THE S-80

SEPTEMBER 1980 ● FIFTY CENTS

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Get your UPPER and lowercase the easy way!

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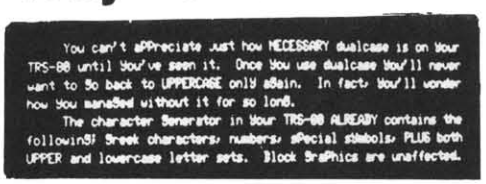
You can't aPPreciate Just how NECESSARY dualcase is on Your TRS-80 until You've seen it. Once You use dualcase You'll never want to So back to UPPERCASE onlY aSain. In fact, You'll wonder how You manaSed without it for so lonS.

The character Generator in Your TRS-80 ALREADY contains the followinS; Greek characters, numbers, sPecial sYmbols, PLUS both UPPER and lowercase letter sets. Block SraPhics are unaffected.

NOW IT'S SWITCHABLE!!

Due to pressure from our customers, we now offer **"THE SWITCHABLE PATCH". It does everything the original PATCH** does, **PLUS** switches in and out! This eliminates conflict with old software.

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THE PATCH!

Unfortunately, converting your TRS-80* requires installing the video memory chip plus wiring changes. There is only one modification on the market which eliminates most of the wiring. To get the dualcase mod installed you have three choices: 1) Send your computer to a company or individual who will do the wiring, 2) do it yourself, or 3) "THE PATCH".

To make choices 1 and 2 operate requires using software overhead in the form of a "driver". This takes 30 bytes, unless you want a "normal" shift to UPPERCASE keyboard. That takes upwards of 60 more bytes. Software oriented mods have three more disadvantages: 1) They reside in program memory, eating program space which you could be using, 2) other machine language programs are unusable if they are loaded against the top of memory, or 3) the "driver" software MUST be loaded every time you power-up, or the "MEMORY SIZE?" appears due to program bomb. Choice number three suffers from NONE of the software overhead problems. We call it "THE PATCH" and it's new for the 80's!

"THE PATCH", a small electronic module which plugs into the unused ROM socket on Level II machines, makes necessary software changes to ROM supporting lowercase, an optional block cursor, and extra keyboard debounce. Electronically means NO software overhead. Your computer displays lowercase instantly upon power-up, and the keyboard operates in "normal" typewriter fashion.

"THE PATCH" is completely compatible with your TRS-80* since it is the first, and only, TRS-80* lowercase system designed that flawlessly mates with the computer as a unit, not just a special program package.

"THE PATCH" is also the only modification of any kind which can have extra options and updates factory installed for 5 to 10 dollars per option, as they are available. Same day turnaround.

THE PATCH is a trademark of CECDAT, Inc.

*TRS-80 is a trademark of Tandy, Radio Shack Corp.

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READER SERVICE 8

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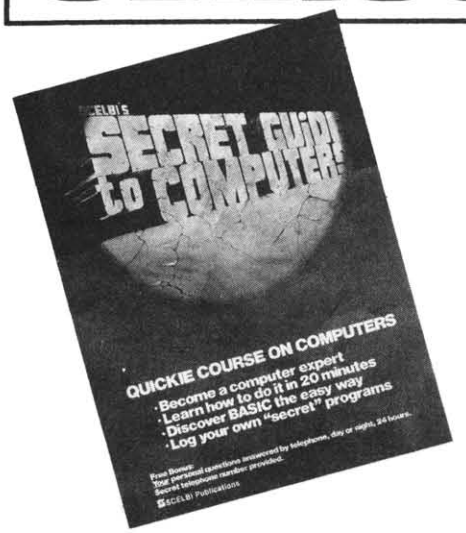

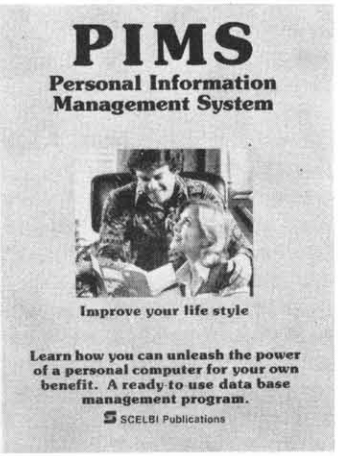

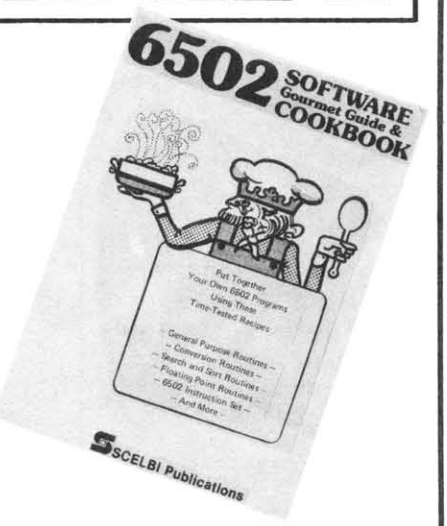

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This book will turn you into a computer expert, quickly and easily. It explains the kind of computer found in most schools, small businesses and homes – the kind that has interactive BASIC. You'll learn BASIC, having fun every step of the way. The book explains how to deal with computer machinery, which buttons to press and trains you to write many kinds of programs. The author's "underground" style of writing is sure to hold your interest. The only way to learn BASIC programming is to look at sample programs, analyze them, and then invent your own. This book contains 150 sample programs that do just that. Charts are given comparing the different computers. Follow the four "secret" lessons of this book and you'll be programming a computer with confidence!

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With the right SCELBI Gourmet Guide & Cookbook, you'll be able to put together programs without having to start from scratch. You'll have the most useful routines at your command – already programmed and ready-to-use. Features are search and sort routines, numerous examples of general-purpose utility routines, I/O and interrupt programming, control and manipulation of stacks, code and numeric conversion routines, flowcharts and source listings. Special listings include a presentation of machine codes (hexadecimal and octal notation included), and a reference guide to complete instruction set. All recipes are time tested. Tens of thousands of SCELBI's cookbooks have been used throughout the U.S. and in countries around the world.

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If a basic understanding of microcomputer language has now become a necessity, help is here. *Understanding Microcomputers* offers its readers an education in microcomputer system information. The easy-to-read format assures quick comprehension for both the neophyte as well as the professional searching for business applications. This 300-page publication tells how to select a small computer system, introduces BASIC language programming, and illustrates BASIC instructions for almost every class of microprocessor. The convenient glossary covers all key terms.

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FEEDBACK

Dear Sir:

I must admit that I was very surprised when I read the Letter to the Editor in the May 1980 issue of your publication. As a computer programmer, and as a person who believes very strongly in good business ethics, I feel I must respond to the letter that Mr. Hern wrote.

Apparently, Mr. Hern, you are not a computer programmer. If you were, you would understand the amount of time, energy, and just plain hard work that goes into software development. When I talk about software, I am speaking of more than just the "games we enjoy", although they are of equal importance. I am talking about very large business applications, complex utilities, compilers, interpreters, languages, and operating systems. Some of these programs can literally take years to design and write. Consider this example:

For the past two and one-half years I have been writing a disk operating system (DOS). Writing a program of this nature is a very taxing process, requiring hours of research and experimentation. Just when you think you have a routine perfected the computer bombs out during a critical moment because of a tiny bug, which you spend hours tracing. After two and one-half years of work, the task is only about one-third complete. I am still not satisfied with the completed work. After all the other work is finished, I can devote only about ten hours a week to the project.

