COLOR COMPUTER NEWS

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REMarks	3
Mail Call	7
Copywrong-Copyright	17
Morse Code Trainer Part I	19
Review-Astro-Blast	26
Color Data File	27
Film Development	36
Logchart	43
Disk DIR/ectory	46
Comment Corner	51
64K Korner	55
Review-Spell-N-Fix	57
Review-Katerpiller	60
Neat Print	62
Review-Color Bonanza	65
Memory Test	68
Review-Super Color Writer II	71
Grades, A Computerized Gradebook	73
Review-EDASM+	79
Review-Raaka-Tu, Pyramid, Bedlam	83
Review-Mark Data	84
Bugs	86
New Products	96

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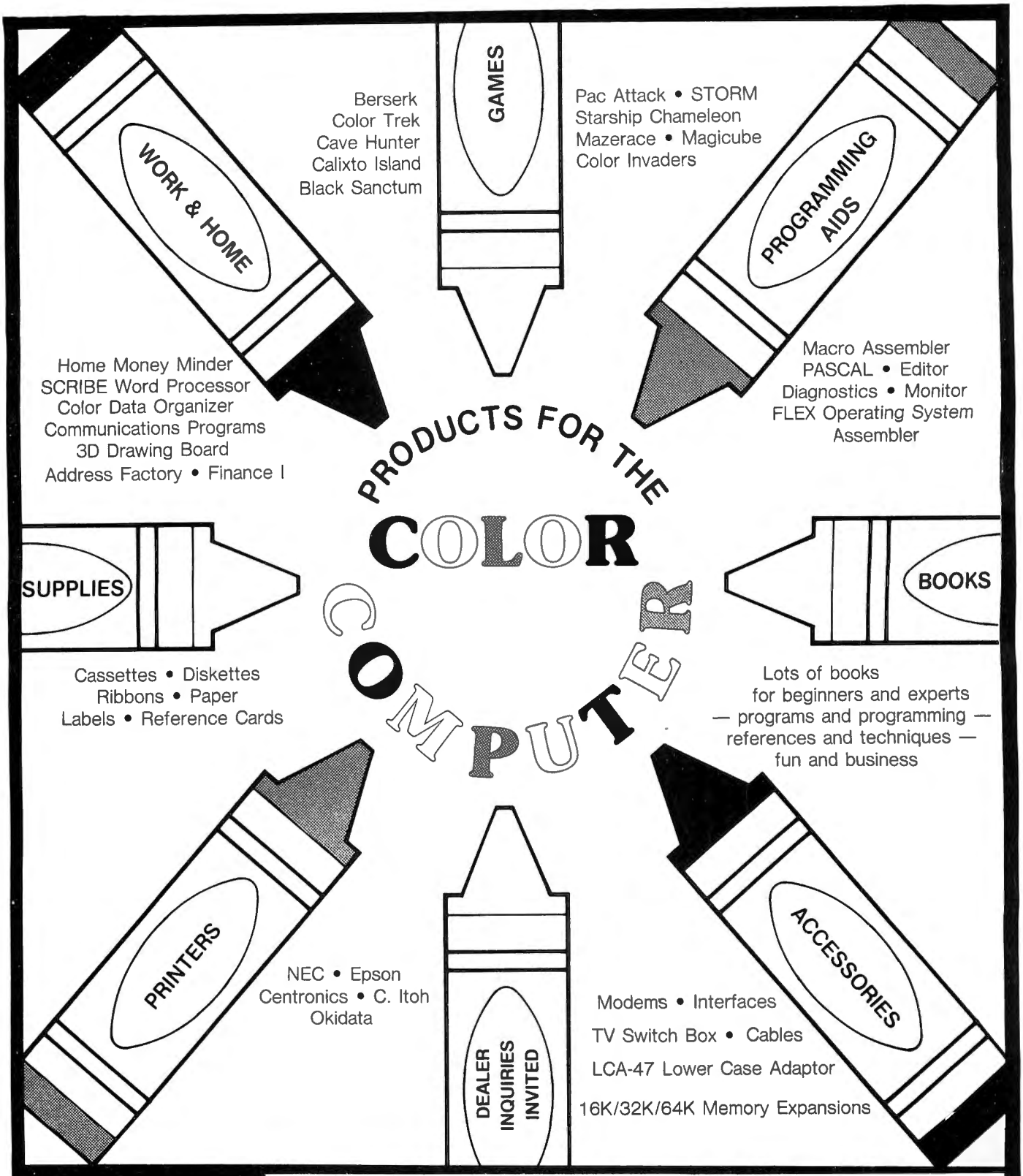

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REMarks
by Bill Sias

Work is going well the 1981 back issue book and should be in the mail by the time you read this. I'm really sorry for the delay but with two format changes and the loss of the original disks it's taken much longer than anticipated. We have a couple other books in the works right now. The first will be a collection of chapters about the Color Computer and Ham Radio, its a how-to sort of thing that includes (so far) CW send and receive programs, schematics for interfaces and lots of other goodies. There's still time for you to get into the book so if you've written or designed anything for the Color Computer send it in to my attention. I've looked a couple other manuscripts but nothing has been finalized on other books.

Our Flex columnist has been selected as Roger Degler and his column will begin to appear next month. Roger is employed by Micro Technical Products and as such has been quite active with the Color Computer and the 6809. His sylabus for the column looks quite exciting so please give Roger your complete support as he begins this new venture.

I feel that my primary responsibility as a publisher is to present alternatives. The biggest right now, if my mail is any indication, is in the area of Disk Operating Systems. We need now to add a column for Radio Shack's DOS. Its a bit embarressing to have the major system as the last one added. There are also several new DOSs coming up the the Color Computer, we'll keep a eye out and if they have reasonable acceptance we'll add them also.

The award program is moving along well. There is, however, something that I should clear up about the program. There are two trophies on the front of last months cover. The square shaped trophy is the monthly award and the taller one is an annual award that will be presented to the best contribution of the previous 12 months. As a reminder and for those folks that are with us for the first time this month the award for the most inovative use of a 6809 microprocessor. The people at GIMIX and I felt that the 6809 has not been given the press it deserves in the past. However, several people have done some quite revolutionary things with the chip and this is our way of recognizing those people and their accomplishments. If you have any questions about the program or how to submit an entry feel free to call or write for more details.

School has probably already started in your area as it will soon here. Because of this we have lost two of our employees as they return to college. Rene Wittevrongel goes back as a senior to finish her courses as a programmer and John Fleener is a freshman in Electronics. We wish them all the best.

While on the subject of employees we are currently looking for replacments for both of these folks. The first is a typist / proofreader / bookkeeper and the other is a shipping clerk. If you are interested in either of these positions and would like living in Western Michigan send me your resume.

I've talked several times before about our plans for CCN and since we've added some new ones I feel its time to inform you again about upcoming items. A couple of months ago I mentioned that I had found a way to do a reasonable facsimely of typesetting with a daisy-wheel printer, as you can see that really didn't work out as well as I thought it would. So to continue our plans to improve CCN's appearance I've purchased a typesetter. I guess there no substitute for the real thing. As with anything new it'll take a while to get it up and running correctly so I've planned to have it completely functional by the January issue. If Murphy can stay away long enough it just may happen too!!

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DynaStar is a powerful, menu-driven screed editor equally suited to the tasks of program preparation and document processing. With the addition of the optional DynaForm print formatter, it is the best word-processing package you can buy for your OS-9 system.

DynaStar Version II is now available and features no-nonsense "what you see is what you get" editing for virtually any terminal with or without cursor addressing (it must be at least able to go to "home"). To edit, simply place the cursor where you want it, and type. Any printable character you type is entered directly into your text, and any non-printable control character causes immediate execution of an editing command. Single keystroke commands permit movement of the cursor in any direction, by character, tab, word, line, or screen full, and deletion of characters, words (left or right) or a whole line. Two keystroke commands augment this set by moving the cursor to the left margin, top or bottom of the screen, beginning or end of the edit buffer, or the beginning of the next paragraph. You can search for any string, replace with any other, do it again, mark original blocks of text, copy, move or delete blocks, read or write to side-files, set tabs and margins, or center the current line.

DynaStar features automatic word-wrap, and it can right-justify text as you enter it so you will see exactly how it will look *before* you print it. If you later make alterations or change the margins, you can reform the text a paragraph at a time with two keystrokes. For programmers, there is a special automatic indent mode to help you write well-structured code. DynaStar includes a Shell command which lets you do almost anything (including edit another file) without even losing your place in your current document, and it permits editing of large disk files in stages without forcing you to break up your files.

If you want to define more powerful commands, DynaStar includes a macro facility which lets you convert any control character to one or a string of characters of your choice. You can use this feature to create global search-and-replace commands, insert "boiler-plate," or simply re-map your keyboard. You can also provide a special "start-up string" which is automatically executed whenever you enter the editor to set up modes such as auto-justify, display a directory, define your favorite macros, or re-map the keyboard.

For complete word-processing, we offer our DynaForm text formatter which provides all the standard features such as pagination, headers and footers with page numbers, single space, double space, multiple space, **bold face**, **double-strike**, and underline. DynaForm has its own macro facility with string variables, nested include files, a full merge-print capability for generating form letters and mailing lists, and it can generate an index automatically, sorted alphabetically or by page number. You can call it from DynaStar to proof-print the active edit buffer, or by itself to print a disk file while you edit another.

DynaStar II $149.95
DynaForm text formatter: $149.95
Both purchased together: $275.00
Note: DynaStar Version I (no macros) will be available at the original price until May 31, and current owners may upgrade to Version II with full credit until June 30.

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SPECIAL

CHESS program coded in A/BASIC (originally sold for $50) is included FREE on the disk in both source and object for your enjoyment. Also some utilities are included for testing and examples, all in source on the disk!

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specify OS-9 or FLEX

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FLEX OR OS-9
by Frank Hoffman

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FLEX 139.95 with any CPM	OS-9 200.00 with 6809 CPM
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COLOR COMPUTER USERS

FHL COLOR FLEX, THE MOST POPULAR DOS FOR THE 6809 FROM THE LARGEST SUPPLIER OF FLEX SOFTWARE IN THE WORLD!

Now you can run FLEX, OS-9 and Radio Shack disk software on your Color Computer. If you have a 32K Color Computer with the Radio Shack disk system, all you need to do is make a trivial modification to access the hidden 32K, as described in the Feb. issue of COLOR COMPUTER NEWS and the April issue of '68' Micro. You can get FLEX from us right now. OS-9 will be ready by summer. Please note that this will only work with the Radio Shack disk system and 32K/64K memory chips that RS calls 32K. Maybe they put 64K's in yours, too. If you don't have a copy of the article, send a legal size SASE (40¢ stamps) and we'll send it to you.

Using this system to run FLEX AND OS-9 has many advantages. First, it gives you 48K from zero right up to FLEX. This means that *ALL* FLEX compatible software will run with *NO MODIFICATIONS* and *NO PATCHES!* There are no memory conflicts because we moved the screen up above FLEX which leaves the lower 48K free for user programs.

What you end up with is 48K for user programs, 8K for FLEX and another 8K above FLEX for the screens and stuff. We have a multi screen format so you can page backward to see what scrolled by and a Hi-Res screen that will enable you to have a 24 line by 51 character display. That's better than an Apple!

We also implemented a full function keyboard, with a control key and escape key. All ASCII codes can now be generated from the Color Computer keyboard!

We also added some bells and whistles to Radio Shack's Disk system when you're running FLEX or OS-9. We are supporting single or double sided, single or double density, 35, 40 and 80 track drives.

MOVEROM moves Color Basic from ROM to RAM. Because it's moved to RAM you can not only access it from FLEX, you can run it and even change it!! You can load Color Computer cassette software and save it to FLEX disk. Single Drive Copy, Format and Setup commands plus an online help system are included.

Color FLEX includes an external terminal program that lets you use a standard terminal hooked to the RS-232 port. This will let you use a full sized keyboard with a 24x80 display. Your printer is then hooked to the terminal. The system will automatically control the printer. No hardware or software modifications are required.

Installing FLEX is simple. Insert the disk and type:

RUN "FLEX"

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OPTIONS

ED/ASM is a very powerful editor/assembler package. ED has all the features of TSC's editor with the addition of screen type editing, MACRO capability, and a math package. With the math package you can perform simple or complex formulas with the answer in HEX, DECIMAL and BINARY! In its simplest form it can be used for base conversions. You can also create a MACRO and pass parameters to it. Works with files larger than memory. It has many additional features.

AMS is also compatible with TSC's assembler. It has MACROS and conditionals, it has more powerful MACROS than TSC's. ASM was created by taking our CRASMB program and making a 6809 only version of it. Nothing else was removed. Both programs have been set up for FHL Color FLEX and cost ONLY 100.00.

DBASIC allows the use of the standard Disk Extended Color Basic under FLEX. All disk input and output operations are done through FLEX and are completely capatible with the normal FLEX utilities. This means that files and programs written to disk by DBASIC may be manipulated by FLEX editors, sort/merge, etc. It also means that these files are not compatible with standard Disk Color Basic files. However, the cassette files are compatible and provide a means of conversion. Also included is a DBASIC program to read a Radio Shack Disk and write to a FLEX disk.

All of the BASIC language components described in the Radio Shack manuals are implemented, with the following exceptions:

1. Random files are not supported. FIELD, LSET, RSET etc. will be of no use.
2. BACKUP, COPY, and DSKINI are not implemented and will give syntax errors. Use the equivalent FLEX utilities instead.
3. A new BASIC command called FLEX has been implemented. FLEX will terminate DBASIC and return to FLEX.
4. DSKI$ and DSKO$ are completely implemented.

DBASIC is only $30.00 when purchased with Color FLEX. $40.00 later.

Other languages available include; FORTH, Pascal, Fortran77, 'C,' A/BASIC compiler, plus more.

Application packages include; A/R, G/L, A/P, Inventory, Electronic Spreadsheets, Accounting, Database programs and more. SEND FOR LIST.

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by Frank Hoffman

For FLEX or OS-9, Create FLEX or OS-9 binary files from either FLEX or OS-9. OSM is a MACRO assembler like CRASMB. It is compatible with TSC's Assembler, but it has more powerful MACROS. OSM makes it easy to move FLEX programs to OS-9. In OS-9 it gives MACRO capability like TSC's assembler and is compatible with TSC source files. OSM was used by the author to move CRASMB to OS-9.

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Specify OS-9 or FLEX

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DYNASOFT PASCAL (OS-9)	69.95/	99.95	9
DYNASOFT Compiler Source		125.00	P
DYNASTAR Screen Editor (OS-9)	149.95		9
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SUPER SLEUTH (Z80)		99.00	8&9
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CODE X = XBASIC, 9 = 6809, 8 = 6800, P = PASCAL

Software by Technical Systems Consultants, Inc.	
FlexTM (includes Editor & Assembler)	150.00
UniFLEXTM (includes one year maintenance and update)	450.00
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Assembler	50.00
68000 Cross Assembler on 6809	250.00
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OS-9 TM Level One Operating System	200.00
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OS-9TM Macro Text Editor	125.00
OS-9TM Interactive Assembler	125.00
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Dear Mr. Schriefer:

I found your article in August issue of COLOR COMPUTER NEWS very disturbing. As head of an association organized to introduce young people to the fun of microcomputer technology, and which includes a number of Color Computer owners, I can not allow such inaccuracy to go unchallenged.

Having written innumerable articles relating the history of the microcomputer, I can tell you that such publications as ELECTRONICS, SCIENTIFIC AMERICAN, ELECTRONIC DESIGN, IEEE SPECTRUM, ELECTRONIC ENGINEERING TIMES, POPULAR ELECTRONICS, READER'S DEGEST, MACHINE DESIGN, NEWSWEEK, TIME, THE BOSTON GLOBE, plus all three television networks and numerous syndicated shows have all related the history of the microcomputer. I currently own at least eight books listing the history of the microcomputer. Thus, I find your statement, "...in the magazine field, not one editor has ever said anything about where it all began or even who started it," somewhat surprising. For your information, I am enclosing an article from the 25th anniversary issue of POPULAR ELECTRONICS that describes the history of the microcomputer as pertains to consumer electronics.

But, let's go beyond that. Jack Kilby received the National Medal of Science from President Nixon for his 1958 invention of the integrated circuit. Noyce, at the time with Fairchild and who would go on to found Intel, developed planar technology concurrently. This made production of IC's feasible. Gate array technology was first patented in 1961 and subsequently exploited by a variety of semiconductor companies including Intel and Texas Instruments. In 1966, Texas Instruments introduced the first handheld calculator that contained an advanced LSI gate array. This device was patented in 1967 and now resides in the Smithsonian Institution in Washington, D.C.

The first LSI microcomputer system was delivered to the Air Force in 1969. With the exploitation of MOS technology, a number of firms including Japanese firms, sought to reduce the central processing unit of the computer to a single chip. While Intel is generally credited with introducing the first microprocessor in 1971, Datapoint Corporation claims to have contracted with Texas Instruments for the first single-chip central processing unit, delivered in 1970 (see the April 21, 1971 issue of ELECTRONICS).

As to the first single-chip microcomputer, Texas Instruments holds the patent (US *Patent* 4074351), recognized worldwide. This first microcomputer was designed to do the BCD calculations of a single-chip calculator. The chip was later enhanced to become the TMS1000 Series -- the "miracle chip," as it became known, and the technology behind electronic toys, appliances, and a host of other consumer products. As reported by International Data Corporation and other independent marketing research organizations, more of these chips have been sold than all other microcomputers combined.

