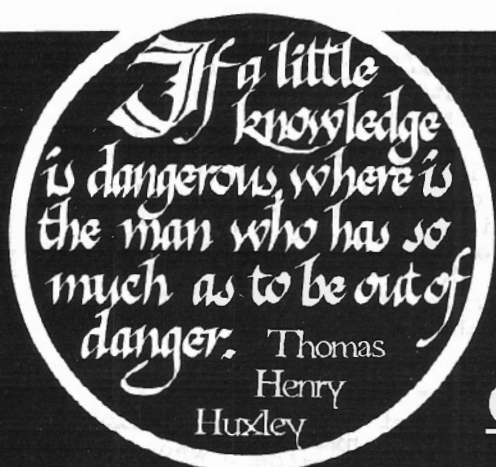


# two/sixteen<sup>TM</sup> magazine

Volume 2, Number 3

November-December 1983

The journal for business, professional, and scientific members of the TRS-80 community



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## two/sixteen magazine

131 East Orange Street  
Lancaster, Pennsylvania 17602  
(717) 397-3364

Dear two/sixteen subscriber:

two/sixteen is now offering an exciting new expanded service for more seriously involved computer users. I believe that this service will be the most comprehensive available for any microcomputer user. We know of nothing else like it. Details of the service are described on the enclosed sheet.

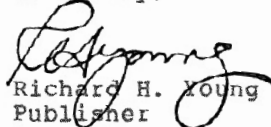
We conducted a survey of a 10% sample of two/sixteen subscribers and found that over 25% were definitely interested and 50% more might be interested on receiving more detailed information.

Our survey was based on an estimated price of between \$200 and \$300 per calendar year (about the cost of a single average commercial program). Because of the high favorable response to our survey, we are able to expand the offered service and provide it for the base price of only \$249 for the first year and \$175 for renewal years. Frankly, I'd pay twice that much if I could buy this service from someone else, rather than compile and publish it myself.

We're offering a special "pre-publication" discount of 10% until March 1, 1984, for a net first year price of \$224. And during this introductory period we will refund the entire subscription price paid to date for present two/sixteen subscribers who purchase this service. For example, if you are a charter subscriber at \$30 and have renewed for a two-year period at \$50, your net cost for the service for 1984 will be only \$144 (\$224-\$80)!

From the list of features, you can see that very large amounts of time, effort, and money are required to produce this service. We have already begun to expand our staff of technical personnel in preparation for it. I believe that most of the more serious Model II/12/16 users will find this service invaluable.

Sincerely,

  
Richard H. Young  
Publisher

# two/sixteen magazine

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# NOTES & COMMENT

BY RICHARD H. YOUNG

## Indexing *two/sixteen*

This issue contains the first cumulative index of *two/sixteen magazine*. We plan to update this index semi-annually. I hope it will enhance the magazine's usefulness.

## Using The 68000 Chip

We invite inquiries and comments from readers, and the most frequent inquiry in recent months has been about operating systems and languages which take advantage of the 68000 chip in the Model 16. Here is a summary of what we've heard lately:

1. XENIX: All current reports from users about the performance of this system are very positive. However, some Model 16 owners do not need multi-user capability and feel that the hard disk requirement and the relatively high cost of XENIX software (compared to 8-bit TRSDOS or CP/M) are not justified for their applications.

Users and potential users of XENIX MBASIC should be pleased to learn that Bob Snapp (SNAPPWARE) now offers his full MBASIC support series. It is sold as a single package for \$995 (the 8-bit RS BASIC series was sold in six separate pieces at a total cost of about \$940). We wrote a few large RS BASIC programs about two years ago -- before being aware of the existence of Snappware. It's my opinion that if we had used only the cross-reference and line-moving capabilities of Snappware on only our single largest program, it would have justified the cost of the entire series. I'm not a fan of BASIC for serious program development (discussions of the reasons why have been beat to death in prior issues). However, there are many people who have overwhelming reasons for using BASIC, at least for the present. In my opinion, such users should investigate Bob Snapp's BASIC enhancement series; it should more than pay for itself in the first one or two hundred programming hours. Check with Bob at (513) 891-4496 (Cincinnati, Ohio).

There is supposed to be a single-user floppy-disk version of XENIX available someday (software development times seem to be stretching out, and it's anybody's guess when this will be).

However, I'm skeptical about its usefulness; XENIX is said to carry about three million bytes of utilities in its hard disk version, and it would be awkward (or even impossible) to utilize a library this size on floppies.

A Pascal-2 Compiler is now available for UNIX, and should function correctly under any XENIX version of UNIX. It's available from Oregon Software (Portland, Oregon), (503) 226-7760 for \$600. However, a version especially set up for RS XENIX is expected to be available from Radio Shack in the near future. If I were seriously interested in using this product, I'd check the "generic" version as well as the RS version before buying.

2. CP/M-68K: This single-user operating system has been available for several months now, but there has not been much in the way of software for it. It comes with a 68000 assembler and a floating-point-less C compiler. Recently, a BASIC compiler became available, and we've just learned that a fully implemented version of FORTRAN-77 will be available about November 1 at \$495. We are planning to review this FORTRAN in the next issue. CP/M-68K products are available from TriSoft (Austin, Texas) at (512) 445-5580.

3. p-System: This operating system is popular because programs can be easily transferred from any computer running this system to any other so equipped, *without recompilation*. It is available for a wide variety of computers, including TRS-80 Models II, III, and 16, as well as the IBM PC, DEC LSI-11, Apple, and many more. TRS-80 versions are available from PCD Systems (Penn Yan, New York), at (315) 536-7428.

## Boot Error Eliminator

If you own an older Model II (one that came with a disk drive terminator plug), then you ought to have one of these. Without one, you will automatically damage the disk in drive 0 when the system is booted with the terminator not in place or with a connected expansion drive not turned on. We mentioned this product in our January-February, 1983, issue, but we mention it again because it

## NOTES & COMMENT

may not always be available in the future (Model IIs built since early 1982 don't need them) and we still get several calls each month from readers who've damaged diskettes and want to find out how to recover the data. (It's not easy! The accidental damage of a single disk usually results in higher recovery costs than the cost of this unit). The "boot error eliminator" is a small in-line connector that goes between the Model II "disk expansion" socket and the disk bay cable. Radio Shack rarely publishes reviews of hardware sold by others, but in the July, 1983, issue of *TRS-80 Microcomputer News*, Jon Shirley said of this unit "we tested it, and it works quite well." We've not damaged a disk in the many months we've been using it on our old II. The SeeBee is cheap insurance. You just plug it in and forget it. Price is \$64.50 plus \$3 shipping (money back guarantee and 90 day warranty) from See, Inc. (Indianapolis, Indiana) at (317) 461-2721.

### Whither Compatibility

A few readers have accused us of "disloyalty" to Radio Shack for discussing non-Shack operating systems and software. However, our loyalty is to our readers first, and several recent developments indicate that our previous long-term (a year or two) predictions about operating systems aren't much off the mark. It's been estimated that over 1,200,000 IBM PCs have been sold, and that IBM now has the clear lead in business micros. It's rumored that IBM will soon announce a plug-in 68000 board for the PC, and that XENIX for the PC will be announced by Microsoft at Fall Comdex. Another rumor has IBM about to announce XENIX for the IBM 9000 (see *two/sixteen magazine*, May-June, 1983, p. 3).

Such developments, and others, underline the probability that only commonly used operating systems (like the CP/M-MP/Ms, XENIX-UNIX, p-Systems, and maybe MS-DOS) will have any significant software support in the future. Business users will find slim pickings in the software market for new languages and applications running under TRSDOS, Apple-DOS, or any other parochial operating systems. It is "rumored" (by virtually unimpeachable sources) that Radio Shack plans to concentrate on *only* CP/M and XENIX software for its

business micros, and that RS Computer Centers will soon be selling *non-RS* software for these operating systems.

This may seem frightening to readers who have invested much time and money in TRSDOS software, but there is a silver lining. Many of the leading TRSDOS software packages are being reproduced in XENIX versions. It also seems likely, once RS CP/M is available (now estimated for about year-end), that some of the standard RS packages might be converted to it. RS Interpreter BASIC programs will run under XENIX in MBASIC. Other user-written software in high level languages (FORTRAN, COBOL, etc.) can usually be recompiled on CP/M-based or XENIX-based compilers with little or no change in the source code.

The "silver lining" is that, once the nuisance and cost of conversion has passed, the whole world of high grade software under UNIX and CP/M becomes available. And our Radio Shack II/12/16 computers rank among the best-performing computers that can run these systems.

What about future conversions? Will there be any? Almost certainly, especially when the long-predicted big breakthrough in huge solid-state memories (billions of bytes) finally occurs. In the no-moving-parts-but-the-keyboard world, new approaches to operating systems and languages are bound to occur (e. g., APL may become a superb business language when all file data is only a microsecond away from the CPU — instead of the dog it is now with file data many thousands of times that far away on moving media).

But such future conversions will probably be very easy for the user who has already adopted CP/M or XENIX. Much effort is being expended to make CP/M and XENIX data compatible. We should see great advances in networking (between different makes of computer) and telecommunications, so that direct, transparent transfers at very high speed become practical.

If a TRSDOS-only user believes all the above, does this mean that he should run right out and convert to CP/M or XENIX? Not necessarily, but such a user should be aware that it will almost certainly be necessary to make a

change soon and that, in the meantime, care should be taken not to do things that are likely to make the change *any* more difficult or costly. Such a <sup>1</sup> should keep track of developments, watching for the optimum time to convert (when all or most of the essential software is available). For many users, that time has not yet come, but it will probably arrive within the next year.

### IBM 3270 Emulator

For readers who need to use their micros to communicate with IBM "mainframe" computers, newly-announced Aton MICRO/REMOTE (tm) 3270 software may be the answer. This software talks to the mainframe in its own language, obviating reprogramming the mainframe's software. It also allows local processing with the same micro that's used for communication. The product appears to be designed for larger users, and no prices were announced. For more information, contact Aton International (Santa Clara, CA) at (408) 554-9922.

### New Tandy Products

Tandy has announced several products which may be of special interest to II/12/16 users:

1. Model 16B+, a Model 16B with a 15 megabyte hard disk replacing the second floppy disk drive. Only one additional hard disk may be added to this system, which costs \$6999.
2. Inboard 15 meg hard disk retrofit kit for Model 12 or 16B, costing \$2495 plus installation. You get to keep your old second floppy drive as a spare.
3. Serial port expander for Model 12 or 16B, which provides three more *local* ports on a XENIX system, at \$399 plus installation. Two caveats: (1) the board can't recognize carrier detect, so it must be used with local hardwired terminals and (2) you will need all the memory you can get (I suggest you check with Bob Snapp before buying memory anywhere else).
4. A new version of XENIX which supports dial-out and the above 3-port board.

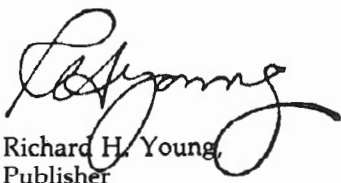
### Microcomputer Reporting Service

Datapro Research Corporation has announced a new reporting service on business-oriented microcomputers. It consists of two looseleaf volumes (about 2,000 pages including monthly updates)

covering 30 systems, 40 peripherals, and 40 of the "most important" software products. The service also includes a telephone "hotline" and a copy of the first edition of the "Datapro Microcomputer Users Survey" of 6000 users. The annual subscription fee is \$600. Datapro (Delran, NJ), (800) 257-9406 or (in NJ) (609) 764-0100.

**And Another TRS-80 Magazine**

A new magazine for across-the-board Radio Shack micros has appeared. *Computer User* is published by the publisher of *Interface Age*. Volume 1, Issue 1, containing 192 pages, is dated November, 1983, and was mailed, gratis, to 216,000 Radio Shack computer users. It's difficult to judge a new publication on its first issue alone, but one might get the impression that *Computer User* is a smaller, slightly more elegant, better-edited version of *80 Micro*. Because it covers all Tandy computers, it has the inevitable bias toward the more numerous low-end machines. The initial issue contains a useful two-page overview of Xenix (although the article is marred by a reference to the PDP-11 minicomputer as a product of Digital Research, Pacific Grove, California, instead of Digital Equipment Corporation, Maynard, Massachusetts -- a careless and embarrassing editorial gaffe). *Interface Age* is one of the older and better-edited microcomputer magazines, and I expect that *Computer User* will aim for higher than average editorial standards. A charter subscription, at \$18.95 for 12 monthly issues, includes a free membership in "PODE" (for Program On-line Data Exchange). PODE is said to include on-line program listings, electronic mail services, various databases, and selected information from the magazine. It is accessed via a Los Angeles telephone number. *Computer User*, P.O. Box 1234, Cerritos, CA 90701, (800)453-9700. ■




Richard H. Young,  
Publisher

# CP/M VARIANTS REVISITED

## Lifeboat, Pickles & Trout and ATON

BY R. P. VANNATTA

 **P**SST! My operating system is better than yours!"

"Wanna fight?"

"How cum?"

"Your operating system stinks!"

Sock! Pow!

No, the typesetters didn't get their lines mixed up with some grade B movie! To the contrary, I am just recounting some of the body punches that came my way after I reviewed the various versions of CP/M available for our "Trash Eighties" that appeared in the Jan/Feb '83 issue of *two/sixteen* ("Review of CP/M Variants: Lifeboat, Pickles & Trout, and ATON," Vol. 1, No. 4., p. 3).

For those of you who haven't been with us that long, I suggested that of the CP/M variants, I was happy with Lifeboat 2.25d (Lifeboat Associates, 1651 Third Ave, N.Y., N.Y. 10028), but that it was featureless and didn't work with double-sided disks.

With respect to Pickles & Trout CP/M (Pickles & Trout, P. O. Box 1206, Goleta, CA 93116), I grudgingly

Robert P. VanNatta  
222 South First Street  
St. Helens, OR 97051

acknowledged that it worked but griped about its oddball disk format and how difficult it is to configure.

When it came to ATON (ATON International, 1765 Scott Blvd., Suite 119, Santa Clara, CA 95050), I suggested that it was cleverly done but had some rough edges. I was particularly upset because ATON and WordStar had fits when they got in the same room.

Since December of 1982, when I actually wrote the review, a lot of water has passed under the bridge. The venerable Model II has passed into history, and now there's the Model 12 and a Model 16B with which to contend. I've managed to sell a couple of my Model IIs and replace them with Model 12s, so this review was written from the perspective of a fellow who has two Model 12s, one Model 16, and one Model II.

I mention the hardware spread because it can affect your point of view. This is especially true since the hardware and the software have gone in different directions. When I last wrote on the subject, for example, the failure of Lifeboat to properly support double-sided drives was, in my opinion, a forgivable sin. Obviously, this sin is now *not* forgivable. The Model II will have been out of production for nearly a year by the time you read this, and I have much difficulty thinking of a reason to recommend the use of Lifeboat on the Model 12 or 16.

Ironically, I am still using Lifeboat most of the time because I haven't exhausted

my supply of single-sided disks. Further, I haven't been able to make up my mind whether to cast my lot with ATON or Pickles & Trout. The as yet undelivered CP/M Plus from Radio Shack has also put me in a quandary.

In addition to hardware changes, there have been some software changes since I wrote last. Pickles & Trout has a brand new version called 2.2m, and ATON has some "fixes" and a new version (2.24B) specifically for the Model 16.

#### PICKLES & TROUT 2.2m

Pickles & Trout has released a new version of CP/M (2.2m), and it is radically

**"P**ickles & Trout has a brand new version called 2.2m, and ATON has some "fixes" and a new version (2.24B) specifically for the model 16

changed. Nearly everything I griped about in January has been changed!

First off, their documentation has been cleaned up; it now comes in some typeset books. Much of it is the same old stuff, but it has been re-done and is now well organized and indexed. Think of it! Documentation that is organized in a book with both a table of contents and an index.

I ordered the hard disk version even though I don't have a hard disk. It came with three manuals: one for the standard system, one for the hard disk, and one for a screen editor (VEDIT) they have thrown in with the deal. I can only say that the documentation is **first class**.

#### New Features

The most conspicuous addition to the Pickles & Trout package is what it calls the System Menu. All system utility functions, such as setting the I/O byte or formatting a disk, can be accomplished "by the numbers" from a menu-driven program appropriately called Menu.Com. It is well conceived and should give the novice a much better chance of getting some practical use out of the system utilities. After all, how many users really understand (or care) what a program such as Iofreeze does?

Score a great leap forward on the ease-of-use scale for the System Menu.

Other new features include a partially user definable keyboard, five programmable keys, a screen dump feature, and an ADM 3A emulation package.

#### KEYXLATE

KEYXLATE is Pickles & Trout's version of a similar function introduced by ATON last year which permits the user to select up to 16 keys and redefine their values. The principle usefulness of KEYXLATE is limited to redefining the special purpose keys since it is not flexible enough to redo the entire keyboard.

A frustrating limitation of KEYXLATE is that if you attempt to change the value of a key that appears on the keyboard more than once, the value will be changed at all locations. Thus, if you attempt to redefine the F1 key, for example, you will also change the value of the Control A key, as the F1 generates the Control A value. This is a characteristic of the cipher table of both the ATON and Pickles & Trout operating systems, and it is really too bad, particularly on the Model 12 with its eight special function keys. You could really get some use out of them if they could be redefined without messing up the rest of the keyboard.

According to Christine Pickles at Pickles & Trout, this limitation is built into the hardware and cannot be altered by software of any kind.

#### AUTOKEY

A far more exciting feature is what P & T calls the AUTOKEY. Unlike the KEYXLATE function, which involves making a system level modification to the operating system, the AUTOKEY function allows the operator to define the values of up to 5 keys "on the fly." The Control 1 through Control 5 keys can easily be defined at any time in a manner not unlike the method used in

electronic typewriters: you can put a word, a phrase, a control code, or even a whole line of text "under" these keys. I hate to use the word *macro* because its meaning confuses a lot of people, this is what computerists call a "macro" key. A similar feature is available in SCRIPSIT. If you want your "macro" definitions to be permanent, there is also a procedure for writing them to the operating system so they will stay with you past a cold boot.

#### Screen Dump

The next new feature to make its appearance is a screen dump function. As you might guess from the name, you may now print the current contents of the screen on your printer by simply pushing a 2-key sequence (ctl-=) on the keyboard. This can be done at any time, regardless of what program you might be running or what might be on the screen. This highly desirable feature effectively lets you preserve any screen display you might generate (except graphics). Particularly if you have a bit of hacker in your blood, you won't want to be without this feature.

#### ADM 3A Module

Those of you who saw my previous review will recall that I complained about the screw-ball terminal codes used by Pickles & Trout. Well, guess what? Pickles & Trout CP/M has been on the market so long that most applications programmers have picked up their codes and included them on the installation menu. Now there is a procedure for modifying the Pickles & Trout operating system to emulate a Lear-Sigler ADM 3A terminal.

Frankly, this is one place where I am still not happy. If Pickles & Trout had emulated ATON instead of Lifeboat, they would have had a better product. Lifeboat CP/M responds to the ADM 3A and ADM 31 terminal control codes, and that's it. Period. Until now, Pickles & Trout responded only to Pickles & Trout control codes. This routine lets you switch the operating system so it will respond to ADM 3A codes instead of the standard codes. A choice of two terminal code sets is better than one, but the open-ended definitions allowed by ATON are even better.

To my notion, however, the real error in the design of the ADM 3A routine lies in the fact that selection of this routine also changes the keyboard to conform to the ADM 3A conventions. This involves redefining the arrow keys so they work

like the arrow keys of the ADM 3A terminal. As they are, the arrow keys generate unique control codes. This means that under standard conditions, you can use the KEYXLATE function to define the arrow keys to do anything that you want. However, if you turn on the ADM 3A routine, you immediately shoot yourself in the foot. The ADM 3A routine will change the value of the left arrow key, for example, to a 08h or backspace. The Radio Shack keyboard already has two backspace keys on it (the one labeled "backspace" and the Control H key). This now gives you a third one! But if you attempt to redefine the key, you will find that all three keys move in lockstep; if you attempt to change one you change all.

I believe this design error is sufficiently serious so as to severely limit the usefulness of the ADM 3A emulation routine.

(Christine Pickles defends the ADM 3A routine by stating that it was offered as an alternative to the standard P & T driver, although not necessarily the preferable one.)

#### Hard Disk

Pickles & Trout has an optional hard disk "add on" which supports both the old 8 megabyte and the current 12

megabyte hard disk packages from Radio Shack. I spent the \$80 for the update from the old 2.2eD to the version with the hard disk drivers just to see what I would get. I don't have a hard disk, so no testing was done, but the documentation looks good and, assuming it all works like the book says, the result should be more than satisfactory on either hard drive.