Let's take a look at the economic facts of life. The DOS will take four years to complete. This means that I will not have a marketable product until the end of 1981. At ten hours a week, 200 weeks, and $8.00 an hour, the total labor bill alone is $16,000.00. Add to that the figure research fees (not everybody can write a DOS), attorneys costs (I license all my programs), advertising and marketing costs, and the cost of supplies and the bill is now hovering at $20,000.00. Since the DOS must be able to run on the large computers (two and three drives instead of one; don't forget the printer.) there are certain hardware costs to consider. Add $2,000.00. The total production cost for the DOS stands at approximately $22,000.00. Of course not all of this is spent money; I could "donate" the labor.

Now we have to sell the final results of my four year project. If the DOS is a success, if the buyers recommend the product to other computer owners who then buy their own copy, if someone doesn't market something similar before I release my own, only then do I make my first dollar. Let's just suppose for a minute that my DOS is a smashing success and I receive orders for 10,000 copies. To make up for the money spent, I have to charge $2.20. The diskette itself is going to run you $8.00 (given inflation for another year). Shipping, handling, etc.is going to cost $2.50. I have to make a profit and the DOS hasn't made any money for four years so add $3.80 (just a tad over 30% of the accumulated costs thus far). Don't forget more legal fees for license processing ($2.50), and having the documentation printed isn't cheap ($3.00). The total unit cost to purchase the new DOS is $22.00 (plus sales tax if you live in Michigan). Remember, also, that you have to wait 30 days before it comes via UPS or Parcel Post.

If I were a dishonest person who wanted a copy of that DOS, and knew someone who had a copy, I could obtain it for the cost of the material ($8.00). That is a savings of $14.00. So much for your mass marketing/low cost theory.

The example I cited above took "only" four years to write. Lance Micklus said that Randy Cooke's DOS took SEVEN years

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THE S-EIGHTY™
VOLUME ONE • NUMBER EIGHT

EDITORIAL

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I'm concerned. I'm concerned for the thousands of ordinary folks out there who are being duped into believing that they can make millions of dollars in the "fastest growing field in the nation" simply by writing software for micros. Don't get me wrong; there certainly is money to be made . . . but millions? Come on, let's be serious for a minute. Do you personally know any programmer who has made 'millions'? Frankly, I doubt it. To tell you the truth, I can't think of one. Thousands perhaps . . . but millions? No way.

How many young singers drift away with dreams of riches and bright lights only to come crashing back to earth, shattered? Just take a minute and list some of your favorite pop music stars. How many could you name . . . fifteen, twenty perhaps, thirty at most. Well, whatever the number may be, I'll bet that less than 30% of those rock'n rollers ever made a million bucks, not to mention the tens of thousands who never made a dime. "What does all that have to do with me", you say? Well, I'll tell you.

The parallels between microcomputing and the recording industry are uncanny, and in time we will have a few "super stars" of our own. Be patient; it won't happen overnight, and it won't happen without practice. Some day we may have our own 'Top Forty', and with that day will come the appropriate national recognition that our 'Super Star' artists deserve. But some people would have you believe that you'd be driving by the Los Angeles Coliseum, only to see swarms of packed micro-groupies anxiously awaiting the arrival of their 'Micro Star'. A scene out of a science fiction comic perhaps, but until we have the fans that the recording stars of today enjoy, the odds of our ever finding individual millionaire programmers are mighty, mighty slim.

As Project Manager at Kilobaud/Instant Software, I occasionally read an editorial or two. The one that I remember the most was June '79 **Kilobaud,** part of which appears below.

Getting Rich

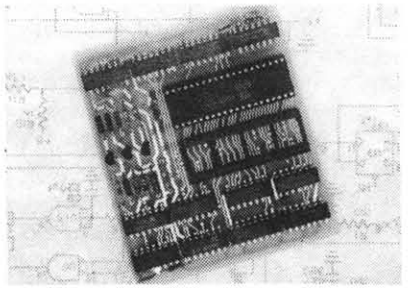
Would you truly like to be rich? Would you like to own your own plane, perhaps a yacht and maybe an Arabian horse? How about being able to travel anywhere in the world you want . . . perhaps a 30-room home on 50 acres with a fantastic view, your own fish pond and even an outside sauna? Fantasy? Not one bit of it. There are fortunes to be made in microcomputing if you go about it the right way. No matter what your education or intelligence, you can become a millionaire . . . if you really want to.

Anyone who really wants to can become a millionaire within five to seven years - and in the microcomputing field I'd shorten that to a maximum of five years, just starting from scratch.

It's been a year or so since I left Kilobaud, and you know I've yet to find all those millionaire programmers. Can you help me?

William F. Gollan

NEW PRODUCTS



PERCOM DOUBLE-DENSITY ADAPTER FOR TRS-80* COMPUTER CAN BOOST 5" DISK STORAGE TO 354 KBYTES

Garland, Texas - June 5, 1980 - Harold Mauch, president of Percom Data Company, announced here today that the company had begun production of a double-density disk controller adapter for TRS-80* Model I computers.

Using the DOUBLER™ as it is called, a TRS-80* computer owner can store almost four times more data on a five-inch disk - up to 354 formatted Kbytes — than can be stored without the DOUBLER™.

By comparison, standard eight-inch floppy disks store 256 Kbytes.

The DOUBLER™ adapter plugs into the controller chip socket of the computer Expansion Interface. No circuit modifications are required.

Price for the DOUBLER™, DBLDOS™ a TRSDOS* compatible double-density operating system - and a utility for converting TRSDOS*, Percom OS-80™ and other single-density files and programs into double-density format, is $219.95.

SCHOOL MICROWARE

Dresden Associates is pleased to announce a new publication, **School MicroWare,** to serve the rapidly growing community of pre-college instructional computer users. **School MicroWare** will be a comprehensive and easy to use directory of instructional microcomputer software offered for sale by commercial and other sources.

The first edition of **School MicroWare** is scheduled for late September, 1980. Quarterly updates will be published in December, February, and April. A regular subscription will be $20 per volume, including the current directory and three updates. A special introductory offer provides subscriptions at a reduced rate of $15 until November 15, 1980. Quantity

continued on next page

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continued from previous page

discounts are available.

The first edition of **School MicroWare** will feature over 500 instructional programs and packages. Most school departments will be represented. It will include software for the three micro's most widely used in education, the Radio Shack TRS-80, the Commodore PET, and the Apple II.

School MicroWare is designed to be of maximum utility to the educator in search of software for use in the classroom. The main section of the directory will include four-line items for all products. This section will be organized by major discipline and within that by subject area. Each item will include program name, subject, grade level range, program type (simulation, etc.), and functional description. It will also identify the hardware on which the software operates, the programming language, the supplier, and the retail price. Other sections will list vendor information and all products by hardware system.

It should be emphasized that **School MicroWare** is being published for educators by educators. Dresden Associates is a consulting firm specializing in instructional computing applications and information systems. Staff members have over a decade of experience in the instructional computing field. They understand school needs and are producing a publication designed to meet those needs.

Subscriptions to **School MicroWare** are available from Dresden Associates, P.O. Box 246, Dresden, ME 04342.

INTELLIGENT MONITOR

INTERPRO (PO Box 4211, Manchester, NH 03105) has just announced the release of an intelligent machine language monitor for the TRS-80. ULTRAMON combines all the features you would expect from a monitor with a disassembler and interpretive execution. The 'Brain' fetches, decodes, and projects the result of each operation before execution allowing the user to stay in complete control. Interpretive execution also allows for a hardcopy trace disassembly and for the setting of breakpoints in RAM or ROM. This ROM independent, relocatable monitor sells for $24.95 with a 13 page documentaion booklet.

ZOOM 3.6

ZOOM 3.6 is an electronic "black-box" that connects in between a Level-II TRS-80 (or Expansion-Interface) and a CTR-41 or CTR-80 cassette recorder. With the ready-to-run software supplied with it, tapes can be written and read in a special format at 3600 bits per second - over 7 times faster than Radio Shack's 500! At that speed, 2K of RAM loads in under 5 seconds, and 16K loads in just 36 seconds -instead of in almost four-and-a-half minutes.