I don't want to overshadow the Intel introduction of the microprocessor, however. It was this introduction that led to the development of the first Altair personal computer, publicized in POPULAR ELECTRONICS in January 1975. This 8080-based kit led to the industry in which we are all participating.

While very special thanks are, indeed, due to Bell Labs for their introduction of the transistor in 1947, and for their work with Linear Predictive Coding and other forms of synthetic speech, I can not find reference to your system in any of the microcomputer, semiconductor, or other numerous references readily available.

A copy of this is being sent to COLOR COMPUTER NEWS in the hopes that they will seek out and print an accurate article.

Cordially,
James H. Muller
Richardson, TX

* I think you've done a good job of clearing up the situation. I do, however, feel the article was extremely interesting and we do, as you also mentioned, owe a heartfelt thanks to Bell Labs.

COLOR COMPUTER NEWS

This letter is to support Ben Zimney (Sept. Mailcall) and go one step farther. It isn't only CCN that is disappointing - it is the CoCo mentality. Evidently CoCo owners prefer to spend their time either digging into ROMs or playing space pilot. What ever happened to high quality educational entertainment?

Is there no market out there for realistic simulations for the Color Computer? Apple, Atari, and Model I/III owners can choose from an abundance of situational programs such as operating a nuclear power plant, running a business (or country), or controlling a plague or forest fire.

Some Plain Talk About a DOS
or
Why You Should Use STAR-DOS™

The Disk Operating System, or DOS for short, is a program which acts as a file manager for a disk. The DOS acts as a buffer between the disk hardware, and the software which uses that disk. Its primary function is to maintain a disk directory on each disk, fetch program or data files from the disk as needed, and store programs or data back on the disk.

When you buy the Radio Shack Disk System for the Color Computer, a Read Only Memory (ROM) integrated circuit inside the disk controller contains those parts of a DOS which change Extended Basic into Disk Extended Basic. Although this Basic allows you to initialize a disk, maintain a disk directory, store and fetch programs and data, and do many other functions of a real DOS, it has one major drawback — it only works with Basic. There is no easy way to integrate it with machine or assembly language programs, and so you are still limited by the speed and power of Basic.

For this reason, many sophisticated Color Computer users are seriously considering switching to another DOS. Some of our competitors are marketing a very flexible DOS, long a favorite among users of larger 6809 systems, which has been adapted to run on the Color Computer. This particular DOS is quite popular among other 6809 users, and there are many available programs which run under it. But it has several disadvantages. It often requires that you void your warranty by opening and modifying the Color Computer. It is completely incompatible with the Radio Shack DOS, and the two cannot read each other's disks. It's also expensive — since you must buy a new Basic to make full use of it (normal Radio Shack Basic disk commands don't work with it), you must pretty much discard all your existing software and start over — new DOS, new Basic, new editor, new text processor, etc. etc.

STAR-DOS is the Solution

STAR-DOS is a real DOS which blends all the best features you want into one DOS. STAR-DOS will run on a standard, unmodified 16K or larger Color Computer using the Radio Shack disk system. Its disk format is fully compatible with Radio Shack Disk Basic — files written by Basic can be read by STAR-DOS and vice versa. Since there is full disk compatibility, you need not throw out your existing programs or files.

But the beauty of STAR-DOS becomes obvious to the serious user. From the programmer's viewpoint, STAR-DOS is just like other standard 6809 Disk Operating Systems. It provides all the standard features you need, such as provisions for multiple 320-byte file control blocks, routines to open, read, write, and close named files, rename or delete files, read or write single sectors, search or modify the directory, and more. STAR-DOS is so powerful that many programs written for other 6809 systems can be run with STAR-DOS just by changing a few addresses.

STAR-DOS is supplied on a disk with a comprehensive user and programmer's manual, which explains all available routines and entry points, along with examples showing how to use them. The manual explains how to convert programs running under another DOS to run with STAR-DOS. It also comes with a number of utilities to make use of your disk system even easier and faster. It costs just $49.90 and is available NOW.

Available NOW for STAR-DOS

ALL-IN-ONE — the super Text Editor/Text Processor/Mailing List/Mailing Label program from AAA Chicago Computer Center which can process your text and even print individually addressed form letters from your mailing list. Adapted for STAR-DOS and available NOW for just $50.

SPELL 'N FIX — the spelling correction program now available in the original Color Computer version or the new, much faster, STAR-DOS version. Finds and fixes spelling and typo errors fast, and costs $69.29.

COMING . . . more software running under STAR-DOS is in the works. Write for details, or see last month's ad for other programs.

Above prices include shipping for orders prepaid by cash, check, or money order. We also accept COD, Visa, and MasterCard. NY State residents please include sales tax.

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SPELL 'N FIX

Finally Available for the Color Computer!

Now produce goof-proof text on your Color Computer by letting SPELL 'N FIX find and correct your spelling and typing mistakes. Used since 1981 on larger 6800 and 6809 systems, SPELL 'N FIX is now available for your Color Computer too.

- ★ Checks your text against a 20,000 word dictionary and finds your spelling and typing errors.
- ★ Displays all questionable words, or prints them on your printer for later action.
- ★ Even corrects errors in your text. Wrong words can be highlighted or changed to their correct spelling.
- ★ Fast and accurate — reads text faster than you can, spots and corrects errors even experienced proofreaders miss.
- ★ Dictionary can be expanded and customized — technical and even foreign words are easily added.
- ★ Available for the Radio Shack disc, cassette, or Flex disk operating system.
- ★ Compatible with all Color Computer Text Processors, including TeleWriter!

SPELL 'N FIX is available off-the-shelf right NOW, and costs $69.29 in the Radio Shack disk or cassette versions (32K RAM required!); $89.29 in the Flex version. (Other versions, including Percom DOS, SSB DOS, and OS-9 versions also available — contact us.)

HUMBUG

Now in a Color Computer Version

HUMBUG is the famous SUPER MONITOR for 6800 and 6809 systems — you can now use it on your Color Computer too.

HUMBUG is a complete machine language monitor and debugging system which allows access to the full power of the 6809E processor in the computer. HUMBUG lets you

- ★ Input programs and data into memory.
- ★ Output and list memory contents in various formats.
- ★ Insert multiple breakpoints into programs.
- ★ Single-step through machine language programs.
- ★ Test, checksum, and compare memory contents.
- ★ Find data in memory.
- ★ Start and stop programs.
- ★ Upload and download from bigger systems, save to tape.
- ★ Connect the Color Computer to a terminal, printer, or remote computer.
- ★ Learn how the Color Computer works by studying the listing of HUMBUG in the complete manual.

HUMBUG is available right NOW on disk or cassette for $39.95 for 16K or 32K Color Computers. Special version for 64K systems costs $59.29 and is compatible with software for large 6809 systems.

Other Color Computer Software

CHECK 'N TAX — Basic programs for checkbook maintenance and income tax reports, for either RS Disk or Flex, $50.

REMOTERM — allows full operation of the Color Computer from an external terminal. $19.95.

LFPRINT — permits the Color Computer to be used with non-standard serial printers which do not support handshaking or automatic line feeds. $19.95.

NEWTALK — a memory examine utility for machine language programmers which reads out memory contents through the TV set speaker. $20.

SHRINK — our version of Eliza, in machine language and extremely fast. $15.

OXXO — our version of Othello, also machine language and very fast. $15.

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You say there should be more material for intermediate and advanced hobbiests. I guess you are right. Maybe then this group will produce software comparable to that available for other machines. Anything developed on Flex will be unusable by 95% of the CoCo users, however.

Bright spots for me have been Telewriter, Okidata 82A (Computer Plus supplies cable and directions), and Chromasette. Viking and Pac Attack have provided good entertainment.

Bob Pakes
Forestville, CA

* If you look at the market right now and compare it with 2 years ago when the Color Computer was introduced you'll discover that the Software houses that were in business then were producing only utility type programs. There were, at that time what we fondly called the big three, CCN, The Micro Works and Computerware, most of the new software houses have been started by new folks that learned by using the tools made available by those folks. As time progresses you'll see the sort of programs you are talking about. Keep in mind that the TRS-80 Model I, which was for a long time the largest selling computer in the world, suffered from bad and/or non-existant software for much more than 2 years.

Dear Bill,

I have just borrowed a copy of CCN from a friend of mine and think it's great! I have also just sent in my subscription, but alas I have a few weeks to wait for it to start.

The reason I am writing is that I have a problem and a question I feel you and your staff can help me on.

Many programs have the statement POKE 65495,0. I realize that this is supposed to cause the 6809 microprocessor to execute a little more quickly. My problem is that this statement does not work on my color computer. I have the disk system by Radio Shack (which plugs into the ROM slot on the side) and the 1.1 version of basic by Microsoft. What can I do to get this POKE to work? I believe that the fact that I have the disk system plugged in is what is causing the problem. When I disconnect the disk interface the POKE will work. Is there another memory address to POKE when you have the disk system hooked up? I have used PEEK to see what is at this location, and have found out that it is 126, whatever that means.

So much for the problem, the question I have is: Is there any good books for beginners regarding machine language and the ways to use PEEK and POKE? It will have to be very basic as I am just starting out.

Your help is greatly appreciated.

Paul J. Moade
Ft. Rucker, AL

* As far as your problem I haven't heard of anyone successfully using the speed POKE (Vitamin E) with the disks. The book that I've recommended in the past is Lance Leventhal's 6809 Assembly Language Programming (available through several of our advertisers). As you learn more about assembly language programming the PEEKs and POKEs will become obvious.

Dear CCN,

Just received another copy of your magazine. I can't tell you date or issue because these are both missing from the front page and index page. It does have the new blue slick cover, if the helps any.

In that issue of Mailcall, you answered a letter from Ben Zimney and stated that "CCN is slanted toward the more technical user and probably will always be." You also stated there is a misconception about no information available for the beginner. Bill, I hate to disagree with you, but in the year and half I have owned my CC, I have yet to find a magazine, book, or other publication which doesn't devote more space to the intermediate and advanced users than to the novice, like me. Your publication does better than most, in that you carry a number of different programs for the CC, but some of these are even beyond me. If there is a better source please tell me where to look.

Two additional notes on that issue, and programs contained therein.

In Randy Graham's article on Bulletin Boards he gives a phone number of Novation in LA. If you use the area code listed, you're liable to get some sleepy old lady in Bowling Green, Florida. Correct area code for Los Angeles is 213.

In Steve Sullivan's fun program, "Venus Lander", there is a major problem when trying to "CSAVE" the program after hitting "BREAK". The program, in line 10, has a POKE 65495,0. This puts the CC into a high speed clock and the cassette I/O will not work properly in this mode. You MUST POKE 65494,0 before trying any

cassette I/O functions. The only other way to slow poor CoCo down is to turn him off. This not only applies the Steve's program, but any time you POKE the high speed.

This high speed routine, combined with the code to disable the Rom-Pac auto start, has some interesting effects on some of the Radio Shack games, like "Polaris" as an example. They take on a whole new challenge. To try this, turn CoCo on without the Rom-Pac, POKE 65315,54 then insert the Rom-Pac without turning the computer off. After the pac is inserted, POKE 65495,0, then EXEC 49152 to start the pac. I've tried this on "Polaris" and it works, but it doesn't work on "Project Nebula". This same disable POKE should work in Mark Rothstein's modification procedures, and is easier than taping a pin. Just remember to POKE before inserting the Rom-Pac. (Above routine was originally published in Sept., 82 issue of 80 Micro).

I hope these comments will help some of your readers.
Jerome D. Lamb
Bakersfield, CA

* It sounds to me like you've learned a lot. Which brings up and interesting thought, Is your definition of intermediate and advanced the same as mine?

Gentlemen:

We had a 16K Color Computer with Extended BASIC and saw in the magazine that Computerware advertised 64 chips which we bought, thinking we would have 64K's of RAMs, not knowing much about Computers. In their literature they sent Frank Hogg's sketch on how to modify to 88K's. Had the Chips put in and modification made, but we don't have 88K's and we don't have 64K's. The most we can get out of it is 30K's with a program in, and 24K's with Print MEM. No one seems to be able to tell us what we have to do to get 64K's of RAMs out of it. Understand there is a certain procedure and I am wondering if you can tell me how to go about this, so as to eliminate shutting it off and starting it over again. You see we do quite a lot of word processing.

Would appreciate your filling me in on this problem, or letting me know who to write to.
Thanks.
Sincerely,
W.P. Redner
Longwood, FL

* In order to use the 64K you have to have a word processor that uses the 64K modification. Whenever you are in ROM BASIC the 64K mod doesn't exist.

Dear CCN,

Your September issue is your best yet. I was especially excited to see the macro key redifinition program for Master Control. When I tried to key in the program, however, my excitement turned to frustration because of the great number of errors in the coding. Except for the misspellings, here are corrections that I think will make the program run:

1. Line 30390 should have the leading single quote deleted so that the line won't be a remark.

2. Line 30720 has a "2" instead of a quote just before last colon.

3. Line 30760 change the variable "AB" to "RB".

4. Line 30790 "GOTO 39719" should be "GOTO 31080".

5. Line 31020 "POKE PT,0" should be "POKE PT,O".

6. Line 31140 delete the first "HEX$;".

7. Line 31170 "IF Y(1" should be "IF Y<1". And INVAILID2 should be INVALID".

8. A major logic error can be eliminated by replacing line 30910 with: 30910 IF C<T THEN 30960.

Also, it would be nice to be able to include an <ENTER> keystroke in the macro definitions. If you add the following 2 lines, you can do this by inputting an E (reverse vidio "E") where you want an <ENTER>:.

```
30725 FOR X=1 TO LEN(C$): IF MID$(C$,X,1) =
"E" THEN MID$(C$,X,1) = CHR$(13)
30727 NEXT
```

By the way, could you please include advice about what to do about sticky keys in a future issue?
Thank you,
Richard Watts, III
Brimingham, AL

* Some people have tried powdered graphite and other recommend a high quality tuner cleaner.

Dear Bill:

I read with interest Larry Grady's review of MASTER CONTROL by Soft Sector Marketing

but I've found one better and believe other Color Computer owners should know about it. it lists for ten dollars more than M-C ($34.95/$24.95) but is well worth the money. It's called BASIC AID by Eigen Systems, P.O. Box 10234, Austin, TX 78766 and I bought mine from Spectrum Projects, 93-15 86th Drive, Woodhaven, NY 11421.

BASIC AID seems to have all the nice features of M-C and other similar programs but with some distinct advantages, the biggest of which is that it is a ROM cartridge! In contrast to tape programs, when I checked "MEM" I discovered it had taken up only 227 spaces of precious memory on my 16K computer--a big plus for people like me without disk drive! Nor is there any waiting for program feed. Just plug in the cartridge and power up! Or leave it in for constant availability.

BASIC AID comes with a good quality plastic keyboard overlay and features 43 preprogrammed command keys. You can redefine any or all (save seven) of the keys to include your own most frequently used commands without any of the reprogramming Larry had to do with M-C. Other handy features include a <MERGE> command for easy merging of two or more programs from tape; Automatic Line Numbering at a starting line and increments you set; a <BLANK SUPPRESS> command to enable or disable automatic insertion of spaces between commands for improved program readability; and a <MOVE> command to easily move program lines from one spot to another--that one alone has saved me quite a bit of time.

The directions are brief but clear. The only caution given regards preservation of the BASIC AID reserved memory location at the very top of the memory map. This should be no problem, however, since the exact locations are given for 4K, 16K and 32K computers. Yes, that's right, being a ROM cartridge BASIC AID is readily used on a 4K computer!

If it sounds like I am impressed and pleased, I am! BASIC AID is a FANTASTIC AID for people like myself who enjoy typing in their own (or other people's) programs but would like to cut down on time and mistakes. Happy programming!
Sincerely,
Everett Reed
Wilmington, MA

* I'd ask you for a review but I think you've got it covered.

Dear CCN,

Appreciate the article on converting the Color Computer using the Model III keyboard.

I have made the change and find it excellent. It does take a couple of nights but well worth it. In fact I'm using the keyboard to write this letter.

Do have some advice.

1. Need to add a jumper from 52 to the trace that was cut below 53. This will operate the shift key.

2. Recommend placing under the posts a felt pad to prevent any damage to the Matrix.

Keep up the good work, looking for some more inovated ideas.
Doug Dawson
Lantana, Fl

Dear Bill,

I would like to share this one-liner for hardcopy Disk Directory listing with other readers of CCN. From command mode, enter:
POKE 111,254 : DIR

The idea here is to assign the output device as the printer (-2) by poking the device flag at $006F with the signed 8-bit equivalent for minus 2, which is 254. On return from the DIR function, the system resets the active device to screen/keyboard. Multi-drive users could include the "DRIVE" command in the one-liner; i.e.,
POKE 111,254 : DRIVE 1 : DIR
Sincerely,
Glen Deas
Ruston, La

* Thanks for the tip.

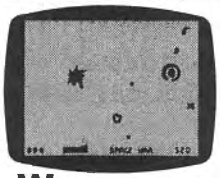
Gentlemen,

Immediately after getting my 80C, I subscribed to CCN and in the first four issues, there were many excellent articles referring to Assembly and Machine Language use of the CC. Unfortunately, at this time I hadn't the slightest idea what Assembly Language was or what the writers were trying to tell me. In issue #3, Bill Sias demonstrated how to use an Assembler and described how to develop a program. In subsequent issues, Andrew Phelps' Comment Corner articles have also been very useful.

In the last issue, you printed a letter from Mr. Michael Jirka in which he expressed a wish to see examples of how to use the various openings in the BASIC ROM.