ATON also has hard disk support, and with a Model 16, ATON allows a hard disk to be shared with XENIX (P & T has an application note to do the same thing).

#### CP/M-68k

No problems were found when using CP/M-68k with this new version of CP/M-80. In my review of CP/M-68k ("VanNatta on CP/M-68k", *two/sixteen*, Vol. 2, No. 1, p. 9), I documented a bug in version 2.2e relating to density selection. Specifically, it was not possible to change from a single-density disk to a double-density disk (or vice versa) without exiting CP/M-68k and rebooting. This bug has been fixed.

#### VEDIT

Among the other new features included with P & T's CP/M 2.2m is a screen editor called VEDIT. This version of

VEDIT is quite similar to the VEDIT regularly advertised for about \$150.00 in magazines that cater to computer programmers (like *Byte*). The full featured VEDIT, which I have had under long term review, will install on any computer (almost) and has about 10 memory buffers into which you can insert file fragments for future use. It also has a word wrap feature and a paragraph reform command.

The VEDIT you get for "free" with Pickles & Trout CP/M is, by contrast, dedicated to that operating system and lacks the word wrap and buffer features.

It is beyond the scope of this article to review VEDIT, but suffice it to say that it is a reasonably decent program editor. For files larger than will fit into memory (around 30k), or tasks which involve extensive block operations, I prefer Word-Star. However, many people think very highly of VEDIT.

I have actually been using VEDIT as a quick and dirty editor to write messages for E-Mail (electronic mail) and the like. It can be configured to automatically expand the tabs and never puts characters with the high order bit set (like Word-Star does) in the file. Since some of the mainframes seem to get a little excited

# MODEL 16 68000 BASIC

TriSoft is pleased to announce the availability of 68K-BASIC for all computers operating under CP/M-68K. Model-16 owners using TriSoft CP/M-68K will find 68K-BASIC to be a valued addition to their system.

68K-BASIC is a BASIC language compiler and run-time system designed to be upward compatible with the features of most other BASIC language implementations. 68K-BASIC has several enhancements not normally found in BASIC that greatly increase the programmer's productivity. At the same time it also makes program maintenance much easier. The major enhancements are:

- 1) Indexed file structure built in
- 2) Alpha-numeric program labels
- 3) Long variable names
- 4) Numeric formatting
- 5) MAPPED variable structures
- 6) Line numbers not needed
- 7) Terminal control independence
- 8) Device independence
- 9) Automatic variable type conversion
- 10) Machine language subroutine calls

**68K-BASIC \$299.00**

**TriSoft**  
4102 Avenue G  
Austin, Texas 78751  
(512) 453-2233  
(800) 531-5170



CP/M-68K™ Digital Research  
Model-16™ Tandy

when odd-ball characters start coming in, these are very worthy features.

One should not, however, expect VEDIT to serve as a general purpose word-processing program. Even the full VEDIT is not that, and the absence of word wrap makes the "free" version even less so.

#### Model 12 Support

You can configure P & T 2.2m specifically for the Model 12, but if you do, this special configuration won't work on a Model II. It will, however, ring the Model 12's built-in bell. (P & T CP/M 2.2m does, of course, work just fine on the Model II without any special adjustments.)

The other bit of excitement provided for the Model 12 (but not the Model II or 16a) is that the Model 12 will function without a system disk in drive A once you have booted up. The 12 comes standard with 80k of memory. When configured for the Model 12, the portions of the operating system normally read from disk when a warm boot is executed (the CCP) are stored in the extra memory. The warm boot routine reloads the operating system from the spare memory, instead of from disk. You have to have a disk in the A drive, but it need not be a system disk and can, in fact, be a single density disk.

As an experienced CP/M user, I am strongly conditioned NOT to put a single density disk in drive A and then push the BREAK key. With this system, you can do it without the customary disaster.

The benefit of this new feature is not in time savings, however. What it really does is make the modular operating system concept workable. With the modular operating system you can design dozens of different operating system configurations, all of which will be incompatible with each other. With this feature (available only on the Model 12 and 16b), you are excused from the necessity of having the "right version" on the system disk. This will save a lot of frustration if you make up several configurations.

#### What's The Catch

It seems as if extra features always have a price; you simply can't add whistles and bells to an operating system without "paying the piper." When you're dealing with computer programs, the price is always paid in size, either disk space or

**"T**his new version of Pickles & Trout CP/M has slightly less available program area, even if you leave out all the new features.

memory space, or both.

If you have been wondering what the price is on P & T CP/M 2.2m, wonder no longer.

Pickles & Trout addressed the problem presented by the need to put added features in a finite amount of space by adopting a modular construction scheme; each feature has been coded into a separate relocatable module. Part of the configuration routine involves running a program called MODSEL that is used to select the features you want for your particular installation.

For example, you have a choice of about half a dozen parallel printer drivers. You can select the one that best fits your printer, or, if you don't use a parallel printer, you can leave the module out all together. Similarly, you can pick and choose among the extended features I have described above, such as screen dump, etc. If you have the hard-disk extensions, then you can pick and choose the module for the particular type of hard disk you have. The result is an operating system which, hopefully, has the features you want without the baggage of the features you don't want. You must balance the need for memory for other purposes with your desire for operating system features.

The following observations of available memory were made using the "Bytes Free" display shown on MBASIC (ver. 5.21) when loaded with no file buffers.

Operating System	Free Memory
P & T 2.2eD	31544
Lifeboat 2.25d	31288
Lifeboat SB-80 version 2.61	29496

P & T 2.2m distribution disk	30776
P & T 2.2m Minimal features	311
P & T 2.2m most features	29240
ATON 2.23e (non-switched)	29752
ATON 2.24B bank switched	37944

You can reasonably conclude from this information that this new version of Pickles & Trout is going to have slightly less available program area, even if you leave out all the new features, and about 2k less program area if you put most of the features in. In absolute terms, however, the old version (2.2eD) compared favorably with the competition, so the new, fatter version would seem to be of a tolerable size.

Memory space isn't the only place where the fat shows. The modular BIOS is too big to fit on the system tracks where it belongs, so you must put up with two regular disk files which hold most of the operating system. Together they consume a total of 56k of disk space on your system disk. They do not need to be present except for a cold boot, but you must be prepared to either switch disks after every cold boot or contend with that much baggage on the system drive.

This may not seem like too much on a 1210k per drive Model 12; however, the disk storage problem is more acute on the Model II than on the newer models with double-sided drives.

#### Other Changes

A review of 2.2m could not be complete without a comment on one of the most delightful improvements of all. Specifically, that wretched routine called RESIZER no longer exists. It used to be worthwhile to own a copy of Lifeboat CP/M (or ATON) just so you would have a decent method of moving the operating system from disk to disk (using COPY.COM).

P & T CP/M is now furnished with a bit-copy program called CLONE which can be used to move either the operating system, or the program files, or both. The famous Pickles & Trout dog called FASTCOPY is still furnished with the system, even though it is neither fast nor (arguably) even a copy program.



FASTCOPY, of course, has its place. Its (usually favorable) side effect is that, in the process of moving files from one disk to another, it physically reorganizes the files so they are written on a contiguous part of the disk.

CLONE is at least as good as the functionally equivalent ATON and Lifeboat COPY programs. It is fast and easy to use. No longer will you have time to go to the water cooler while making painfully slow backups.

### Bugs And The Like

Publication deadlines have only given me about a month to fiddle with this new version. In such a short time, I can't be certain there are no bugs lurking in the system; however, it has been pretty thoroughly shaken down on an old Model 16 and a new Model 12. So far, no obvious defects have been disclosed. Everything seems to work as documented. Previously, I mentioned the poorly designed ADM 3A module, but this isn't a bug in the technical sense. The ill-thought-out design is documented.

### ATON CP/M

The folks down at ATON have not been

standing still since last December either; they have been very busy refining their product and have released their current version as 2.24B. Last January, yours truly had not yet acquired the necessary hardware to run the bank-switched version, and my comments were necessarily limited to observations relating to the "standard" version and a look at the documentation on the switched version.

Since that time, two things have happened. First, I got around to springing for the \$399 memory board (Radio Shack #26-4105), and secondly, ATON got their new version out (2.24B) which will function in the switched mode using the extra memory already installed in the Model 16s and other machines with the Model 16 upgrade.

Other than the fact that the switched version will now run in a Model 16 without the user having to buy extra memory boards, which is perhaps exciting, there is really nothing all that different from the version reported on in the Jan/Feb issue of *two/sixteen*.

What has happened to ATON is that the product has matured. In case the euphemism is too subtle, let me try to be

more plain spoken. ATON CP/M now does what it should have done all along. The rough edges have been filed down and the bugs squashed.

Back in December, I thought it was very odd that anyone would publish an operating system that didn't work properly with perhaps the singularly most popular program in microcomputer history (WordStar). ATON now provides a patch routine to be added to WordStar. Once this is done, WordStar will operate reliably in either the switched or unswitched mode with the memory mapped routines functioning.

The patch also installs the arrow keys so they finally do what arrow keys are supposed to do. This means that the down arrow no longer works as a delete key so you must either use the (Ctl-) for the much needed DEL key or redefine some other key for that purpose. Two possibilities are redefining the HOLD key to generate the 7th code, or swapping the (Ctl-) and BACKSPACE definitions.

The patch installation leaves the cursor blinking (like Lifeboat) which, in my opinion, makes it somewhat easier to locate the cursor (the P & T cursor

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doesn't blink with WordStar).

The switched version also provides slightly improved performance in that the additional memory area reduces the need for work files when editing large files. The track buffering feature provides some speed benefits as well.

The other major benefit of using WordStar on ATON as opposed to Pickles & Trout is that the terminal will display the characters with the high-order bits set. It has been my experience that owners of Pickles & Trout CP/M don't know what high-order bits are, and,

**"N**either of these systems is clearly the better choice; both are credible. The choice boils down to how much you are willing to pay for performance.

generally, don't understand how they relate to WordStar. All too often, Pickles & Trout users attempt to take a WordStar generated document file (made using the "D" (Document) edit mode instead of the "N" (Non-Document) edit mode) and use it as source code for a computer program or source material for transfer to another word processing device. All too often, they also run into frustration. This problem never fools an ATON (or Lifeboat) user very long because if you TYPE a WordStar file while using ATON CP/M, all of the strange characters display in inverse video.

There is hope, however, for P & T users. If you have the new version (2.2m) which comes with VEDIT, simply load a WordStar file with VEDIT. The command is simple: VEDIT FILE.DOC will do the job, where FILE.DOC is the name of your WordStar file. It seems that VEDIT displays all those dreadful high-order bits. If you select a WordStar file that has been right-justified, you will be certain that your computer has run amok, as there will be white speckles all over the screen.

Once you see the problem, its cure is no farther away than PIP, as the "Z" toggle on PIP is a ready made way to get rid of the high order bits.

### Model 12 Support

The bank-switched version of ATON CP/M supports key-click and bell routines of the Model 12 keyboard. It does not require a system disk in Drive A with any computer, if the bank-switched version is in use. The standard version reloads the CCP from the system tracks in traditional CP/M fashion.

### VEDIT

The P & T version of VEDIT will not work under ATON CP/M, however, the full featured version can be installed on the II/12/16 utilizing the memory mapping facilities. When it is so in-

reported initially that this version won't work on their operating systems, even though the installation menu specifically lists LIFEBOAT and Pickles & Trout installation routines. (As of this writing, P & T offers a patch to properly install WordStar 3.3 using the Menu option.)

These initial reports are only half true. If you follow the specified installation routines, the reports are true, but you can bypass the menu installation routines and enter your terminal control codes one at a time. If you do this, you can get WordStar 3.30 to work (in the serial terminal mode) on both P & T and Lifeboat CP/Ms.

Similarly, you can get ATON 2.24B to work in the non-switched mode if you install it as a SOROC terminal. Unfortunately, in the switched mode, ATON 2.24B locks up solid on the second key of any two key command unless you disable the ERASE TO END OF LINE function. This can be done by answering question "H" of the custom terminal installation routine with a period (".").

WordStar 3.30 has no new features, so if you are lucky enough to have version 3.0, by all means keep it. The only changes are a more "user-friendly" installation routine and much-improved documentation.

Mailmerge has one very useful feature I'll miss if version 3.30 isn't eventually fixed. Conditional printing has been added, meaning that you can insert into your document a "dot" print command that will execute the logic of an "IF THEN-GOTO" statement.

### Spreadsheets

When it comes to spreadsheets, only one rule makes sense, and that is: the more available memory there is, the better.

The actual capacity of various spreadsheets on the market varies widely. CalcStar from MicroPro has the smallest capacity of any spreadsheet I have worked with (a few hundred entries), and Perfect Calc has the greatest capacity (around 3000). The most respected, SuperCalc from Sorcim, is in the middle with around a 1500 entry capacity. The bank switching routines of ATON move about 8k of operating system code into the extra memory-bank, thereby increasing the effective area available for user programs from somewhere between 54k to 56k (depending on the operating system) to a full 62k.

stalled, it will work equally well (without modification) on Lifeboat, ATON (both variations of 2.24B), and P & T.

For what it is worth, the old 2.23 switched version of ATON would not work with VEDIT, so we have an improvement here.

### Beware Of SpellStar

My comments suggesting that WordStar version 3.0 now works with the ATON patch should not be construed to extend to SpellStar. All versions of SpellStar for Version 3.0 have had fatal bugs in them which, depending on the operating system, have been troublesome.

Specifically, SpellStar crashes during the correction routine when applied to large files. Under Lifeboat or P & T CP/M the error is generally a recoverable one (i.e., you crash out of SpellStar with a memory error message but land in WordStar). However, this same SpellStar bug under ATON rings the bell, flashes the screen, locks the system, and necessitates a cold boot.

### WordStar Version 3.30

This summer MicroPro released a new version of WordStar. The update costs \$85 plus \$25 for Mailmerge and \$25 for SpellStar. Both ATON and P & T

**FIGURE 1**  
TIMES to Build a BTREE INDEX USING FABS  
(in minutes and seconds)

record #	P & T Model 12	ATON II Model 12	ATON II Model 16A
500	4:02	2:26	3:00
1000	8:18	5:07	6:00
1500	12:39	7:52	9:08
2000	18:07	12:08	12:39
2500	26:50	18:94	17:01

**FIGURE 2**

```
rem CB-80 program to write and read
rem random files on two drives

print "push any key to start"
any.key% = inkey

create "a:onefile.dat" recl 10 as 1
create "b:twofile.dat" recl 10 as 2

rem alternately print a single character
rem first to one drive then the other.
rem repeat 1000 times

for i%=1 to 1000
    print # 1,i%; "a"
    print # 2,i%; "a"
next i%
close 1,2
print "done writing"
print "push any key to read"
any.key%=inkey

open "a:onefile.dat" recl 10 as 1
open "b:twofile.dat" recl 10 as 2

rem now read them back
for i%=1 to 1000
    read # 1,i%; x$
    read # 2,i%; x$
next i%

close 1,2

print "done reading. You should now"
print "have a 10k file on each drive."
```

**FIGURE 3**  
EXECUTION TIMES of FIGURE B PROGRAM

	WRITE	READ	TOTAL
P & T Model 12	9:15	3:56	13:11
ATON Model 12(128k z80)	:40	:23	1:03
ATON Model 16a	1:10	:37	1:47

Figure 3 provides an example showing time elapsed in a "weighted" benchmark test. The conditions tested perform exceedingly fast in a system with disk buffering (the ATON CP/M). Since P & T CP/M does not have disk buffering, it doesn't show as well. However, the timed tasks are not ones that would often occur in the "real world."

**CORRECTION:** In our Sep/Oct 1983 issue we incorrectly printed Dataright Software's address as P.O. Box 1402, Hillsdale, NJ 07642. The correct address is P.O. Box 402, Hillsdale, NJ 07642.

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This extra program area (called TPA) increases the capacity of CalcStar from pathetic to less pathetic. Similarly, it increases the capacity of SuperCalc by about 300 entries.

With respect to Perfect Calc, the total capacity of 3000 entries is not changed, but the effective capacity is greatly increased. Perfect Calc achieves its great capacity by using a 64k workfile on disk, and with almost any computer not equipped with a memory disk, the user is likely to give up in frustration waiting for workfile writes before the theoretical capacity of 3000 entries is achieved. However, the increased memory area, coupled with the superior disk performance inherent in the track buffering scheme of ATON, work together to make Perfect Calc a much more manageable animal than might otherwise be expected.

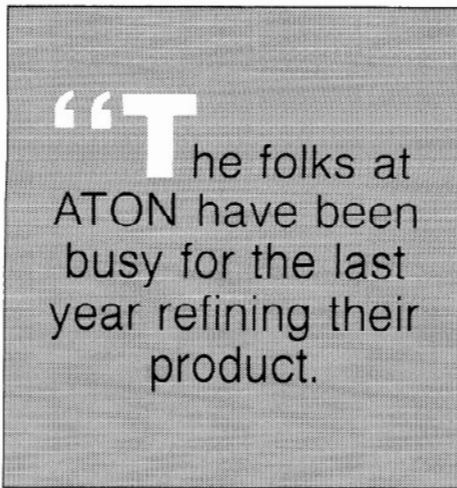
ATON now furnishes a page and a half of step-by-step instructions for making a proper installation of SuperCalc. In my book, a proper installation includes highlighting. Pickles & Trout has a menu installation for this product, but if you want to get the highlighting on ATON, you have to start out with the televideo selection on the menu and then modify it using the custom installation routines. The instructions are clear, and it is well worth the effort.

The highlighting feature in Perfect Calc goes crazy on both P & T and ATON installations. For reasons I can't explain, it works correctly on Lifeboat CP/M.

### Speed

The ATON pamphlet includes benchmarks showing the speed of ATON CP/M at about twice that of the competition. I don't happen to have any of the particular programs used by ATON for the benchmarks, but with my usual cynicism, I suspect that it is only under the most exotic of conditions that this kind of improvement can be expected, and, in due course, I shall demonstrate what I mean.

Three of their examples involve running program compilers, and two of the examples involve running sort and indexing routines in dBASE II. These are activities you would expect to be helped by improved disk performance. In my world, the differences are not so great. With WordStar you need to have a pretty good imagination to notice any difference in performance, but I think there is some. With my favorite com-



piler (CB-80), I have observed compilation improvements from 10% to 25%. I don't have access to dBASE II, but I am familiar with what it does, and it is reasonable to expect from the nature of the beast that ATON would provide major improvements in the otherwise tedious sorting and indexing routines.

Realistically speaking, track buffered I/O provides the potential for great improvements in performance. Disk buffering is like printer buffering; it's easy to prove that such buffering greatly increases speed under certain conditions, but for the most part, those "certain conditions" occur only infrequently.

Index building is a prime example. It is generally a remedial function and involves, by its nature, reading through an often large data file, an item at a time, extracting the index key, and then writing it to the index file. If the index is a B-tree index, as is commonly used, the index key will have to be inserted into the index file in its proper location. If no space is available at the "proper" location, then at least a portion of the index file must be rearranged to make space.

I couldn't let this review go by without doing some head-to-head speed comparisons, and, since I didn't have dBASE II available, I used the materials at hand.

My first test was an index building routine which involved building a B-tree index for a name and address file consisting of 2500 names in a 530k file. I used the index BUILD command from FABS (a B-tree subroutine sold by Computer Control Systems, 298 21st Terrace S.E., Largo, FL 33541). The project was implemented in CB-80 code, the CBASIC compiler from Digital Research, noted for being very fast and very well suited for business and accounting programming.

The statistics appear in Figure 1. The test was performed three times using the same program code. In each instance, the tests were made using disks formatted to the operating system in the double-sided, double-density format. Pickles & Trout was tested only on the Model 12. ATON was tested in both a Model 12 and a Model 16a. The same disks were used for the two ATON tests. From a hardware standpoint, the Model 12 was equipped with two floppy drives, the optional card cage, and an extra Z80 memory board, for a total of 128k. The old style Model 16 was an "out-of-the-box" version with only the MC68000 memory. The Z80 memory board allows for 5 track buffers, and the Model 16 created 17 track buffers.

You will note from a review of the test results that under some conditions the Model 12 with an extra Z80 board outperformed the Model 16A. Both are equipped with the same Tandon 848-2 drives which are considerably faster than the drives that are standard with the Model II. The reason for the time variation is that data transfers between the Z80 memory and the MC68000 memory require numerous wait-states in order to assure synchronization as two processors operate at different speeds.

