduled to announce significant extensions to the PET product line at the Consumer Electronics Show, held in Las Vegas in January. New computers, printers, and the long-awaited floppy disk drive were unveiled.

A new version of the PET is on the way. It has a *real* keyboard, additional RAM memory, and room for more ROM. The BASIC has been fixed to remove numerous bugs present in the initial version, and the machine language monitor is present in ROM as well.

Actually there are four models: 2001-16N (with a PET graphics-engraved keyboard), the 2001-16B (with a standard typewriter-like keyboard), each with 16K of RAM, and the 2001-32B and N, with 32K of RAM. Both have

numeric pads as well, but do not have the built-in cassette unit present in the 2001-8 model. The external cassette is currently available for \$95 from Commodore. The 16K model will cost \$995, and the 32K version \$1195; delivery was to begin in February.

It is expected that the corrected set of ROMs will be available for use in the PET 2001-8 model, but when and at what price could not be ascertained.

Floppy disk drives are here, too. The model 2040 contains two drives, using "minifloppy" diskettes (five-inch size), each storing about 170K bytes of programs and data. Commodore's non-standard technique for recording employs a variable number of sectors per track, depending on the radius. The disk drive connects to the IEEE bus, and contains two microprocessors of its own—a 6502 (like the PET) and a 6504. It contains its own memory buffer, and uses no additional memory from the basic 8K PET. The dual-drive model costs \$1095, and Commodore plans to have a single-drive model (the 2401) available for \$595, starting in May. The dual-drive 2040 should be available this month (March).

The status of the many-times-delayed 2020 printer has also been resolved. It has been withdrawn, apparently because of problems with the print mechanism supplied by the vendor, but is supplanted by *three* new printers, offering a variety of options. Each connects to the IEEE port, and contains its own microprocessor, used for both control and intelligent functions, like formatting. The 2021 prints on special electrosensitive paper, at low speed, and costs \$549. It, like the other two models, uses a dot matrix to generate the full PET character set, including graphics.

The 2022 is the top-of-the-line printer, printing on plain paper, with a tractor-feed mechanism. It has a bi-directional printing mechanism, printing 84 lines per minute. It costs \$995. The 2023 is a similar printer, but has no tractor feed, and prints in only one direction, giving about 70 lines per minute. It costs \$849. Orders for the aborted 2020 model can either be withdrawn or switched to one of the new models. The backlog of 2020 orders meant delaying new printer orders; first shipments were scheduled for March.

It should be emphasized that "availability dates" almost always refer to *first* shipments. The new printers won't be there in quantity, so actual delivery dates will stretch out for most people. And for a popular product, it is usually impossible to have enough units to satisfy the demand (consider the infamous Simon this Christmas). Also, these dates assume Commodore sticking to schedules and having no glitches and delays.

COMMODORE ANNOUNCES PET USER MANUAL

Yes, Virginia, there is a PET User Manual. After a year of delays, the long-awaited, promised user documentation on the PET is ready. The manual is about 250 pages long and contains a pretty good introduction to BASIC and the special features of the PET. The book has nine chapters, with something valuable for all users, from beginners to advanced programmers. It incorporates the information previously issued as separate flyers along with new information. Due to the intermixing of technical and elementary material throughout the book, it is not easy reading, and doesn't have the excellent tutorial style of, say, the TIS Workbooks (read on).