Color Computer Collection For Your TRS-80

the PROGRAM STORE



Color Space War

From Spectral Associates
You command the last combat Viper, and must break through the defenses of the Death Star while avoiding the pull of gravity of the Black Hole. Watch out for space mines and enemy ships. Extended BASIC not required. Joysticks.
16K Tape, $21.95

Galloping Gamblers

By Fred Scerbo
From Illustrated Memory Banks
Exciting racetrack game for 1 to 4 players. Each player gets $100 to bet. There are 4 horses in each of 12 races; odds are posted at the bottom of the screen for each. The outcome of the race ***cannot*** be predicted. At the end of the race, the computer awards wins or losses. No joystick required; one player must enter information at the keyboard. Extended BASIC required.
16K Tape, $18.95

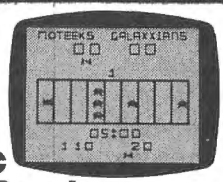
Cocobug

Debugging Monitor for TRS-80 Color Computers

By Allen Gelder From Allen Gelder Software
COCOBUG is a compact monitor program. "With COCOBUG you may examine RAM and ROM in hexadecimal, ASC II or mixed hex and ASC II form. In addition, the powerful MC6809E CPU is made available in a pair of 6809 Programming Models that depict the CPU features at entry and exit (via a restorable Breakpoint) of your machine code string. Byte entry and Breakpointing, plus the ability to direct real-time program flow, are made easy and natural through a line-entry of addresses, bytes and certain control characters."
Tape, $19.95 4K Color BASIC, 16K Extended Color BASIC.

Co-Resident Editor/ Assembler (CO-RES9)

From Cer-Comp
CO-RES9 is a M6809 processor machine language program for the color computer. You can enter the text of your article, letters, or a chapter of your newest book; then go back and revise. The tape contains two copies of a demonstration program that you can use to familiarize yourself with the Editor and Assembler entry format.
Tape, $29.95



Cosmic Super Bowl

From Spectral Associates
An excellent simulation of the popular handheld football games, but with a ***cosmic*** flavor. You must maneuver your player through a field of defenders. 5 action skill levels. Extended BASIC not required.
16K Tape, $14.95

Kosmic Kamikaze

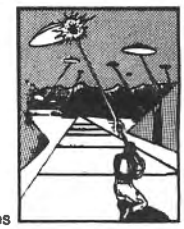
By Fred Scerbo
From Illustrated Memory Banks
Test your reflexes in this arcade-type space game. Your fighter craft is armed with automatic laser cannons and rechargeable shields to blast the enemy pirate saucers which pop in and out of hyperspace. Comets can destroy you and end game unless you hit them ***dead center.*** 3 levels of difficulty; challenging. Extended BASIC, joysticks required.
16K Tape, $18.95

6809 Assembly Language Programming

By Lance Leventhal from McGraw Hill
This comprehensive book covers 6809 assembly language programming in detail. The entire instruction set is presented and fully explained. The book contains many fully debugged, practical programming examples with solutions in both object code and source code. Discussion of assembler conventions, I/O devices, and interfacing methods is also included. If you've never before programmed in assembly language, this book will teach you how. If you're an experienced programmer, you'll find this book an invaluable reference to the 6809 instruction set and programming techniques.
Softcover, $16.95

6809 Microcomputer Programming and Interfacing with Experiments

Ed. by Staugaard from Howard W. Sams
This book offers a complete description of how to program and interface the 6809 microprocessor. Topics include: chip structure and basic 6809 concepts; addressing modes; registers and data movement instructions; arithmetic, logic and test instructions; branching; input and output signals; interfacing and applications. Review questions and answers for each chapter, plus 4 appendices.
Softcover, $14.95



Cosmic Invaders

From Spectral Associates
Fast-action invaders-type game, complete with 16 skill levels, dynamite sound and 4-color hi-res graphics. Use the special mobile defense shield to help you dodge the invaders' bombs. With Mystery Invader who zooms in and out of hyperspace. Extended BASIC not required.
16K Tape, $21.95

Starbase Attack

By Fred Scerbo
From Illustrated Memory Banks
You are the lone defender of 3 starbase cities on the far edge of our galaxy in this exciting simulation. Your cities are under attack by either alien warheads or bombarding asteroids. You only have a limited time to evacuate your population. You must ward off attack while launching your escape vehicles and your own ship. Extended BASIC, one joystick required.
16K Tape, $12.95

The Color Computer Disassembler

By Commander from Interpro
This utility allows you to gain knowledge of the Color Computer ROM to aid you in machine language programming. It will disassemble any portion of the Color Computer's memory. With BASIC program to help you understand how memory is organized and disassembled. Extended BASIC required.
16K Tape, $19.95

Super "Color" Writer II

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Fast, machine code, full-featured, character (screen)—oriented word processing system for the TRS-80 Color Computer and ***any*** printer. Movable print ***window*** displays text in green characters on black background for reading ease. Simple enough for beginners; versatile enough for the professional writer. Features include: scrolling; exchange/delete; footnote position; quick paging; block move, copy and delete; merge or append files; underline; superscript/subscript and ***much more!*** Create or edit Super "Color" Terminal files, ASC II files, BASIC programs or Editor/Assembler source listing.
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I would like very much to see a continuation of the Assembly language development, started in the Sept/Oct 1981 issue. I live in a small city, and there is no one in the immediate vicinity that I can compare note with or ask questions about machine language programming. I'm sure I'm not alone in this situation, so how about including more articles on Assembly Language program development.

Another Subject: Copyrights

I have learned a great deal about programming techniques from disassembling machine language programs and simply listing basic programs--which I have purchased and are copyrighted. For instance, I have written a program that fixes the no line feed on CR when the buffer is empty condition for the Okidata 82. I figured out how to do this from someone else's program, although his program didn't do this directly. I have developed some good uses for LEFT$ MID$ etc. after studying a copyrighted word processor program. Where does a Copyright leave off, and where does infringement begin? This may be the subject for another good CCN article.

You wanted reader comment--you got it!

Very truly yours,
Fran Sherwood
Ft. Pierce, Fl

* I appreciate all reader comments. I suggest you locate a book called The Copyright Kit. Most computer stores carry it. One of these days I may have time to finish the article on Assembly Language programming you mentioned.

Dear Bill,

I am writing this note for four reasons. One, to subscribe to your magazine. Two, to tell you I think you are doing a great job and to keep up the good work. Three, to offer some comments which may or may not be useful. Four, to ask you to publish a notice that the COLOR USER'S GROUP of NASHVILLE and MIDDLE TENNESSEE is established and in full operation, with (usually) twice monthly meetings, and soon we will have some software available to members from the local FORUM-80 BBS. Interested parties may contact me at 615-889-4666 after 6 PM or at 615-322-3408 from 12 to 1 PM weekdays.

Now about comments, it would be nice if you could publish some articles about some of the other languages available on the 80-C besides BASIC and Assembler. Not that I want less about either but it would be nice to see an article about FORTH once in a while, or even LOGO, etc.

Also, I would like to issue another call for a compiled list of ROM calls from Extended BASIC and Disk BASIC.

With respect to the magazine format itself, an index of advertisers would be a nice touch.

Well, thanks for your time to read this. My check is enclosed, but until then I will be looking for CCN at my local computer store.

Sincerely,
Charles Garner
Nashville, TN

* I would like articles about other languages also. If you keep watching Comment Corner eventually all of the addresses you are looking for will be published in the meantime I'll see if I can put together an article with the calls to all the ROMs.

Dear Bill:

In the last issue, September I think, (the one without a date), was a letter from Ben Zimney of Far Rockaway, NY.

In Bens letter he said, "Someone told me that if you upgrade to 64K using Frank Hogg's system you eliminate I/O inputs from ROMpack put-etc."

Ben your friend is wrong, the upgrade does NOT affect the normal operation of your CC until YOU tell it via software to do something else. Everything works as before.

Ben also complained that the 64K Kolumn was just an ad for our system. Until recently, we were the only one with software that used the 64K! There was nothing else to talk about! Now you can find other people jumping on the bandwagon with software for the 64K CC.

Let me hop on the old soapbox for a moment. Look back in all the magazines before we came along with the 64K mod for the CC. How much software was there, and of that, how much was just games. Without the capability to go to 64K, the CC was doomed to be a game playing computer, just a little better than the Atari and the VIC 20. But now with the capability to run 64K, the CC outpreforms ALL of those toys.

Did you know that the 64K CC with FLEX and TSC XBASIC runs 2 1/2 times FASTER than the IBM PC, APPLE II, and the TRS-80 I, II, & III. With OS-9 and BASIC09 it is even faster! It also costs quite a bit less than any of those and is better besides. Maybe my enthusiasm for the

CC and making it more powerful than other 8 bit computers comes across as pluging my company, but I'm going to continue to do it. I think the CC is the best choice for anyone that's buying a computer today. You just can't beat it! As more people develop things for the 64K CC, it won't appear so onesided. But we were there first and it just takes awhile for the others to catch up.

I'm going to continue the column because there is a lot of things happening and this is the best way to spread the word. Besides, a lot of people like it and I'm having a lot of fun doing it.

As far as you go Bill, keep up the good work old buddy, we need ya!

Sincerely,
Frank Hogg
Frank Hogg Laboratory, Inc.
Syracuse, NY

Color Computer News

Subscribe to CCN

Are you tired of searching the latest magazine for articles about your new Color Computer? When was the last time you saw a great sounding program listing only to discover that it's for the Model I and it's too complex to translate? Do you feel that you are all alone in a sea of Z-80's? On finding an ad for a Color Computer program did you mail your hard earned cash only to receive a turkey because the magazine the ad appeared in doesn't review Color Computer Software? If you have any of these symptoms you're suffering from Color Computer Blues!

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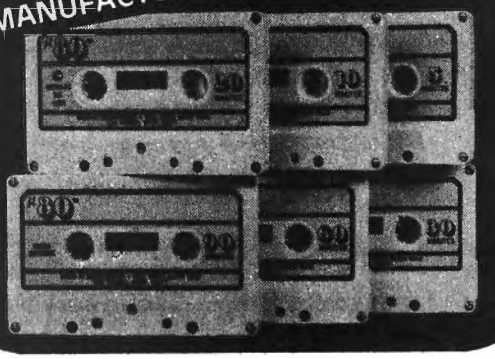

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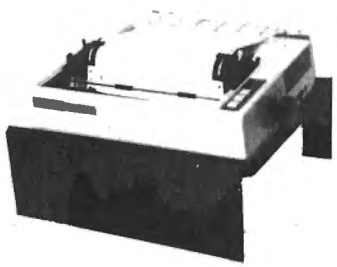

The computer/monitor stand is the heart of the **Color Companion Series**. With it, you get a built in storage shelf for your disk drive as shown in the picture, (and if you have them, there is plenty of room for two drives) or you can store your manuals, cassette tapes or the "what-have-you's" which clutter up all of our computer areas! Coming soon, is an optional sliding cassette storage tray which will hold about three dozen tapes and yet still leaves room for a disk drive as well.

As you can see, the TV monitor is raised up to a more natural viewing height and set back a bit which greatly improves picture viewing quality. Cut-outs on either side of the base provide free access to the on/off and reset buttons as well as the ROMpack slot. The sturdy construction will handle most TV's with bases up to about 16 inches wide. (Order stock #CPU-1, $44.95 each, plus shipping)

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COPYWRONG-COPYRIGHT

By: Steve Cox
2837 Lawndale Ave.
Cincinnati, OH 45212

The revised Copyright Law of 1978 provides the easiest means ever to obtain protection for Copyright works, yet many people still do not understand how the law works. My hope in writing this is to help new programmers obtain the protection that the law gives by explaining some of the aspects of the Copyright law.

What is Copyright? It is "a form of protection given by the laws of the United States (title 17, U.S. Code) to the authors of original works of authorship such as literary, dramatic, musical, artistic, and certain other intellectual works", as stated in circular R1 from the copyright office.

What does copyright do? In general it gives the author or the employer of an author of an "original work" exclusive rights to that work. Some of those rights are:

1) To authorize and/or make reproductions of the work.

2) To prepare derived works based on the "original work".

3) To distribute or transfer ownership of the work by sale, rental, lease, or lending.

4) To perform and/or display the work publicly.

Who can claim Copyright? Any author, or persons given rights through the author or the employer of an author, of an "original work" can claim copyright.

How can you claim Copyright? Copyright protection exists from the time the work is created in a fixed form. It is automatic. In other works, Copyright of the work immediately becomes the property of the author who created it. There are no forms to fill out or file and no fees to pay. From the moment you write a program which is an "original work" you become the owner of the copyright for that program.

It is really that simple? Yes and no! No, because so far we are only talking about an unpublished work. Once a work is published things change a little.

What is Publication? According to the Copyright Act "Publication" is the distribution of copies (or phonorecords) of a work to the public by sale, or other transfer of ownership, or by rental, lease, or lending. A public performance or display of a work does not of itself constitute publication. "To the public" is defined as distribution to persons under no explicit or implicit restrictions with respect of disclosure of the contents.

To the programmer what all this means is that if you write a program and only you use it, you can show, run and even let others use it and it remains unpublished.

However, if you give anyone a copy by sale, lending or any other means without restrictions as to their use and/or display of the program to others, by law publication takes place. Sending copies to publishers for review does not constitute publication.

Why is publication important? When a work is published several consequences follow. Among them are:

1) Published works should bear a Notice of Copyright.

2) Some works published with a Notice of Copyright are subject to mandatory deposits with the Library of Congress (computer programs are exempt).

3) Some of the exclusive rights may be affected.

What is a Notice of Copyright? The notice should contain the following three elements:

1a) For visually perceptable copies (listing, printouts, etc.) the symbol C (the letter C in a circle) or the word "Copyright" or the abbreviation "Copr."

1b) For tapes, records and sound recordings the symbol P (the letter P in a circle).

2) The year the work was first published.

3) The name of the copyright owner.

Example:

1) C Jim Smith 1981

2) Copyright Jim Smith 1981

3) P Jim Smith 1981

The position of the notice should be affixed to copies in a place so as to give a reasonable notice of the claim. In programs it is best not only to include the notice in the listing but to display it or print it at the start of a program run when possible.

Distributing programs that don't contain a notice can void a copyright claim if the claim is not registered within 5 years of the publication of the work.

What is Copyright Registration? It is a "legal formality aimed at placing on public record the fact that you claim a copyright." By law, it is not a condition of copyright protection itself but it has advantages, some of which are:

1) It establishes a public record of the claim.

2) It may be necessary in order to file an infringement suit in court.

3) If made within 5 years of publication it establishes immediate evidence as to the validity of the claim.

4) If made within 3 months after publication or prior to an infringement the owner in court will qualify for statutory damages and attorny's fees. Otherwise only actual damages and profits is available to the owner. However, registration may be made at anytime within the life of the Copyright.

How long does Copyright last? For works created or first published after January 1, 1978 protection lasts from the moment of creation of the work, for the life of the author plus 50 years after the author's death.

As mentioned earlier once a work is published some of the exclusive rights may be affected. One of these rights is the right of disposal. Prior to publication only the author may decide how to dispose of the work or copies of the work. When you purchase a program, however, you also gain the right of disposal for that copy. Should you chose to resell the copy, lend it, lease it or even burn it you may do so. In most cases the law also permits back-up copies to be made as long as they are for the use of the person in possession of the purchased copy. What this means is that if a person buys a copy of a Copyright program, they may make back-up copies and can even sell the copies as long as they also sell the copy they bought, with all copies going to the same person. They can not keep a copy for themselves.

Another right affected falls under the "fair use" limitation. While I could find no definite reference to the "fair use" of computer programs the "fair use" law does cover various copyrighted works. In general it permits limited reproductions of certain copyrighted works for use in education and libraries without payment of the royalty fees.

How do I register a Copyright Claim? Registration must contain the following three things:

1) A properly completed application form (Form TX) for computer programs.

2) A fee of $10 for each application.

3) For computer programs, one copy of the best edition of the program for each application.

In general a printout listing of a complete program is considered the best edition, however, a tape or disk may be submitted as an edition. I recommend sending one of each. Use a C not P on the tape or disk and state that the printout is the same as the tape or disk. Also, only one program per application and per tape, disk or printout is accepted.

Anyone interested in more information about Copyrights can write or phone the Copyright office. Ask for circular R1 "The Nuts and Bolts of Copyrights", R99 "Highlights of the New Copyright Law" and R2 "Publications of the Copyright Office" which list the many circulars available from the office, most of them free.
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MORSE CODE INSTRUCTION; PART 1
PROGRAMMED CW INSTRUCTION FOR THE COLOR COMPUTER

by John Steiner
508 4th Ave. N.W.
Riverside, ND 58078

When I decided to purchase a computer system, my justification was not as an accessory for my ham station, however I have found more uses there than I imagined for it. I use it to store my repeater club roster, to keep track of my important QSO's and as a RTTY terminal. In addition to this, I can also use it as a CW learning aid.

My TRS-80C (the Color Computer) was called upon to assist in teaching my nine year old son the code. It's sound capability is the key to this application. After writing this program, I cleaned up the code a little, and am offering it to anyone who would like a beginning CW practice session. Next month, I have a program that will take the learner beyond 5 WPM and past the extra class requirement. That program also includes a CW keyboard that allows an instructor to send CW to a group by just entering the data into the keyboard.