No soldering and no modifications are needed. ZOOM 3.6 is wholly transparent to all the XRX mods (and to any other signal processor connected to the cassette-port), and to the CLOAD, CSAVE, SYSTEM, and PUNCH functions. A built-in

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CITY _____ STATE _____ ZIP _____
TELEPHONE _____ OCCUPATION _____
COMPUTER EQUIPMENT OWNED _____
_____
INTENDED USE _____
_____

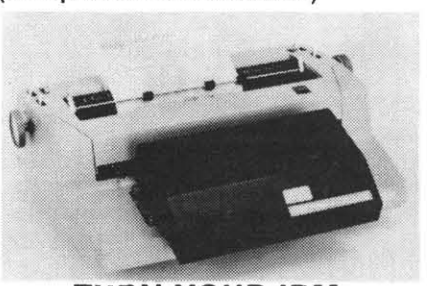
S-80 SEND FOR CATALOG ☐ READER SERVICE 47

continued from previous page

relay and a toggle-switch on the front panel bypass the unreliable Radio Shack reed relay. All cables can be left plugged in permanently.

ZOOM 3.6 is the fastest CTR-4/CTR-80-based system available, and it is believed truly to represent the state-of-the-art. With ZMBUG V1.0 object code and the manual, it costs only $119.00; far less than either an Expansion-Interface plus a floppy-disk ($670 and up) or a high-speed cassette deck ($250 and up). Delivery is currently estimated at three weeks.

For further information please send a SASE to ZOOM! PO Box 3766, Nashua, NH 03061. (Telephone 603-889-0901)



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For more information, contact Mark Nakanishi, Kogyosha USA Office, 179 Riveredge Rd., Tenafly, New Jersey 07670. Telephone: (201) 569-8769.

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continued from previous page

TRS-80 LEVEL II BASIC
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Now available from Radio Shack is TRS-80 Level II BASIC, a self-teaching guide for learning to program and use a Level II TRS-80 Microcomputer System with no previous computer experience.

According to Radio Shack, no matter what your level of experience with computers, from beginners to more advanced hobbyist or professional, this 351-page step-by-step manual includes all the information needed to make a computer work for you.

Written by Bob Albrecht, Don Inman and Ramon Zamora, each chapter of the self-teaching guide is composed of short, numbered sections called frames. Each frame presents a single idea or topic on the BASIC language, the TRS-80, or a program that is being developed.

The authors believe that learning to program can be an enjoyable experience. They feel that computer terminology and concepts can be introduced within a framework of fun and exploration. Small games and recreations are sprinkled throughout the book. Application programs and the elements of developing simulation routines are also presented.

The TRS-80 computer, according to the authors, is a tool that you can use to aid you in whatever you are doing. This book is designed to help you fully explore that tool and learn some general information about programming that applies to many other computers.

The material in the book gets more challenging as you move through the chapters. Beginners are advised to start with the first chapters and progress through in order.

Radio Shack TRS-80 Level II BASIC, a self-teaching guide, is available from participating Radio Shack stores and dealers, and Radio Shack Computer Centers. Priced at $9.95.

The S-EIGHTY is happy to publish information about new products related to the TRS-80*. We cannot be responsible for the accuracy of the information presented here, and those with questions are asked to contact the indicated companies directly.

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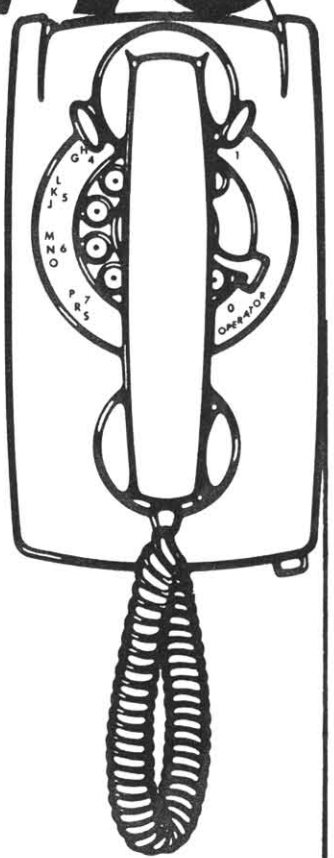

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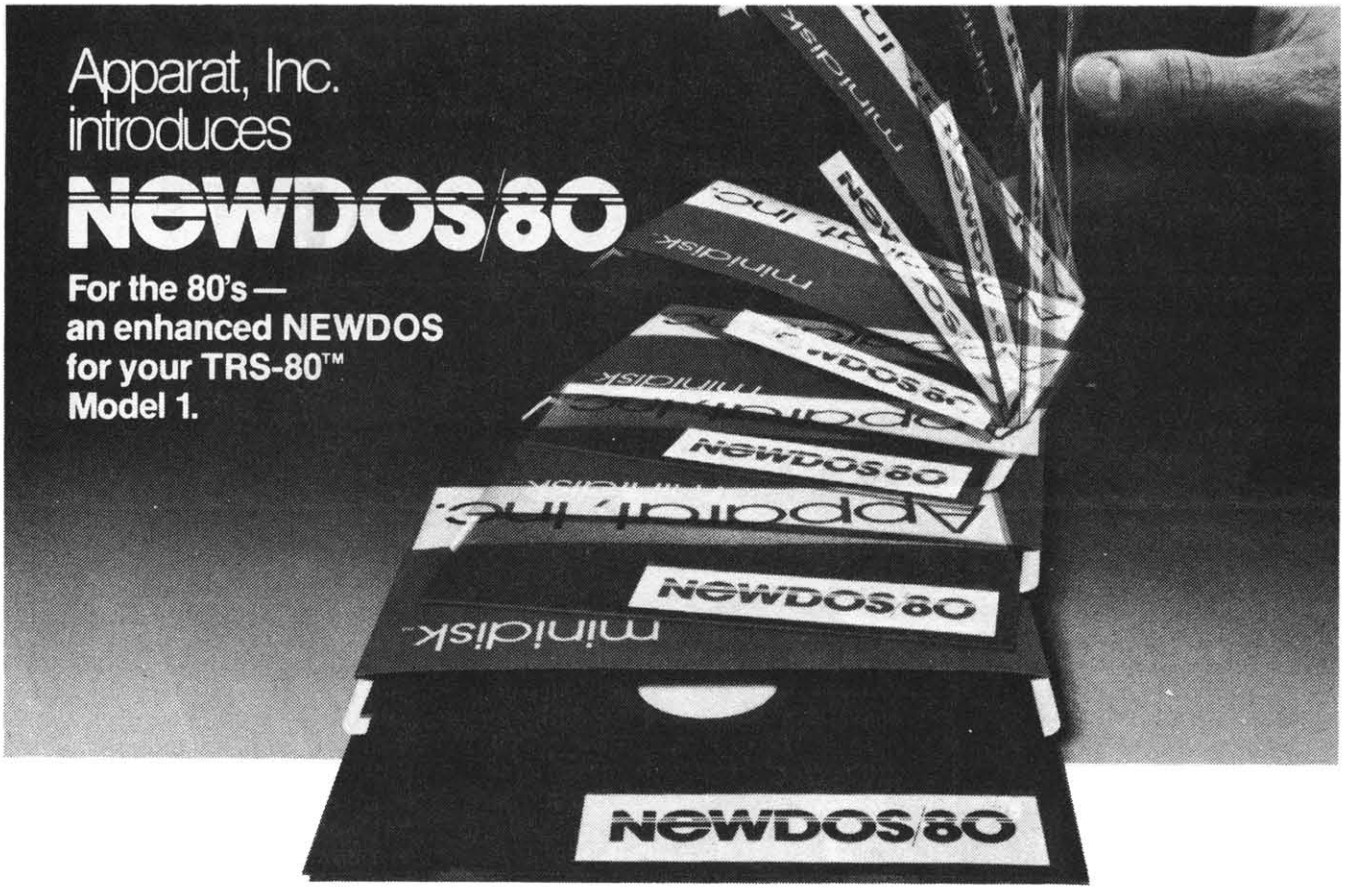

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As with 2.1, NEWDOS/80 relies on the TRSDOS and Disk Basic Reference Manual published by Radio Shack. NEWDOS/80 documentation supports its enhancements and upgrades only.