One of the most interesting things about this table is not so much the overall times, but rather the intermediate times. You will note that, despite the claim in the preceding paragraph that the Model 16 was the slower of the machines, its overall time was lower than the Model 12's time. But look at where they were after 500 or 1000 records. In both ATON tests, I used the same disks with ATON 2.24b in the bank-switched mode. The Model 12 got the first 1000 records indexed almost a full minute ahead of the Model 16.

Now look at the times required for the final 500 records. Curious thing, isn't it? The slower Model 16 got done first. It is normal to expect that the index building speed would slow as the index gets larger, but here we have a definitive illustration of the old maxim: "If a little is good, more is better". The 5 track buffers allowed by the extra Z80 board in the Model 12 simply ran out of before the job got done. In this example, the Model 16 overwhelmed the Model 12 by the brute force of its 17 track buffers. As would be expected, Pickles & Trout brought up the rear. The difference is obviously substantial, but not what I

would call a real run-away.

While I was setting up for this test, it was necessary to PIP that 530k data file several times, so I timed that as well. P & T managed to get the job done in a leisurely 3 minutes. ATON wanted 2 minutes to transfer the same file from a P & T disk to an ATON disk and 1:39 to move it from an ATON disk to an ATON disk.

### Is ATON Really 13 Times Faster?

The final speed test is a most fascinating one. The source code for the test is set forth in Figure 2. The test results in Figure 3 show ATON getting the job done about 13 times faster than P & T.

My purpose in publishing this benchmark is not to try to convince you that ATON is really 13 times faster, but rather, to show a graphic example of an unfair, biased, and misleading benchmark.

It is quite true that this program example will send P & T CP/M chasing its tail (right along with any other operating system that does not have disk buffering). It is also very true ATON will execute this program at the wink of an eye. The foul is that I have selected a set of conditions handled very badly by a traditional disk operating system, but ones which rarely appear in the real world.

In this case, we do a series of trivial disk writes alternating between drive A and drive B, followed by an equally trivial set of reads. If you set up this test on a Model II, be prepared to hear the drives go clickety-clack 4000 times before the program is over. The Model 12 is not so noisy; you just get to watch the idiot lights on the drives flash 4000 times.

Watching ATON execute the program is no fun at all. This particular routine happens to be one for which track buffering is especially suited. ATON does the whole job with perhaps no more than a dozen disk accesses, and, in fact, most of the time neither disk light is on. It simply does the work in the buffer area and writes the final result out to disk.

The test results are dramatic, but they don't show much other than that under certain conditions, track buffering can make a big difference. It seems unlikely to me that anybody in the real world would want to perform the task set forth in the program. A true measure of per-

formance ought to be weighted to the things a user actually does. If your bag is word processing, I suspect it would be hard to document a significant over-all increase in output. On the other hand, if you make a living executing benchmarks, you will want ATON (unless you are paid by the hour!).

### Conclusions

For those of you who are hoping this article will end with a cliché identifying the best choice of these operating systems, get prepared for a disappointment. Neither of these systems is clearly better than the others. Both are credible.

P & T chose to put their bag full of tricks in an obese disk file and put you in charge of deciding which features you really want.

ATON expects you to take a whole lot of money down to your local Radio Shack store and either bring home a Model 16 or an extra \$399 memory board. Once this is done, the bag full of tricks crawls into the extra memory and does its thing without consuming your precious user memory.

Digital Research and Radio Shack have had a team of programmers trying to implement a bank-switched version of CP/M on Radio Shack computers for about a year. Release dates have been scattered throughout 1983, and there have been no releases. As I have been writing this in September of 1983, the September 15, 1983 release date has slipped to November 15. One must wonder if that date will be kept. Meanwhile, ATON has had a similar product on the market for over a year. One wonders why Digital Research and the Shack don't slip a few bucks to the guys down at ATON and get them to tell how they did it.

The choice between these two credible products, as I see it, boils down to how much you are willing to pay for performance. If you have already purchased a Model 16, you have bought the performance, and it's a shame not to use it.

ATON is the choice for Model 16 owners -- with a couple caveats. First, the bank-switching won't work on about 30% of the old-style Model 16s. (These are the ones now called Model 16a, even though none of us knew about the "a" until the 16b came out.) The difficulty is some sort of a hardware problem in the Model 16 itself. Unfortunately, there is

no way to predict which of the Model 16s suffers from this abnormality, and the only known cure is to randomly exchange chips and boards within the Model 16 (at considerable expense, no doubt) until it goes away. Apparently, no one is even sure what the abnormality is. Luckily, it does not appear on the Model 16b or the Model 12 (and happily for yours truly, my very ancient Model 16 is not one of the offenders).

The second caveat is that ATON and TriSoft have not yet gotten their acts together so as to coordinate their efforts to make CP/M-68k do its best with ATON. As of this writing, the issue version of ATON will not even work with CP/M-68k; however, TriSoft furnishes (on request) a short patch that will allow CP/M-68k to work correctly with the non-switched version.

The task of getting the switched version to work with CP/M-68k is a horse of another color. Both want to make use of the 68000 memory for quite different purposes, and thus, the use of the two creates an inherent conflict. The theoretical solution is to partition the 68000 memory and put each task in a different part. Call that a "better idea" that hasn't happened yet.

If you don't have a Model 16, then the choice is not so obvious. If you have a Model II, you can spring for a \$399 Z80 memory board and use the bank-switching. Or, if you have a Model 12, you can spring for the board PLUS a card cage in which to put it. Otherwise, you will not have a bank to switch into!

When it comes to a head-to-head comparison of P & T with the standard ATON (non-switched), I think it is fair to say that both P & T 2.2m and the ATON Level I are memory hogs. P & T, however, has more features, plus the option of scrapping some of the features should memory become critical. Level I ATON, however, stays on the system tracks where it belongs.

It may sound crazy, but I am of half a notion to suggest that it is quite reasonable to consider acquiring both ATON and Pickles & Trout, particularly if you use your computer for a wide range of activities. Each seems to do some things better than the other, and it does not seem unreasonable to take advantage of this. ■

# WHAT PRICE A MIRACLE?

BY BRUCE V. BATES

Nothing is quite as disheartening to a SCRIPSIT user as to have the message "DOCUMENT IN THIS POSITION IS UNREADABLE" appear on the screen. Hours, days or weeks worth of typing, editing, and composing up in smoke. This is another of Radio Shack's cryptic messages which leave you scratching your head as to what to do next.

Recently I was presented with that same error message for all 19 documents on a SCRIPSIT diskette. The smallest of the documents was a four line memo, and the largest was a 67 page Policies and Procedures Manual which had taken over three months to construct. Needless to say, I was less than pleased with the message. The apparent cause of the initial problem was a power failure, which in turn caused the SCRIPSIT problem. Queries to the local Radio Shack computer store were fruitless, and I imagined that there was no way to recover the documents.

Fear not! SCRIPFIX to the rescue!

SCRIPFIX is a program originally written for the TRS-80 Model II which will whisk away those errors and reconstruct the files to their original condition. SCRIPFIX was written by Custom Com-



puting Company, in Poughkeepsie, New York as an in-house utility to ease in the recovery of SCRIPSIT files which had been destroyed. When the success of the program became apparent, the decision was made to market the program.

SCRIPFIX is distributed on a standard TRSDOS data diskette, so single-drive users will have to fend for themselves in terms of loading the program onto a system diskette. The suggestion is made that perhaps your friendly Radio Shack computer center might accommodate you.

SCRIPFIX is easy to use and demands little response from the operator. Point SCRIPFIX to the disk drive containing the damaged diskette and away it goes. Within a matter of minutes, all of the document headings which can be found will be displayed, even those from documents you purposely deleted in the past.

As soon as the program is through, all of the documents on the diskette which could be reconstructed are available to

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What price is this miracle? A mere \$69.95. A pittance when compared to hours of laboriously trying to reconstruct your damaged documents. No serious SCRIPSIT user should be without this fine utility.

Incidentally, SCRIPFIX recovered all 19 documents on my diskette!

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# REVIEW OF SPLITHD

BY JOHN A. LEWIS

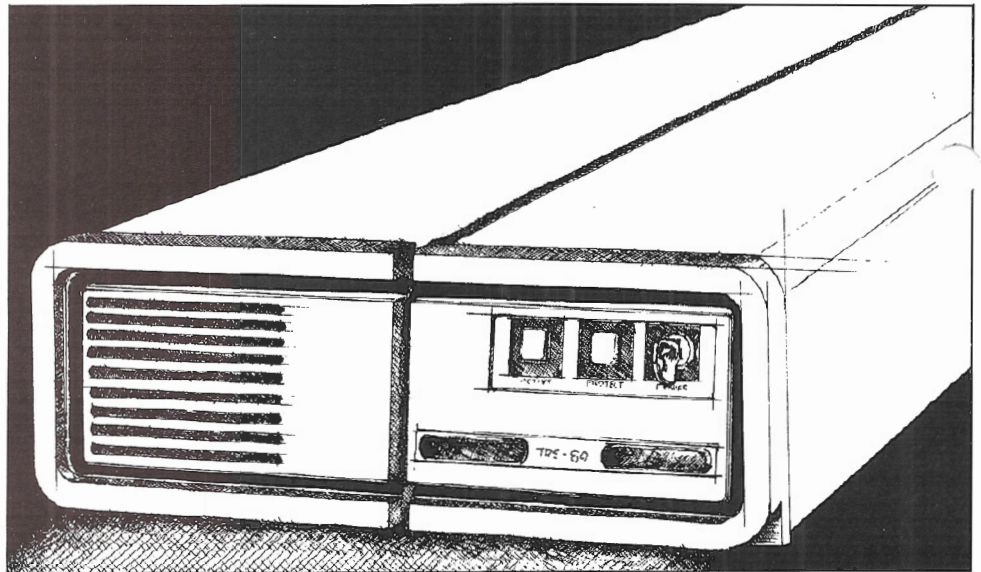
**Thanks to Bob Snapp's newest program, you can now keep both XENIX and TRSDOS operating systems on the same hard disk.**

One of the fascinating things about microcomputers is the phenomenal pace of change: new CPUs, new peripherals, new modems, new memories, new printers, new applications, and new operating systems. The changes seem endless.

Despite this excitement and constant wondering about what is around the corner, we're also faced with the dark side of the forces of change: transition. In the computer sense, transition is that condition which necessitates falling back on previous versions of hardware or software that contain little "pet" features which have not yet been carried to new versions.

As a hardworking, hard-disk user dedicated to the betterment of your application programs and operating systems, have you ever thought "there has to be a better way" when forced to revert back to floppies to change your operating systems? Well, somebody else has thought so, too. And that somebody is Bob Snapp.

If you own a Radio Shack Model 16 (or enhanced Model II or 12) hard-disk system with the XENIX operating system



and are faced with the constant necessity of flipping from XENIX to TRSDOS 4.2 and back again, thanks to Bob Snapp's newest program, SPLITHD, you can now keep both your XENIX and TRSDOS operating systems on the same hard-disk. By merely booting (or resetting) with the appropriate option, you are placed in the operating system of your choice, i.e., either XENIX or TRSDOS 4.2.

SPLITHD is completely transparent once installed, with the exception of the initial selection (SPLITHD boot) screen on booting or system reset. If you actually loaded your TRSDOS and XENIX systems yourself when you got your computer, you will have no trouble in-

terpreting the simple documentation that comes with the package. (CAUTION: If you are not a programmer and had your system loaded by someone else, I suggest you have this package installed by an experienced programmer.)

Another nice feature of this product is that you can split your hard disk on a percentage basis between XENIX and TRSDOS. When testing the package, I tried a 80/20 split, which gave me nice round figures on ten megabytes for XENIX and two megabytes for TRSDOS. You also get a chance to change these percentages if you don't like the split.

You should be alerted to the following

---

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JAL Associates  
227 Tuscan Road  
Maplewood, NJ 07040

---



idiosyncrasies. The SPLTHD boot screen is somewhat peculiar. At the top of the screen a terse message requests your selection (T/X). Then toward the center of the screen, informational messages indicate how much memory is allotted to the system components, together with a curious allusion to the twelve days of Christmas. The lower portion of the screen contains eight lines of optional garbage. Puzzled? So was I. But that is exactly what is on the screen: "First line of optional garbage....Second line of optional garbage....", etc. A call to Bob indicates that he is in a bit of a quandry on what to put there. I'm still puzzled; why not leave the area blank and eliminate all questions? I also found the absence of my friendly guiding cursor a little disconcerting. Ah well, so much for user-friendly programming. Just ignore all that and hit "T" if you want TRSDOS or "X" if you want XENIX.

Another peculiarity. If you want to change operating systems after initial boot, you flip the reset toggle, but instead of the SPLTHD boot screen appearing, you get a "boot error H0" message. This apparently is a timing error in the seek time of the cylinder head trying to track 0 on the hard disk. Ac-

ording to Bob, this is a bug in the peripheral's ROM logic. Alas, a call to Radio Shack indicates that they are not aware of this bug. However, once again, this is no major problem. Just flip the reset toggle again and the SPLTHD boot screen appears.

How can one use such a tool? SPLITHD is essentially a transitional convenience tool. An example that immediately comes to mind is the convenience of transferring a file from TRSDOS to XENIX via the "TX" command without having to flip your floppies. Another example would be to extract files from a public data base (CompuServe, The Source) under TRSDOS and then transfer it to XENIX via "TX."

I have a QUME printer with an RS-232-C serial interface. This works fine under TRSDOS, but I have been unable to get XENIX to communicate with it. I really like the text processing capabilities of XENIX. Now, wouldn't it be nice if I could transfer a XENIX text file to TRSDOS and then to my QUME? Maybe somebody will develop a nifty little program that will accomplish this, but then hope springs eternal....

SPLITHD costs \$99.00 and is available from:

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# CONVERTING DATA FILES: From TRSDOS 2.0 or 4x to XENIX MBASIC

BY ANTHONY LAWRENCE

Tandy has provided an upward migration path for BASIC programs going from TRSDOS 2.0 or 4.x to XENIX MBASIC. Conversion of programs is fairly straight forward, with only a few minor problems of non-acceptance commands and some unexpected line length surprises.

The conversion of data files, however, holds a few traps for the unwary.

As most BASIC programmers know, the related functions MKI\$, MKS\$, and MKD\$ provide very handy packing of numeric data for disk storage. What is not generally realized is that the packing doesn't really do anything special. It merely takes the memory image of the number and stores the exact bytes as it sees them.

The storage format is rather loosely explained in the BASIC manuals, but briefly it is as follows:

*Integers* are stored in Z-80 word format; two bytes LSB-MSB. The value 1 would be stored as 0100 hex. The value 10 would be 0A00 hex, and so on. Try PRINT CVI("&H0A00") if you have trouble with this.

---

Anthony Lawrence  
BackUp-80  
160 North Main Street  
Randolph, MA 02368

---

*Single Precision* numbers take four bytes and are stored in what Microsoft calls "excess 128 notation," and Tandy people have sometimes called "XS128." A simple program will show you the format:

```
5A$="BBBB"  
10INPUT "NUMBER";A  
20LSET A$=MKI$(A)  
30FOR X=1 TO LEN (A$)  
40PRINT HEX$(ASC(MID$(A$,X,1)));  
50NEXT X
```

Understanding it all from the manual's explanation earns you one "attaboy," but I will give you a hint: once you have located the implied decimal point, remember that it is actually a binary point. Binary .1 is .5 decimal, the next place right is .25, then .125, etc.

*Double Precision* is the same scheme except eight bytes are used, and the program given above will show you those bytes also (change MKS\$ to MKD\$). Change line 5 in the above program to A\$="BBBBBBBB" (or any eight characters).

Enter XENIX MBASIC.

*Integers* are stored almost the same way, but backwards. Oh, all right, you think the Z-80 is the one that is backwards. Whatever the semantics, the format is reversed. So if TRSDOS stored a 1, XENIX thinks it's a 256. A 140 stored by TRSDOS converts nicely to -29696. Very handy if the 140 was a pointer to

another record! This inconsistency is not too difficult to get around -- a function definition will do it.

```
10 DEF FNSW$(A$)=  
RIGHT$(A$,1)+LEFT$(A$,1)
```

This will swap the bytes so you could use

```
PRINT CVI (FNSW$(B$))
```

Or, if you want to store in Z-80 format, use:

```
LSETA$=FNSW$(MKI$(A))
```

*Single and Double precision* numbers are not so easy. XENIX MBASIC uses packed BCD. Actually, BCD is easier to understand than excess 128, and the program given above will show the bytes to you.

If you don't have a XENIX system right now, one example will give you the flavor: The number 128.34 stored as single precision will look like this:

```
43 12 83 40  
(spaces added for clarity)
```

The 43 is the exponent, and the rest of it is just 128.34 packed two digits per byte. A simple scheme, but excess 128 numbers just are not going to match.

Tandy's telephone response to the problem of different storage formats was typical. There is no problem, they said,

and anyway, TX (the file transfer program used to bring stuff to XENIX) will take care of it. A moment's reflection will tell you that there is no way any transfer program could begin to handle data conversions without knowing your file lay-out. String and numeric data cannot be distinguished in a direct access file. Try PRINT CVS("THIS") if you are not clear on that. "THIS" can be a number!

There are two methods you could use to fix the data so your programs will work. One would be to re-write your data in a sequential file before transferring it, then read it sequentially under XENIX, and re-write it random. Sequential files store numbers just like you see them on your screen or printer.

The second method would be to write a routine that either writes packed BCD (if you do it under TRSDOS) or one that reads excess 128 (if you do it from XENIX).

The first method is simple, slow, and wasteful of disk space. The second is quicker, but your routines had better be perfect. ■

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## Read or set your drive's stepping rate

BY JEAN-PIERRE RADLEY

RATE is a machine-language program that will read or set the stepping rate for the drive(s) under TRSDOS 2.0a or 2.0b. SNAPP, Inc. has published DOSFIX09 to change the 20msec. rate of TRSDOS 2.0a to 12msec.:

```
PATCH SYSRES/SYS A=0CFB F=1E C=1D
PATCH SYSRES/SYS A=OD12 F=1E C=1D
```



The THINLINE patches from RS (for thinline drives) change the steprate to 6msec. This change, plus all the others in THINLINE, produce TRSDOS 2.0b.

RATE is *not* a patch to SYSRES/SYS on disk which would take effect only *after* a RESET. RATE changes the step-rate parameter currently stored in the TRSDOS portion of RAM. This change stays in effect until RESEting or a new RATE is set.

The fastest possible rate is always desired, but some disk I/O errors are circumvented by a slower rate. My upgraded Model 12 and my Model II have cranky drives which haven't been serviced. When operating only Drive 0, I can use fast rates, but when using other drives, I need to slow down the steprate.

The program is invoked from TRSDOS READY by typing in either the four-letter word "RATE" <ENTER>, or by typing the six characters "RATE R" <ENTER> where R = 0, 1, 2, or 3.

Entering just "RATE" will display the existing steprate. For example, typing "RATE 1" will change the steprate to 12msec. and TRSDOS will report: "The steprate is now 1, i.e., 12 msec." Because the PARSER SVC is used, the program can be renamed to any legitimate filespec of any length.

Do NOT use RATE 0 (6 msec.) with single-sided drives! It is too fast and a RESET will be unavoidable. RATE 3, for 30 msec., is quite slow and not likely to be of practical value unless serious disk I/O problems occur at other rates.

The program was written with the RS Assembly Language Development

System (ALDS), a very powerful, rapid, flexible, and sophisticated Z-80 editor-assembler-linker with superb options. It includes ALTRAN for transmitting source code, object code, or data files between Models I, II, III, 4, 12, and 16 through modems or hard-wired connections. It also has ALBUG, which is more versatile than DEBUG.

The rate parameter (0, 1, 2, or 3) forms the two lowest order bits of a command issued by the floppy-disk controller. The other six bits define the command as a seek, control head positioning, and determine if the track positioning is to be verified. A seek command using a 12 msec. track-to-track stepping rate (rate = 1 decimal = 01 binary) would thus be, in binary: 00011101, and thus in Hexadecimal: 1D.

Comments on specific line numbers:

- 15 The program loads and executes from F000H. This address is not used by BASIC so the program could be called by SYSTEM"RATE". But you could relocate it. On entry, HL=2700H the address of TRSDOS command lines.
- 18 Illegal Z-80 instruction? This is one of the many Extended Op-Codes afforded by ALDS. These are really

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New York, NY 10025

just macro calls. Here the instruction SVC 46 is expanded by ALDS to LD A, 46; RST 8.