Learning CW requires some effort on the part of the individual, as every ham knows. It is divided into nine sections, each a bite sized mini lesson. To operate the program, after loading, the student is presented with instructions and a menu that allows him to select the level of instruction required. After selecting the desired step, he is given a prompt that will let him return to the main menu if he chose the wrong level. After reading the message screen, he can begin. The first three minutes of each level sends only code that is to be learned in the current session. After a slight pause, the character sent is displayed on the screen. The student should listen to the character and try to visualize it each time it is sent. After three or so minutes, the screen clears, and the student is expected to copy the code heard without reference to the screen. This section of practice uses all code learned up to and including the current session. The student should practice on a level until he is copying at a rate of eighty per-cent or better before moving on.

The practice session will run for approximately fifteen minutes, and the Color Computer's built in timer keeps track. When the time is up, the student is given an encouragement prompt and reminded to run the program the next day.

PROGRAM DESCRIPTION

This program may be loaded from cassette or disk into a 16K machine and will run properly only in Extended BASIC. It is quite long, however and will not load into a 16K machine without entering a PCLEAR2 before loading. All REMarks are in lines ending in 5, so they can be easily left out if desired. Lines 5 through 320 initialize the program and print the instructions. Line 330 through 1090 set up and allow menu selections, each level routine is coded here also.

Level nine is actually not a learning step. It is a reward for passing the course and is a graphics display and congratulations message. This message and graphics display could be removed if desired, though it adds a reward for good work that my boy really enjoyed.

The heart of this program is Extended BASIC's PLAY command. PLAY accepts notes of the musical scale, timing commands, volume and octave instructions and then delivers the proper notes to the monitor speaker. This data is stored in string format and processed just as all strings are. For example, PLAY "L3; A; P3; L1; A; P1" will send the note A, relative length 3 to the speaker. P3 denotes a wait of three units, and the final note sent for a length of one unit will also be an A. Though strings can be set up as constants as in the above example, I have chosen to use variables. In other words, the command PLAY A$ will play the notes assigned to the string. This might cause you some problem in debugging as will be explained below.

Lines 1190 to 1620 define the code strings, whose labels should be obvious. The array N$ contains the numbers one through zero, while array S$ contains the special characters such as a ',' ; 'SK'; 'AR'; etc.. Each special character is identified after the code with a REMarks.

Lines 1630 to 2060 decide which letter should be PLAYed, and sends control to the appropriate line. This output code routine is in lines 2070 to 2510. The debugging problem mentioned earlier will probably show up in this section of code. For example, if the character happens to be an 'R', line 1800 sends control to line 2240 which is to PLAY R$. If there is an error in line 1360, which defines R$, an FC eror, or SN error will identify the offending line as line 2240, where program execution will stop. If this happens, and line 2240 is correct, check line

1360 as the error is probably there.

The individual characters are chosen in lines 2520 to 2930. The random function is assigned to variable L, which is sent to the appropriate character by line 2970, the select letter subroutine. The subroutines in lines 2940 to 2950 check the timer, and print the code the first three minutes approximately.

Line 2990 sets flag DIS, which occurs after the first three minutes of CW. The screen is cleared, and the program continues. Lines 3000 to 3060 play a tune and then end the program. The subroutine starting at 3070 is the press any key and level select routine.

As you can see by the listing, the program is quite long. If you would prefer not to type in these listings, they are available in cassette format. Send a $10 check to

John Steiner
508 Fourth Ave NW
Riverside, ND 58078

I will foreward a cassette containing both LRNMORSE and LRNMORS2, which will be printed in the next issue. If you have any questions or improvements, you may contact me at the above address. Please enclose a stamped, self-addressed envelope if a reply is desired. Now to get working on that CW send and receive program.

```
5 REM V1.0 10/5/81
10 CLS:GOTO10000
20 PRINT@132,"MORSE CODE INSTRUC
TION"
30 PRINT@196,"BY JOHN STEINER"
50 PRINT@452,"PRESS ANY KEY TO C
ONTINUE";
60 IF INKEY$=""THEN60
70 CLS:PRINT@64,"THIS COURSE WIL
L TEACH YOU":PRINT"THE INTERNATI
ONAL MORSE CODE."
80 PRINT"SET ASIDE THE TIME EACH
 DAY TO":PRINT"RUN THIS PROGRAM
JUST ONCE."
90 PRINT:PRINT"DURING THE FIRST
THREE MINUTES":PRINT"OF THE RUN,
 I WILL PRINT THE"
100 PRINT"LETTERS ON THE SCREEN,
 AFTER":PRINT"THAT THE SCREEN WI
LL BE CLEAR."
110 PRINT@448,"PRESS ANY KEY TO
CONTINUE.
120 IFINKEY$=""THEN120
130 CLS:PRINT:PRINT"WORK WITH EA
CH GROUP OF LETTERS":PRINT"UNTIL
 YOU HAVE 80% OR BETTER"
140 PRINT"ABILITY TO COPY. DO NO
T TRY":PRINT"TO PROGRESS TOO FAS
T!"
150 PRINT:PRINT"WHEN YOUR PRACTI
CE TIME IS UP,":PRINT"I WILL LET
 YOU KNOW, AND END"
160 PRINT"THE PROGRAM."
170 PRINT:PRINT"DON'T FORGET TO
TURN UP THE":PRINT"MONITOR VOLUM
E.
180 PRINT@448,"PRESS ANY KEY TO
CONTINUE.
190 IFINKEY$=""THEN190
200 CLS:PRINT@10,"CODE GROUPS"
210 A=0:FORI=67TO347STEP32
220 A=A+1:PRINT@I,A"--LEVEL"A
230 NEXT
240 PRINT:PRINT"SELECT YOUR PRES
ENT LEVEL"
250 PRINT"DO NOT ENTER LEVEL 9 U
NLESS YOU":PRINT"HAVE COMPLETED
ALL THE OTHERS!"
260 A$=INKEY$:IFA$=""THEN260
270 IFA$<"1"ORA$>"9"THENPRINT"EN
TER 1 TO 9 ONLY":GOTO260
280 LV=VAL(A$)
290 PLAY"T17;"
300 CLS:PRINT@32,"YOU ARE AT LEV
EL"LV:PRINT"IF YOU CHOSE THE WRO
NG LEVEL,
310 PRINT"PRESS THE @ KEY.
320 TIMER=0
325 REM SELECT LEVEL
330 ON LV GOTO 340,420,510,600,6
80,780,870,970,1060
335 REM LEVEL 1
340 PRINT:PRINT"THE LETTERS WE W
ILL WORK ON":PRINT"TODAY ARE:
350 PRINT"  E  I  S  H":PRINT"WE
 WILL ALSO LEARN THE NUMBER 5.
360 GOSUB3070:CLS
370 L=RND(5):GOSUB2970
380 GOSUB1190
385 REM SELECT SPACING AND TIMIN
G
390 D1=300:D2=1000
400 GOSUB2930
405 REM LEVEL 2
410 GOTO370
420 PRINT:PRINT"CONGRATULATIONS!
 YOU'RE DOING":PRINT"FINE.":PRIN
T
430 PRINT"A LITTLE PERSISTANCE P
AYS OFF!":PRINT
440 PRINT"THE NEW LETTERS ARE:":
PRINT"  A  M  O  T":PRINT"TODAYS
 NUMBER IS 0.
```

Color Computer News Magna-zine

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Well actually, the "vacation" is from the tedium of hand typing the programs published in **Color Computer News**. Even if you are a fairly good typist (i.e. you use *more* than two fingers, and you *don't* have to look at the keyboard!) it would take you about *twelve hours* to type in most of the programs in an average **Color Computer News** issue — and *then* you have to de-bug the programs on top of that! Save your "finger energy" for scratching your head while you think great thoughts and leave the program typing to the **CCN Magna-zine Service**. We guarantee that our monthly program tapes will save even the fastest typist many hours of frustration!! Relief for your tired fingers is just a **CLOAD** away!

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```
450 GOSUB3070:CLS
460 IFTIMER>10000THEN480
470 L=RND(5)+5:GOSUB2970:GOTO490

480 L=RND(10):GOSUB2970
490 GOSUB1190:D1=300:D2=800
500 GOSUB2930:GOTO460
505 REM LEVEL 3
510 PRINT:PRINT"READY FOR LEVEL
3, ALREADY?":PRINT"THAT'S MOVING
 RIGHT ALONG."
520 PRINT:PRINT"NEW LETTERS THIS
 TIME ARE:":PRINT"  N  D  G  U
530 PRINT"AND THE NUMBER 1."
540 GOSUB3070:CLS
550 IFTIMER>10000THEN570
560 L=RND(5)+10:GOSUB2970:GOTO58
0
570 L=RND(15):GOSUB2970
580 GOSUB1190:D1=300:D2=700
590 GOSUB2930:GOTO550
595 REM LEVEL 4
600 PRINT:PRINT"REMEMBER, TRY TO
 WRITE THE":PRINT"LETTERS BEFORE
 LOOKING AT THE":PRINT"SCREEN":P
RINT
610 PRINT"TODAY THE LETTERS ARE:
":PRINT"  K  R  W  B":PRINT"THE
NUMBER IS 2.
620 GOSUB3070:CLS
630 IFTIMER>10000THEN650
640 L=RND(5)+15:GOSUB2970:GOTO66
0
650 L=RND(20):GOSUB2970
660 GOSUB1190:D1=300:D2=700
670 GOSUB2930:GOTO630
675 REM LEVEL 5
680 PRINT:PRINT"KEEP UP THE GOOD
 WORK!":PRINT"TRY TO SEE THE LET
TERS, AS YOU"
690 PRINT"HEAR THEM.":PRINT:PRIN
T"THE LETTERS IN THIS GROUP ARE:
":PRINT"  C  Q  V"
700 PRINT"THERE ARE TWO NUMBERS:
":PRINT"  4  3"
710 PRINT"WHEN YOU ARE READY..."

720 GOSUB3070:CLS
730 IFTIMER>10000THEN750
740 L=RND(5)+20:GOSUB2970:GOTO76
0
750 L=RND(25):GOSUB2970
760 GOSUB1190:D1=300:D2=700
770 GOSUB2930:GOTO730
775 REM LEVEL 6
780 PRINT"ONLY THREE MORE LEVELS
 TO GO.":PRINT:PRINT"YOU ARE LEA
RNING A NEW LANGUAGE"
790 PRINT"IF YOU ARE HAVING TROU
BLE WITH":PRINT"ANY SPECIFIC LET
TERS, GO BACK":PRINT"AND REVIEW
THE LEVEL THE LETTER IS ON."
800 PRINT"THIS GROUP OF LETTERS
CONTAINS:":PRINT"  F  J  L":PRIN
T"AND NUMBERS:  6  7
810 GOSUB3070:CLS
820 IFTIMER>10000THEN840
830 L=RND(5)+25:GOSUB2970:GOTO85
0
840 L=RND(30):GOSUB2970
850 GOSUB1190:D1=300:D2=600
860 GOSUB2930:GOTO820
865 REM LEVEL 7
870 PRINT:PRINT"TRY TO LISTEN TO
 AN
880 PRINT"AMATEUR BAND RECEIVER.
":PRINT"GET AN IDEA OF WHAT YOU'
LL HEAR ON THE HAM BANDS.
890 PRINT:PRINT"TODAY THE LETTER
S ARE:":PRINT"  P  X  Y  Z  (FIN
ALLY)!!
900 PRINT"YOUR LAST TWO NUMBERS
ARE:  8  9
910 GOSUB3070:CLS
920 IFTIMER>10000THEN940
930 L=RND(6)+30:GOSUB2970:GOTO95
0
940 L=RND(36):GOSUB2970
950 GOSUB1190:D1=300:D2=500
960 GOSUB2930:GOTO920
965 REM LEVEL 8
970 PRINT:PRINT"NOW FOR THE PUNC
TUATION MARKS.":PRINT"GOOD JOB,
I TRUST IT HASN'T BEEN";
980 PRINT"TOO LONG FOR YOU TO PR
OGRESS":PRINT"TO THIS POINT."
990 PRINT:PRINT"THIS LEVEL COVER
S THE FOLLOWING":PRINT"SYMBOLS":
PRINT"  ,  .  ?  --  /"
1000 GOSUB3070:CLS
1010 IFTIMER>10000THEN1030
1020 L=RND(5)+36:GOSUB2970:GOTO1
040
1030 L=RND(41):GOSUB2970
1040 GOSUB1190:D1=300:D2=400
1050 GOSUB2930:GOTO1010
1055 REM LEVEL 9
1060 PRINT:PRINT"ARE YOU DONE AL
READY?":PRINT
1070 PRINT"IF NOT, PRESS THE @ K
EY AND":PRINT"RETURN TO THE MENU
.
```

```
1080 PRINT"OTHERWISE, CONGRATULA
TIONS!!!":PRINT"YOU DESERVE A RE
WARD,":PRINT"SO GO AHEAD AND..."

1090 GOSUB3070:CLS
1095 REM GRAPHICS DISPLAY
1100 PMODE1,1:COLOR2,3:PCLS:SCRE
EN1,0
1110 LINE(120,192)-(126,40),PSET
:LINE-(130,192),PSET
1120 CIRCLE(20,20),20,2:PAINT(20
,20),2,2
1130 FORI=1TO10:H=RND(200)+50:V=
RND(40)
1140 LINE(126,40)-(H,V),PSET:FOR
X=1TO30:NEXT:LINE(126,40)-(H,V),
PRESET:NEXT
1150 CD$=" ":GOSUB1190
1155 REM END MESSAGE
1160 PLAY"T17;XG$;XO$;XO$;XD$;XS
1$;XS1$;XL$;XU$;XC$;XK$;XS1$;XS1
$;XE$;XS$;XS1$;XS1$;XN7$;XN3$;XS
1$;XS1$;"
1170 GOTO3030
1180 RETURN
1185 REM CODE STRING
1190 A$="L3;A;P3;L1;AP1
1200 B$="L1;A;P3;L3;A;P3;A;P3;AP
1
1210 C$="L1;A;P3;L3;A;P3;L1;A;P3
;L3;AP1
1220 D$="L1;A;P3;L3;A;P3;AP1
1230 E$="L3;AP1
1240 F$="L3;A;P3;A;P3;L1;A;P3;L3
;AP1
1250 G$="L1;AP3;A;P3;L3;AP1
1260 H$="L3;A;P3A;P3A;P3AP1
1270 I$="L3;A;P3AP1
1280 J$="L3;A;P3;L1A;P3A;P3AP1
1290 K$="L1;A;P3;L3;A;P3;L1AP1
1300 L$="L3;AP3;L1;A;P3L3;A;P3;A
;P1
1310 M$="L1;AP3;AP1
1320 N$="L1;A;P3;L3;AP1
1330 O$="L1A;P3;A;P3;AP1
1340 P$="L3A;P3L1;A;P3;A;L3P3;A;
P1
1350 Q$="L1A;P3;A;P3;L3;A;L1P3;A
P1
1360 R$="L3;A;P3;L1;AP3;L3;AP1
1370 S$="L3;A;P3;A;P3;AP1
1380 T$="L1;AP1
1390 U$="L3;A;P3;A;P3;L1;AP1
1400 V$="L3;A;P3;A;P3;A;P3;L1;AP
1
1410 W$="L3;A;P3;L1;A;P3;AP1
1420 X$="L1;AP3;L3A;P3;A;P3;L1AP
1
1430 Y$="L1;A;P3;L3;A;P3;L1;A;P3
;AP1
1440 Z$="L1;A;P3;A;P3;L3;A;P3;AP
1
1450 N1$="L3A;P3;L1A;P3A;P3A;P3A
P1
1460 N2$="L3A;P3A;P3;L1A;P3A;P3A
P1
1470 N3$="L3A;P3A;P3A;P3;L1A;P3A
P1
1480 N4$="L3A;P3A;P3A;P3A;P3;L1A
P1
1490 N5$="L3A;P3A;P3A;P3A;P3AP1
1500 N6$="L1A;P3;L3A;P3A;P3A;P3A
P1
1510 N7$="L1A;P3A;P3;L3A;P3A;P3A
P1
1520 N8$="L1A;P3A;P3A;P3;L3A;P3A
P1
1530 N9$="L1A;P3A;P3A;P3A;P3;L3A
P1
1540 N0$="L1A;P3A;P3A;P3A;P3AP1
1550 S1$="P1
1560 S2$="L3;A;P3;L1A;P3;L3A;P3;
L1A;P3;L3A;P3;L1A;P1"'.
1570 S3$="L1A;P3;A;P3;L3A;P3;A;P
3L1A;P3;A;P1"',
1580 S4$="L3A;P3A;P3L1A;P3A;P3L3
A;P3A
1590 S5$="L1A;P3;L3A;P3A;P3A;P3;
L1A;P1"'--
1600 S6$="L3A;P3A;P3A;P3;L1A;P3;
L3A;P3;L1A;P1"'-SK-
1610 S7$="L3A;P3L1A;P3L3A;P3L1A;
P3L3A;P1"'-AR-
1620 S8$="L1A;P3;L3A;P3A;P3;L1A;
P3;L3A;P1"'/
1625 REM CODE SELECT TABLE
1630 IFCD$="A"THEN2070
1640 IFCD$="B"THEN2080
1650 IFCD$="C"THEN2090
1660 IFCD$="D"THEN2100
1670 IFCD$="E"THEN2110
1680 IFCD$="F"THEN2120
1690 IFCD$="G"THEN2130
1700 IFCD$="H"THEN2140
1710 IFCD$="I"THEN2150
1720 IFCD$="J"THEN2160
1730 IFCD$="K"THEN2170
1740 IFCD$="L"THEN2180
1750 IFCD$="M"THEN2190
1760 IFCD$="N"THEN2200
1770 IFCD$="O"THEN2210
1780 IFCD$="P"THEN2220
```

QUALITY SOFTWARE FOR TRS-80 COLOR AND OSI

ADVENTURES!!!
For TRS-80 COLOR and OSI. These Adventures are written in BASIC, are full featured, fast action, full plotted adventures that take 30-50 hours to play. (Adventures are inter-active fantasies. It's like reading a book except that you are the main character as you give the computer commands like "Look in the Coffin" and "Light the torch.")
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VENTURER!—A fast action all machine code Arcade game that feels like an adventure. Go berserk as you sneak past the DREADED HALL MONSTERS to gather treasure in room after room, killing the NASTIES as you go. Great color, high res graphics, sound and Joystick game for the TRS-80 Color or OSI machines. (black and white and silent on OSI.) Tape only. $19.95.

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AT LAST AN AFFORDABLE COMPILER FOR OSI AND TRS-80 COLOR MACHINES!!! The compiler allows you to write your programs in easy BASIC and then automatically generates a machine code equivalent that runs 50 to 150 times faster.
It does have some limitations. It takes at least 8K of RAM to run the compiler and it does only support a subset of BASIC—about 20 commands including FOR, NEXT, END, GOSUB, GOTO, RETURN, END, PRINT, STOP, USR(X), PEEK, POKE, *, /, +, -, X, X, =, VARIABLE NAMES A-Z, A SUBSCRIPTED VARIABLE, and INTEGER NUMBERS FROM 0 - 64K.
TINY COMPILER is written in BASIC. It generates native, relocatable 6502 or 6809 code. It comes with a 20 page manual and can be modified or augmented by the user. $24.95 on tape or disk for OSI or TRS-80 Color.

LABYRINTH — 16K EXTENDED COLOR BASIC — With amazing 3D graphics, you fight your way through a maze facing real time monsters. The graphics are real enough to cause claustrophobia. The most realistic game that I have ever seen on either system. $14.95. (8K on OSI)

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Please specify system on all orders

This is only a partial listing of what we have to offer. We have arcade and thinking games, utilities and business programs for the OS1 and TRS-80 Color. We add new programs every week. Send $1.00 for our complete catalog.

AARDVARK - 80
TRS 80 COLOR **2352 S. Commerce, Walled Lake, MI 48088** **OSI**
(313) 669-3110