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by A. A. Wicks

RADIO SHACK'S "VERSA-FILE"

As a person with a great many diversified interests, I am always jotting down notes or reminders regarding a multitude of subjects. When the volume of these notes gets to be a little unwieldy, I review them -- and frequently end up with sub-notes!

When I first saw the announcement by Radio Shack about a disk program called "VERSA-FILE", it looked like a way to finally get organized -- but still keep my note "system". Indeed, it has permitted me to do that, and more. Almost daily I find a new use for this unique program.

"VERSA-FILE", in effect, permits you to keep note records of any information chosen, with instant recall of this information by an input query. For instance, you might place this statement on file: "Passport is in security box top shelf of bedroom closet." (No quotation marks are used in actual input -- just the sentence with a period.) Weeks, or months later, you might wonder where you put your passport for safekeeping. You do remember that you had listed it in "VERSA-FILE". So you query the file with "Where is my passport?", and promptly the answer comes back: Passport is in....etc. The possibilities of keeping track of seldom-used or easily-forgotten items or documents, "etc". is endless. There would appear to be some reason to consider the program for inventory purposes, too. However, I feel that the entry mode (individual statements to disk) would be unwieldy, and, as there is no sort capability, there are more efficient programs that are available for inventories.

As an active amateur radio station operator, I frequently wish to know the date when I contacted a certain station. Although I keep a log, it is necessary to scan the "call" column for months back in order to determine this. Now, with "VERSA-FILE", I enter all calls for a particular day with the statement: "Contacts for 06/03/80 were: W6BRG, KA6YFA, YU4HO....etc." Then, when I need a contact date, I query, "When was contact with W6BRG?", for example. The reply provides my original input statement, which, of course, includes the other station calls, too. I may also ask, "What contacts were made on 06/03/80?", and get the same information.

Another application with some good possibilities is language translation training, similar to that now done on the handheld translators, or just for study purposes. For example, enter "In German, Good Day (or "hello") is Guten Tag." Then, you can query, "What is Good Day in German?" -- and, sure enough, there is the answer! History, politics, dates, mathematics can all be similarly handled.

What is happening here, and how does Radio Shack's program author accomplish this? Well, without going into the deep details of the program itself for its technicalities, the basis is Keywords,and each Keyword is a data file. The Keywords on this disk program are: "is", "are", "was", "were", "will", "has", "can", and "the". However, the program is in BASIC and may be listed and edited, if you wish. Therefore, you may change any Keyword to suit your needs. As an information entry is made, the data is stored within the Keyword file. That means, of course, that if you enter a statement that contains no Keywords (and that's hard to do!), then the statement will be placed in the last file ("the") along with any "the" entries.

At the time a query is given to the computer, a search is made within the related file for a statement containing companion words to the query. As some statements on file could be closely related, more than one statement could be returned. For instance, if, in our passport example given, we had entered an additional statement, which said that Bob's passport was in the desk drawer, and then asked "Where is the passport?", both passport statements would appear. But by making the query more specific, the search is restricted and will provide the single answer desired.

If you are not sure in which file one of your entries resides, you can perform a "Global Search". In this case, if you provide the word that you are searching for (again, for example, "passport"), then the response will be all statements containing the word "passport". This will occur even though the original statements may be in different Keyword files. Similarly, an entire file may be produced by merely typing the Keyword and a question mark (e.g. "is?"). At any time, if you do something unacceptable to the program, the response will be, "I don't understand your entry. Please try again."

Any or all files may be "killed" at any time, either individually, or as a "multiple kill". A warning is issued in the latter mode, which states that all records in that file are about to be killed. Upon completion of any kill action, a statement is displayed, advising the number of records killed. On a multiple kill, you have a last chance when you are asked, "Are the records kills correct?" Also, in a multiple kill, the records must all be in the same file; otherwise the display will interrupt your input and state, "Not in same file!" In this case, a new kill must be initiated for the "foreign" Keyword file.

The manual for the program is contained in a "TRS-80 Model I" brown plastic three-ring binder of good quality. One clear, plastic, two-diskette sleeve is provided for the supplied diskette, and, presumably, a backup diskette. The manual itself is extremely clear and would permit anyone who

continued on next page

continued from previous page

has no knowledge of programming whatsoever, and only a rudimentary knowledge of TRS-80 operation, to run this program without any difficulty. Many examples of each function are given (something that is needed in many program guides). For those demanding a more thorough background, a call for "List" will give them the whole program, which, incidentally, is fairly complex.

The excellent printing and layout of the manual is somewhat marred by several spelling errors and some typographical mistakes, but these are minimal. An Appendix provides information on formatting disks and on making backup copies, but fails to address the poor single drive owner.

Printing is supported on any question or answer. Minimum system requirements are 16K Level II computer, Expansion Interface, and one Disk Drive.

As a very useful information filing program, "VERSA-FILE" meets all the requirements, and more; its possible varieties of use could be considerable. The price of $29.95 is certainly reasonable, if you can utilize its full capabilities. But unless you can, then the cost to you will be high for something that is just "played" with and then put aside. Hopefully, this rather detailed review will help you to make the correct determination.

VERSA-FILE. Catalog No. 26-1604, by Radio Shack, a Division of Tandy Corporation.

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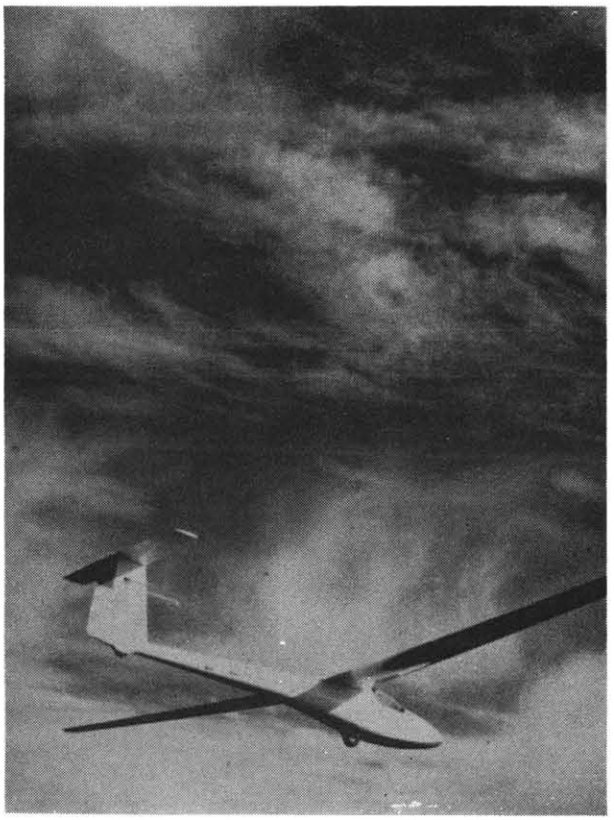

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READER SERVICE 42

by James H. Sheats

SPEED ON THE TRS-80

Much has been written about the "speed" of data processing. Certain CPU chips are "fast," there are "fast" and "slow" RAM memory, and "speed of execution" is measured in nanoseconds and microseconds. What does it all mean, and is it relevant to the average TRS-80 owner? As usual, the stock answer is that it depends on the situation.

There are several situations in which speed is of great importance:

1. In process control and other real time situations.
2. In time sharing situations.
3. When you are using leased transmission lines.
4. When utilization approaches full capacity.