- 7 In the list address blocks (lines 76-78), 0DH (the carriage return) is specified as a terminator. If the PARSER finds a separator instead of a terminator, it sets the Z flag to inform us that more fields to parse remain.
- 19 NZ means a terminator was found, so we have no new rate desired and we proceed to read the existing steprate.
- 43 If the same byte is not at 0CFBH and 0D12H, we could just arbitrarily make them the same, say 1CH for 20 msec. But why would they be different? Rather than reset them to be equal, assume that this error may be symptomatic of other problems, and give the BADNEWS.
- 54 Another ALDS Extended Op-Code, which is expanded to LD D,0; LD E,A.
- 76 The List Address Block used by PARSER. If no List Address Block is used, PARSER will allow 1-0,A-Z,a-z in a field. Anything else is a separator. No terminators are initially defined.
- 77 List 1 makes the carriage return a terminator.
- 78 List 2 makes ":" a field character, not a separator. (This permits you to get RATE from a given diskette: RATE:1 2= get "RATE" from Drive 1 and set steprate of all drives to 20 msec.) A List 3 (not used here) would remove letters or digits from range of permissible field characters and make them separators. ☐☐

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## PEEK & POKE FOR THE MODEL II

BY LAMBERT BARILLEAU

For the life of me, I cannot understand why Radio Shack did not include PEEK and POKE functions with their BASIC. To make up for R/S's omission, I have written a quick PEEK and POKE machine language routine, along with a short BASIC routine to demonstrate its use.

Enter the following machine code in hex using DEBUG, starting at location F300H:

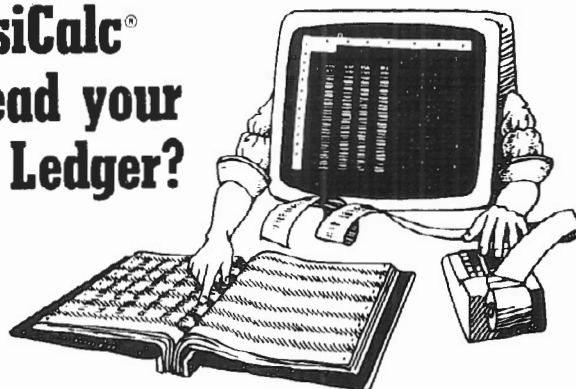
```
5E 23 56 D5 E1 5E 23 56 23 7E 12 C9 E5 5E 23 56
IA E1 77 23 36 00 C9
```

DUMP POKE/PEEK/OBJ START=F300, END=F316, RORT=R.

The BASIC routine goes like this:

```
10 'Filespec: POKEPEEK/BAS By Lambert Barilleau
20 CLS:SYSTEM"POKEPEEK/OBJ":DEFUNG X:DEFINT A,P
30 DEFUSR0=&HF300' POKE address X, value A(1)
40 DEFUSR1=&HF30C' PEEK address X, result LSB P
50 X=0:P=0:DIM A(1)' A(0) for int-address
60 INPUT"ENTER: Integer 0 - 255 to be poked";A(1)
70 IF A(1)<0 OR A(1)>255 THEN PRINT"ERROR":GOTO60
80 FOR X=32765 TO 32770:GOSUB 150:NEXT
90 PRINT"Locations 32765 to 32770 poked to"A(1)
100 PRINT:PRINTTAB(8)"ADDRESS"TAB(39)"CONTENTS"
110 PRINT"decimal","hex","decimal","hex"
120 FOR X=32764 TO 32771:GOSUB 170
130 PRINT X,HEX$(X),P,HEX$(P):NEXT:PRINT:GOTO60
140 ' POKE Subroutine
150 GOSUB 190:P=USR0(VARPTR(A(0))):RETURN
160 ' PEEK Subroutine
170 GOSUB 190:P=USR1(A(0)):RETURN
180 ' Address to Int-address Subroutine
190 IF X<32768 THEN A(0)=X:RETURN
200 A(0)=X-65536:RETURN
```

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E Addr	Obj	F1 Ln #	Source Line	
0000		00001	*	
0000		00002	RATE	Jean-Pierre Radley
0000		00003	Sep 8, 1983	320 Central Park West
0000		00004		New York, NY 10025
0000		00005	Sep 26, 1983	revised to include PARSER SVC
0000		00006		
0000		00007		To change or determine the stepping rate of the disk drives.
0000		00008		The change is NOT a patch to the disk, but to the DOS now in RAM.
0000		00009		Entering RATE from TRSDOS READY will return the existing steprate.
0000		00010		Entering RATE R will change the steprate to 6, 12, 20 or 30 msec.
0000		00011		according to R = 0, 1, 2, or 3. DO NOT USE 0 EXCEPT ON THINLINES!
0000		00012	*	
F000		00013	RATE PSECT OF000H	
F000		00014	;	
F000	4E	00015	BEGIN LD C,(HL)	;(2700H) = length to parse
F001	23	00016	INC HL	;start parse here
F002	11B9F0	00017	LD DE,LAB	;list address block
F005	3E2ECF	00018	SVC 46	;PARSER
F008	2023	00019	JR NZ,REPLY	;terminator found means get existng
F00A	1600	00020	LD D,0	; rate, else zero MSB of DE
F00C	19	00021	ADD HL,DE	; as E has offset for next parse
F00D	11B9F0	00022	LD DE,LAB	
F010	3E2ECF	00023	SVC 46	
F013	2849	00024	JR Z,ERROR	;excess fields were input
F015	78	00025	LD A,B	;B has length of found field
F016	D601	00026	SUB 1	; which should be only one byte
F018	2044	00027	JR NZ,ERROR	;if more than one, return w/error
F01A	7E	00028	LD A,(HL)	;A has ASCII datum
F01B	D630	00029	SUB 30H	;change it to Hex
F01D	383F	00030	JR C,ERROR	;input byte less than 30Hex
F01F	D604	00031	SUB 4	;test if greater than 3
F021	303B	00032	JR NC,ERROR	;if Carry, input is betw. 0 and 3
F023	C620	00033	ADD A,20H	;input is now 10,1D,1E, or 1F
F025	21FB0C	00034	LD HL,POINT1	;first place for datum
F028	77	00035	LD (HL),A	;put it there
F029	21120D	00036	LD HL,POINT2	;next place
F02C	77	00037	LD (HL),A	;there too
		00038	;	
F02D	21FB0C	00039	REPLY LD HL,POINT1	;look for first datum
F030	7E	00040	LD A,(HL)	;put it in A
F031	21120D	00041	LD HL,POINT2	;look for second datum
F034	46	00042	LD B,(HL)	;put it in B
F035	B8	00043	CP B	;they'd better be identical
F036	202C	00044	JR NZ,TROUBL	;oy vey!
F038	D61C	00045	SUB 1CH	;to get to 0 - 3 range
F03A	3828	00046	JR C,TROUBL	;datum too small
F03C	D604	00047	SUB 4	
F03E	3024	00048	JR NC,TROUBL	;datum too big
F040	C634	00049	ADD A,34H	;OK 0 - 3 range, put into ASCII
F042	21B4F0	00050	LD HL,ANSWER+21	;where it goes in the message
F045	77	00051	LD (HL),A	;put current rate in message
F046	D630	00052	SUB 30H	;back to Hex
F048	CB27	00053	SLA A	;twice the datum for indexing
F04A	5F1600	00054	LD DE,A	

E Addr	Obj	F1 Ln #	Source Line
F04D	21C3F0	00055	LD HL, TABLE ;contains values in milliseconds
F050	19	00056	ADD HL, DE ;HL points to one of the four values
F051	118CF0	00057	LD DE, ANSWER+29 ;where to put value
F054	010200	00058	LD BC, 2 ;two bytes to transfer
F057	EDB0	00059	LDIR ;put them there
F059	216FF0	00060	LD HL, ANSWER
F05C	1809	00061	JR PRINT
		00062	-----
F05E	0630	00063	ERROR LD B, 48 ;incorrect command parameter
F060	3E27CF	00064	SVC 39 ;ERROR
F063	C9	00065	RET
		00066	-----
F064	2194F0	00067	TROUBL LD HL, BADNEWS
F067	46	00068	PRINT LD B, (HL) ;length of message
F068	0E0D	00069	LD C, 0DH
F06A	23	00070	INC HL ;start of message
F06B	3E09CF	00071	SVC 9 ;VDLINE
F06E	C9	00072	RET
		00073	*****
F06F	245468652073 746570726174 65206973206E 6F77203F2020 692E652E203F 3F206D736563 2E	00074	ANSWER DEFT 'The steprate is now ?, i.e. ?? msec.'
F094	245374657072 61746520756E 726561646162 60653B207375 676765737420 524553455420 21	00075	BADNEWS DEFT 'Steprate unreadable; suggest RESET !'
F0B9	BFF0 C1F0 0000	00076	LAB DEFW LAB_1, LAB_2, 0
F0BF	01 0D	00077	LAB_1 DEFB 1, 0DH ;make car.ret. terminator
F0C1	01 3A	00078	LAB_2 DEFB 1, 3AH ;':' OK, as in 'RATE:1 2'
F0C3	203631323230 3330	00079	TABLE DEFM ' 6122030'
OCFB		00080	POINT1 EQU OCFBH
OD12		00081	POINT2 EQU OD12H
F000		00082	END BEGIN

No Assembly Errors

Time = 0:00  
 Bytes = 203  
 Lines = 82

---

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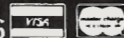


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# THE ZOOLOGY OF XENIX

A comprehensive look at Tandy's multi-user system for the model 16

BY JOHN ESAK

As a long-time user of both TRSDOS (in all of its many variations), and CP/M throughout its version number gyrations, I became accustomed to the frustrations and successes associated with keeping track of data on these operating systems. Using various cryptic and not-so-cryptic commands, I was able to keep things reasonably straight and even began to fancy myself as rather handy with the daily chores of running my Model 16. The more obscure disk operations and library commands, like ATTRIB, APPEND, RECEIVE and so forth, eventually made themselves clear to me, and I got pretty arrogant about all I could accomplish with a few SVC operations on my fantastic Radio Shack system.

My ignorance was bliss, however, because never in my wildest dreams did I think I would be able to do one hundredth of the operations I am now able to do with XENIX. But, on the other hand, I never expected to find myself wearing the hat of a zookeeper!

XENIX is a strange animal all by itself, but once you get several of your office staff using the system, it fragments into a giant zoo of data, programs, direc-

tories, utilities, fun and games. Keeping it all under control, with everyone getting what they need to stay happy and productive, is the task, challenge, and reward of the head zookeeper.

XENIX assigns this position of control and management to the "system manager," known to all as "Root." Occasionally you will see him referred to as the "Super User." These designations may sound funny, but there are

**"A**t the absolute heart of XENIX is the tenet: XENIX thinks of everything as a file.

legitimate reasons for them.

"Super User" is appropriate for the simple reason that this individual has "super" powers over the *entire* system, while an ordinary user can only control his own work and resources. For instance, the Root can allow one user to access the Accounts Receivable program but not the Payroll program. He may allow access to company documentation but not executive memos. A very exten-

sive and completely flexible system of permissions is under the control of the Root for everything on the computer. The same permission structure can be applied by an ordinary user to protect his own files but is limited to those things under his direct control.

The term *Root* is appropriate for reasons which become obvious as one learns about the structure of the filing system. At the absolute heart of XENIX is this tenet: XENIX thinks of everything as a file. Every device, every program, every user, *everything* is a file to XENIX. You can do things like "open" the video screen or the printer, although it's not likely that you would want to do such things.

#### File Structure

Here is the standard metaphor governing XENIX: All of XENIX is set up like a tree. In fact, if you can imagine, it's an upside-down tree with its "root" at the top. The Root is given the symbol / (slash) all by itself, and every crux point where two or more branches come together is given the symbol / (slash) followed by the name of the branch added.

These branches are actually separate directories where files appropriate to that directory are found. For instance, one of the main directories growing immediately out from the Root is the USER directory named /usr. Incidentally, almost everything in the filing system of XENIX is done in lower case. I have not been able to determine why this is so,

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but following the convention is recommended. However, if you want to name a file "FRED," this is fine, but remember that "FRED" and a file named "fred" will be seen by XENIX as two different files.

Getting back to directories and the branches of the filing system tree, let me make a comparison to TRSDOS-II for the hard disk. In TRSDOS there is only one directory of the information on your disk. You see it by typing in "DIR" at the TRSDOS-II Ready prompt. In XENIX, since there are many directories, you must first go to the directory that you want to view by moving yourself there and then listing it out accordingly. You will see only what it contains and not what is in all the other branches of the tree. (Unless you go to the top of the tree and specifically ask to see absolutely everything.)

Let's say the Root wants to put several users on the system, among them Bill, John and Mary. They are added to the system using the command "mkuser" ("make user" is an ability Root has). Directories for these folks will be created as branches under the /usr directory. During the "make user" setup for each individual, he/she will be assigned a password needed to log on to the system. It is a good idea to make this initial password the same as the user's name, and new users should be instructed how to change it to whatever they want at their leisure. They simply type in "passwd" and put in their new choice, but tell them not to forget it, as it is a minor hassle for the Root to be reinstating people who have forgotten their passwords.

When these new users create files, write programs etc., they will generally do it in their own directory, known as their "home directory." Their "home directory" would have a full "pathname" from Root to distinguish its place in the tree. For instance, Bill's would be /usr/bill, John's /usr/john, and so on. Since directories can contain other directories (branching downward), John, Bill, and Mary could create other directories under their control. These may be accessed by other users if the permissions have been established to allow this.

For instance, the full pathname of Mary's directory (full pathnames start at the root) is /usr/mary. She may decide to make herself a directory called "notebook", in which she might keep memos and sundry notes. The full pathname for this would be /usr/mary/notebook. John may also get

the bright idea to make himself a notebook directory. If he titles his "notebook" also, there is no conflict. If you tried having two files with the same name under TRSDOS, you would very quickly see that this is impossible. But in XENIX, things are different. Since Mary has her own directory and John has his own directory, there can very easily be matching names because the full pathname for each (starting from the root) would be different, and XENIX can get to either unique place by using the different pathnames, i.e., /usr/mary/notebook and /usr/john/notebook.

#### Sample Simple Commands

When a user logs on the system he is placed in his home directory as a starting point. XENIX checks the user's ".profile" and establishes all of the correct permissions. The prompt he sees when the computer is ready and waiting for a command is \$ (the dollar sign). Root's prompt is # (the pound sign).

In Mary's case, she is placed in /usr/mary, and given a \$. She begins from this point to do her work. If she wants to view the contents of her home directory, she would use the command "ls" ("list"), and she would get a list of everything there. It would contain the

names of all files she has created in her directory (/usr/mary), together with all the names of all the directories she has created in there which extend downward and contain files and perhaps other directories of their own.

There is no limit to the number of directories within directories a user might have. In fact, this expandability and flexibility can lead to some of the animals getting lost once in awhile. The more cages you have, the more space you take up, the more you have to worry about, etc. It is a good idea to create only the directories you actually need to store files and not go crazy just because you can.

The command "ls" only lists the names of the files and directories in the current working directory; it will not list the names of files under other directories.

Let's say Mary's work requires that she change to a different directory and operate there. She would type: "cd directoryname." This stands for "change directory", and it does just that. If she types in "cd notebook", XENIX would move her there. All that would happen on the screen is precisely nothing, and it would happen very fast, too. She would

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only be given her prompt \$ as if nothing happened, but if she now types "ls," the contents of her "notebook" directory would be displayed instead of her home directory's contents. She is actually moved from one place in the system to another.

The "ls" might give her files titled something like:

```
project1
novemberdata
decemberdata
memo1
memo2
memo3
```

In case Mary has been moving around a lot and doesn't remember which directory she is currently working in, she may type in "pwd", which stands for "present working directory," and XENIX will respond with the full pathname of her current working directory, perhaps /usr/mary/notebook.

If Mary wishes to copy a file, "cp filename filename" is the command she uses. The command "cp project1 project1A" would give Mary two identical files in the same directory, each with its own unique name.

To rename a document, Mary uses the "mv" command. "Mv" stands for "move," as you might guess, but it accomplishes a renaming operation if the same directory is chosen. In other words, "mv project1 project1A" would leave Mary with only one file titled "project1A."

These commands span directories, and this is part of the true power of XENIX. User John might be working in his home directory on a file called "newproject." When he finishes his work, he can set some permissions correctly and then leave a message for Mary (via electronic mail or one of the other communication programs) telling her to check his progress on "newproject" and give him suggestions. Mary types in: "cp /usr/~john/newproject /usr/mary/newproject" and in about a second she receives the \$ prompt. Again it appears as if nothing has happened, but lo and behold, when she looks with the "ls" command, there is a copy of John's "newproject" file in her directory waiting for her scrutiny and evaluation.

When she is done with it, she may then move her adjusted file back over to John's directory (assuming he has given

**"N**ever in my wildest dreams did I think I would be able to do one hundredth of the operations I am now able to do with XENIX.

her permission to write in his directory), and no paperwork has been pushed, xeroxed, lost, or misdirected. When the document is ready to see the light of day, it might be copied into the user's directory who is in charge of word processing, or over to the boss for approval, etc.

I've been telling you about files and manipulating them, but I haven't yet explained how to read the file itself. The command for looking at the contents of a file is "cat filename" which comes from the word, *conCATination*. In this case, "cat filename" is showing all the characters in the file concatenated one after the other. You would type, for instance, "cat newproject1" and your file called "newproject1" would print on the screen. And very, very fast, I might add. If you type, "cat newproject1 newproject2", XENIX will first display "newproject1" and then immediately display "newproject2". This concatenation is useful in many instances.

The most important functions of XENIX with regard to manipulation of data are redirection and piping. Redirection of files, for instance, goes something like this: Let's say you type "cat memo1 memo2 memo3" to look at the contents of those files. XENIX will send the contents of them, one after the other, to your video screen since this is the default destination for "cat" and most similar commands.

Instead, you might want to put these files "memo1 memo2 memo3" into another file called "memos." Redirection is done with the >> (greater than and less than signs). The command would be: "cat memo1 memo2 memo3 >> memos". This redirects the output of the concatenation to the file "memos." If no file "memos" exists, XENIX will create one for you. (Extensive wildcard-

ing is possible so "cat memo\* > memos" would do the same thing as the longer version, but these examples are for brief overview only; they are not meant as a full tutorial in XENIX.)

"Cat" and the " > " sign are used many times a day in the XENIX zoo, but the real lion operator is something called a pipe. The pipe is a vertical bar |, obtained by typing <CTRL> | or <CTRL> |. This piping does just what it says; it creates a pipeline between operations. It takes the output of one operation and funnels it into the input of another operation.

For instance, there is a program in the XENIX system called "more." "More" takes very long files or documents and displays them a screenful at a time. At the bottom of the screen is the word *more* in reverse video. When you are ready for another screenful, press the spacebar, and the next screenful appears.

As an example, putting "more" together with "cat" creates a very functional display of the file. "Cat memo\*|more" would give you all your memos a screenful at a time. The pipe basically takes the output of any operation and funnels it to the input of another.

The command which paginates documents is called "pr". This and the command "lpr" (printing on the printer) work nicely together with a pipe. "Cat memos|pr|lpr" will give you a neat, paged printout of long documents.

Pipes and redirection can be used to accomplish just about anything in a single command. Users should spend a good deal of time familiarizing themselves with these operators; they keep traffic in the zoo flowing smoothly and efficiently.

Before I go any farther, I must tell you that I have not only put up the core system as supplied by Radio Shack, but also the Development System which costs \$750 and makes the whole operating system usable. It is a necessary addition to the core in my opinion, and you should not really consider using XENIX without it, for the simple reason that all the good stuff from UNIX (the basis for XENIX) is there. The core is merely a runtime package so you can use Radio Shack products, such as Accounts Receivable, General Ledger, etc.

### The Editor

In case you've been wondering how to create files in the first place, here's how. Actually, there are several ways to create a file, but the easiest is to simply type: "`> filename`." This will establish an empty file with whatever name you choose. "`> fred`" makes a file name "fred", "`> memo`" makes a file named "memo," etc.

Filling up the file with words or data is done with editing. Data can be entered into files in many ways, (automatically by programs, for instance), but 90 percent of the time, it's through editing. In fact, editing is the number one and truly the only way to accomplish anything in XENIX.

There are several editor programs of both the line and full screen type. Let me pick the most often used and useful of the line editors for a quick demonstration.

This editor is called "ed", and you invoke him by typing in "ed filename." This not only puts you in the editing mode, but puts you inside the file that you've specified. If there is no file with the name you've specified, ed will create one for you, put you in the editing

mode, and wait for you to do something (like put in some words). Several commands are used to operate ed. They are easy to learn and soon become second nature.