```
1790 IFCD$="Q"THEN2230
1800 IFCD$="R"THEN2240
1810 IFCD$="S"THEN2250
1820 IFCD$="T"THEN2260
1830 IFCD$="U"THEN2270
1840 IFCD$="V"THEN2280
1850 IFCD$="W"THEN2290
1860 IFCD$="X"THEN2300
1870 IFCD$="Y"THEN2310
1880 IFCD$="Z"THEN2320
1890 IFCD$="0"THEN2330
1900 IFCD$="1"THEN2340
1910 IFCD$="2"THEN2350
1920 IFCD$="3"THEN2360
1930 IFCD$="4"THEN2370
1940 IFCD$="5"THEN2380
1950 IFCD$="6"THEN2390
1960 IFCD$="7"THEN2400
1970 IFCD$="8"THEN2410
1980 IFCD$="9"THEN2420
1990 IFCD$=" "THEN2430
2000 IFCD$="."THEN2440
2010 IFCD$=","THEN2450
2020 IFCD$="-"THEN2470
2030 IFCD$=">"THEN2480
2040 IFCD$="#"THEN2490
2050 IFCD$="/"THEN2500
2060 IFCD$="?"THEN2510
2065 REM OUTPUT CODE
2070 PLAYA$:GOTO1180
2080 PLAYB$:GOTO1180
2090 PLAYC$:GOTO1180
2100 PLAYD$:GOTO1180
2110 PLAYE$:GOTO1180
2120 PLAYF$:GOTO1180
2130 PLAYG$:GOTO1180
2140 PLAYH$:GOTO1180
2150 PLAYI$:GOTO1180
2160 PLAYJ$:GOTO1180
2170 PLAYK$:GOTO1180
2180 PLAYL$:GOTO1180
2190 PLAYM$:GOTO1180
2200 PLAYN$:GOTO1180
2210 PLAYO$:GOTO1180
2220 PLAYP$:GOTO1180
2230 PLAYQ$:GOTO1180
2240 PLAYR$:GOTO1180
2250 PLAYS$:GOTO1180
2260 PLAYT$:GOTO1180
2270 PLAYU$:GOTO1180
2280 PLAYV$:GOTO1180
2290 PLAYW$:GOTO1180
2300 PLAYX$:GOTO1180
2310 PLAYY$:GOTO1180
2320 PLAYZ$:GOTO1180
2330 PLAYNO$:GOTO1180
2340 PLAYN1$:GOTO1180
2350 PLAYN2$:GOTO1180
2360 PLAYN3$:GOTO1180
2370 PLAYN4$:GOTO1180
2380 PLAYN5$:GOTO1180
2390 PLAYN6$:GOTO1180
2400 PLAYN7$:GOTO1180
2410 PLAYN8$:GOTO1180
2420 PLAYN9$:GOTO1180
2430 PLAYS1$:GOTO1180
2440 PLAYS2$:GOTO1180
2450 PLAYS3$:GOTO1180
2460 PLAYS4$:GOTO1180
2470 PLAYS5$:GOTO1180
2480 PLAYS6$:GOTO1180
2490 PLAYS7$:GOTO1180
2500 PLAYS8$:GOTO1180
2510 PLAYS4$:GOTO1180
2515 REM CODE GROUPS
2520 CD$="E":RETURN
2530 CD$="I":RETURN
2540 CD$="S":RETURN
2550 CD$="H":RETURN
2560 CD$="5":RETURN
2570 CD$="T":RETURN
2580 CD$="M":RETURN
2590 CD$="O":RETURN
2600 CD$="A":RETURN
2610 CD$="O":RETURN
2620 CD$="N":RETURN
2630 CD$="D":RETURN
2640 CD$="G":RETURN
2650 CD$="U":RETURN
2660 CD$="1":RETURN
2670 CD$="K":RETURN
2680 CD$="R":RETURN
2690 CD$="W":RETURN
2700 CD$="B":RETURN
2710 CD$="2":RETURN
2720 CD$="C":RETURN
2730 CD$="Q":RETURN
2740 CD$="4":RETURN
2750 CD$="3":RETURN
2760 CD$="V":RETURN
2770 CD$="F":RETURN
2780 CD$="J":RETURN
2790 CD$="L":RETURN
2800 CD$="6":RETURN
2810 CD$="7":RETURN
2820 CD$="P":RETURN
2830 CD$="X":RETURN
2840 CD$="Y":RETURN
2850 CD$="Z":RETURN
2860 CD$="8":RETURN
2870 CD$="9":RETURN
2880 CD$=",":RETURN
```

Morse Code Trainer

```
2890 CD$=".":RETURN
2900 CD$="?":RETURN
2910 CD$="/":RETURN
2920 CD$="-":RETURN
2925 REM SPACE DELAY
2930 FORI=1TOD1:NEXT
2935 REM PRINT CODE ON SCREEN
2940 IFTIMER<10000THENPRINTCD$;:
IFCD$="-"THENPRINTCD$;
2950 FORI=1TOD2:NEXT:IFTIMER>100
00 AND DIS=0 THEN GOSUB2990
2955 REM IS PRACTICE TIME UP?
2960 IFTIMER<50000THENRETURNELSE
3000
2965 REM SELECT LETTER
2970 ON L GOSUB2520,2530,2540,25
50,2560,2570,2580,2590,2600,2610
,2620,2630,2640,2650,2660,2670,2
680,2690,2700,2710,2720,2730,274
0,2750,2760,2770,2780,2790,2800,
2810,2820,2830,2840,2850,2860,28
70,2880,2890,2900,2910,2920
2980 RETURN
2985 REM CLEAR DISPLAY
2990 DIS=1:CLS:RETURN
3000 CLS:PRINT@224,"TIME'S UP, A
GAIN!!"
3010 PRINT"KEEP UP THE GOOD WORK
, AND
3020 PRINT"I'LL SEE YOU TOMORROW
.":PRINT"DON'T FORGET!!!"
3025 REM END THEME
3030 FORI=1TO2:PLAY"O2T6L2FCGCAL
4AB-03CO2L8.B-L8AL2G
3040 NEXT
3050 PLAY"O2L2FCGCDL8DEL4FL1.AO3
L4CL2F
3060 FORI=1TO500:NEXT
3070 PRINT@448,"PRESS ANY KEY TO
 BEGIN.
3080 A$=INKEY$:IFA$=""THEN3080
3090 IFA$="@"THEN200ELSERETURN
10000 PMODE0,1:PCLEAR2:GOTO20
```

REVIEW-"ASTRO-BLAST"

by Phill Beistel
1439 Arnold Street
Pittsburgh, PA 15220

Just another space game you may ask, well you may be right but this one is done with "CLASS".

You start out with the familiar "MARK DATA" logo and are then asked to pick a skill level by use of the joystick. Just press the fire button and your off.

You ship ascends to the screen from somewhere below your television and you can see the movement of the stars as they slide by in the background. The "ALIEN" crafts attack from the top of the screen in wave after wave. pressing the fire button emits a strange sound and fires a charge of energy at the aliens. If you are so skilled as to hit one of the invading horde a rather neat explosion occurs. Now that you have wiped out one of the aliens don't get cocky there are many-many more. Be very careful as the "ALIEN" ships are shooting at you also, and your shields (3 SHIELDS) can only protect you so long. Also be very alert for the "COMETS" they are worth 50 pt. but can wipe out a shield as sure as getting hit by an alien.

Once a set of invading alien ships is destroyed it is replaced by another different set of aliens. if you can survive thru three such attacks without losing your shields or running out of fuel you get a crack at the "COMMAND" ship. By shooting the command ship you can then dock with it and re-fuel (a real experience) yourself, so that the battle can continue. One note on re-fueling, you don't get new shields. Three is all you get, so guard them well.

Once again, I think that "MARK DATA" has a winner. The graphics are excellant (Hi-res.), The sound is good and the action is very good. I found myself looking for the slot to put the "QUARTER".

COLORTERM (c)

The 16K Color Computer* as an intelligent terminal with 51 or 64 columns by 21 lines and lower case!

- 300 or 110 Baud
- user programmable keys
- automatic repeat when key is held down
- dump your files to host
- reverse video
- partial screen clear
- 4-way cursor control
- any data format (commercial systems, TSO, bulletins etc.)
- memory buffer for incoming data—save buffer—scroll through buffer
- preserve a "window" of any size; new material scrolls through remainder of screen.
- encode data for more secure storage
- macro buffers for often-used output
- patch the 51 or 64 column display to your own programs running above 9168 (23 D0 hex)

Cassette and Manual $34.95 (u.s.) $40.95 (Canadian)

Visa, Master Charge, Money Order.

Martin Consulting, 94 Macalester Bay, Winnipeg, Manitoba, R3T 2X5 Canada

*T.M OF TANDY CORP

COLOR DATA FILE

by Roger Kilpatrick
107 Forest Place
Stockbridge, GA 30281

One of the very best uses for a computer system is the storage of data. We often see programs which allow storage of recipes, personal financial data, magazine lists, and many other specific types of data. The problem with most of these programs is that they are "almost, but not quite" what we need for our particular data file. Another problem is that it becomes very cumbersome to maintain many different types of Data File Programs for our various needs.

I decided to remedy the problems by writing a generalized Data File Program which will allow the user to easily format all data fields. The COLOR DATA FILE (CDF) is the result of my efforts.

CDF is a completely interactive program which will allow you to format any input or display screen for your particular data characteristics. The functions of the program are selected from a main menu. The program will allow you to:

1 - Format an input screen.
2 - Enter records to a data file using the formatted screen from #1 above or from any previous file.
3 - Add records to an existing file.
4 - Insert a record into an existing file.
5 - Change data in any field of any record.
6 - Display all the records in a file in sequence.
7 - Search for specific records based on any characters in any field.
8 - Print an exact copy of your file in screen format on a printer.
9 - Get a directory listing of all files on a disk.
10 - Exit the program.

CDF will work with either cassette or disk (R/S disk system). However, since CDF does not retain the data file in memory, there are some functions (Changes, Inserts, and Adds) which will not work with cassette. Almost all functions are error trapped to prevent attempting something which will crash the program. All data inputs are 'LINE INPUTS' so that commas and such will be accepted. The program will generally tell you if you are getting into trouble. Throughout the program, responding to any prompt with a 'Q' will quit the function and return you to the main menu.

The main 'feature' of CDF is the interactive formatting of your input screen. The first 13 lines of the display are available for your use. The bottom 3 lines are used by the program to accept information and provide you with various prompts. The formatting routine requires you to tell CDF the line and column where you would like to place a field. You must also tell CDF what type of variable data (String or Number) is going into the field and the Name of the field. You must then specify the length of the field - how many blanks to reserve for this field. Because this program is 'line-oriented', a field may not wrap-around to the next line. If you need more than one line to hold your data, just format more lines with the same Name.

The final prompt on the Formatting screen is 'OK (Y/N/END)'. As you are setting up each field, respond with 'Y' if it is OK, 'N' if it is not OK and needs to be redone. When you have totally finished formatting all fields, respond with 'END'. You will then be allowed to Enter your data file. Even if you don't wish to Enter your file at that time, you should Enter at least one record to preserve the screen format.

CDF stores the data needed to construct the screen format at the beginning of every file. Because of this, you can enter data for a new file by using the format of an existing file.

While using CDF, just follow all instructions. If data screens are displayed, the bottom of the screen will show you what commands are available. The only error which may stop the program is 'NE' (can't find the disk file name). CDF does provide a disk directory list so that you can look up the correct file names.

CDF has been expanded for better readability. All line numbers which are multiples of 10 must not be changed. All other lines can be strung together onto the 10-multiple below it. For example, line 140 must remain 140. But lines 141, 142, 143, 144, and 145 can be eliminated by adding them to 140 with colons. The program does not hold the entire data file in memory, so it will run in 16K if it is condensed. If anyone wishes a condensed version of CDF on tape, it can be provided by sending a request along with $5 to the author. As written, CDF allows up to 15 fields on a screen. If you need less (or more), change 'X=15' in line 90.

I hope CDF will provide many of you with an easy, versatile means of storing your data. We can then go a long way in dispelling the idea that the TRS-80 COLOR is merely a game machine.

Now, what Name did I give my arcade game data file.....???

NOTE - WRITE CHANGED TO PRINT IN 9240, 9261, 9263