In the first situation, the computer is interfaced to a series of measuring instruments and controls so that it can measure certain parameters and take certain corrective actions based on the readings it obtains from the controls. The "speed" of the computer determines when the next measurement can be taken and is very important in industrial quality control, since the process has been unsupervised since the last measurement was taken many nanoseconds ago. If anyone is using the TRS-80 for control applications, he has the material for an excellent article of his own and does not need advice from me.

However, now that Micronet, The Source, Forum 80, and various Community Bulletin Board Services are in operation, the second and third situations will come up more often. Even though the BAUD rate is standardized at 300, it is still possible to create savings in the pocket by cutting down on what is transmitted and by trying to say the same thing with fewer bits.

Situation Four will probably always be the most common case. In its classical textbook form, this is where the programmer attempts to avoid something expensive, like a new shift of operators in the computer room or the purchase of a larger machine, by finding a way to get the required output through the computer in less time. The TRS-80 owner is not generally faced with a decision of this nature, but he probably would like to cut down on long pauses in the program where nothing visible is happening. He would like to get on to the interesting parts.

When is speed not critical?

1. When the program provides for a great deal of interaction between user and computer. The computer's delays, measured in nanoseconds, fade into insignificance as the machine waits for the user to scratch his head, refocus his bifocals, and shift his chair prior to entering his response.
2. When the computer is "peripheral bound." Regardless of how efficient the programming is or how fast the CPU is, if you have a slow printer, you just don't finish the job significantly faster.

Still, attempting to speed up one of your programs is a good intellectual exercise and not without its own set of benefits. Even if you only use your TRS-80 for games, cutting down on the length of time necessary to draw a backgammon or checker board on the screen can increase your enjoyment of your machine, so it's still a worthwhile endeavor. So how do you go about it?

First, learn more about TRS-80 BASIC. There are many alternate ways of coding the same program. Some run faster than others. Most good BASIC textbooks, including the famous Radio Shack User's Manual for Level I, may have hints for speeding up execution. Read several of them. They are rarely totally repetitious, and sometimes if a reader is told the same thing several times, it finally sinks in. After reading several textbooks, read some of the articles in the various hobby journals, including this one. Occasionally some hobbyist full of wisdom will seek to share his own discoveries on speeding up execution with other hobbyists. A trick that I have used with slow programs is to save the original program and then find a part of the program that has a fairly definite starting and stopping place. Time the execution of this part of the program with a stop watch or any timepiece with a second hand, and then begin to make your changes. Retime the program from time-to-time to see if various changes have helped or hindered execution speed. When you have arrived at what you consider to be your best effort, save it before you sign off the computer. You can use it as a starting point, next time.

Second, you might try a different higher level language. Now that FORTRAN, COBOL, FORTH, APL, PASCAL, BASEX, and tiny C are available on the TRS-80, maybe one of these languages will pick up the execution speed of the program. There are also other BASIC dialects, and some of them are compiled rather than interpreted versions, so that you would actually be running a lightning-fast machine language object program.

Next, with increased involvement on the user's part, but probably less expense, you might want to program in Assembly Language, using the Editor-Assembler, or Machine Level Language, using T-BUG, or you can use one of the other monitors. This is, of course, quite involved and should be undertaken only if you mean business.

First try putting machine language subroutines into BASIC programs. Then try whole programs in machine language. Again, the hobby magazines will provide some help.

Mentioned last, for good reason, is the possibility of speeding up execution time by doctoring the inside works of the TRS-80. In the first place, all of the advertising and other discussion of this type of modification indicates that it will

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speed up execution time by approximately fifty percent. Most of the advertised software, including new language compilers, promise speed increases of factors of from three to twenty times the speed of Level II BASIC. Obviously, then, the software route is the way to go before trying anything else. In the second place, these speed-up modifications will probably void the Radio Shack warranty. However, if you have done about all that you can do in the software direction, presumably you will still be able to improve your best effort to-date with a speed-up modification.

So if your wife has become restless watching you play Star Trek, try spending your time speeding up one of your more practical programs. It is an excellent way to learn more about programming.

Feedback continued from page 4

to write. If programming is putting bread and butter on your table, seven years is a long time to wait for a project to begin making money.

Above and beyond all else, the law is quite specific with regards to theft. Our society places stiff sanctions on those who steal from others. There are patent and copyright laws to protect literature and inventions. If you want to "hang the ethics" because you feel "no one gives a rat's tail about morality", does that give me the right to go out and shoot someone who steals my programs?

Software that people purchase for their computer belongs to the original purchaser. Let them modify it, rewrite it, destroy it, whatever they like, so long as they don't copy it off for their friends and relations to use. Any fool can take other peoples' programs and append them; that hardly qualifies as writing software.

As for you, Mr. Hern, business people who "swallow their pride" when theft is occurring right underneath their noses are an even greater threat to our free enterprise system than those who do the stealing.

Respectfully yours,
Christopher C. Gillett
Software Design Laboratories
Harrison, MI 48625

My sentiments exactly, Chris. Great letter. I really wonder how many readers actually took Mr. Hern's letter seriously. Frankly, I discounted the entire piece as pure rubbish. On one hand he characterized the ". . . . political left . . ." as unappreciative non-producers and, later on, advocated "hang the ethics . . .". It sounds to me like Mr. Hern's answer to the copyright infringement problem is quite similar to that which he accuses the ". . . dwellers in the dreamland of the political left . . ." to be guilty of. By the way, what does the "political left" have to do with software piracy? W.F.G.

Dear S-Eighty folks:

I guess if you're just doing a compendium of TRS-80 advertising, you're doing an OK job. The little polemic by Bill York in the June issue entitled "Economics??" looked to me like an eleventh-hour afterthought cranked out at high speed - I can write better in my sleep - and who was it directed at? Certainly not the readers. Maybe we've got a democratic organization here of the advertisers, for the advertisers, and by the advertisers.

But if that's so, why have editorial content at all? As an author, I was (expletive) that you didn't publish the listing of my program ONECLAP last month. And I was also (expletive) that I didn't receive a single review copy. I loaned out my "subscription" copy and the recipient lost it, so now I don't even have a copy of my own article! But I wasn't (expletive) enough to write.

But I was genuinely interested in Scott Snyder's subroutines. His article (after the funny part) says "We must first look to line 110 . . .". Like my ONECLAP, you printed the article (written to complement the listing), but not the listing, making the author feel dumb, the reader infuriated, and DOS offended.

Bill York: if you listen to that stuff on the radio going to work, your brain turns to MUSH. Roger Robitaille: if you need someone to put the editorial material together right, I'm available.

Michael Potts

P.S. Tell Scott Snyder I'll trade him a listing of ONECLAP for a listing of his subroutines.

Michael, which came first, the chicken or the egg? It sounds to me like your anger towards us for not running the "ONECLAP" listing has surfaced in the form of a blanket indictment of our publication, which I believe to be unfair. A publisher generates the bulk of his income directly from the pages of each month s issue. The June issue consisted of 53% advertising and 47% editorial. Perhaps to someone 'outside' the publishing business this ration seems excessive. We barely cover our costs with a 50/50 mix of editorial vs advertising. Aren't we entitled to a ham sandwich? I can't fault Bill York on his piece entitled "Economics", other than to say that the S-80 is not an industry newsletter and its' readers are more concerned with end user problems than with those that beset advertisers, perhaps we erred in running it. We'll watch it next time. Thanks for your offer to assist us editorially. We can all use some help from time to time. Well, I must sign off now; I have a terrible headache, probably from listening to all those Boston radio talk shows? W.F.G.

by Jon Stevenson, Dave Dishcert, Dan Keen

OPPOSITE GRAPHIC RELATIONSHIPS

Few people have noticed that there is a direct relationship between a graphic character and its opposite on Radio Shack's Level II computer. By using a simple routine, a graphic character on the screen can be reversed; that is, the lit squares can be darkened and those that are dark can be lit. This can help create some very interesting and eye-catching video displays. That is the application which caused us to first realize that a pattern existed.