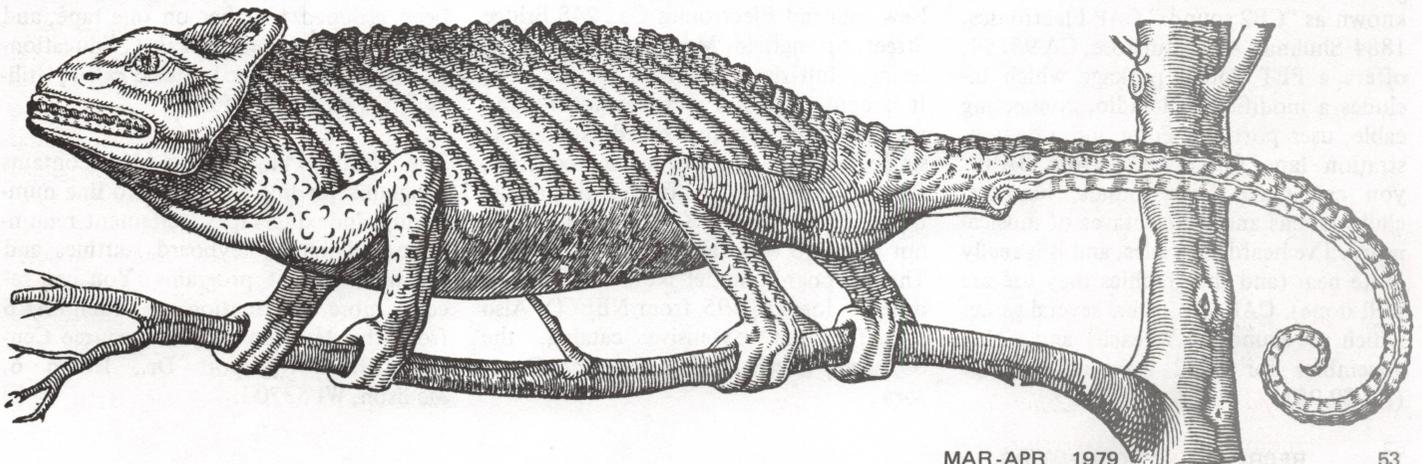
Why don't you have it yet? Commodore is selling the manual (for \$9.95), and including it with new PETs. But if you already have a PET and want a copy of the PET User Manual, write to Commodore Business Machines, Inc., 901 California Ave., Palo Alto, CA 94304, giving Commodore the serial number of your machine (see sticky label on back panel) and the name of the dealer from whom you purchased it. Enclose a check for \$3.50 for shipping and handling. Your local dealer *may* be able to sell you the manual, but Commodore headquarters is a sure source.

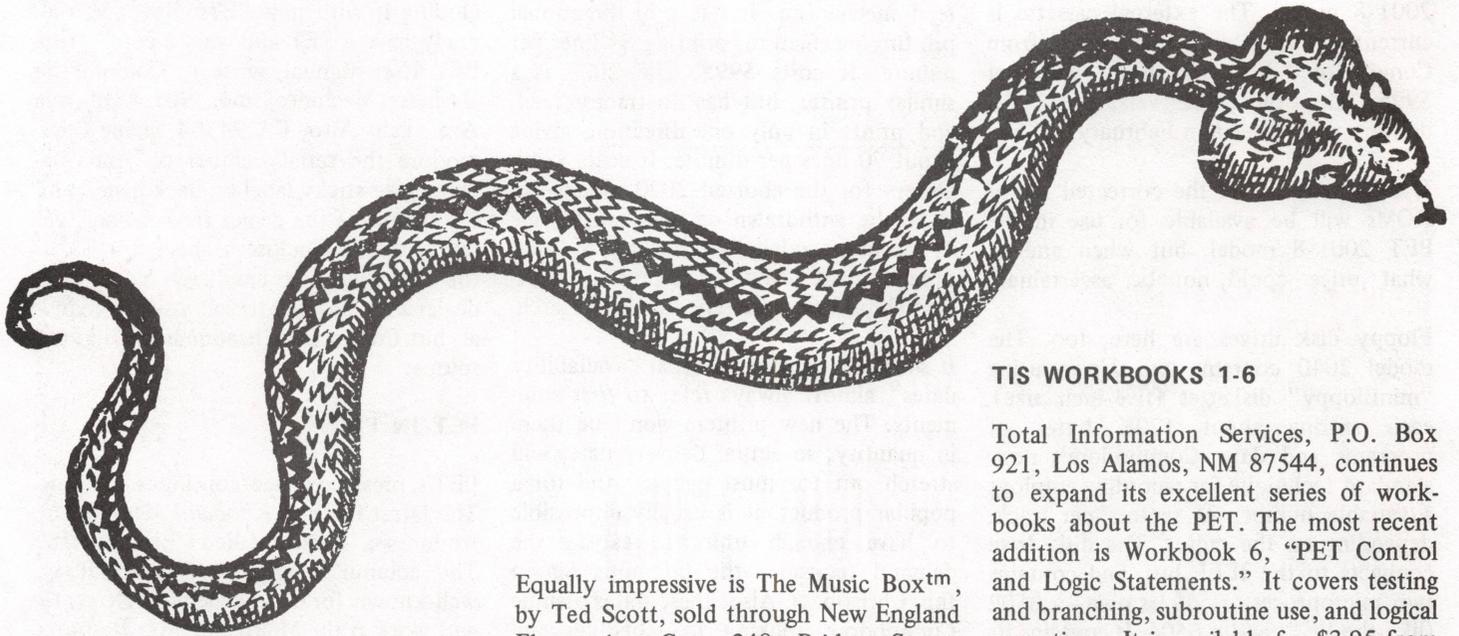
PET IN PRINT

PET's press coverage continues to grow. The latest issue of *Kilobaud Magazine* introduces a feature called "PET-pourri." The column is edited by Len Lindsay, well known for his excellent *PET Gazette* and work at the Microcomputer Resource Center. *Creative Computing* also has begun a regular column dedicated to the PET; it's called "Personal Electronic Transactions." It is authored by Gregory Yob, who not only is quite knowledgeable about the PET, but writes well too!