```
10 '*****************************
20 '*      COLOR DATA FILE      *
30 '*            BY             *
40 '*      ROGER KILPATRICK     *
50 '*      107 FOREST PLACE     *
60 '*      STOCKBRIDGE,  GA     *
70 '*      PH  404-474-4580     *
80 '*****************************
90 CLEAR550:P=137:X=15:DIML(X),L$(X),C(X),C$(X),V$(X),N$(X),LE(X),LE$(X),T$(X)
100 CLS :PRINT@98,"C O L O R   D A T A   F I L E"
101 PRINT@175,"BY" :PRINT@232,"ROGER KILPATRICK"
102 PRINT@386,"WILL YOU BE USING 'C'ASSETTE    OR 'D'ISK FOR YOUR I/O ?(C/D)"
103 PRINT@494,; :INPUT CD$
104 IF CD$="C" OR CD$="D" THEN 110 ELSE PRINT@494,"          " :GOTO 100
110 IF CD$="C" THEN TD$="TAPE" ELSE TD$="DISK"
120 '********MAIN MENU*********
130 CLS:PRINT@38,"M A I N   M E N U"
131 GOSUB 9120
132 PRINT"  1 - FORMAT INPUT SCREEN"
133 PRINT"  2 - ENTER DATA FILE"
134 PRINT"  3 - ADD TO EXISTING DISK FILE"
135 PRINT"  4 - SEARCH/CHANGE DATA FILE"
136 PRINT"  5 - OUTPUT FILE TO PRINTER"
140 PRINT"  6 - PRINT LIST OF DISK FILES"
141 PRINT"  7 - EXIT PROGRAM"
142 PRINT@418,"(ALL '0' ANSWERS RETURN HERE)"
143 SOUND 1,5
144 PRINT@484,; :INPUT "ENTER YOUR CHOICE"; MM$
145 IF MM$>"7" OR MM$<"1" THEN 130 ELSE IF MM$="3" AND CD$="C" THEN 9100
150 ON VAL(MM$) GOTO 1000, 2000, 3000, 3000, 4000, 5000, 6000
999 '*******FORMAT INPUT*******
1000 FOR R=1 TO 15
1010 CLS 0
1011 IF R>1 THEN R=R-1 :GOSUB 9210 :R=R+1
1020 PRINT@416,"LINE      COLUMN    VAR(S/N)"
1021 PRINT@448,"NAME                LEN"
1022 PRINT@487,"OK (Y/N/END)  ";
1023 POKE 136, 5 :POKE P, 165
1024 LINEINPUT L$ :X$=L$
1025 IF L$="" THEN 1020 ELSE GOSUB 9130
1026 IF NF=LEN(L$) THEN 1030 ELSE N=13 :L=416 :GOSUB 9020 :GOTO 1020
1030 L(R)=VAL(L$)-1
1031 IF L(R)<0 OR L(R)>12 THEN N=13 :L=416 :GOSUB 9020 :GOTO 1020
1040 L(R)=INT(L(R))
1041 IF LEN(L$)=1 THEN L$=L$+" "
1050 PRINT@416,"LINE ";L$;"  COLUMN     VAR(S/N)"
1051 POKE P, 176 :LINEINPUT C$
1052 X$=C$
1053 IF C$="" THEN 1050 ELSE GOSUB 9130
1054 IF NF=LEN(C$) THEN 1060 ELSE N=25 :L=416 :GOSUB 9020 :GOTO 1050
1060 C(R)=VAL(C$)-1
1061 IF C(R)<0 OR C(R)>24 THEN N=25 :L=416 :GOSUB 9020 :GOTO 1050
1070 IF POINT (C(R)*2,L(R)*2)<>0 THEN L=416 :GOSUB 9200 :GOTO 1020
1080 C(R)=INT(C(R))
1081 IF LEN(C$)=1 THEN C$=C$+" "
1090 PRINT@416,"LINE ";L$;"  COLUMN ";C$;"  VAR(S/N)"
1091 POKE P, 189 :LINEINPUT V$(R)
1092 IF V$(R)="" THEN 1090 ELSE IF V$(R)="S" OR V$(R)="N" THEN 1100 ELSE IF V$(R)="0" THEN 130 ELSE PRINT@416,"INVALID - MUST BE 'S' OR 'N'" :GOSUB 9030 :GOTO 1090
```


(TO P. 33)

word's worth

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```
5003 IF CD$="C" THEN PRINT@164,"
YOU CANNOT GET A LIST OF" :PRINT
@228,"FILE NAMES FROM CASSETTE"
:PRINT@292,"YOU MUST EXIT PROGRA
M" :PRINT@356,"AND  SKIPF 'X' ."
 :GOSUB 9030 :GOSUB 9010 :GOTO 1
30
5010 ! :PRINT :GOSUB 9010
5011 GOTO 130
5999 '******END PROGRAM******
6000 CLS :CLOSE
6001 PRINT@169,"PROGRAM ENDED"
6002 PRINT@298,"TO RESTART,"
6003 PRINT@362,"TYPE  'RUN'"
6004 PRINT :PRINT :END
8999 '*****SUBROUTINES*****
9000 IF RIGHT$(FI$,4)="/DAT" THE
N FI$=LEFT$(FI$,LEN(FI$)-4)
9001 RETURN
9010 PRINT@451,"PRESS <ENTER> TO
 CONTINUE";
9011 AN$=INKEY$
9012 IF AN$="Q" THEN 130 ELSE IF
 AN$<>CHR$(13) THEN 9010
9013 CLS :RETURN
9020 PRINT@L,"INVALID - MUST BE
NUMBER 1 -";N;
9021 GOSUB 9030 :RETURN
9030 FOR TM=1 TO 25 :SOUND 200,1

9031 NEXT TM :RETURN
9040 PRINT@417,"<ENTER>=OK  I=IN
SERT  C=CHANGE";
9041 PRINT@449,"INSERTED RECORD
WOULD BE NEXT ";
9042 AN$=INKEY$
9043 IF AN$=CHR$(13) AND CD$="D"
 THEN GOSUB 9300
9050 IF AN$=CHR$(13) THEN CLS :R
ETURN
9060 IF AN$="I" AND CD$="D" THEN
 SOUND 1,1 :CLS :GOSUB 9300 :FOR
 X=1 TO R :T$(X)="" :NEXT X :GOS
UB 2120 :GOSUB 9300 :SOUND 1,1 :
RETURN
9070 IF AN$="C" AND CD$="D" THEN
 SOUND 1,1 :GOSUB 2130 :GOSUB 93
00 :SOUND 1,1 :RETURN
9080 IF AN$="I" OR AN$="C" THEN
IF CD$="C" THEN GOSUB 9100 :CLS
0 :GOTO 3130
9090 GOTO 9040
9100 IF CD$="C" THEN CLS :PRINT@
130,"YOU MAY NOT ADD TO, CHANGE,
" :PRINT@194,"OR INSERT TO A CAS
SETTE FILE." :PRINT@258,"A NEW F
ILE MUST BE REENTERED." :PRINT@3
22,".........SORRY !!" :GOSUB 9
030 :IF AN$="I" OR AN$="C" THEN
GOSUB 9010 :RETURN
9110 GOSUB 9010 :GOTO 130
9120 PRINT@96, STRING$(32,128)
9121 RETURN
9130 NF=0 :FOR X=1 TO LEN(X$)
9131 IF ASC(MID$(X$,X,1)) >47 AN
D ASC(MID$(X$,X,1)) <58 THEN NF=
NF+1
9140 IF X=1 AND ASC(MID$(X$,X,1)
)=45 THEN NF=1
9150 IF ASC(MID$(X$,X,1))=46 THE
N NF=NF+1
9160 NEXT X
9161 IF X$="Q" THEN 130 ELSE RET
URN
9170 DT$="" :FOR X=1 TO LEN(D$)
9171 IF ASC(MID$(D$,X,1))=34 THE
N DT$=DT$+CHR$(39) :NEXT X :D$=D
T$ :RETURN
9180 DT$=DT$+MID$(D$,X,1)
9181 NEXT X :D$=DT$ :RETURN
9190 PRINT@(L(FI)*32)+LEN(N$(R))
+C(R)+2, STRING$(30-LEN(N$(R))-C
(R),128);
9191 RETURN
9200 PRINT@L," THAT POSITION IS
ALREADY TAKEN";
9201 GOSUB 9030 :RETURN
9210 FOR X=1 TO R
9211 PRINT@32*L(X)+C(X), N$(X);
":" ;STRING$(LE(X),255);
9212 NEXT X :RETURN
9220 FOR X=1 TO R
9221 PRINT@(32*L(X))+C(X)+LEN(N$
(X))+1, T$(X);
9222 NEXT X :RETURN
9230 CLS 0
9231 PRINT@416,"LINE "; L$ ;"  C
OLUMN "; C$ ;"  VAR(S/N) "; V$(R
)
9232 PRINT@448,"NAME "; NA$ ;" L
EN "; LE$
9233 PRINT@487,"OK (Y/N/END)
 ";
9234 RETURN
9240 IF FT>0 THEN FOR X=1 TO R :
? #(CD), T$(X) :NEXT X :RETURN
9250 IF CD$="C" THEN CD=-1 ELSE
CD=1
```

(TO P. 35

```
3072 FT=0 :GOSUB 9270
3073 IF CD$="D" THEN OPEN "O", #
2, "NEW/DAT" :! #2, R$ :FOR FI=1
 TO R :! #2, L$(FI), C$(FI), V$(
FI), N$(FI), LE$(FI) :NEXT FI
3080 IF EOF(CD)=-1 THEN 3170
3081 RN=RN+1 :CLS 0
3090 IF MM$="3" THEN GOSUB 9270
:GOSUB 9300 :GOTO 3080
3100 GOSUB 9210
3101 IF Z=0 AND S=2 THEN FOR X=1
 TO R :T$(X)=STR$(X) :NEXT X :GO
SUB 9220 :PRINT@416,; :INPUT "
 SEARCH WHICH FIELD "; FS :LINEI
NPUT "   FOR WHAT ?"; S$ :Z=1
3110 GOSUB 9270
3111 IF S=2 THEN GOSUB 9310 :IF
F=0 AND CD$="D" THEN GOSUB 9300
3120 IF S=2 AND F=0 THEN 3080
3130 GOSUB 9210 :GOSUB 9220
3131 IF MM$="5" THEN 4070
3140 PRINT@489,"RECORD #"RN;
3141 GOSUB 9040
3150 IF MM$="5" AND CD$="D" THEN
 GOSUB 9300
3160 CLS 0 :GOTO 3080
3170 IF MM$="3" THEN FOR X=1 TO
R :T$(X)="" :NEXT X :GOTO 2120
3180 IF CD$="D" THEN CLOSE #2 :C
LOSE #1
3190 CLOSE #-1 :RN=0 :FI=0 :S$="
"
3191 IF CD$="D" THEN KILL FI$ :RENAME "N
EW/DAT" TO FI$
3200 IF MM$="5" THEN 4060
3210 GOTO 130
3999 '****PRINT-OUT ROUTINE****
4000 CLS
4001 PRINT@34,"P R I N T E R   O
 U T P U T"
4002 GOSUB 9120
4003 PRINT@162,"THIS ROUTINE REQ
UIRES THAT"
4004 PRINT@226,"YOU HAVE A PRINT
ER ATTACHED."
4005 PRINT@290,"IF YOU DON'T HAV
E A PRINTER,"
4006 PRINT@354,"PRESS 'Q', ---OT
HERWISE:"
4007 GOSUB9010
4010 CLS
4011 PRINT@34,"YOU CAN ALWAYS GE
T A SCREEN"
4012 PRINT@98,"OUTPUT OF YOUR FI
LE WITH THE"
4013 PRINT@162,"SEARCH OPTION (#
4) FROM THE"
4014 PRINT@226,"MAIN MENU."
4015 PRINT@290,"ENTER A 'Q' TO R
ETURN TO THE"
4016 PRINT@354,"MAIN MENU, OR EN
TER THE NAME"
4020 PRINT@418,"OF THE FILE YOU
WISH PRINTED"
4021 PRINT@490,; :INPUT FI$
4022 IF FI$="Q" THEN 130 ELSE IF
 FI$="" THEN 4010
4030 GOSUB 9000
4040 IF LEN(FI$) >8 THEN CLS :PR
INT@74, FI$ :PRINT@164,"THE FILE
 NAME YOU JUST" :PRINT@228,"ENTE
RED, SHOWN ABOVE IS" :PRINT@292,
"TOO LONG (MAX=8)." :PRINT@356,"
PLEASE REENTER THE NAME" :GOTO 4
020
4050 S=1 :GOTO 3060
4060 CLS
4061 PRINT@198,"YOUR FILE IS PRI
NTED"
4062 GOSUB 9010 :GOTO 130
4070 A=1024
4071 PRINT#-2, STRING$(8,35);"
 RECORD #";RN;"  ";STRING$(8,35)

4080 FOR X=A TO A+31
4081 IF PEEK(X) >26 AND PEEK(X)
<64 THEN PRINT#-2," "; :GOTO 413
0
4090 IF PEEK(X) >127 THEN PRINT#
-2," "; :GOTO4130
4100 IF PEEK(X) <27 THEN PRINT#-
2, CHR$(PEEK(X)+96); :GOTO 4130
4110 IF PEEK(X) >95 AND PEEK(X)
<128 THEN PRINT#-2, CHR$(PEEK(X)
-64); :GOTO 4130
4120 PRINT#-2, CHR$(PEEK(X));
4130 IF X=A+31 THEN PRINT#-2, "#
"
4140 NEXT X :A=A+32
4150 IF A>1439 THEN 4160 ELSE 40
80
4160 PRINT#-2, STRING$(33,35)
4161 GOTO 3150
4999 '*******LIST FILES******
5000 CLS
5001 PRINT@35,"D I S K   F I L E
   L I S T"
5002 GOSUB 9120
```

(TO P.30)

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```
1100 PRINT@448,"NAME
        LEN"
1101 POKE P,197 :LINEINPUT N$(R)

1102 IF N$(R)="" THEN 1100 ELSE
IF LEN(N$(R)) >19 THEN PRINT@448
,"NAME TOO LONG  MAX=19 LETTERS"
; :GOSUB 9030 :GOTO 1100
1110 IF LEN(N$(R))+C(R) >27 THEN
 PRINT@448,"NAME TOO LONG";27-C(
R);" SPACES LEFT"; :GOSUB 9030 :
GOTO 1100
1120 NA$=N$(R)+STRING$(19-LEN(N$
(R)),32)
1130 PRINT@448,"NAME ";NA$;" LEN
 "
1131 POKE P, 217 :LINEINPUT "LEN
 "; LE$
1132 X$=LE$
1133 IF LE$="" THEN 1130 ELSE GO
SUB 9130
1134 IF NF=LEN(LE$) THEN 1140 EL
SE N=30-(C(R)+LEN(N$(R))) :L=448
 :GOSUB 9020 :GOTO 1130
1140 LE(R)=VAL(LE$)
1141 IF LE(R)<1 OR LE(R) >30-(C(
R)+LEN(N$(R))) THEN N=30-(C(R)+L
EN(N$(R))) :L=448 :GOSUB 9020 :G
OTO 1130
1150 FOR X=1 TO LE(R)
1151 IF POINT ((C(R)*2)+(LEN(N$(
R))*2)+(X*2),L(R)*2) <>0 THEN L=
448 :GOSUB 9200 :X=LE(R) :NEXT X
 :GOTO 1050
1160 NEXT X :LE(R)=INT(LE(R))
1170 GOSUB 9210 :POKE 136,5
1171 POKE P, 244 :LINEINPUT E$
1172 IF E$="" THEN GOSUB 9230 :G
OTO 1170
1180 IF E$="Y" THEN 1210 ELSE IF
 E$="N" THEN 1010
1190 IF E$="END" THEN FI=R :R=15
 :GOTO 1210
1200 IF E$="Q" THEN 130
1201 GOSUB 9230 :GOTO 1170
1210 L$="" :C$="" :LE$=""
1211 NEXT R :CLS :GOSUB 9030
1999 '*******DATA ENTRY********
2000 CLS
2001 PRINT@34,"D A T A   E N T R
 Y   M O D E"
2002 GOSUB 9120
2010 PRINT@165,"WHAT NAME DO YOU
 WANT                FOR THIS FILE
?"
2011 PRINT@266,; :INPUT FI$
2012 IF FI$="" THEN 2000 ELSE IF
 FI$="Q" THEN 130 ELSE GOSUB 900
0
2020 IF LEN(FI$) >8 THEN PRINT@2
61,"NAME TOO LONG - MAX 8" :GOSU
B 9030 ELSE IF LEN(FI$)<9 THEN 2
030
2021 PRINT@260, STRING$(22,143)
2022 GOTO 2000
2030 R=FI :FT=0
2031 IF R<>0 THEN 2050 ELSE CLS
2032 PRINT@65,"IF YOU HAVE NOT J
UST FINISHED"
2033 PRINT" FORMATTING AN INPUT
SCREEN,"
2034 PRINT" YOU MUST ENTER A PRE
VIOUS"
2035 PRINT" FILE TO GET THE SCRE
EN FORMAT."
2036 PRINT@225,"PLACE A PREVIOUS
LY RECORDED"
2037 PRINT" "; TD$ ;" IN YOUR DR
IVE."
2040 IF CD$="D" THEN 2090
2050 IF R<>0 THEN TR$="'RECORD'"
 ELSE TR$=" 'PLAY'"
2060 IF CD$="D" THEN 2070 ELSE P
RINT@322,"(REMEMBER TO PRESS ";T
R$
2061 PRINT"   KEY ON THE TAPE RE
CORDER)"
2062 GOTO 2080
2070 PRINT@322,"PLACE A BLANK DI
SKETTE INTO"
2071 PRINT@359,"YOUR DISK DRIVE.
"
2080 IF R<>0 THEN 2110
2090 GOSUB 9010
2091 CLS :PRINT@160,"WHAT IS THE
 NAME OF THE PREVIOUS"
2092 PRINT@226,"FILE WHOSE SCREE
N FORMAT YOU"
2093 PRINT@298,"WISH TO USE"
2094 PRINT@394,; :INPUT FS$
2095 FI$=FS$ :GOSUB 9000 :FS$=FI
$
2096 IF FS$="Q" THEN 130 ELSE TF
$=FI$ :FI$=FS$
2097 GOSUB 9010 :GOSUB 9270
2098 CLOSE #CD :FT=0 :FI$=TF$
2099 CLS
2100 PRINT@98,"YOUR FORMAT HAS N
OW BEEN"
2101 PRINT"  LOADED AND YOU ARE
READY TO"
```

```
2102 PRINT"  PREPARE THE DRIVE T
O ENTER"
2103 PRINT"  NEW DATA. (INSURE T
HAT"
2104 PRINT"  A BLANK "; TD$ ;" I
S MOUNTED)"
2105 GOTO 2050
2110 GOSUB 9010 :R$=STR$(R)
2111 FOR X=1 TO R :T$(X)=""
2112 L$(X)=STR$(L(X))
2113 C$(X)=STR$(C(X))
2114 LE$(X)=STR$(LE(X))
2115 NEXT X :GOSUB 9240
2120 CLS 0 :GOSUB 9210
2130 FOR FI=1 TO R
2131 IF MM$="4" AND AN$="C" THEN
 PRINT@417,"<ENTER>=SKIP FIELD (
NO CHANGE)" :PRINT@449," RETYPE
THE FIELD TO CHANGE IT ";
2140 IF L(FI)*32+LEN(N$(FI)) >25
5 THEN POKE 136, 5 :POKE P, (L(F
I)*32)+LEN(N$(FI))+C(FI)-255 :GO
TO 2160
2150 POKE136,4
2151 POKE P, (L(FI)*32)+LEN(N$(F
I))+C(FI)+1
2160 LINEINPUT D$ :X$=D$
2161 IF AN$="I" OR MM$="3" THEN
2180
2170 IF MM$="4" AND D$="" THEN D
$=T$(FI) :GOTO 2210
2180 IF D$="" THEN D$=" " :IF V$
(FI)="N" THEN D$="0" : X$="0"
2190 GOSUB 9170
2191 IF LEN(D$) >LE(FI) THEN PRI
NT@449," TOO LONG FOR FIELD - RE
ENTER "; :GOSUB 9030 : GOSUB 919
0 :GOSUB 9210 :GOSUB 9220 :GOTO
2140
2200 IF V$(FI)="N" THEN GOSUB 91
30 :IF NF<>LEN(D$) THEN PRINT@45
0,"   ENTRY MUST BE A NUMBER   "
;:GOSUB 9030 :GOSUB 9190 :GOSUB
9210 :GOSUB 9220 :GOTO 2140
2210 PRINT@(L(FI)*32)+LEN(N$(FI)
)+C(FI)+1+LEN(D$), STRING$(31-LE
N(N$(FI))-C(FI)-LEN(D$) ,128);
2211 PRINT@448, STRING$(32,128);