We had drawn a picture on the screen which we planned to use as a display in a window. We wanted a scan from the top to the bottom which would change the picture from a "positive" to a "negative". The discovery of a direct relationship between a graphic character and its reverse enabled us to have the animated display we had hoped for.

Here's the relationship. As you know, a graphic character is made up of 6 blocks. ASCII Code 128, no blocks lit, is the reverse of ASCII 191, all blocks lit. Code 129 is the reverse of 190, 128 is opposite 189, and so the pattern goes until it reaches 159 and its reverse, 160. Figures 1 and 2 demonstrate this pattern of the end characters matching opposites on the way toward the middle.

The routine for reversing is shown in Figure 3 from lines 50 to 200. It reverses scanning from the top of the tube to the bottom and then reverses again (Line 90) going from the bottom up as if it bounces off the side of the screen.

The beginning lines simply throw random "garbage" graphics on the screen.

The actual math and logic portion of the program can be described in a nutshell. A video memory address is peeked and a value is obtained. The computer takes that value and subtracts 128 from it. The result is

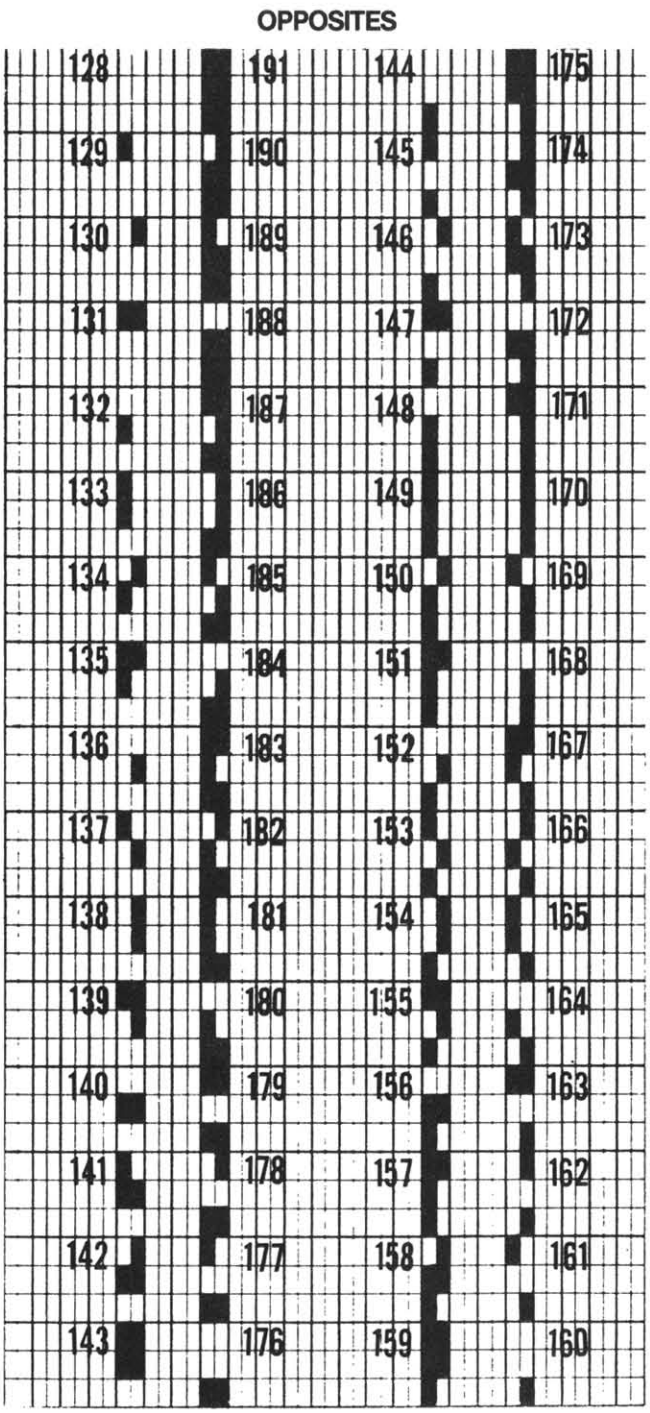

FIGURE 2

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then subtracted from 191. The value gotten from that operation is examined to see if it is greater than 191. If it is, 191 is poked into the same video location; if it's not, the remainder is poked after subtracting 128 from the peeked value and then subtracting that from 191.

The routine won't reverse numbers or letters. Should your screen contain these characters, a line could be added to the routine to tell it not to touch the value stored in that location.

A nice feature about this routine is that it doesn't matter whether the characters have been placed on the screen by a CHR$, STRING$, or set statement.

There are the tricks. Just get your imagination into gear and put it to work for you.

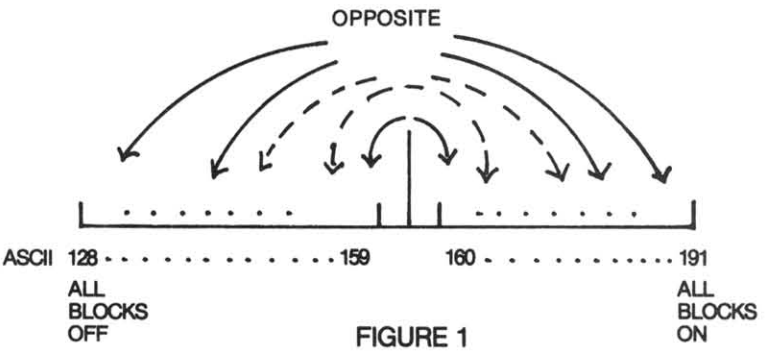

FIGURE 1

```
10 '    ROUTINE FOR THROWING RANDOM GRAPHIC CHARACTERS ON THE VIDEO

20 DEFINTA-Z:CLS:FORX=1TO400:R=RND(63)+128
30 PRINT@RND(1023),CHR$(R);
40 NEXT
50 '
        ROUTINE FOR REVERSING VIDEO

60 NN=128:CC=191:FORM=15360TO16383:N=PEEK(M):C=N-NN:P=CC-C:
70 IFP>191THENPOKEM,CCELSEPOKEM,P
80 NEXT
90 NN=128:CC=191:FORM=16383TO15360STEP-1:N=PEEK(M):C=N-NN:P=CC-C:
100 IFP>255POKEM,CC:NEXTM
110 IFP>228POKEM,N:NEXTM
120 IFP>191POKEM,CC:NEXTM
130 POKEM,P:NEXTM
200 GOTO200
```

FIGURE 3

by Sherry M. Taylor

BACK TO SCHOOL

322 South 21st Street
Haines City, FL 33844
Dear Sir:
In the May 1980 issue of the S-Eighty an article by Michael Potts appeared. He seemed upset at the lack of good educational programming. And, in some ways, he's right. It is hard to find. However, if you look hard enough, it's there.

I discovered these two programs, "The Playful Professor" and "The Human Adventure" through an ad in 80 Micro Computing. I have been very impressed with them.

I asked a math teach his opinion of "The Playful Professor." He is very excited at his prospects of using it in his classes next fall.

I have no connection what-so-ever with Med Systems Software. I submit this article to let people know that these programs are available.

Thanks for your consideration of my article.
Sincerely,
Sherry M. Taylor

For those of you who are bemoaning the fact that there are few educational programs available, Med Systems Software of Chapel Hill, N.C., has brought out two new programs that are worth mentioning.