And the January 1979 issue of *Dr. Dobb's Journal* contains an article by Bill Seiler, author of the Renumber program discussed in our Jan-Feb "SPOT." Bill's article in *DDJ* not only describes how Renumber works, but provides the entire source code for those who wish to follow it in detail, or make modifications.

Those of you who would like to know more about the "guts" of the PET, and how to get access to machine language programs in the Commodore ROMs, such as printing on the screen, saving directly to tape, etc., will find the *PET Assembler Programming Guide* contains a wealth of





handy information which is unlikely ever to be printed by Commodore. This interesting 50-page manual can be obtained from Computhink, 701 Welch Road, Suite 1119, Palo Alto, CA 94304 for \$19.95.

MUSIC FOR YOUR PET

Lately, more and more programs are incorporating sound along with excellent PET graphics. There are several ways this is being done, and in a future issue we'll try to explain them for you. The simplest way to get started right now is to buy one of two excellent sound packages available "ready to go." This avoids the hassle of locating PET-compatible connectors, and gives you a couple of good demonstrations to get started with.

The simplest way to generate sound uses some fancy features of one of the integrated circuits in the PET, and is usually known as "CB2 sound." CAP Electronics, 1884 Shulman Ave., San Jose, CA 95154, offers a PET Sound package which includes a modified AM radio, connecting cable, user port connector and a demonstration tape for \$19.95. From BASIC you can make laser sounds, bounces, clicks, sirens and four octaves of musical notes. I've heard examples, and it is really quite neat (and the graphics they use are well done). CAP also offers several games which use sound (\$4.95 each), and a Tiny Assembler for 6502 machine language (for \$9.95).

Equally impressive is The Music Box™, by Ted Scott, sold through New England Electronics Co., 248 Bridge Street, Springfield, MA 01103. This package includes all the electronics necessary to make your PET play music, and can be placed right inside the PET. (Unfortunately, it uses a quite non-standard scheme for music output which I hope they will convert to the standard CB2 output line.) The Music Box actually lets you compose music on a conventional musical staff drawn on the screen. You can build up to 90 pages of music, with 16 notes per page. You can play any sequence of pages back and also edit them, transpose them, and save them on cassette tape or in memory for incorporation in programs. The visual effects are amazing, as the set-up draws the notes as it plays them, including sharps, flats, rests, etc. The Music Box is available for \$49.95 from NEECO.

FULL-SIZED TYPEWRITER KEYBOARD FOR THE PET

New England Electronics Co., 248 Bridge Street, Springfield, MA 01103, is now offering a full-sized keyboard for the PET. It is contained in a metal enclosure, and permits touch typing, as well as retaining single key function for cursor controls, RUN, STOP, etc. It attaches in parallel to the standard PET Keyboard, and does not interfere with the user or IEEE ports. The keyboard, model NPK-101, can be ordered for \$139.95 from NEECO. Also ask for the extensive catalog, the *Software/Hardware PET Products Directory*.

TIS WORKBOOKS 1-6

Total Information Services, P.O. Box 921, Los Alamos, NM 87544, continues to expand its excellent series of workbooks about the PET. The most recent addition is Workbook 6, "PET Control and Logic Statements." It covers testing and branching, subroutine use, and logical operations. It is available for \$3.95 from TIS. Previous workbooks cover fundamentals of PET BASIC, string and array handling, graphics, cassette I/O, and other miscellaneous features. Workbooks are either \$3.95 or \$4.95, and TIS offers a money-back guarantee. If you are not satisfied with their products, you may return them within 15 days and have your money refunded.

PET GAZETTE PROGRAM PAKS

The *PET Gazette* is now providing an additional service beyond the one-for-one exchange offer for programs donated to the PET Program Exchange. They are offering packages of six programs to anyone (no exchange required) for \$10. (There's a copying charge of \$1 for each program, \$2 for a high quality AGFA tape, \$1 for box and postage, and \$1 handling fee.) A variety of programs have been grouped together on one tape, and are available as: Games Pak 1, Educational Pak 1, Useful Pak 1, Music Pak 1, Utility Pak 1, and Best of Pak 1.

The Utility Pak, for example, contains programs for line erasing, auto line numbering, indexing tapes, statement renumbering, dynamic keyboard routines and file management programs. You can receive more information, or order PAKS from the Microcomputer Resource Center, 1929 Northport Dr., Room 6, Madison, WI 53704. □