If you type "ed memo1," XENIX will create a file called "memo1" and return a 0. This tells you there are no characters in this file. To write in the file type: "a" `<ENTER>`. This puts you in the append mode until you type a "." (period) at the beginning of a line. So if you were to type:

```
a
Roses are red, violets are blue,
I like peanut butter, can you iceskate?
```

You would have these two lines in the editing buffer. If you wanted to actually store this in the file called "memo1", you would type "w" (for write) and then "q" for quit. The \$ would appear again, and if you looked at your directory with the "ls" command, you'd see your file called "memo1." If you typed "cat memo1", it would return the dumb poem.

If you forgot to type the "w" (write out the buffer to the file) and just typed "q", XENIX would remind you that you

haven't written anything to the file yet with a ?. This gives you warning that you may lose all your changes which is a nice idea.

Sometimes you may not wish to change the original file, in which case you type: "w newfilename", and the buffer would be written into the new filename and the original would not be changed.

The insert, delete, and other commands are easy to learn and useful for making quick changes. The switch command does things like change the word "boy" to "girl", i.e. the command "s/boy/girl/" will search for "boy" and when found, change it to "girl." There are extensive -- and I do mean *extensive* -- wildcarding techniques with the switch command, for doing everything from taking spaces out of a file to very complex global search and replace routines.

Earlier I said editing is the key operation for accomplishing anything in XENIX. Let me reiterate and give a couple examples. Since XENIX sees everything as a file, even its own operating instructions, you have the ability to edit the function behind changing instructions.

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When a user signs on, the first thing he sees is a welcoming message with lots of asterisks around it. This is not a built-in operation of XENIX, but merely a file that it displays to each user as he logs in. If the Root has something to say to every user who signs on that day, he edits this message file to say whatever he wants. He might need to tell everyone that the system is running low on disk space, and would they please delete unnecessary files to help clean up the zoo. This file is called the "motd" file (message of the day), and to change it, the Root types in "ed motd"; then he can modify it to read as he likes. Editing the motd is reserved as a Root privilege.

comes with XENIX has some neat stuff. Among the offerings are quizzes on everything from Shakespeare to Tolkien, Asian capitals to famous killer/victim pairs throughout history. (The guys at Bell Labs must be really strange.)

There is backgammon and the I CHING, hangman, the wumpus and several others, but what I like best under the games directory is "fortune". Typing the word "fortune" returns you some fragment, phrase, sentence, sometimes even an actual fortune! They are all strange and interesting, and I haven't been able to exhaust all them yet. Of course when

XENIX system must have written for it a "termcap" (parameter profile program) which tells XENIX what type of terminal it is, how many character screen, which keys do what, and so forth. There is termcap for the Model 100 available from Fort Worth, and I suggest you obtain this and edit it into the correct file in XENIX.

But if all you want to do is use the 100 as a quickee terminal to transfer a program or file, here's how. Just take the RS232 cable out of your DT-1 terminal and plug it into the Model 100 (there must, of course, also be a null modem adaptor on the cable). Enter the TELECOM program, and select STATUS. Set this for 88N1 (9600 BAUD, 8 BIT WORD, NO PARITY, 1 STOP BIT) which matches what the DT-1 termcap defaults are. Select TERMINAL mode. Now you are connected, and tapping ENTER should give you a \$ prompt.

If you wanted to put a file from XENIX into the Model 100, press the DOWN(load) function key on the 100 and type in the filename. Then simply cat it from XENIX over to whatever the user name is that you logged the 100 on with. If it's fred for instance, you would type "cat filename > /us.fred/filename", and it would pop it over to the 100. This is really a neat thing, especially since the MBASIC on XENIX and the MBASIC in the 100 are so compatible. You can write on XENIX with a comfortable big screen and just move the files when they are ready over to the little guy.

#### Conclusions

My conclusions are that I don't have nearly enough time or paper to write about XENIX, and so I'll promise more articles containing explicit helps and hints. For now I'm back to my seven user zoo to do some cleaning up. The "du" (disk space used) and "df" (disk space free) commands are very useful for this purpose; I can see how much disk space is used and where, and then yell at my secretary to take her fourth Christmas list revision file off and see if she can hobble along with just three versions! ■

"If you have tried having two files with the same name under TRSDOS, you would very quickly see that this is impossible. But in XENIX, things are different.

#### The Learn Package

This brings me to the question of how to learn XENIX processes. XENIX comes with a built-in "learn" package which includes lots of the functions of XENIX. These are hands-on, computer assisted learning tutorials on the various aspects of XENIX. The categories include "files", "editor", "morefiles", "macros", "eqn", "The C Language", etc. These courses are fun and very instructive. Once completed, XENIX is an open book to you, or at least cracked wide enough for you to be productive and learn further.

The courses can be started and stopped, that is you can either review or pick up where you left off. And they are sequential in that if you take them in order, you should have no trouble. Files, editor and morefiles are required, while macros is terrific for getting the heavy duty capabilities of the XENIX typesetter under your belt if you need to do this. (Very neat stuff can be done with the vi editor for full screen word processing with unbelievable power, but unfortunately it is not "user friendly" in the traditional "double density secretary" sense.) Eqn is strictly for the typesetter, and the C tutorial is for advanced programmers.

#### The Games Package

Need I say it? The games package that

I do, I will simply edit in thousands more of my own choosing.

#### Manual Pages

The giant reference manual for XENIX can be found within XENIX -- every single page! It's amazing and very useful, and a great help when starting up and learning. Once you've got things cooking, much space can be saved by leaving it on the shelf where it belongs and deleting it from the hard disk.

#### Communications

I spoke earlier of electronic mail. This is a terrific program for user communications. Type in: "mail username" and then type in your message. When you're done, just type a . (period) as you do to stop appending in the editor, and the message is sent to the designated recipient. If you want it to go to lots of people, type "mail user1 user2 user3" and so on. They all get the message.

XENIX has several external communications programs, among them "cu" and "uucp" which can connect you to other databases. Understanding how to use these requires careful reading in the manuals and some experimentation, but they do work.

#### Model 100 Transfers

Usually any terminal hooked up to the

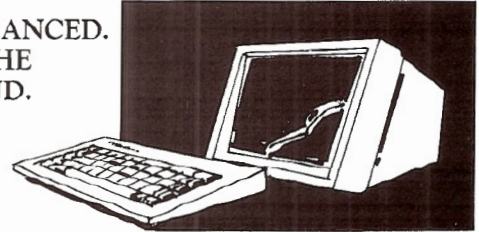
two/sixteen  
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SCH A ITEM DED	SCH F FARM	F2210 EST PEN	F4797 SUPPL G/L
SCH B INT/DIV	SCH G INC AVE	F2440 DISABILITY	F4835 FARM RENTAL
SCH C BUS	SCH R/RP RET CR	F2441 CHILD CARE	F5695 ENERGY CR
SCH C BUS	SCH SE TAXPAYER	F3468 INVEST CR	F6251 ALT MIN
SCH C BUS	SCH SE WIFE	F3903 MOVING EXP	F6252 INST SALE
SCH D CAP G/L	SCH W WAGE CR	F4136 GAS TAX CR	CLIENT DATA/BILL

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Computer model \_\_\_\_\_

TSM



## TAXbyte, Inc.

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CPM is a registered trademark of Digital Research, Inc.

# ISAM 300

BY ARNOLD FISCHTHAL

## Index Sequential Access Method from Johnson Associates helps you control random access files

Most microcomputer operating systems and languages lack many features that would be beneficial to the programmer. I have written several articles in past issues of *two/sixteen magazine* describing packages that make a programmer's life easier. ISAM 300 from Johnson Associates is another such system.

Many applications require one or more fields to be sorted and eventually searched. Without sorting, searches would have to be done sequentially. Sequential searching is, at best, a very time consuming process. Even with sorting, every time a new entry is made or an old entry is updated, the entire sort must be redone. With ISAM 300, such re-sorting is not necessary.

Briefly, ISAM (Index Sequential Access Method) is a set of subroutines you include in your application program to carry out the tedious effort required to control Random Data Files. The routines automatically insert the new or updated entry in the correct alphabetical position without the necessity of a new sort.

ISAM 300 is a very fast machine language routine. The time it takes to insert or search for an item is completely transparent to the end user.

A file creation routine is used to set up an ISAM file structure that will be accessed by the ISAM 300 routine. The ISAM file stores such things as field specifications (number of fields, field lengths, field names), which field is the key field, memory usage of indices, and other pertinent data.

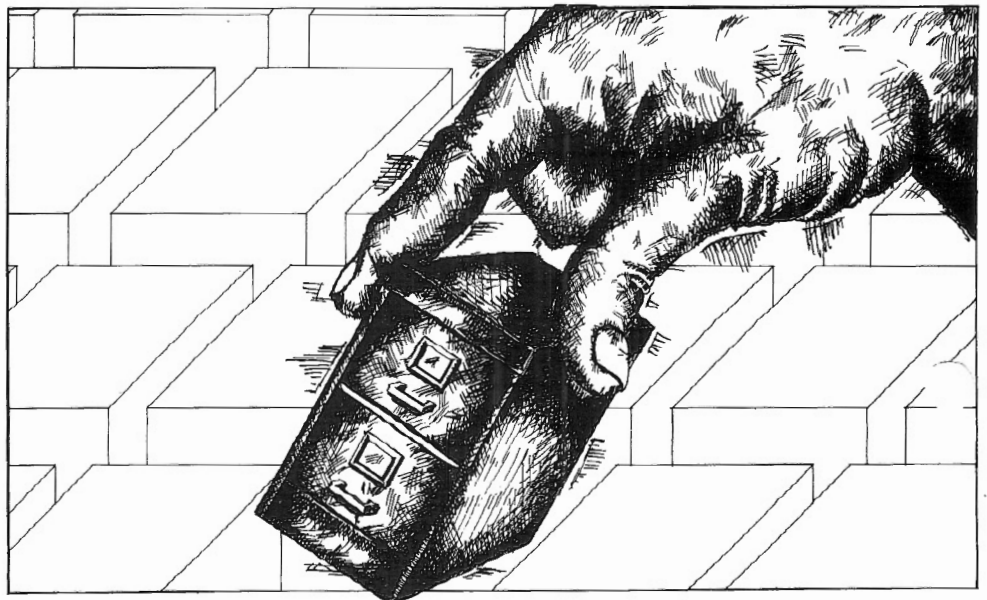
Restrictions: a maximum of 251 bytes is available for data storage (numeric data is stored in packed form); a maximum of 22 data fields is allowed per record; and the maximum alphabetical key length is 121 characters.

High memory must be protected before the routine is LOADED. Then a set of BASIC lines, whose function is to perform the necessary interface between the application program and machine language routine, is added to the program.

With simple GOSUBs the program will:

OPEN the appropriate file  
 GET the first record matching the field specification  
 UPDATE an existing record  
 DELETE a record  
 PUT a new record  
 GET the first record in the file  
 GET previous record  
 EMPTY the file  
 GET absolute record

Only one file stores both the actual data itself and the structure that allows manipulation (insertion, deletion, and searches) of the data. When a record is added (or modified or deleted), using the appropriate GOSUB will cause the ISAM routine to correctly store the information. The indices themselves are intermixed in the physical file, along with the data.




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 Advanced Data Design, Inc.  
 184-08 Tudor Road  
 Jamaica Estates, NY 11432

---



Several variables are reserved for use by the machine language routine. These variables are either changed by the code to designate which ISAM file is to be accessed (more than one file can be OPEN at the same time) or are used as buffer variables to write and retrieve the information.

An option is available for creating an index-only file. Having this file allows you to create and manipulate your data files as usual and then use the index-only file to store key field data and record number. The index-only file is also useful for creating a secondary key file. For example, the main key might be "last name", while a secondary key could be "zip code."

When a key is entered, a simple line of code retrieves the desired record almost instantaneously. In a test application containing 1500 records on hard disk, the data almost always appeared on the screen within one-quarter of a second.

If an exact match is not found, an error code is stored by the system. This code can be checked by the software and appropriate steps taken. In the case of no exact match, the routine will return the next highest record. For example, if you search for "ABCD" and it is not found, the system will return the record containing "ABCE".

Once a record has been retrieved, a simple GOSUB allows for single stepping, either forward through the key field, or backward. This allows easy access in finding the desired entry. For example, if you are looking for JOHN SMITH and the data was stored "last name, first name", you could enter SMITH,J. The first entry you might see is SMITH,JAMES; then by single stepping through the key, you would see SMITH,JIM and then SMITH.JOHN, and so on.

Another very nice feature allows you to choose how much of the high level index the computer should store in RAM. By choosing to store most of the index in RAM, you speed up the process of locating the correct record, or you can choose to store a minimum amount of the index in RAM allowing for bigger programs and more RAM data storage.

The machine language routines and high level index do take up some space in RAM, and this is a consideration to keep in mind if you write long programs or require a large amount of in-memory data to be stored.

Depending on the exact order used to enter the original data, it is possible to have a very complicated index. The index gets modified every time a new record is added, changed (key field change), or deleted, and in some cases, this can cause an unusually high number of disk searches. The result of such disk searches/disk head moves is a long elapse of time to find a particular record. This occurred to me during a floppy disk test. There were only 300 records stored, but I could hear the drive head moving back and forth. It took several seconds to finally locate the record.

Johnson Associates realizes this might be an occasional problem and provides a solution: a REORGanization program which will take any ISAM file and rewrite it in key field order. This yields the best file format for quick retrieval.

For those of you who use SNAPP-WARE programming utilities, I did not find any incompatibilities when using ISAM 300 and SNAPP-WARE together, although I did not try all the facilities. There is a slight trade-off in memory since both use the same areas for some of their routines. The ISAM routines can be relocated to accommodate the areas used by SNAPP, however, this will use up additional RAM.

The worst thing I have to say about this product concerns the manual. It is not easily readable and was not clear on several points for someone who was getting started. In an industry where the manual is sometimes just as important as the software, this manual needs much improvement.

During the course of testing ISAM 300, I ran across several problems and questions. Johnson Associates was very courteous and prompt in answering questions and responding to my telephone inquiries.

Once I mastered the manual, I found the software easy to use and to apply. It fulfilled all the expectations I had for applications requiring constant sorting and searching. I would rate it a 9 (with its only detraction being the manual).

ISAM 300 is available from:  
Johnson Associates Software  
P.O. Box 3069  
Redding, California 96049  
916/221-0740  
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PICKLES & TROUT

# REBUTTAL

TO A REVIEW OF

## ADVANCED COMMAND PROCESSOR

BY CHRISTINE PICKLES

Christine Pickles responds to two/sixteen readers in defense of P & T's recently reviewed product, The ACP.

The July/Aug issue of *two/sixteen magazine* featured a review of the Pickles & Trout Advanced Command Processor by Robert VanNatta ("Advanced Command Processor," Vol. 2, No. 1, p. 47). After reading this review, it occurs to me that Mr. VanNatta has misunderstood several key features of the ACP. In addition, he failed to mention many of the convenience features the ACP provides.

Mr. VanNatta claimed that programs such as WordStar, which are made up of several parts (actually they are overlays), do not work properly with the ACP. He also complained that the utility ALIAS.COM could only be used with files that are read from and not written to. He gave as an example creating aliases for STAT.COM so it could be executed from several user areas. From these findings, he concluded that user areas are unusable. Mr. VanNatta has obviously misunderstood the function of ALIAS.

ALIAS was specifically designed to

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Goleta, CA 93116

---

deal with the problem of overlays for programs like WordStar. Virtually all programs that load overlays into memory never write to the overlay file(s). Since the CP/M operating system was not designed to handle multiple directory entries for one file, ALIAS sets the files for which aliases are created to "read only" to protect the user from inadvertently erasing one alias while leaving others intact.

By creating aliases for the WordStar overlays on those user areas from which you expect to use WordStar, you make it possible for WordStar to find its overlays and function properly even though the ACP is no longer in memory. The matter of using ALIAS to make overlay files available from several user numbers is described in the ACP manual as one of the principle reasons for using ALIAS. In fact, the description uses an example of a text editor that has overlay files (although WordStar is not specifically mentioned).

As for Mr. VanNatta's example of aliasing STAT.COM so it can be available from several user areas, he seems to have missed one of the outstanding features of the ACP -- its ability to search multiple drives and user areas for ".COM" files to execute. In order to get maximum benefit from the ACP's ability to search for executable files, a user

could put all the commonly used system utilities, editors, compilers, data base programs, etc. on Drive A, user 0. Then no matter which user or drive the person is logged onto at the time, the ACP will find the ".COM" file to be run on A0.

The user has control of the search process and can set it up so that up to three drives and up to three user areas on those three drives will be searched. We at Pickles & Trout feel that the ACP makes it possible to use the user areas as an organizational tool. The only files that need to be on each user are the data files to be used by that user. Using ALIAS (as previously described) to handle overlays for the common programs allows a single copy of the overlay files to serve multiple user areas. One of our ACP customers reports a savings of 4 Mbytes on a 10 Mbyte disk drive by merely eliminating redundant copies of common programs!

The Pickles & Trout Advanced Command Processor does make user areas useful. The ACP makes it possible to organize your disks so that related subject matter files can be put in their own user area where they can be easily found without having to look at hundreds of other unrelated directory entries. On high capacity hard disk drives, we find the ACP not just convenient but essential.

Mr. VanNatta also failed to mention many of the other features of the ACP that make it a useful and desirable tool, even if you never want to use any user area other than the standard user 0.

For example, the ACP has an expanded SUBMIT facility that does away with some of the limitations in the standard SUBMIT. A replacement for the standard Digital Research SUBMIT program called PNTSUB is supplied with the ACP. While SUBMIT limits a ".SUB" file to a total of 2048 characters, PNTSUB allows up to 16384. PNTSUB allows nesting of ".SUB" files so that one file can call another and then resume processing after the called file has finished. Neither PNTSUB nor the ACP automatically changes the submit file to upper case so the XSUB facility can be used for input to programs that are case sensitive. Parameters passed to PNTSUB may contain spaces, so you are not limited to one word parameters as with SUBMIT. PNTSUB even tells you if you have specified too few or too many parameters for the ".SUB" file being processed and lets you take corrective action if necessary!

The XSUB facility is built into ACP and does not require a separate .COM file to operate. When using XSUB, input lines intended as program input are marked `D` to distinguish them from command lines. Thus ACP will not try to use lines intended for your program and XSUB will not give lines to your program that are intended as command lines for the ACP. There is also a built-in command in ACP called WAIT that will cause a submit file to pause and wait for ENTER to be pressed before continuing. Pressing BREAK instead will cause the ".SUB" to be aborted. This is useful for ".SUB" files that need to check with the user before performing drastic operations like formatting a disk.

Another very useful feature of the ACP is that it allows a user to "edit" any line on the console display and then re-execute the line as if it had just been entirely retyped. This means that when the thirty-fifth character of a sixty character command is wrong and you get some nasty message from CP/M, you just move the cursor to the offending character and fix it instead of having to re-type the entire command. This feature is only available with certain types of console devices. Anyone who is

interested in finding out which ones may contact Pickles & Trout for a current list.

Yet another useful feature of the ACP is the LIST command. This command allows the user to print a file on the system printer much as the TYPE command displays a file on the console. LIST provides optional pagination and form feeds to eliminate the problem of printing on the perforations between pages.

Other minor conveniences include accepting ";" as well as ":" in drive specifications and accepting "\*" to mean "\*.\*". Users of CP/M will appreciate these improvements that help avoid unwanted trips to the shift key.

Mr. VanNatta's main complaint about the ACP is that WordStar will not run with the ACP. This is simply not true. By using ALIAS as it was intended to be used, programs like WordStar can be used from different users. Mr. VanNatta focused on a problem that does not exist and ignored the rest of the features that make the Advanced Command Processor a useful and worthwhile tool for the CP/M user. ■

## UNDERWATER INIGMA

BY WALDO T. BOYD

Why does the swimmer slow down before he gets across the pool? Why is each succeeding crossing slower? Could it be the filling of a variable towards string packing? This program was originally published in the July 1983 issue of *Basic Computing*; they have given us permission to have it reprinted. Their reasoning for the phenomena produced by this routine is that the TAB function really does print spaces when used. By changing the PRINTTABs to PRINT @ the swimmer will be able to keep his speed up.

```
5 'UNDERWATER INIGMA by Waldo T Boyd
10 CLS 'Once upon a time there was a
20 PRINT CHR$(02) 'swimmer who liked
30 Y=RND(10) 'to swim underwater but
40 FOR A=1 TO 76 'each time he head-
50 FOR X=1 TO Y 'ed for the far side
60 PRINTTAB(A)'".' 'of the lake some-
70 PRINTTAB(A+2)"o" 'thing seemed to
80 PRINTTAB(A+3)".'" 'slow his speed,
90 PRINTTAB(A+1)"o" 'and almost held
100 NEXT X 'him to a standstill. All
110 NEXT A 'you could see was bubble
120 PRINT 'trouble. Perhaps you can
130 END 'discover what impeded him!?
```

# SCRIPFIX\*

One of the weakest points of Model II Scripsit™ is the fact that if something happens to glitch *ONE* of the documents, the whole document menu is *UNUSEABLE*.