Most kids really hate drilling with math problems, but "The Playful Professor" makes it a little more fun. With this program two youngsters (or oldsters) can drill together. The program sets up a sixty-room mansion complete with a pesky ghost who has the key to the front door. The player must chase the ghost to get the key and make it back to the front door before the ghost or other player takes the key from them. The doors to the rooms open and close at random with each move.

To make moves through the mansion, the player must answer the math problem correctly. Then the number of moves is determined by the roll of dice. If the player is temporarily trapped in a room, his move is skipped and play is passed to the other player. If there is only one player, the next problem is served up.

From the educational standpoint, the tutorial routine of the program makes it worth much more than other drill programs. If a problem is missed, the screen is cleared and the program goes into an explanation using a blackboard format familiar to every student. It takes the student step-by-step through to the solution. Even the tutorial is interactive in the case of reducing fractions to their lowest terms. After the explanation on how to reduce fractions, the program asks the student what number will reduce it.

"The Playful Professor" provides tutoring in integer mathematics as well as fractions, for the four basic operations. There are three difficulty levels: easy, hard, and hardest. And if you enter the password instead of a difficulty level, you may play the game without the problems.

I have only one gripe about the program. When working fractions on the hardest level, there is a 3½ to 5 minute delay before you are told if you are correct. This is apparently due to the time the program takes to work out the solution in fractions rather than in decimal notation. Also, there is a delay while it checks to see if the answer is in lowest terms. Of course, this time could be used by the student to check the problem out for him or her self before the computer gives it all away. But knowing most kids, they'll use the time to go get something to eat!

The program is in BASIC so that you may modify it to fit some of your own needs. However, if you have only 16K of memory, you won't have enough room to modify it much. The program uses all of 16K. This includes the BASIC code, the machine-language subroutine and work area.

The other new program from Med Systems is "The Human Adventure" which allows movement through the human body's cardiovascular system. Adventurers will find this one a challenge. I haven't accomplished my mission yet. This too, will need all of 16K memory.

Many people will remember a movie called "The Fantastic Voyage." In this film a patient having vital information was incapacitated by a blood clot in the brain. To get to it, the medical team was placed inside a mini-submarine and then reduced to microscopic size. The sub was then placed into the bloodstream of the patient by a hypodermic syringe, enabling the medical team to travel through the patient to the site of the clot and destroy by laser fire.

However, there was one catch: antibodies identifying the submarine as a foreign material began to attach themselves to the sub, signaling the white blood cells to begin their attack.

This is the premises of "The Human Adventure." Therefore, only movement in the direction of blood flow is legal. Access to all major parts of the body is possible by making the correct decision. The CATscan-like graphic of the patient shows the subs location and the disease locations.

Since this program was designed more as an educational tool than as an Adventure, this program has three modes. The exploration mode involves no disease and no white blood cell attacks. It will allow you to become familiar with the body's layout. All locations are fully described, and you may choose either a female or male body. (May I recommend a dictionary beside your computer. Many medical terms are used. Don't be surprised if your children start talking like surgeons!)

The game mode involves a patient with cancer. Initially there are two affected sites, each growing at an average but not identical, rate. The rate is determined by the difficulty level chosen (easy, moderate, and difficult.) At a certain point in

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their growth they will begin to infect other sites, if they are not destroyed.

Your sub is equipped with a laser gun to kill the attacking blood cells, and you will have to periodically electrify the hull to burn off the build up of antibodies. Of course, all this traveling and laser fire will use energy, so you must make your way to the brain to replenish the energy of your batteries through filed induction.

When you have finally made your way to the affected site, you will have to shoot it with interferon charges. Those cost no energy, but you have only 20 per game.

For reports and other information, the command REPORT will give the locations of all affected sites, the commands available, and the number of interferon charges left. There is also an option for arterial/venous traces.

All commands are one word and may be abbreviated to three letters. You are shown the percentage of energy still left as you travel. If you allow the energy level to drop below critical, you will have no defense and the entire submarine and crew will be engulfed and destroyed by white blood cells!

The third mode is the attention or demonstration mode. In this mode the moves are made by the computer and no disease incurred. Also, after 6 to 7 moves, the venous/arterial traces are shown. Then the demonstration returns to moves.

The only gripe I have about "The Human Adventure" is that the graphics are not as detailed as I would like them. You may mistakenly think you are at the affected site by what the graphics show. You may be in the right phrenic artery and the diesase really be in the right phrenic vein, although the graphics picture you right on the site. You have to check out the descriptions with the indicated sites given by REPORT. However, I suspect the graphics are as detailed as can be, given only 16K memory to work with.

I enjoy "The Human Adventure" very much even though I sometimes get very frustrated. I seem to end up going in circles, or am caught by the current heading in the opposite direction from my intended course! But then, I'm not always going the right way in real life!

Both "The Playful Professor" and "The Human Adventure" are available from Med Systems Software, P.O. Box 2674, Chapel Hill, N.C., 27514. They guarantee all tapes to load and run, and any defective tapes will be replaced, if the bad ones are returned to them. They also guarantee to ship your order within 2 working days. If there is a back-order, you will be notified and the balance of your order sent ahead to avoid delay. The programs are very reasonably priced at $9.95 each. Not a bad deal, wouldn't you say???

This Weekend:

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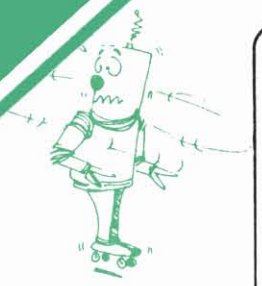


Board Games-1, CS-3001 (16K)

- **Mugwump** $7.95

Mugwump is a board game which uses a 10x10 grid on which four friendly Mugwumps are hiding. Your mission is to locate these mysterious animals and capture them.

- **Flip Disc**

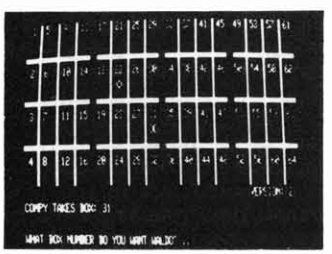
Are you an Othello freak? Flip Disc is a program which will turn your computer into an excellent opponent. Three different skill levels, (good, expert, and genius), provide an introduction for the novice and continuing interest for the experienced player.

- **Wumpus**

In game 1, you scour a network of underground caves in search of the prized Wumpus. Bagging a Wumpus wins the game, but if you accidentally stumble into his cave, the Wumpus will enjoy a tasty dinner of sauteed computer freak.

- **Wumpus 2**

If you master the dodecahedron cave network in Wumpus 1, you may proceed to Wumpus 2 which allows you to choose from five different caves, or you can design your own.



- **Qubic**

Qubic is a three dimensional Tic Tac Toe game. The game is played in a 3 dimensional cube (4x4x4). The object is to outwit the computer and place four pieces in any straight line.

- **Backgammon**

This is the TRS-80 adaptation of the popular board game. Backgammon uses graphics and all the standard backgammon rules, not a strange computer variation. The computer is your opponent in this version, written by Scott Adams of "Adventure" fame.

Space Games-3, CS-3002 (16K)

- **Ultra-Trek** $7.95

Ultra-Trek is a fast-paced version of Star Trek, complete with "real time" action graphics, lasers, Nilon space mines, high energy photon torpedoes, enemy ships that move, and an experimental ray which does something different each time you use it. You must act quickly to save yourself and the Federation.

- **Star Lanes**

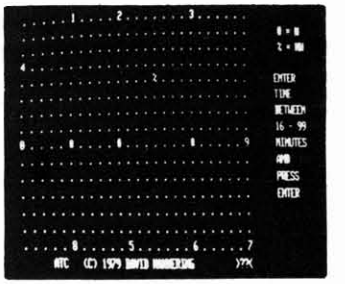
Imagine yourself the president of an intergalactic shipping company. If you're successful, you may be named Imperial Advisor on Economic Affairs. Entrepreneurs: to your ships.