2212 T$(FI)=D$ :GOSUB 9210
2213 GOSUB 9220 :NEXT FI
2214 IF MM$="4" THEN RETURN
2220 FOR TM=1 TO 300 :NEXT TM
2221 CLS
2222 PRINT@196,"DO YOU HAVE MORE
 RECORDS"
2223 PRINT@268,; :INPUT A$
2224 IF LEFT$(A$,1)="Y" THEN 225
0
2230 IF LEFT$(A$,1)="N" THEN IF
MM$="3" THEN 2280 ELSE GOSUB 924
0 :CLOSE #CD :GOTO 130
2240 GOTO 2220
2250 IF MM$="3" THEN GOSUB 9300
:GOTO 2270
2260 GOSUB 9240
2270 FOR X=1 TO 15 :T$(X)=""
2271 NEXT X :GOTO 2120
2280 GOSUB 9300 :GOTO 3180
2999 '*****SEARCH/CHANGE/ADD****

3000 Z=0 :CLS :GOSUB 9120
3001 PRINT@194,"WHAT IS THE NAME
 OF THE FILE"
3002 IF MM$="4" THEN PRINT@34,"S
 E A R C H   &   C H A N G E" EL
SE PRINT@35,"A D D   F I L E   M
 O D E"
3010 PRINT@267,; :INPUT FI$
3011 GOSUB 9000
3012 IF FI$="" THEN 3000 ELSE IF
 FI$="Q" THEN 130 ELSE IF MM$="3
" THEN S=1 :GOTO 3060
3020 CLS
3021 PRINT@2,"DO YOU WISH TO:"
3022 PRINT@66,"1 - SEARCH OR CHA
NGE AN ENTIRE      FILE  (START
TO FINISH)."
3023 PRINT@162,"2 - SEARCH FOR,
OR CHANGE A          SPECIFIC REC
ORD."
3024 PRINT@258,"(CHANGES/INSERTS
 ARE CHOSEN      FROM EACH RECOR
D DISPLAY)"
3030 IF CD$="C" THEN FOR X=1 TO
8 :SOUND 200,1 :PRINT@356, STRIN
G$(61," "); :PRINT@354,"(CASSETT
E FILES CAN ONLY BE     SEARCHED
. NO CHANGES/INSERTS)" :NEXT X
3040 PRINT@452,; :INPUT "ENTER #
 OF YOUR CHOICE"; ST$
3041 IF ST$="Q" THEN 130 ELSE IF
 ST$>"0" AND ST$<"3" THEN 3050 E
LSE 3020
3050 S=VAL(ST$)
3060 CLS
3061 PRINT@256,"  READY YOUR " T
D$ " FOR OUTPUT"
3062 IF MM$="5" THEN PRINT@355,"
AND TURN ON YOUR PRINTER."
3070 GOSUB 9010
3071 PRINT@234,"PLEASE WAIT"
```

(TO p. 36)

```
9260 OPEN "O", #(CD), FI$
9261 ? #(CD), R$
9262 FOR FI=1 TO R
9263 ? #(CD), L$(FI), C$(FI), V$
(FI), N$(FI), LE$(FI)
9264 NEXT FI :FT=FT+1 :RETURN
9270 IF FT>0 THEN FOR X=1 TO R :
INPUT #(CD), T$(X) :NEXT X :RETU
RN
9280 IF CD$="C" THEN CD=-1 ELSE
CD=1 :FI$=FI$+"/DAT"
9290 OPEN "I", #(CD), FI$
9291 INPUT #(CD), R$ :R=VAL(R$)
9292 FOR FI=1 TO R
9293 INPUT #CD, L$(FI), C$(FI),
V$(FI), N$(FI), LE$(FI)
9294 L(FI)=VAL(L$(FI))
9295 C(FI)=VAL(C$(FI))
9296 LE(FI)=VAL(LE$(FI))
9297 NEXT FI :FT=FT+1 :RETURN
9300 FOR X=1 TO R :! #2, T$(X)
9301 NEXT X :RETURN
9310 F=0
9311 FOR X=1 TO LE(FS)-LEN(S$)+1

9312 IF S$=MID$(T$(FS),X,LEN(S$)
) THEN F=1
9320 NEXT X :RETURN
```


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Auto Run is a utility program for the TRS-80* Extended Basic Color Computer. It is used to add convenience and professionalism to your software.

Auto Run will create a tape which will consist of a machine language loader followed by your basic or machine language program. With this tape, a simple CLOADM command will load and start the loader which will load and start your program.

You may design a title screen with the graphics editor which will display as your program loads. Also you may record a vocal or musical introduction preceding your program. The Auto Run loader will control the audio on/off.

Basic programs can be set to load anywhere in memory above $600 (the PCLEAR 0 page).

Software authors: The Auto Run prefix may be appended to your software products.

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*** FILM DEVELOPMENT ***

By: Peter Ashley
10 Clinton Street
Portland, ME 04103

My original film developing program was written for the Model I TRS-80 about two years ago. Soon after acquiring my Color Computer, I began writing this version, unique to the Color Computer. Actually the Color Computer version is better. It is faster, uses less memory, contains more options and is more understandable from the perspective of the programmer. Many enhancements are made possible because of the special features of the Color Computer's BASIC, such as it's sound generating ability.

So, what is a "film developing" program? Well, what this program actually does is "talk" you through the steps necessary to develop a roll of black & white film. It is designed with two types of users in mind. The first is the beginner, or person who is learning to develop film. Plenty of opportunities for expanded explanation are made available for this person. The second type of user, one who is already familiar with developing film, will also find this program useful, and will be able to skip over those parts that are already known to her/him.

The computer's TV screen will not effect the film in any way because once the film is loaded into the developing tank (in total darkness), all other procedures can be carried out in normal room lighting. In fact, most likely you will be performing other duties while the program is working and your film is developing. The computer will remind you to return to your developing chores through a series of audio prompts.

From the user's viewpoint the program is very straight forward. It beeps and tweets and flashes messages all over the screen when it is time for you to do something. It is filled with all kinds of selections that are reassured with audio and visual feedback. All you have to remember is to turn up the sound on the TV.

The actual developing procedure is accomplished using nine steps.

1. LOAD
2. DEVELOP
3. STOP
4. FIX
5. RINSE
6. HYPO-CLEARING AGENT
7. WASH
8. WETTING AGENT
9. DRY

These operations are all fairly standard and should pose no problems. If they do, the program is flexible enough to bypass any unwanted steps.

From the perspective of the programmer there are also plenty of options and opportunities for modifications and additions. As the LISTing shows, the program is divided into "blocks" or routines that are easily identified by the REM *** statements *** just before them. These blocks are numbered with line numbers in multiples of 100 so that they can be easily located. Let's take a closer look at each of these blocks, exploring options that you might wish to include in your own customized version of "Film Development".

Let's begin our examination of the program by looking at the subroutines beginning with line #3000. This line simply loops through itself, causing a delay of about 2 seconds.

The "Mix Routine" (line # 3100) sets up the proportions of developer to water and returns the correct working solution (ST). This will become clearer when we look at the "Mixing of Developer" (line # 2500) later on.

The "Clock Routine" (line # 3300) is worthy of some close study. This same routine could easily be implemented in any other program that requires a timer. Lines 3302 to 3366 are for setting-up the screen. They print lines and boxes. Line 3302 and 3303 draw a line that erases itself, three units down on the vertical (Y) axis. The PRINT @ statements (lines 3360 to 3366) draw the box around the screen "clock".

The countdown feature works by:

1. Taking one of the minutes (M) and reassigning it as 60 seconds (S) (line 3368).

2. Subtracts 1 second (line 3380) each time the TIMER counts to 50 (line 3500).

3. The timer "ticks" in line 3480 (you can change the ticker tone by changing 240 to another value).

4. The minutes are subtracted in line 3400.

5. Line 3410 prints the "Agitate" message every 30 seconds.

6. The updated timer is printed in line 3470.

7. When the minutes and seconds are equal to 0 (line 3430), the program branches to the "Alarm" routine (line 3610).

8. The alarm is just a series of tones ranging from 10 to 90 (lines 3610 to 3640).

The "Select Number" routine (line 4000) allows for the input of anumber without having to press the <ENTER> key. The "Inkey" routine (line 5000) is similar, and is enhanced with an audio prompt when RUNing the program.

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I like to have my programs as "self-documenting" as possible, and thus have all kinds of reminders such as line 5. Change this to anything that helps you in understanding the source of the program (such as Color Computer News issue...). Line 10 CLEARs some memory for all the STRING$ graphics and DIMentions an array to hold the film type, developer, and appropriate developing times. This DIM statement must be changed if you decide to add more film or developer choices.

Lines 20 to 150 draw the cover. The letters appearing as lower case in the LISTing are actually reversed on the screen. The words "FILM DEVELOPMENT", flash using lines 90, 140, and 150.

In the following two blocks "Select Film" and "Select Developer", the choices are READ from DATA statements in lines 700 and 900. If you decide to change a film type or the developing chemistry, these are the lines to modify. However, you must also change the developing time value in line 1300. Two of these DATA lines (900 and 1300) effect the "Developing Time Chart" (line 1500). Any changes in film type, would require changing line 1530 to correct the "Developing Time Chart".

The "9 Steps" routine (lines 2000 to 2180) is simply a fancy way to familiarize newcomers with the series of steps that the program will follow. You will notice that you have the option of skipping this review (line 2020) when RUNning the program.

The "Load" and "Mixing of Developer" routines help keep the beginner on track, and assist old timers with the mixing of developer solutions. Nothing too fancy is going on here. SS refers to "stock solution", the developer. SW is water, and ST is the sum of the two, or "total working solution".

With a good deal of the programming work already done in other routines, the "Develop" routine becomes comparitively short. All we have to do in this section (lines 2600 to 2999) is PRINT a little information on the screen and call-up the "Clock" routine.

There you have it. A "film developing" program for all you photographers, and a little course in BASIC programming. GOTO it.

```
5 '----- FILM DEVELOPER -----
      BY  PETER ASHLEY  1982
          FILE: "FILM"
  ------------V.2-------------

10 CLEAR200:DIMT(7,3)
20 '
   ********** COVER **********

30 CLS0
40 PRINT STRING$(32,207);
50 PRINT STRING$(32,203);
60 PRINT STRING$(96,207);
70 PRINT STRING$(32,206);
80 PRINT STRING$(32,207);
90 PRINT@72,"FILM DEVELOPMENT";
100 PRINT@288,"THIS PROGRAM WILL
 TAKE YOU STEP BY STEP THROUGH T
HE DEVELOPMENT OF YOUR BLACK & W
HITE FILM."
110 PRINT@452,"PRESS enter TO CO
NTINUE";
120 A$=INKEY$:IF A$="" THEN 140
130 GOTO 600
140 FOR D=0 TO 25
150 PRINT@72,"film development";
:NEXTD:GOTO90
600 '
    ****** SELECT FILM ******

610 SOUND200,1:CLS 5
620 PRINT@39," SELECT YOUR FILM
";
630 FOR R=1 TO 3: READ F$(R)
635 S$=STRING$(15-LEN(F$(R))," "
)
640 PRINT@103+(32*R),R;F$(R);S$;

650 NEXT R
660 GOSUB4000
670 IF V<1 OR V>3 THEN 660
680 F$=F$(V):F=V
700 DATA VERICHROME,PLUS-X,TRI-X

800 '
    **** SELECT DEVELOPER ****

805 SOUND200,1:CLS5
810 PRINT"OK...";F$;" ";
820 PRINT@67," NOW SELECT THE DE
VELOPER ";:PRINT@96,""
840 FOR R=1TO 7:READ D$(R)
850 PRINTR;D$(R),
860 NEXT R
870 PRINTSTRING$(16," ")
880 GOSUB4000: D=V: D$=D$(D)
890 IF D>7 OR D<1 THEN 880
900 DATA D-76,"D-76 (1:1)",MICRO
DOL-X,POLYDOL,"HC-110 (A)","HC-1
10 (B)",DK-50
1000 '
     *** DEVELOPMENT TIMES ***
```

```
1005 SOUND200,1:CLS0
1010 PRINT"WOULD YOU LIKE TO SEE
 A COMPLETECHART OF DEVELOPING T
IMES (Y/N)?"
1020 FOR DR=1TO 7:FOR FR=1TO 3:
     READ T(DR,FR):NEXT FR,DR
1030 GOSUB5000
1040 IF I$="Y"THEN 1500
1045 IF I$<>"N"THEN1020
1046 CLS0
1050 PRINT"AT 68 DEGREES FAHRENH
EIT (20C)":PRINT:PRINT"USING ";D
$;" DEVELOPER":PRINT"WITH  ";F$;
" FILM"
1200 IF T(D,F)=0 THEN PRINT@196,
" == not recommended == ";:PLAY"
L4;1;2;3;4;5;6;5;4;3;2;1":RESTOR
E:GOTO600
1220 M=T(D,F)
1230 PRINT@256,"DEVELOPING TIME
IS";M;"MINUTES"
1240 PRINT@384,"WOULD YOU LIKE T
O ADJUST THE    DEVELOPING TIME
(Y/N)?"
1250 GOSUB5000
1260 IF I$="N"THEN 2000
1280 IF I$<>"Y"THEN1250
1300 DATA7,6,8,9,8,11,9,8,11,10,
6,8,3.75,0,3.75,8,5,5,5,4,6
1500 '
     * DEVELOPING TIME CHART *

1510 CLS:PRINT"  DEVELOPING TIME
S @68 DEGREES"
1520 PRINT STRING$(31,"=")
1530 PRINT"DEVELOPER   VP   PLUS
-X   TRI-X"
1535 PRINT
1540 FOR R=1 TO 7
1550 PRINTD$(R);TAB(11)T(R,1);TA
B(19)T(R,2);TAB(25)T(R,3):NEXT
1610 PRINTSTRING$(31,"-")
1620 PRINT:M=0
1630 PRINT"ENTER ONE OF THE ABOV
E TIMES OR"
1640 INPUT"YOUR OWN ADJUSTED TIM
E.";M
1650 IF M<1 THEN1500
2000 '
     ****** THE 9 STEPS ******

2010 SOUND200,1:CLS
2020 PRINT@131," WOULD YOU LIKE
TO REVIEW         THE nine steps
  (Y/N)?"
2030 GOSUB5000
2050 IF I$="N"THEN 2300
2055 IF I$<>"Y"THEN 2030
2060 CLS:PRINT"  FILM DEVELOPMEN
T nine steps":FOR S=100 TO 200 S
TEP 5:SOUND S,1: NEXT S
2070 PRINT STRING$(31,"=")
2075 FOR X=0 TO 200:NEXT
2080 PRINT"1. LOAD","TOTAL DARKN
ESS":SOUND25,1:GOSUB3000
2090 PRINT"2. DEVELOP","THE REAL
 WORK":SOUND50,1:GOSUB3000
2100 PRINT"3. STOP-BATH","STOPS
DEVELOPER":SOUND75,1:GOSUB3000
2110 PRINT"4. FIX","NEGATIVES SA
FE":SOUND100,1:GOSUB3000
2120 PRINT"5. RINSE","BEGINS WAS
HING":SOUND125,1:GOSUB3000
2130 PRINT"6. HYPO-CLEAR","REMOV
ES FIX":SOUND150,1:GOSUB3000
2140 PRINT"7. WASH","REMOVES CHE
MICAL";:SOUND175,1:GOSUB3000
2150 PRINT"8. WETTING AGENT":SOU
ND200,1:GOSUB3000
2160 PRINT"9. DRY":SOUND225,1:GO
SUB3000
2170 PRINTSTRING$(31,"-"):PRINT
2180 PRINT"    PRESS enter TO CO
NTINUE":GOSUB5000
2300 '
     ********* LOAD *********