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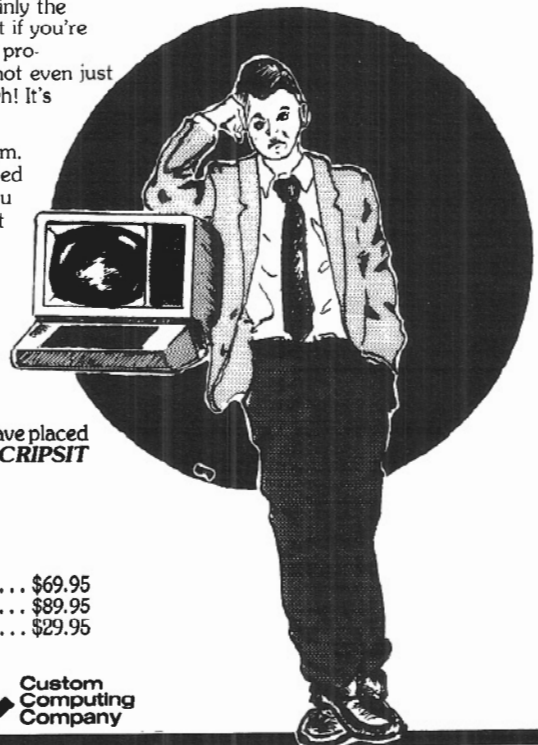
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# KWIX 2.0

## A BETTER WORDTRAP

BY DEAN R. LAMBE

### KWIX 2.0 allows the user to analyze the contents of SCRIPSIT documents in terms of the actual words used.

Skylight Software is my kind of programming house. When the world calls for a better mousetrap, they respond. Only a few months have elapsed since my original review of KWIX 1.2, the useful key word index program for those who use SCRIPSIT word processing (*two/sixteen*, May/June 1983). While my comments were generally favorable, there were limitations and problems with the first KWIX. With the present major upgrade, however, almost all of my quibbles have vanished, and KWIX 2.0 features many additional capabilities.

In brief, KWIX 2.0 allows the user to analyze the content of SCRIPSIT documents in terms of the actual words used. Sorted lists of key words are compiled, either as Key Word Only lists or displayed as Key Word in Context lines of 80- or 132-character SCRIPSIT text. In the Key Word Only option, up to 100 separate SCRIPSIT disks may be indexed. Thus a lawyer could sort for client names, a writer could list adverbs, a librarian could display titles -- the potential is great, and the uses are only limited by individual creativity. With each sort, document number and page (and optionally, line) number are presented, so every listed word may be located within the original documents. A well-organized report index, or a table

of contents can be generated easily with this program. The new version offers several major improvements, and the comments which follow will concentrate on them (readers may wish to consult my first review for details about the actual operation of KWIX).

The first change encountered is anti-piracy protection. The KWIX distribution disk must be transferred to a TRSDOS disk with a special COPY-KWIX command. Backups of working KWIX disks are no longer possible, and each new copy must be made from the master diskette -- an inconvenience since the MOVE command no longer works, but an important safeguard for the programmer's hard work.

From the user's standpoint, however, the most important improvement is the flexibility now possible with key and non-key word dictionaries. KWFIL, the system-supplied list, has about 3,300 non-key words: "the," "and," "or," etc. A normal KWIX run, therefore, would load this KWFIL, search all the SCRIPSIT documents as user-selected from the screen menu, and list an alphabetic (or mixed alphanumeric) sort of all the uncommon words. Should *all* words in all chosen documents be desired, however, KWFIL may be bypassed, and an actual count of every use of "the" and "me" will be presented.

Additionally, the user may now create one or more personal key word dictionaries, either as supplements to the common-word KWFIL, or as a separate

USERFIL of key or non-key words. Consider the following example: I am currently collaborating on a novel with another writer. As we are both creating character and place names, when we pass additional text back and forth, the original KWIX seemed an ideal way of making a list of such names. So I made an index for the first 32 pages. As the novel moves along, however, I would like to provide an index of every new name that the two of us have added since page 32. With the much-improved KWIX 2.0, the task is simple. I merely use the first index (which I have already converted to a SCRIPSIT document) as an addition to the non-key word file, and a new index is produced of everything we have added since the last index. Alternately, I could delete any or all of the prior sorting dictionaries, and create an option that would index only certain specified key words. Those who do not immediately appreciate this latter possibility are invited to consider how they would locate a reference to "Purchase Order 37519" in a series of 27 letters to Acme Nut Company. In short, KWIX 2.0 not only allows indexes of everything in one or more documents, but permits a narrow search for just one word in hundreds of text files as well.

As with the original version, the sorted index may be listed to screen, to printer, or to screen plus ASCII file (and hence easy conversion to SCRIPSIT document). A very nice feature permits adjustable speed of screen display. Taps on the up-arrow key increase display speed, while the down-arrow key slows the list (and HOLD does what you would expect).

Dean R. Lambe

Route 1, Northlake Drive  
Vincent, OH 45784

© 1983, Dean R. Lambe

No longer are long words chopped off in the sorted index, for maximum key word size has been doubled to 30 characters, and fans of "anthropomorphizing" may now attribute human characteristics to cats without fear that their KWIX index will lack "zing." Compound names and other words that go together, e.g., "Dow Jones," will also now hang together when sorted, but only if the user puts in a "hard" or "required space" between the words in the original SCRIPSIT document. While that required space may be easy to remember for something like corporate names, it probably will not be readily added for "North Carolina" or "New York" and the index would create more separation than the Civil War.

Those who work with numbers and dollars will be pleased with the addition of a "Special Character" option that allows the user to choose whether or not the common punctuation marks and other common characters (\*, \$, #, etc.) should be included in the index. Thus by choice, amounts of money may be indexed separately from ZIP codes, as one would hope they would be, or an index of only those words within quotation marks could be created.

Three different types of index lists are now available. The output formats include the standard word list, with numbers and words increasing from zero and "a" respectively, and indication of document number, page, and line numbers. Secondly, a simple index may be produced without any document references; and finally, a list may be generated of word frequency in descending order. This last option might be quite useful for an index on the report to the Chairman of the Board, when it is revealed that Chairman Growl's name has been used less frequently than Third-Vice-President Grovel's moniker.

Last, but certainly not least, full text statistics are available. At user option, the number of different key words, the number of sentences, average sentence length, and average word length may be displayed. The information in this section will help anyone be a better writer, whether that person produces memos that usually wind up in the "round file" or generates textbooks of theoretical physics. Word and sentence length are important considerations for clear communication -- too short and the reader is irritated by "childishness," too long and the reader loses the message. Additionally, educators and those writing for a specific readership would find these

**"A** well-organized report index or a table of contents can be generated easily with this program.

statistics quite useful (although it is hoped that Hollywood screenwriters won't use KWIX to make their scripts even more juvenile).

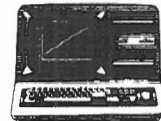
The documentation is well written, and the expansion from the original set of operating instructions provides clear examples of every program feature. As one might expect (and as a nice selling point), a good table of contents and an index round out the documentation. Most users will have little difficulty with the creation of exactly the type of index sort they desire on the first try.

Even though KWIX 2.0 sells for almost triple the price of the original version, I consider it a bargain for anyone who uses SCRIPSIT (and owners of version 1.2 may upgrade for about half-price). While some might worry about a program wherein backups of working disks are not possible, conversion of the index to an ASCII file still allows movement of that file to another disk, and replacement of a damaged master disk is available at a small charge.

Skyline Software appears to be most responsive to user comments and complaints, and customer support is offered readily. In that regard, some will have recognized the commonality that KWIX 2.0 shares with database management searches and sorts. Certainly this program is far faster than Radio Shack PROFILE. In response to user requests, an additional choice will be offered that will create a periodical index. Files of magazine articles, journal reports, and so on, may be indexed and searched, with every word in the title a key word. In principle, this option will allow use of SCRIPSIT for database management, for inventories, parts lists, and mailing lists should be accessible in the same way. KWIX 2.0 is almost perfect, and I

recommend it to anyone who can spell "word processing."

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# Special Feature

NOV/DECEMBER 1983

No. 216

VOLUME No. IXXVII

## SCRIPSIT Receives Mixed Reviews From Two/Sixteen Readers

❖  
**F**ROM: Putnam Barber, Coast Consulting, 732- 17th Avenue East, Seattle, WA 98112

Any of the user sequence keys may be made recursive quite easily, thus eliminating the need to use two keys for a repetitive function. After the user key has been defined in the usual way, follow this sequence:

<CTRL> Z

Then: Enter the number or symbol for the key to be changed. (The screen will display a menu and the current "contents" of the key -- see page 69 of the SCRIPSIT 2.0 manual.)

<ENTER> -- The "E" (for edit) is already on the menu.

Use the cursor control to move to the end of the string -- where the symbol Ctl-Z appears.

{F1}  
{ESC}  
{F1}

Enter the number or symbol for *this* user sequence key.

<CTRL> Z

This user sequence will be repeated indefinitely once initiated by ESCAPE plus the appropriate number or symbol. The BREAK key terminates. If the sequence is one that can add pages to your document or have other curious results when it runs out of text, you need to be alert to hit BREAK quickly at the right time.

Recursive sequences can be used whenever a tiresome collection of keystrokes is needed. I often use this ap-

proach for cleaning up complex formatting errors, such as repositioning columns in a tabular presentation.

The utility "Repaginate" (`<CTRL> U R`) allows substitution of a new format for the one used in creation of the document. Unfortunately, it's not selective, so it's not very useful for documents in outline format or ones that contain intermediate format changes. If paragraphs to be treated differently can be identified by some "flag" though, then they can be found and selectively "put right" by a properly constructed recursive user key sequence.

Since `<CTRL> R` inserts the text in temporary storage, there is no need to go to the bottom of the current page when multiplying text (as for a visitor's log). The fastest way to do this operation is like this:

Put the cursor at the beginning of the line you want to repeat. Be sure it has an ENTER at the end, or fills every character of your format.

`<CTRL> D` -- for Define

B -- for Below

D -- for Duplicate

`<CTRL> R` -- for Restore. Now you have two identical lines.

`<CTRL> D`

B

D

`<CTRL> R` -- Now you have four identical lines

Repeating the sequence will produce 8, 16, 32, and 64 lines. When you try to do it again, the message "There are too many lines of text on this page" will appear flashing at the bottom of the screen (84 is the max in vertical format, 51 in horizontal). BREAK eliminates the message (no "restore" takes place).

You can, of course, stop doubling the number of lines in temporary memory when you have 8 or 16 and just use `<CTRL> R` a few more times. Temporary memory is stored on the disk in Drive 0 and thus is not changed by `<CTRL> R`, nor for that matter by quitting the document and opening another, or ending the session and restarting SCRIPSIT at a later time.

There are a few quirks in SCRIPSIT which I think ought to be remedied in future upgrades:

\*The fact that the `<CTRL> S` (search) and `<CTRL> U G` (global search) utilities cannot "recognize" embedded format control characters (like `<ESC> +` for boldface or `<ESC> -` for underline) or user defined print codes is tiresome.

\*The inconsistent behavior of the cursor when the ENTER key is used in the middle of existing text is hard on new users. It would be much nicer if ENTER *always* brought you to the beginning of the next line.

\*I have yet to figure out how the Repaginate Utility decides what to do with header and footer pages when heavy editing forces the utility to do a major reorganization of the document. At least, the documentation should explain the idea behind the way things are handled to help us anticipate the results.

\*When you put a new { or } on the format line, the old one ought to be removed automatically.

\*The page Number Utility ought to allow for "page zero," or better, negative page numbers so that a conventional report with preliminary, unnumbered pages can be created in the familiar way and printed using {P} on the text pages where numbering is wanted.

\*It would be nice if inserting non-printing characters (such as the underline or bold face controls) into a line did not increment the character count. Lines with several such characters look "short" when printed without justification, and "light" when printed with it. For example, I once did a report for a client whose name included five vertical bar characters and when it appeared a couple of times on a single line (|N|A|M|E|, |N|A|M|E|), the line would be 10 characters short at print time.

\*And lastly, the C (copy document) utility on the Main Document Menu ought to reorganize the document to eliminate the chopped up segments produced by extensive revisions. As far as I can tell, there is no way to produce a "clean" document in SCRIPSIT except to convert the document to an ASCII file which eliminates all the powerful format and print control features SCRIPSIT provides, a real loss.

I have only one real complaint about SCRIPSIT to add to the comments about the difficulty of recovering from disk failures which were mentioned in the SCRIPSIT Review in the Jul/Aug issue of *two/sixteen*. The Merge Utility does not allow selecting the specific elements off the list of variable information to be printed on a particular run. The nicest approach would be a display of the the document reformatted with the variable information, followed by an (optional!) prompt along the lines of "Do you want to print this document?" Alternatively, something like the Print Document Menu specification for pages, allowing the choice of a subset of the variable information file, would be much better than having to edit and "recompile" the file whenever a printer calamity or type messes up part of the complete run.

\*\*\*

FROM: Jim Kloosterman, Hammond Bay Software, P. O. Drawer 48, Rogers City, MI 49779

I kind of resent the big, bold excerpt on page 30 of Jul/Aug issue of *two/sixteen* ("SCRIPSIT is dynamite -- easy, fun, and powerful if you can keep it from blowing up in your face."). In the past eighteen months of frequent use, I can't recall SCRIPSIT ever "blowing up!"

My worst goof the past year was stupidly calling the Delete Function to get rid of a blank page, then answering the phone. When I returned, I *thought* I'd called Renumber to finish-up with a Begin-to-End renumbering and lost the whole document! SCRIPSIT didn't blow it, but I did!

My only problem seems to come, just once-in-a-while, when I "catch up" with the dotted lines in an insert <F1> opening of text not properly propagated ahead, causing me to type over existing material. A good touch typist might find this extremely troublesome. To me, it's only annoying.

Many SCRIPSIT problems are really computer or disk drive trouble. SCRIPSIT "does things" no other programs do in disk usage. Maybe SCRIPSIT is a more sensitive test program than the test program! Often, it's the first program to find drifting alignments, etc.

The single document file is "messier" than just not knowing where each document begins and ends. If you skip around and work on one document

awhile and then on another, fragments of the various documents are intermixed. It's like the fragmenting of any other TRSDOS file when space originally allocated has been exceeded and the next logical space is occupied by another file. The fragments of the file then appear to skip around from one track sector to another in a jumbled mass. Except, of course, SCRIPSIT 2.0 does it all within the DOCUMENT/CTL file.

You can get "unscrambled" text via the built-in ASCII conversion. I used to hate using CONVERT as I was never sure there was room on the SCRIPSIT disk for the ASCII file. I even doctored a few disks according to R/S instructions to make DOCUMENT/CTL smaller. Now though, I often write BASIC or ASSEMBLY source code on SCRIPSIT to avoid their horrible line-editors. Don't know why I never thought of it before! With SCRIPSIT in Drive 0, give the CONVERT Utility a filespec ending in :1, like TEXT/ASC:1. The ASCII file will be written upon any TRSDOS (non-SCRIPSIT) disk you've placed in Drive 1. Try it! It works the other way, too.

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The best solution to over-crowded directories is use more disks; they don't cost much. However, I tend to over fill them, too.

I'd like to see: (1) Never catching up with the dots of an Insert opening; (2) CONVERT to/from ASCII on only a defined text block; (3) COPY put you in the new document; (4) Truly buffered print spooling (extra 64K RAM?); (5) Copy counter in print monitor.

\*\*\*

FROM: Al E. Smith, Agent, State Farm Insurance, 2566 Billingsley Road, Worthington, OH 43085.

My Model II has been a tremendous help to me in my insurance business. I use SCRIPSIT, and I use a large data base built from my own BASIC software. Unfortunately, I could not access my data base files to use with SCRIPSIT.

To solve my problem I developed the following routine that converts the data in my data files into a MERGE document that SCRIPSIT can access.

```
10 REM:SCRIPSIT Merge File Routine
20 OPEN "O", 1, "MERGE/DAT":
REM: creates data holding file
30 OPEN "R", 2, "YOURFILE/DAT":
REM: open your data file
40 FIELD 2, nn as A$:REM: use your
regular field statement
50 PRINT #1, "{F$}" + CHR$(13) +
"{L$}" + CHR$(13) + "{A$}" +
CHR$(13) + "{C$}" + CHR$(13):REM:
Note:F$=first name, L$=last name,
A$=address, C$=city, state, ZIP.
These are the variables in my data file I
needed to access. This sets up the re-
quired format in the MERGE file
```

```
60 FOR R=1 TO EOF(2):REM: Read
your data file, start to end.
70 GET 2, R
80 PRINT #1, F$+CHR$(13)+L$+
CHR$(13)+A$+CHR$(13)+C$+
CHR$(13):
90 NEXT R
100 PRINT #1, CHR$(13)+CHR$(13):
CLOSE: END
```

The MERGE file created by this routine will hold the variables to be included in a SCRIPSIT base document.

When you're ready to try it out, load SCRIPSIT in Drive 0 and your MERGE file in Drive 1. Create a base document and insert the same variables, using braces where they belong. When you print the document, insert your merge-file filename at the prompt. SCRIPSIT will proceed on its way, and you will have saved lots of time by not having to re-enter your data in a SCRIPSIT file.

\*\*\*

FROM: Rudolph C. Troike, Professor, University of Illinois at Urbana-Champaign, College of Education, Department of Educational Policy Studies, 1310 S. Sixth St., 360 Education Building, Champaign, IL 61820

I am taking your invitation to send comments on one experience with SCRIPSIT over the last 18 months.

First, I should say we are *very* happy with it, and find it extremely easy to use. We have found it very easy to access all sorts of utilities from inside a file, to change formats, move text, duplicate, insert, delete, etc.

A particularly valuable feature is the simple ASCII/SCRIPSIT conversion which enables us to download material

from the University mainframe (via <sup>PC</sup> TERMINAL program) and edit it, then upload again, or upload texts created on SCRIPSIT.

We now have an OCR reader, which will input anything typed with an OCR-B ball/printwheel, which can then be converted to SCRIPSIT for editing. With an OCR-B printwheel on our printer, we will be able to make paper back-ups of our files, and won't need to rely so heavily on magnetic diskette storage which gets relatively expensive after awhile. If you had an OCR reader, you could read in text typed anywhere with an OCR-B element.

There are only three problems we have ever found with SCRIPSIT:

(1) When repaginating after hyphenation, we have periodically had pages disappear, get re-shuffled, or moved over to the right. This doesn't always happen, but it happens often enough to be distressing.

(2) When right-justifying by character, the program inserts more space between letters on the left-hand side of the page than on the right side. This shows up even in some of Radio Shack's demonstration examples. For anyone who wants to use the Model II to produce camera-ready copy for printing, this is a serious drawback. No other word processing program I have seen does this.

(3) No print control has been installed in SCRIPSIT to handle the new PS (proportional spacing) printwheel for the Daisy Wheel II (which is so far available only in elite, not pica size). As a result,

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the printer does not right-justify correctly with the PS wheel. This is unfortunate, since the typeface provides a nice alternative to IBM, and the DWP II is specifically set up to use it.

As a minor complaint, there are number of functions that have not been implemented, such as column manipulation, and it is impossible to either print-out or save the results of a global search and find.

It would be nice to know how to access SCRIPSIT files directly from BASIC, TRSDOS, or PROFILE +, without having to convert to an ASCII FILE first (at least in the first two cases), as well as how to use the TERMINAL facility directly from SCRIPSIT to send and receive programs without having to exit SCRIPSIT to do it.

\*\*\*

FROM: Jean-Pierre Radley, 320 Central Park West, New York, NY 10025

Following are a few more examples of the power of SCRIPSIT's user defined keys, which are far more extensive than anything you've published so far.

People most often use SCRIPSIT's user-defined keys for rather elementary repetitive jobs. For example, I have one key that prints my name and address, then centers them. However, these two-stroke entries have a great deal more scope than just entering pre-cooked phrases into a document.