- **Star Wars**

If you hate Darth Vader, you'll love Star Wars. This real time game is fun for aliens of all ages. May the Force be with you!

- **Romulan**

Your mission is to destroy an invading Romulan space craft. Maneuver through space and around stars looking for the deadly enemy, but be careful! The nasty Romulans fire back.



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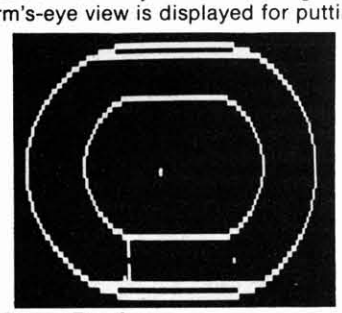

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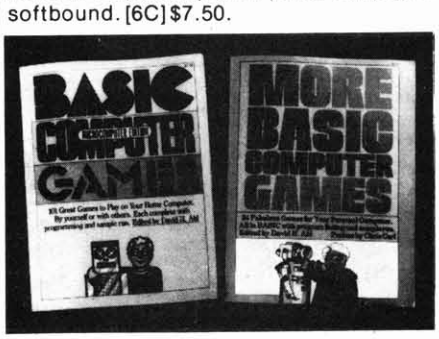

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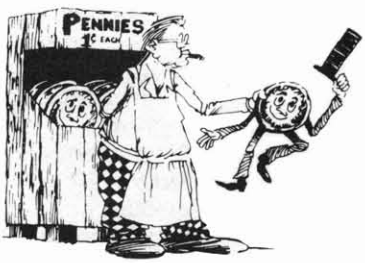

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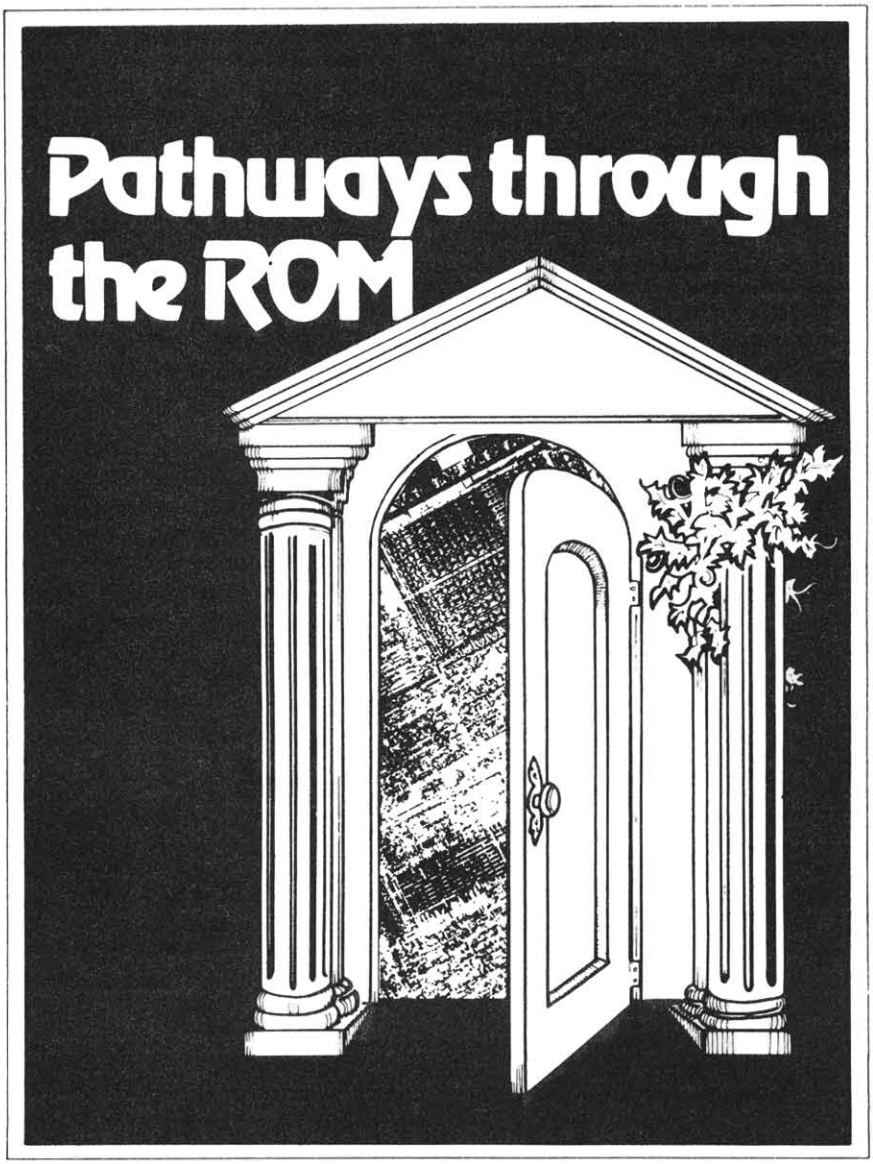

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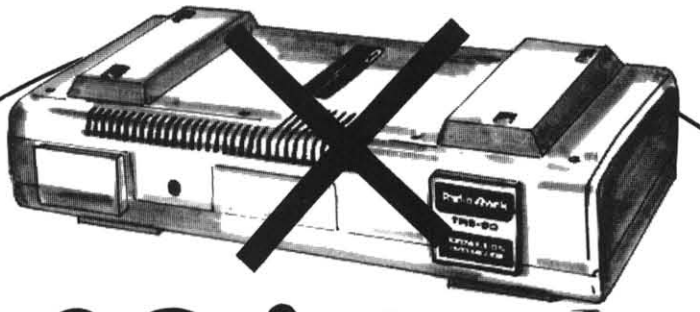

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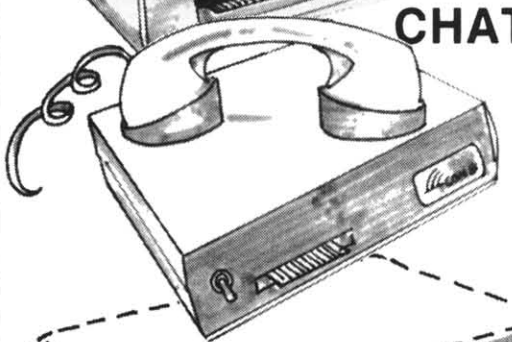

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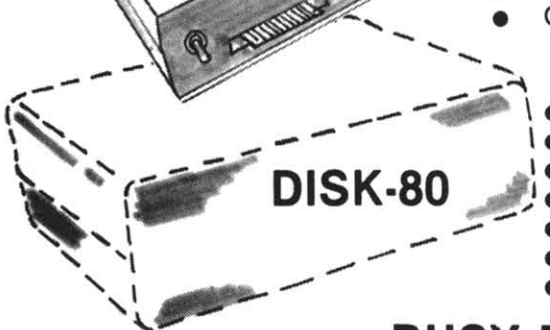

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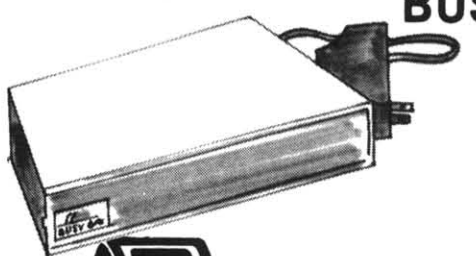

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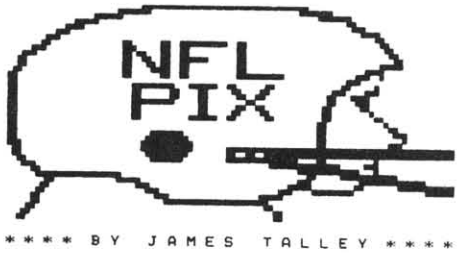

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