A user key can call another user key. Say you've already defined key "1" to print the company name. To finish up a business letter, you'll need:

```

<ENTER> <TAB> Sincerely,
<ENTER> <ENTER> <TAB>
Name <ENTER> <TAB>
Title <ENTER> <TAB>
Company <ENTER>

```

To enter this format into a user defined key, first define key "2" as  
 <ENTER> <TAB> . Then

```

define key "3" as <ESC> 2Sincere-
ly, <ESC> 2 <ESC> 2
Name <ESC> 2Title <ESC> 2
<ESC> 1 <ESC> 2

```

A user key can even call itself. Since user defined keys can call themselves, a reformatting routine should use only one user defined key -- the last character can refer to itself!

Try this for reformatting, using user defined key #5:

Ctrl-D b f Ctrl-N ES 5 Ctrl-Z

I also use a user defined key to address envelopes, but my routine is to copy the address, add a page, put the address there at the end, put in print codes and reformat if necessary, and invoke the Print Utility for the last page only.

Define a 4-line address (this is still usable with a 3-line address since the line before the salutation would be empty) for duplication; quit this letter and open "ENVELOPE" with two ENTERs and one ESCAPE; reproduce the new address, reformat it, go down four lines to

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the old address and delete it, then go to printing. Insert the envelope in the printer while the user defined key is executing. The keystrokes for programming this sequence would be:

```
Ctrl-D p p p p d Ctrl-Q o ENVELOPE
EN EN ES Ctrl-R Ctrl-D b f DN DN DN
DN Ctrl-D b F2 Ctrl-U p ES Ctrl-Z
```

As another example, suppose that you have a page containing, say a price list, and that all the items are in the 3000 series, i.e., each line starts with item number 3001, 3006, 3025, 3026, etc. Then your company decides, in its arbitrary way, that the item numbers shall now be AZ001, AZ006, AZ025, AZ026, etc.

Define a user key, say "#", as follows:

```
<F 1>   A Z   <F 2>
<F 2>   D N   L T
LT   <ESC> #
```

(This is best done out of the disk utilities, not from an open document.) Then position the cursor over the first "3" and hit <ESC> #. But be prepared to hit BREAK as you reach the end of the column!

User keys can take key-ahead instructions. Some information, including invoking certain utilities or going back to the directory, can't be keyed in until SCRIPSIT is ready for it. But user defined keys can accept these key-ahead instructions! Here's a long example, but far from the longest possible.

When I first write to a new person, I add the name to the head of my ASCII merge list for use in future form letters. The list is "NAMELIST" in the SCRIPSIT directory and "NAMELIST/ASC" as a TRSDOS filespec on the disk. Its format is:

```
{name}
{add1}
{add2}
{add3}
{add4}
```

I find I frequently need five lines to take care of titles, departments, etc.

```
{Mr. John Doe}
{1111 A Street}
{Bigtown, NY 10000}
{}
{} etc.
```

If the new name and address have only three lines, I make sure there are two empty lines before the salutation. When

the letter is all typed, I position myself at the first character of the name, and do the following with <ESC> &:

(a) Define five paragraphs for duplication, and (b) quit this (c) letter. (d) Open document "NAMELIST", (e) answering three prompts. "HOLD L(ine) 7" (f) will put the cursor at the beginning of the list. (g) Replicate the five lines that were stored. Make space (h) for a "{", close the space, (i) go to the far right, put in the "}" [no "F1" is needed to enter on top of an "ENTER"], (j) close the opening, (k) go to the next line. Do this four more times, except that you need a blank line (l) after the last "}". Now repaginate (m), with its four answers, and then (n) convert this SCRIPSIT list to the TRSDOS ASCII file. Quit (o). Since the letter was just created, it is number 2 (p) on the first page of the directory, and the letter is now printed (q), assuming the print defaults are acceptable.

The keystrokes needed to enter this sequence are as follows:

```
Ctrl-D P P P P P D Ctrl-Q O
NAMELIST ES ES ES HD L 7 Ctrl-R F1 {
F2 HD RT } F2 EN F1 { F2 HD RT } F2
EN F1 { F2 HD RT } F2 EN F1 { F2 HD
RT } F2 EN F1 { F2 HD RT } EN F2
Ctrl-U R 60 Y K Y ES Ctrl-U M C
NAMELIST/ASC Ctrl-Q 2 P ES ES Ctrl-
Z
```

Should you move up to a Model 12 or a Model 16B, you would have six new function keys which provide Ctrl-D, Ctrl-L, Ctrl-N, Ctrl-P, Ctrl-S, and Ctrl-U.

#### Flash Note on DMP Printer Hang-ups

Many programs will frequently give "Printer Not Ready" errors when using some of the slower fonts on the RS DMP-2100. What's happening is that the printer's buffer fills up too fast. To remedy this problem, execute DO LPII on all original issue TRSDOS disks. That introduces more delay into the printer driver before it decides that it can't do its job.

\*\*\*

FROM: Frank G. Higgins, 9510 18th Avenue, N.W., Seattle, WA 98117

In response to William Kneedler's suggestions for using a user defined key to type an envelope, I would like to add the following.

The sequence in the defined key creating the address block to type envelope can be started much earlier so that defining the new address from the letter heading, quitting the letter, finding the "envelope" document, changing the address, and printing the envelope are all a part of the sequence. It requires only three considerations:

(1) The bottom line of the inside address has always to be on the same line. I make all inside addresses bottom out on line 15. Addresses requiring more than three lines are pushed upward without destroying the style or balance of the letter. Consequently, all I have to do is get the cursor *anywhere* on page one (as a matter of fact, getting page 1 can be part of the sequence also. I'm going to add that next.) Then <ESC> 6 takes the cursor to the right end of line 15, defines above, duplicates, <CTRL> Q to exit the letter, opens the envelope document, gets page 2, restructures the duplicated inside and return addresses to fit an envelope, deletes page 1 (the previous envelope address), rennumbers pages (making page become page 1), calls for printing me... to print page 1 and stops to allow me to insert an envelope if I've forgotten. If the envelope is ready, ESCAPE prints the return and addressee addresses.

(2) User defined keys can be "programmed" for sequences involving the directory if the steps are programmed *beginning in a document*. <CTRL> Z is ineffective in the directory. Also, once printing is called for, subsequent steps in any programmed sequence won't work.

(3) Do the envelope before printing the letter, then call for printing of the letter directly from the directory without going back to the document by placing the cursor on document # or the last document created and use the "P" prompt. Put a stamp on the envelope or otherwise fill in the time while the letter is printing.

I think user definable keys are terrific!! I have four keys set aside for individual control of left and right margins and change from block to hanging indent paragraphs and back. They are easier to use than saved formats, which tend to be used up in tables and graphs and other complex documents. ■

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The object of a game is to amass treasure for points or accomplish some other goal such as preventing the destruction of the automated nuclear plant in Mission Impossible. Successfully completing a game, however, is far easier to state than achieve. In many cases you will find a treasure but be unable to take it until you are carrying the right combination of objects you find in the various locations.

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# MAKING BACK UPS ON XENIX

## A Guide To Backing Up Files Using XENIX

BY RICHARD A. BILANCIA

Last winter I had the privilege of becoming a Beta test user for TRS-XENIX. Since I had had no previous exposure to UNIX, I began a long and frustrating, yet stimulating and rewarding, experience.

The first thing I learned about UNIX and XENIX is that there is no adequate single reference source on either of these operating systems. Initially I thought this was the fault of the Radio Shack manuals. Let me assure you, it is not! The power of UNIX, or in our case TRS-XENIX, is just too incredible to place in a single manual.

A friend initiated me into one of the mysteries surrounding the lack of documentation for UNIX; he told me that the only methods used to train new UNIX users are oral communication and visual examples. I've found this observation to be correct, as I've been able to resolve problems mostly by talking to other knowledgeable UNIX users.

I never stopped looking for the definitive UNIX guide, and accordingly, I quickly built a library of nearly every UNIX book published. The two best books I've found thus far are *Introducing The UNIX System*, by Henry McGilton and Rachael Morgan (McGraw Hill: \$19.95)

Richard A. Bilancia  
P. O. Box 620127  
Littleton, CO 80162

and *The UNIX System*, by Steven Bourne (Addison Wesley \$16.95). I recommend them both but for different reasons.

The McGilton/Morgan book covers the super-user functions of UNIX, features often completely missing from other tutorials. It also discusses, among other things, the two back up utilities, "tar" and "dump," more commonly known to XENIX users by their aliases "sysadmin" and "save".

Steven Bourne, author of the second book, *The UNIX System*, also happens to be author of the shell used by nearly all first time XENIX users. His book is more advanced than the other; it covers not only many of the features of the UNIX operating system, but also the "C" programming language and the "vi" (visual editor) that was created at the University of California at Berkeley.

### Problems, Problems

The first problem I encountered when I began working with XENIX was making back ups. Nothing is quite as important on a hard disk system as the back up procedures. TRS-XENIX provides several: "sysadmin," "save" (from the Bourne or "C" shells), "impsave" (for MULTIPLAN files from the Bourne or "C" shells only), "save" and "restore" (both from the Tandy shell, "tsh") "dump" and "restor", and "tar."

Only tar (from tape archiver) and dump and restor are real UNIX programs. You'll never find any discussion of the others in UNIX books or tutorials. All

three of these utilities were originally designed to provide back up capabilities to tape from the primary UNIX hard disks. Since these functions were normally handled by an installations computer operations department and not individual users, these commands are somewhat cryptic to the new class of users running UNIX or XENIX in a microcomputer environment. In addition, even these standard back up utilities have not been described in most of the current UNIX references.

What about the others? Sysadmin is a shell script, i.e., a shell program that incorporates both of the UNIX functions dump and restor. Its nicest and most useful option allows what are called "incremental dumps" or "restores" -- a very handy feature that greatly enhances the ease of doing daily, or more frequent, back ups. Sysadmin saves to floppies only those files created and/or modified since the previous complete back up. (See Figure A for a listing of sysadmin.)

I should have realized there was a catch to such a handy utility. I found out what it was when one of my clients was having hardware problems and the local Radio Shack Computer Center suggested reformatting the primary hard disk. My client had been using sysadmin to handle his backups, and he did a complete sysadmin save before the reformat. After reformatting the disk and reinstalling the TRS-XENIX core, we discovered that without a great deal of special handling, sysadmin must restore files one at a time! In addition, sysadmin will not restore a file with its original name, but with a number! As it turns out, this

number is the "inode" number that TRS-XENIX uses to identify the file. Not much help for the average user.

What should you use to handle your back ups? I recommend the use of save and restore from within the Tandy shell, tsh. These utilities are really a way of using tar without having to know or understand all of its options. Since tar has both save and restore capabilities, it can be the only utility you ever need to use for both back ups and restorations. Except for unusual circumstances, I do not recommend using either save or mpsave from the Bourne or "C" shells because these utilities cannot do complete back ups of all user files! They will only work with Radio Shack multi-user system software and data files, such as Accounts Payable, Accounts Receivable, Payroll, General Ledger, or in the case of mpsave, only files created by MULTIPLAN.

To use the Tandy shell save command, it's best to login as "root", make sure you are in the root directory by typing "cd /", and then enter the Tandy shell by typing "tsh". To see a complete description of the utility, type "help save". This is what you'll see:

```
save - save files and/or directories
save [:]drive-number {-ss | -ds}
[name...]
```

Save saves files and entire directories and their contents to a floppy disk in the drive you specify. You may list as many files and directories as you wish or as many as will fit on a command line. In all cases where a directory name is listed, save specifies that that directory and all its files and sub-directories (and their contents) are to be saved. You must tell save if you are using single-sided or double-sided diskettes by using the -ss flag if they are single-sided (or the -ds flag if they are double sided). The floppies must be formatted prior to use but cannot be mounted.

Assuming that you want to perform a complete save to a floppy diskette in drive 0 and are using double-sided drives on a Model 16, 16B, or an upgraded Model 12 and have not yet entered tsh, type the following commands after inserting a blank but previously formatted diskette in drive zero:

```
cd / ; tsh
save :0 -ds
```

The tar program will take over and begin copying every file to the floppy diskette. In fact, tar will even try to copy the "/dev" device files, so don't be alarmed when you see several error messages about these files. When you see the messages:

```
tar: ---- is not a file. Not dumped
tar: ---- cannot open file
FLOPPY DISK -: not ready
HARD DISK -: not ready
```

replace the diskette in drive zero with another blank and previously formatted one and hit <Enter>. The program will continue until all files have been backed up.

If you are using an up-graded Model II, the "-ds" should be replaced by a "-ss" to specify single sided diskettes.

Partial saves of selected sub-directories are also available with the save command by simply indicating the directory name(s).

Should the restoration of a file ever become necessary, once again login as the "root" user, type "cd /", "tsh", and "restore :0 filespec" after inserting the appropriate diskette in drive zero (the full pathname of the file should be substituted for the word "filespec").

Should you wish to restore the entire contents of a directory, replace the word "filespec" with the full directory pathname.

Lastly, if you want to do a complete restore of everything on a set of diskettes, don't enter any "filespec", just "restore :0".

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```

: "(C) Copyright Microsoft Corporation, 1982"
:
: Perform simple file maintenance tasks
:
while(true)
do
cat <<|
      File System Maintenance
      -----
      Type  1  to do daily backup,
            2  to do a periodic backup,
            3  to get a backup listing,
            4  to restore a file,
            q  to quit

!
echo -n "Enter Number: "
read reply
case $reply in
1)
    echo "DAILY DUMP";
    echo -n "Type 1 for single sided, 2 for double sided: ";
    read type;
    echo -n "Insert first disk in drive zero, then press ENTER ";
    read dummy;
    case $type in
        1)
            dump u9fk /dev/rfd0 608 /dev/rroot;
            exit 0;;
        2)
            dump u9fk /dev/rfd0 1224 /dev/rroot;
            exit 0;;
        *)
            echo;
            echo "Bad Type -- Try Again";
            echo;;
    esac;;
2)
    echo "PERIODIC DUMP";
    echo -n "Type 1 for single sided, 2 for double sided: ";
    read type;
    echo -n "Insert first disk in drive zero, then press ENTER ";
    read dummy;
    case $type in
        1)
            dump u0fk /dev/rfd0 608 /dev/rroot;
            exit 0;;
        2)
            dump u0fk /dev/rfd0 1224 /dev/rroot;
            exit 0;;
        *)
            echo;
            echo "Bad Type -- Try Again";
            echo;;
    esac;;
3)
    echo "PRODUCE BACKUP LISTING";
    echo -n "Insert first disk in drive zero, then press ENTER ";
    read dummy;
    dumpdir f /dev/rfd0 >/tmp/backup.list;
    echo "LIST IS IN /tmp/backup.list";
    exit 0;;
4)
    echo "RESTORE FILE(S)";
    echo "Type Full Pathname of Files to Restore.";
    echo "One per line, blank line to terminate."
    while(true)
    do
        echo -n "Enter Pathname: "
        read next;
        if [ $next ]
        then
            path="$path $next"
        else
            break
        fi
    done
    echo -n "Insert first disk in drive zero, then press ENTER ";
    read dummy;
    restor fx /dev/rfd0 $path;
    exit 0;;
q)
    exit 0;;
*)
    echo
    echo "Bad Option -- Try Again";
    echo
esac
done

```

FIGURE A - TEXT OF /ETC/SYSADMIN

## RUMORS

# OVERHEARD AT CPM'83 EAST

The following unattributable rumors were overheard at the CP/M'83 EAST Conference, held in Boston's Hynes Auditorium September 29, 30 and October 1. We're providing them here for your edification and entertainment.

- The exhibit staff at the Radio Shack booth was informed that the primary goal at this show was to deliver more information than hard sell. Further, the staff was advised that an informed customer who receives answers to his questions is far more likely to come into a R/S computer store to purchase a Tandy machine if he believes that Tandy people know what they are talking about and are interested in helping the individual computer user.

- CP/M for the R/S Models II, 12, and 16 will be available on or before November 1. (I)

- Tandy's current game plan for CP/M is to offer a reasonably priced operating system and to carry no applications at all.

- Radio Shack believes Xenix is their means for competing with DRI (Digital Research, Inc.) concurrent CP/M and Multiuser CP/M. R/S looks to the Model 4 and the Model 12 as the preferred purchase for the user who wants only single user capability. If XENIX is not needed, the user should save himself some money and buy the product that best meets his needs.

- Two reasons for the delay of the release of the Model 16B+: (1) hardware and (2) software. The built-in drive ran too hot so an additional cooling unit had to be added, and someone "forgot" to check the format and initialization routines until the units were ready to be shipped. When a virgin hard disk was tested, this oversight was discovered.

- DRI has a system up and running "in the back room" that allows interaction and linking between CP/M and UNIX (XENIX). This system's problem is realtime, in that the machine takes so long to get the information to the screen that the whole thing appears as slow as, if not slower than, the original 8 bit machines. They expect to have the CP/M-XENIX problem licked and the product on the market in 6-8 months.

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"In my opinion, all users of older Model II's... should get a SeeBee as cheap insurance against the dreaded Boot Error."

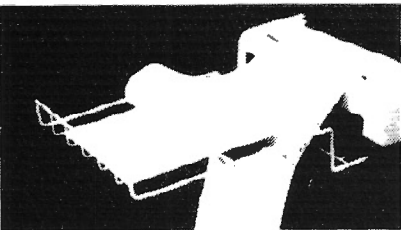
R.H. Young, Editor/Publisher  
Two/Sixteen Jan-Feb 1983

"SeeBee performs as represented. It's a better mouse trap..."

Product Review, 80 Micro - July 1983

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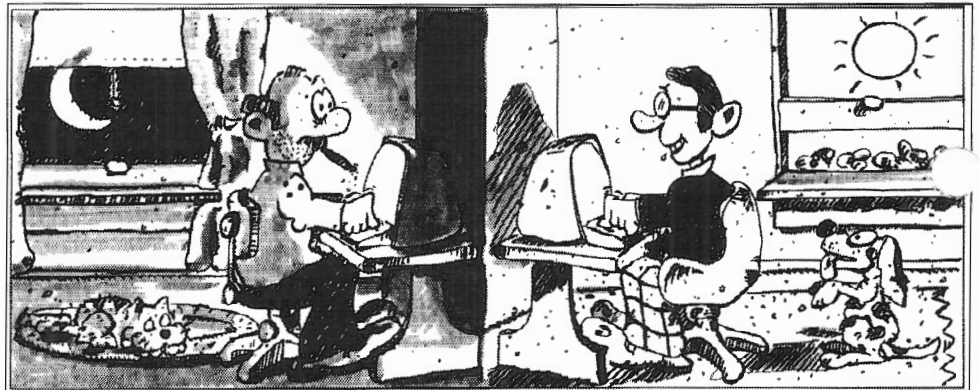
BY PAUL NAITOH

**M**y work with a R/S Model II is often done in solitude during the late evening and early morning hours. It's lonely. A moment of joy experienced after seeing a troublesome program work well cannot be shared with others right then. Sometimes I wish I could ask other computer professionals questions to resolve some thorny problems, but how can I do so at 1:30 a.m.?

I found that I can break my isolation by plugging into a new world of nighttime telecommunications, where I can share joyful moments, as well as problems, with others -- even around midnight.

I found also that a venture into telecommunications can fulfill my desire to transfer R/S Model III programs to my own trusty Model II. In the past, I read many articles about "DOWNloading" programs from one computer to another. I guessed that the Model II's "SETCOM" and "TERMINAL" programs will do the trick in downloading programs, but people I talked to were quick to point out that transferring programs from a Model III to a Model II using a telephone, a modem, and a

Paul Naitoh  
4446 Marseilles St.,  
San Diego, CA 92107



TRS DOS "TERMINAL" program will be very "tricky". So I almost gave up all hope of communicating with other computers.

One lucky day I happened to read a monthly flyer called "CompuServe UPDATE," which renewed my hope of being able to transfer programs to other computers, and perhaps even "talk" to other micro users -- even during late evening hours -- by means of a telecommunication information service, such as CompuServe and the Source.

After a quick check, I decided to subscribe to CompuServe, Inc., the Columbus, Ohio-based subsidiary of H&R Block, Inc. (I suggest you read Alfred Glossbrenner's book, *The Complete Handbook of Personal Computer Communications* (N.Y.: St. Martin's Press, 1983; \$14.95) to help you decide to which service you should subscribe.)

I discovered that CompuServe started out as a remote data processing time-sharing service, and, in fact, that's still its primary orientation. Then in 1979, as a method to generate additional income and to utilize the time-sharing computer's capabilities at night when no other work was going on, CompuServe began to make computer time available to hobbyists. This concept caught on and grew to present day proportions of over 35,000 subscribers! CompuServe is still available only at night and on weekends, except for persons who are authorized for "Prime Service" hours (8 a.m. to 6 p.m.). Customers interested in this special authorization must agree to certain terms and conditions, not the least of which is paying \$22.50 per hour connect time. Ordinary connect time is only \$5.00 per hour, which is a bargain...

Let me give you a money-saving hint right at the start. When you answer CompuServe's question concerning type of billing, choose the credit-card mode



of payment, and don't ask for direct billing. Direct billing costs you \$3.00 extra per each billing, and it will add up very fast.

I can tell you that you can do downloading effectively and simply through CompuServe. Transfers of program files between the R/S Model III and Model II become simple tasks. I can also tell you that you can break a sense of being all alone by participating in CompuServe's "Citizen's Band (CB) radio simulator" and Special Interest Groups (SIG).

Serious programmers might frown on those who subscribe to CompuServe because they might have been fooled by advertisements which emphasize "fun and games." The fact is that telecommunication information networks offer the opportunity to do a lot of serious work with microcomputers.

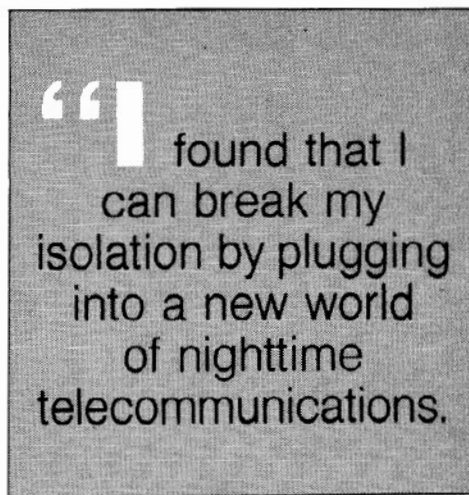
### Getting Started

My experience in getting started on CompuServe might be helpful for those who are tempted by what the networks offer but hesitate to get involved with modems and other "evil" sounding things, such as electronic mail (where is my privacy?!).

After I decided to go telecommunicating, I looked around for some practical help concerning how to buy a modem and how to get on to CompuServe. I was very surprised to find that little help is in sight. I am sure I could have saved hundreds of dollars if I knew as much then as I do now.

In this article, I will try to pass on as much information as I have to reduce the expenses and frustrations for others trying to get on CompuServe. However, my article will neither advise you how you should choose one modem over another, nor will it discuss which computer networks will be best suitable for you. I am going to limit this article to those who wish to use the R/S Modem II with the R/S Model II for CompuServe, although I believe that the basic information might be helpful for those who have chosen a different modem and computer.

Let me summarize briefly some circumstances when you will be thankful for having joined the world of telecommunications via CompuServe:



\* when you wish to download BASIC and other programs from one computer to your Model II, where swapping program diskettes will not work because of incompatible disk size, formats, etc.;

\* when you wish to send electronic mail (EMA) to your friends and other users, or wish to "chat" with them right away through the CB simulator; and

\* when you wish to get advice on computer software and hardware quickly and free of charge from those professionals in SIG through "CB", "Conferences," or leaving messages.

### How to Subscribe to CompuServe

Place a call to CompuServe (toll free number: 1-800-848-8199), and purchase CompuServe's Information Service (CIS) Starter Kit (\$39.95). It includes a CompuServe account number (that is, your USER ID #), Password, a CIS User's Guide, and a three-ring binder. This USER ID# allows five free hours on CompuServe.

At the same time you buy the Starter Kit, be sure to purchase the CompuServe VIDTEX program (\$39.95), which makes your life with CompuServe much easier. If you are brave and have some more money, purchase a copy of CompuServe's Information Service Programming Area Guide, and a copy of the Special Interest Group instructions. If you wish to use the CompuServe computer system (consisting of Digital Equipment Corporation (DEC) System 10s and 20s with a modified TOPS-10 operating system) to write and execute computer programs, you need to purchase CompuServe language books on XBASIC, FORTRAN, PASCAL, APL, and others.

You can also subscribe to CompuServe by visiting a local Radio Shack Computer store. (Incidentally, before this

year, this used to be the only way a person could subscribe to CompuServe!) Ask for the "Universal Sign-Up Kit" (RS #26-2224) which costs \$19.95. It contains a sealed package with your CompuServe User's manual, USER ID number and Password, and one free hour on both CompuServe and the Dow Jones News/Retrieval networks. Since this package does not come with the software to let your modem communicate to CompuServe, you must know how to use the "SETCOM" and "TERMINAL" commands of your Model II. Also, it does not contain a local telephone number you can call to get into the CompuServe network. You must ask the Radio Shack salesman for that telephone number; don't forget!

Instead of RS #26-2224 (the Universal Sign-Up Kit), you can buy Radio Shack's complete communications package. According to the latest Radio Shack Computer catalog (*and confirmed by the local Radio Shack Computer Center in Lancaster, Pa. - Ed.*), Radio Shack has up-dated their Videotex Package; now it's called "Videotex Plus" instead of just the Videotex Package. The part number is RS #26-4721 instead of RS #26-2221, and it costs \$49.95 instead of \$29.95. The 1983 price includes a \$20 increase and the added appenage "Plus" because now you can write to disk those programs which were downloaded from CompuServe and stored in

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RAM. This feature was not available before.

"Vidextex Plus" comes in a three ring binder with two sealed sections, one for CompuServe and another for Dow Jones. The sealed section for CompuServe contains your USER ID# and Password, plus a free hour with CompuServe. Another sealed section has a USER ID# for one free hour connect time with Dow Jones.

This package comes with software that permits variable width screen display (40 or 80 characters per line); it supports simultaneous printing and disk to disk file transfer; it contains user-definable function keys for often used commands; and there's an option that lets you use the R/S Modem II auto-dial feature, together with a routine for on-screen editing to customize the auto log-on sequence to your specific requirements.

Let's assume you bought the R/S Modem II and connected it properly into both a phone line and a Model II, and that you have bought CompuServe VIDTEX software.

#### Autodial/Autolog-On

Instructions for the R/S Modem II and for CompuServe VIDTEX do not tell you how to accomplish hand-shaking among a Model II computer, a telephone, a modem, and CompuServe. These hardware components are interconnected by hard wires, but you do not have step-by-step descriptions on what to do from the time you turn on your Model II to the time you get the message from CompuServe. Let me fill in these details.

Step 1: Model II power off. Set the toggle switches of the R/S Modem II as follows:

Power/off;      AUTO      mode;  
ORIG(inate)Mode; TEST Off

Step 2: Model II power on. Insert VIDTEX diskette, close the door of disk drive. In response to (TRSDOS ready), type in:

VIDTEX C    <ENTER>

Step 3: The VIDTEX program will give you a message: (Place Call). Do not lift the telephone receiver and dial the local number serving CompuServe because we are going to use its AUTO DIAL feature.

Step 4: In response to (Place Call), do:

<HOLD> M

A table of "META key functions" will appear on the Model II screen. This menu is very important for the efficient use of CompuServe VIDTEX.

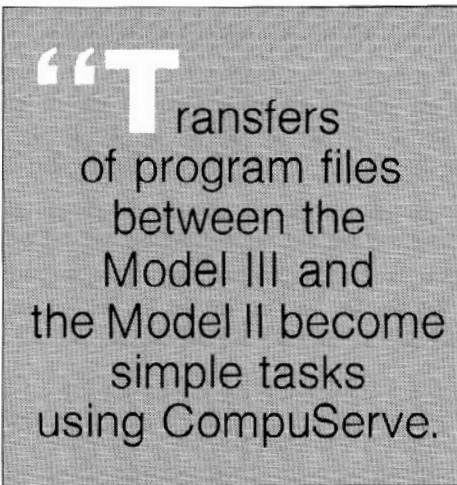
Step 5: Type in:

I

to indicate that you want to set up an information file for automatically connecting (or "logging in") to CompuServe.

Step 6: A message will appear: (Enter output file name:). You type in:

VIDTEX/ATO



The next question will be: (Rotary or Tone:). Most likely, you will type in

T

because most phones are tone types. However, if you have a Rotary phone, be sure to type "R". Do not press ENTER after answering this question.

Step 7: The next question is: (Enter phone number). Here you type in the local phone number of CompuServe, e.g., key in 283-6021 in San Diego area.

Step 8: The next question is (Prompt:). You press ENTER.

Step 9: The next question is (Response:), to which you do:

<CTRL> C

Step 10: Then the computer displays again (Prompt:). You type in the words:

User ID:

Step 11: To the next display of (Response:), you type in your User ID #, which is the number issued with the VIDTEX package.

Step 12: The next question is ag (Prompt:). You type in the word:

Password:    <ENTER>

Step 13: In answer to the next question (Response:), you type in your secret Password.

Step 14: In response to the next display of (Prompt:), you press <BREAK>

This completes an autodial/autolog-on file which will automatically call up and connect you to CompuServe via your modem.

Now you are back to the message (Place Call). Turn POWER ON to your R/S Modem II and watch its lights eventually settle down to "TR" ("Terminal Ready"). Then, you type in:

\*

This is it! You sit back and watch your phone number being dialed. In San Diego where I call 283-6021, I see my Model II screen an echo of (\*DT2836021X), then a pause, followed by (Ctl-C). Shortly after (Ctl-C), I see (USER ID #:), and so on till I get the very first message of CompuServe:

(CompuServe Information Service)  
(18:30 PDT Thursday 28-JUL-83)

From this step on, you can follow the on-line instructions given by CompuServe, which will appear on your screen.

Once you have decided to subscribe to CompuServe after your free time has been used up, CompuServe will send you a new password. Also, you are encouraged to change your password from time to time to protect yourself from others who stumble on your password and use your time illegally. This means that you must change the password in the VIDTEX/ATO file you created earlier. The easiest way will be to type in:

KILL VIDTEX/ATO

in response to (TRSDOS Ready).

Then, after (TRSDOS Ready) appears again, type in:

## VIDTEX.C

Repeat the procedure outlined above using **<HOLD> I**, and the file name VIDTEX/ATO.

### Pages and Menus of CompuServe

CompuServe works on "pages," just like a book. Some pages have a menu to give you a choice of things you can do. Perhaps the very first thing you will wish to do in CompuServe is to start using the first page of CompuServe's "book," i.e. Page CIS-1.

Time saving hint: if you wish to go to a certain page of CompuServe, type in: GO and the page number, such as GO CIS-1, in response to the prompt (!). The prompt (!) is to let you know that you can now issue any command, including a command to go to the specified page of CompuServe's book.

On page CIS-1, you will find the following message with six options:

#### CompuServe Page CIS-1

##### CompuServe Information Service

- 1 Home Services
- 2 Business & Financial  
Personal Computing
- 4 Services for Professionals
- 5 User Information
- 6 Index

ENTER your Selection Number, or H for more information.  
!

Option 6 is very handy, as it tells you which page you should look up for information you want. Similar information is also available in a one page flyer called "The CIS Subject Index," but it is not really up-to-date.

To print the current Index, turn on the power to your printer, adjust printer paper to the top, and type:

**<HOLD> R 6**

The CIS index shown on your screen will be printed out on paper. After printing a few items, you will get (KEY S OR ENTER TO CONTINUE !). If you wish to type all indices without further stopping, type in:

S

It takes about 20 minutes to scroll all indices.

If you want to get out of this scrolling and printing because you don't like what you are getting or for some other reason, type in:

**<CTRL> C**

These key strokes will be echoed as (Ctl-C) on your computer screen and you will see the prompt (!) so that you can issue a new command. You can turn the printer off by typing:

**<HOLD> T**

If you wish to store the indices in your own disk file, type:

**6 <HOLD> O**

This command will make your computer memory available for storage of information. Type in:

**<HOLD> Z**

to clean up your memory space.

You have been on Page IND-1, so press 2 and later on press 5 to continue transferring Index information to your computer's memory. It will take about 17 minutes to complete the job. At (LAST PAGE. KEY M FOR MENU !), type in:

**<HOLD> C**

to close the access to your computer memory, and type in:

BYE

to disconnect from CompuServe.

Type:

**<HOLD> M**

and you'll see that the index took up about 29K bytes of space. Now you want to transfer this index information in your computer to a disk file, for example INDEX/TXT. Type in:

U S

since you are already looking at "META Key Functions" table, and specify the output file INDEX/TXT.

Warning: you must do U or S, otherwise you'll lose all that index information when you reset or power off your Model II.

Later on you can view the index by typing:

**<HOLD> L** and INDEX/TXT

If you feel ambitious, you can transfer INDEX/TXT to a SCRIPSIT ver. 2.1.0 diskette. Then, using SCRIPSIT's C command, you can bring INDEX/TXT under SCRIPSIT control. There you can edit, print and search your INDEX at will.

Remember that those of you who live on the East Coast can stay up till 4 a.m. to talk to us Californians who will still be "bushy-tailed" and alert as it is only 1 a.m. in California!

Welcome to the Future Land, and Good Luck (to us all).

*Part Two of Paul's article will appear next issue. At that time you'll learn about all the nifty things you can do once you get on-line with CompuServe, including Electronic Mail, Special Interest Groups, communicating with other computers, and downloading and uploading programs. We'll also read a little about data bases you can access on CompuServe and why you might want to save your pennies before ordering any searches from them!* ■

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(column omitted if 1)

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## BOOKREVIEW

### How To Do It On The TRS-80

BY MARK BENNETT

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While browsing through a bookstore recently, I came across a new book from IJG Publishers (remember the folks who brought you *BASIC Faster and Better?*) and, on an impulse, bought *How To Do It On The TRS-80*, by William Barden Jr.

I should admit right here that if I had given myself more time to look at the book, I may not have paid the price (\$29.95). Like all IJG publications, it is guaranteed to leave your wallet smoking.

You say you don't understand how to change the attributes of a disk on your Model II? You say you didn't even know disks had attributes? Flip open the 32 page index in the front of *HTDIOTT* (rhymes with "idiot") and look for "Attributes, of a diskette, changing TRS-80, Model II." This will refer you to entry "ADC2". Sorry, no page numbers (there are about 350 pages), but the entire book is indexed alphabetically using four-digit abbreviations. Referenced items are easy to find, and you'll come to a five paragraph description for changing the password on an entire disk, along with cross-references to other sections on passwords (PWDS) and changing the attributes of a disk file (ADFC). The discussion of attributes isn't as complete as the one in your TRSDOS manual, but this book doesn't take nearly as long to use. What's nice is that you get a discussion of similar functions for all the different TRS-80 machines, usually on the same page.

Mixed into the main section of the book you'll find descriptions of all TRSDOS commands for each computer, a complete catalog of all BASIC commands, and general information on hardware, circuitry, programming in BASIC and Assembler, graphics, use of peripherals and more general info, but not much of it seems to be for the Model II. All Model II information is for TRSDOS 2.0. It does have the best memory map I've ever seen for a Model II, though.

Model 100 owners: your bonus is in the back of the book. A separate 100 page section has been included just for you. You get your own index, and a list of procedures by keyword, and a lot of cross-referencing to other sections. The descriptive paragraphs in the Model 100 section are generally shorter, but then it's a smaller machine, right? The publication date is April 1983; apparently this section was tacked on to the original book at the last minute.

There isn't much to not like about *HTDIOTT*, but I really get peeved when I pay \$29.95 for a book and find seven full page ads for other IJG books pasted in the back.

In summary, if you are new to computing, if you use any combination of TRS-80 machines, and if you want one book instead of several to use for reference, *HTDIOTT* is worth the money. If you are an advanced programmer, forget it; you already know most of what's in this book.

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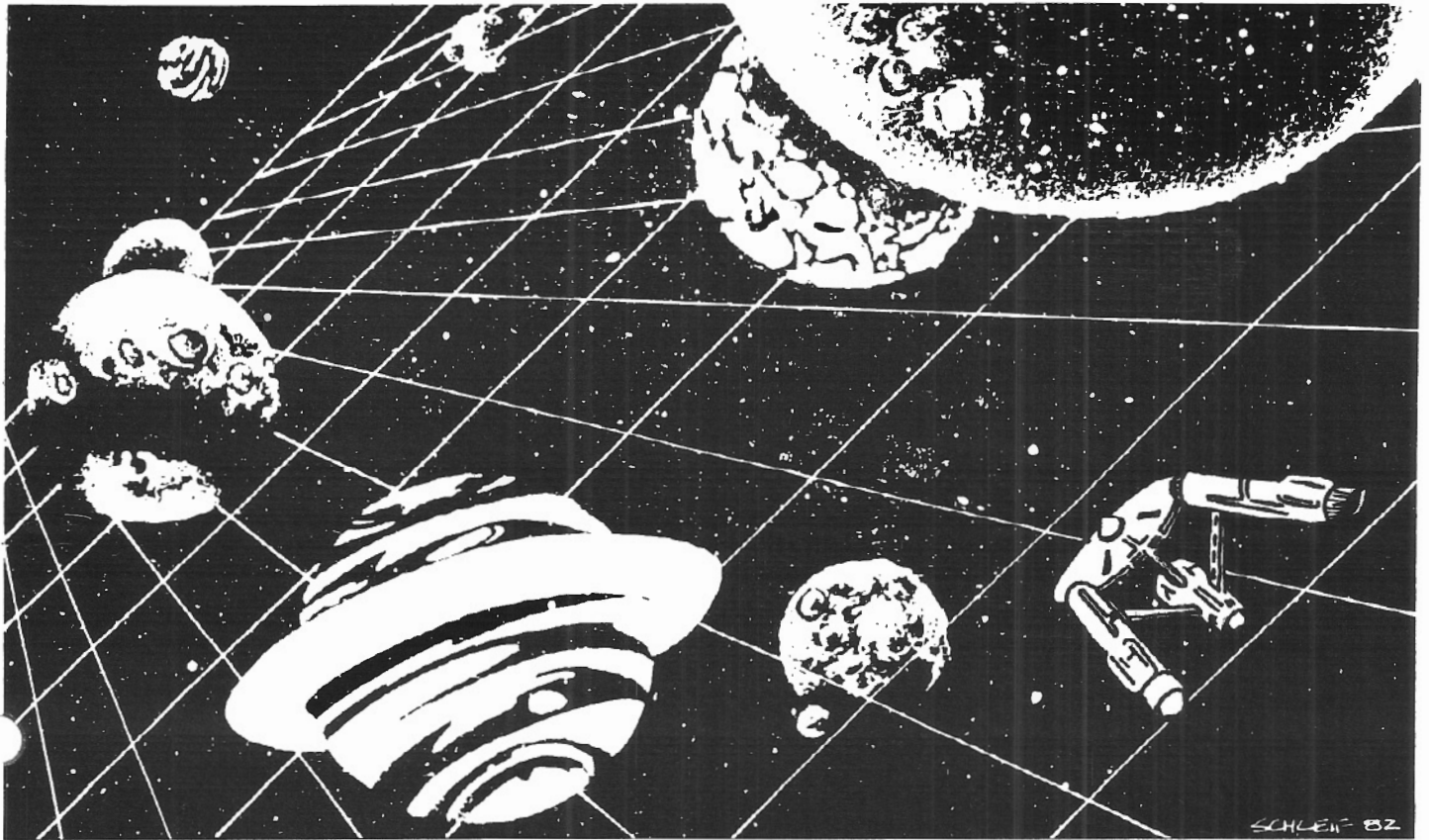
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# STARSHIP I



STARSHIP/I (copyright registered) is a save-the-galaxy type game based on the venerable STARTREK games which have been played on large mainframes for more than ten years. It is specifically designed for the RS Model II and features a constant console display with no scrolling. Each game begins in a randomly arranged galaxy of 64 "quadrants," each containing 64 "sectors."

STARSHIP/I is a "strategic" game (as opposed to "tactical" games which involve reflex action but little thought). However, STARSHIP requires quick thinking, as all events are timed. Because STARSHIP is written in the RS BASIC interpreter language, users can modify the source code or use sections of the code as models to learn techniques which can be used to produce games of their own design.

STARSHIP comes with a disk instruction file which can be listed on your printer. It can also be listed on the screen at the beginning of a session. In addition, STARSHIP contains a few undocumented "surprises" at advanced levels of play (there are ten levels of difficulty). These surprises may be analyzed by reviewing the source code, then modified or deactivated if desired.

Games may be saved in files at any point for later play or for "duplicate" games in which several players start with the same layout and position and compete for the highest ending score.



starship I

STARSHIP/I was sold for several months at \$50 through leading computer magazines. It is now available to two/sixteen subscribers at the special price of \$30, including air mail (anywhere) in protective Kangaroo mailer.

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