2310 SOUND200,2: CLS2
2320 PRINT@11,"= load =";
2330 PRINT@64,"LOAD YOUR DEVELOP
ING TANK IN    TOTAL DARKNESS."
2340 PRINT"WHEN THIS IS COMPLETE
D, YOU MAY WORK UNDER NORMAL ROO
M LIGHTS.
2350 FOR S=250 TO 150 STEP-10: S
OUND S,1: NEXT
2360 PRINT@256,"WOULD YOU LIKE S
OME HELP MIXING THE DEVELOPER (Y
/N)"
2370 GOSUB5000
2380 IF I$="N"THEN2600
2390 IF I$<>"Y"THEN 2370
2400 SOUND200,1:CLS 3
2410 PRINT"NOTE THE AMOUNT OF CH
EMICAL     SOLUTION NEEDED TO CO
VER ALL    THE ROLLS OF FILM THA
T YOU ARE  DEVELOPING..."
2420 FOR X=0 TO 2000: NEXT X
2430 PRINT@168," THIS IS CALLED
";:GOSUB3000
```

THE 1248—EP EPROM PROGRAMMER

The 1248-EP EPROM PROGRAMMER is a full function, stand alone unit that is compatible with virtually all popular 1K, 2K, 4K & 8K-by-8, 24 pin, 5 volt EMPROMS (2508's, 2758-0/1's, 2516's 2716's, 2532's, 68732-0/1's, 68764's, 68766's to mention a few). The programmer is totally MENU DRIVEN by resident, on-board, position independent firmware in EPROM, which makes it suitable for experienced computer operators and novices alike.

In addition to the fact that the 1248-EP is compatible with a large number of devices, it also performs a broad range of user selected functions as well. The 1248-EP verifies EPROM erasure, compares EPROM contents to contents of RAM or ROM, programs blocks or individual bytes of EPROM memory, and copies EPROM contents to user specified location in RAM. At specified times, EPROM's can be inserted or removed from the programmer without having to "power down" the computer.

Hardware features of the 1248-EP programmer are significant. It contains its own on-board programming power supply, plugs into the cartridge slot of the Color Computer, has a quality "zero insertion force" socket and provisions for decoding the firmware driver to any 2K byte boundry within the cartridges memory map for efficient memory map utilization when used with other non-position independent hardware or software that must be executed at $C000.

The combination of the TRS-80 Color Computer, an editor/assembler/monitor such as the Micro Works SDS80C✲✲, and the 1248-EP EPROM programmer makes a high performance, cost effective software development station for MC-6800/6809 microprocessor based systems. Use the system to write and store your own games or utility programs in EPROM's for execution from the cartridge slot using the CK4 PROM/RAM card described below.

The cost of the unit, including easy to understand instructions is just $94.95.

THE CK4 PROM/RAM CARD

The CK4 is a cartridge slot compatible circuit board that can be populated with either ROM's, EPROM's or static RAM's as the user so desires. Each of the four on-board sockets can be decoded starting at any 2K block boundry of the memory map from $C000 through $F800 of the Color Computer. In addition, each socket can be configured to respond to address blocks from 2K to 8K bytes in length, accommodating therefore, 2K, 4K or 8K-by-8 ROM's, EPROM's or RAM's. One can mix ROM and RAM on the same card in various amounts and sizes. One can also "write protect" RAM's via dip switches on the CK4.

The unit comes complete with instructions for setting up the decoding features as desired. The unit works with 2K, 4K or 8K-by-8 ROM's or EPROM's of the 5 volt only variety in 24 pin packages, or may be used with 4 static RAM's such as 4016's to expand the computers memory work space by 16K.

The CK4 PROM/RAM card is available from stock, with instructions for $29.95 each.

"COCO" GETS A BREADBOARD

The COCO BREADBOARD is a circuit board that plugs directly into the cartridge slot of the Color Computer and provides the user with 16 square inches of predrilled breadboarding area for circuit development, interfacing experiments, motherboard implementation, or whatever your imagination conjures up. The holes in the breadboarding area of the circuit board are on 0.10 inch centers as found on other popular but more expensive boards. The COCO BREAD BOARD brings all of the data, address and control signals available at the cartridge slot outside of the body of the computer and the signal lines are appropriately labeled to facilitate error free wiring of breadboards. A ground plane is provided on the top side of the board and solder pads are provided on the bottom of the board, thus facilitating circuit grounding and point-to-point wiring. In short, the COCO BREADBOARD was designed with the experimenter in mind.

The COCO BREADBOARD is attractively priced to justify its use for even the lowest budget projects. It is an ideal vehicle for learning interfacing techniques. Buy extras to have on hand for those rainy weekends.

The COCO BREADBOARD costs just $19.95. Price for two (2) or more is $16.95 each. Include $3.00 to cover shipping and handling for quantities through ten (10).

MORSE ENCODER/DECODER KIT

The MEDK80 Morse En/Decoder kit consists of a machine code software driver on tape, a schematic diagram of the interface circuitry, component parts, a printed circuit board (PCB), packaging suggestions and complete instructions for building a Morse code transmission and reception system that is compatible with 4K RAM and up models of the TRS-80 Color Computer.

The transmitter/receiver interface circuitry is totally optically isolated and is, therefore, compatible with all receivers and transmitters. The specific keying method employed in the users transmitter, however, may require minor modification of the interface, e.g., the addition of an external transistor inverter for proper phasing and voltage level matching. Specific examples are given in the instructions to aid in transmitter interfacing. Transmitter and receiver both connect to the interface unit and to the Color Computer via the RS-232 port.

The MEDK80 Morse En/Decoder kit operates at speeds up to 70 words per minute (fastest speed found so far to test receiving capability), and when receiving, automatically adapts to speed variations of the sender.

In the transmit mode, transmission speeds are user selectable from a list of ten (10) speeds that may be user programmed. Words are transmitted only when fully formed and visual management of the 512 character text buffer provides overwrite protection.

Potential purchasers of this product should have previous kit building experience. However, this is not a kit of great complexity, however, and is well within the abilities of those actively involved in amateur radio or electronic hobbiest to construct. To reduce the chance of wiring errors, component placement is indicated on the PCB and detailed assembly instructions are included.

The cost of the MEDK80 software, parts and instructions is $39.95.

ALIEN ENCOUNTER

This action packed "shoot-em-up" is one of the most challenging games of its kind. These ALIENS are smart, they aim back at you anticipating your every move, and are unrelenting in their attack. Play it at any one of 10 degrees of difficulty, but beware, they become desperate as you approach victory, after all, they are "ALIENS"!!

Program available on tape, is compatible with all machines with more than 16K of RAM and does not need joysticks to play. ALIEN ENCOUNTER costs $9.95. Add $1.00 for postage and handling.

CAPTURE

This multiple strategy (10 levels of play) "SURROUND and CAPTURE" game will give hours of thought provoking, stimulating challenge. The computer is your opponent, and you'll be delighted with the level of play that "COCO" has achieved. Chess and Checkers enthusiast will especially enjoy "CAPTURE". Joysticks not required.

"CAPTURE" is supplied on tape for just $9.95. Add $1.00 for postage and handling.

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Prices subject to change without notice.

```
2440 FOR R=0 TO 4 :PRINT@228," T
OTAL WORKING SOLUTION ";:FOR R1=
1 TO 90:NEXT R1:SOUND100,1:PRINT
@228,"=total working solution=";
:FOR R1=1 TO 90:NEXT R1: NEXT R
2450 GOSUB3000:PRINT@288,"exampl
e: ";:SOUND200,1:GOSUB3000
2460 PRINT"IF YOUR TANK REQUIRES
  10 OZ. PER ROLL OF FILM, AND Y
OU ARE DEVELOPING TWO ROLLS, YOU
R total working solution = 20 OZ
.":FORX=0 TO 3000: NEXTX
2465 SOUND 200,1
2470 PRINT@448,"ENTER TOTAL WORK
ING SOLUTION":INPUT ST
2480 IF ST<1THEN2470
2500 '
     ** MIXING OF DEVELOPER **

2505 SOUND200,1: CLS 5
2510 ON D GOSUB3110,3120,3110,31
10,3110,3110,3120
2520 PRINTTAB(6)" MIX THE FOLLOW
ING: ":PRINT
2530 PRINTTAB(2)SS;TAB(8)"OUNCES
 OF ";D$
2540 PRINTTAB(2)SW;TAB(8)"OUNCES
 OF WATER"
2550 PRINTSTRING$(31,"-")
2560 PRINT"TOTAL WORKING SOLUTIO
N=";ST;"OZ."
2570 PRINT@352,"WHEN THE ";D$;"
IS MIXED":PRINT
2580 PRINT@424," PRESS enter ";:
     GOSUB5000
2600 '
      *******: DEVELOP ********

2610 CLS2
2620 PRINT@10,"= develop =";
2630 PRINT@64,"DEVELOPING: "F$;"
 FILM"
2640 PRINT"USING: ";D$;" DEVELOP
ER"
2650 GOSUB3300
2700 ' ** STOP BATH **
2710 PRINT@10,"= stop bath =";
2720 PRINT@64," ADD COMMERCIAL S
TOP OR WATER.":PRINT
2730 M=1: GOSUB 3300
2750 PRINT@13,"= fix =";
2760 PRINT@64,"              ADD TH
E FIX":PRINT
2770 M=10: GOSUB 3300
2800 PRINT@11,"= rinse =";
2810 PRINT@64,"    RINSE FILM WI
TH WATER":PRINT: M=1: GOSUB 3300

2830 PRINT@4,"= hypo clearing ag
ent =";
2840 PRINT@64,"  ADD HYPO CLEARI
NG AGENT":PRINT: M=2: GOSUB 3300

2850 CLS2: PRINT@13,"= wash =";
2860 PRINT@64,"  WASH FILM UNDER
 RUNNING WATER":PRINT: M=5: GOSU
B 3300
2870 PRINT@14,"= dry =";
2880 PRINT@64,"RINSE FILM WITH W
ETTING AGENT.":PRINT"HANG FILM T
O DRY."
2999 END '**********************
**********************************
**********************************

3000 FOR X=0 TO 1000:NEXT:RETURN
'     * 2 SEC. DELAY *
3100 '
      ****** MIX ROUTINE ******

3110 SS=ST:SW=0: RETURN
3120 SS=ST/2:SW=SS:RETURN
3300 '
     ***** CLOCK ROUTINE *****

3302 FOR X=1 TO 62
3303 SET(X,3,1):RESET(X,3):NEXT
3305 PRINT@133,"TOTAL TIME: ";M;
" MIN. ";
3310 PRINT@194," PRESSING THE spa
acebar WILL ";:PRINT@226," INTER
RUPT THE TIMING CYCLE ";
3330 PRINT@289," PRESS enter TO
BEGIN TIMING. ";
3340 GOSUB 5000
3360 PRINT@288,STRING$(9,191);"
REMAINING TIME ";STRING$(7,191);

3362 PRINT@329,STRING$(16,191);
3363 PRINT@361,STRING$(3,191);
3364 PRINT@374,STRING$(3,191);
3366 PRINT@393,STRING$(16,191);
3368 M=M-1:S=60
3370 IF M=2.75 THEN M=3:S=46
3380 S=S-1
3390 I$=INKEY$:IF I$=" "THEN3600

3400 IF S<0 THEN M=M-1:S=59
3410 IF S=30 OR S=59 THEN PRINT@
448," AGITATE THE DEVELOPING TAN
K... ";
```

```
3420 IF S=25 OR S=55 THEN PRINT@
448,STRING$(32,159);
3430 IF M=0 AND S=0 THEN 3600
3470 PRINT@364,M;" : ";S;
3480 SOUND 240,1
3490 TIMER=0
3500 IF TIMER=50 THEN 3380 ELSE
3500
3600 '
     ********* ALARM *********

3610 FOR S=0 TO 8
3620 CLS S: SOUND (S+1)*10,1
3630 PRINT@13," STOP ";
3640 NEXT S
3650 PRINT@168," EMPTY THE TANK
";
3660 PRINT@384," PRESS enter FOR
 THE NEXT STEP."
3670 GOSUB5000:CLS2:RETURN
4000 '
     ***** SELECT NUMBER *****

4010 SOUND1,1:PRINT@332,"BY NUMB
ER";
4020 I$=INKEY$
4030 IF I$="" THEN FOR X=0 TO 25
:PRINT@332,"by number";:NEXT X:
GOTO4010 ELSE V=VAL(I$): RETURN
5000 '
     ******* INKEY *******

5010 SOUND1,1:FORX=0TO 50:NEXTX
5020 I$=INKEY$:IF I$=""THEN5010
ELSE SOUND200,1:RETURN
```


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LOGCHART

By: Richard Giovanoni
315 Coffman Ave.
Hagerstown, MD 21740

Plotting data on Log paper can make it a lot easier to use when an exponential function is involved. In my own case, the extrapolation of cost projections on Learning Curves is an everyday task that makes use of this method.

My program LOGCHART draws a "sheet" of 2 X 3 cycle log paper on my screen and plots actual hours per aircraft so that I can see the trends that are developing. After this kind of preliminary look-see I can investigate in more detail with my other programs for LEARNING CURVES and LEAST SQUARES REGRESSION ANALYSIS, as well as my ESTIMATING program.

LOGCHART draws the chart in high resolution format and marks scale values on each axis after you choose the starting point. Choices on the X axis are 1 or 10. On the Y axis you can use 1, 10, or 100. In each case the maximum value is 10000. This can be adjusted. Just remember, a log chart can never start at zero.

The input values are entered in data lines starting at 800 as X,Y pair values. In my case X = an aircraft number, Y = the actual hours for that aircraft. Circles of radius 1 mark each point. See Figure 1.

The set up of the grid and scale markers take into account that the little graphic blocks are not really square so it is necessary to move along the X axis 82 spaces for 75 spaces along the Y axis to get my grids as square as possible.

The decimal values are converted to Log Base 10 and scaled to the proper position on the chart in lines 520 to 560.

I don't have a printer so if I need to save a particular set of data I still have to do it by hand. Maybe one of these days I'll convince the boss.

```
1 CLS
5 PRINT"LOGCHART REV.1.0,MAR.198
2":PRINT"              R.GIOVANONI":
PRINT
10 PRINT"THIS PROGRAM WILL PLOT
DATA IN  2X3 CYCLE LOG FORMAT":P
RINT
20 PRINT"DATA MUST BE GIVEN IN X
,Y PLOT  POINT PAIR VALUES":PRIN
T
25 INPUT"IF YOU ARE READY TYPE Y
";Y$
27 IF Y$="Y" THEN 30 ELSE 25
30 CLS:PRINT"ENTER X,Y VALUES AS
 DATA LINE.  START AT LINE 800."
:PRINT
35 PRINT
40 PRINT"AFTER DATA ENTRY IS COM
PLETED   TYPE <RUN50> THEN HIT <
ENTER>.  THIS WILL PUT PROGRAM I
N GEAR"
45 PRINT"GO AHEAD WITH DATA ENTR
Y NOW.   DON'T SWEAT THE <BREAK>
 MESSAGE":STOP
50 INPUT"ENTER NUMBER OF PLOT PO
INTS";PP
60 INPUT"ENTER X AXIS BASE VALUE
";BX:BX=INT(LOG(BX)/LOG(10))
70 INPUT"ENTER Y AXIS BASE VALUE
";BY:BY=INT(LOG(BY)/LOG(10))
80 PMODE4,1:PCLS:SCREEN1,1
85 REM MAKE Y AXIS
90 LINE(3,20)-(3,85),PSET:LINE(3
,95)-(3,170),PSET
95 REM MAKE X AXIS
100 LINE-(255,170),PSET
105 REM MAKE SCALE MARKERS
120 LINE(0,20)-(4,20),PSET
130 LINE(0,95)-(4,95),PSET
140 LINE(84,169)-(84,175),PSET
150 LINE(166,169)-(166,175),PSET

160 LINE(250,169)-(250,175),PSET

165 REM MAKE GRID LINES
170 FOR J=9TO250 STEP3
180 PSET(J,20):NEXT J
190 FOR J=9TO250 STEP4
200 PSET(J,95):NEXT J
210 FOR K=20TO166 STEP4
220 PSET(84,K):NEXT K
230 FOR K=20TO166 STEP4
240 PSET(166,K):NEXT K
255 FOR K=20TO166 STEP4
260 PSET(250,K):NEXT K
290 REM SET UP NUMBER STR$
295 REM FOR 1 TO 10000
300 A$="D6"
310 B$="D6BR2U6R3D6L3"
320 D$="D6BR2U6R3D6L3BR5U6R3D6L3
"
330 E$="D6BR2U6R3D6L3BR5U6R3D6L3
BR5U6R3D6L3"
340 F$="D6BR2U6R3D6L3BR5U6R3D6L3
BR5U6R3D6L3BR5U6R3D6L3"
390 REM SET SCALE LIMITS FOR
   EACH AXIS
400 IFBY=0 GOSUB1000
410 IFBY=1 GOSUB1010
420 IFBY=2 GOSUB1020
450 IFBX=0 GOSUB1030
```

```
460 IFBX=1 GOSUB1040
490 REM READ DATA & CONVERT TO
    LOGS
500 FOR N=1TO PP
510 READ X,Y
520 XX=((LOG(X)/LOG(10))-BX)*82+
3
530 YY=170-(((LOG(Y)/LOG(10))-BY
,)*75)
540 XP=INT(XX)
550 YP=INT(YY)
555 REM PLOT EACH POINT AS TINY
    CIRCLE
560 CIRCLE(XP,YP),2:NEXT N
600 GOTO600
800 REM USE FOR DATA ENTRY
990 REM DRAW SCALE VALUES ON
    EACH AXIS
1000 DRAW"BM3,10XD$;"
1005 DRAW"BM3,87XB$;":GOTO450
1010 DRAW"BM3,10XE$;"
1015 DRAW"BM3,87XD$;":GOTO450
1020 DRAW"BM3,10XF$;"
1025 DRAW"BM3,87XE$;":GOTO450
1030 DRAW"BM3,180XA$;"
1031 DRAW"BM82,180XB$;"
1032 DRAW"BM163,180XD$;"
1033 DRAW"BM239,180XE$;":GOTO500

1040 DRAW"BM3,180XB$;"
1041 DRAW"BM78,180XD$;"
1042 DRAW"BM160,180XE$;"
1043 DRAW"BM234,180XF$;":GOTO500
```


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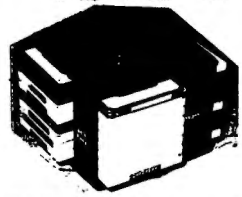

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DISK 'DIR'/ECTORY

by Jack Greb
1040 Brookpoint Drive
Macedonia, OH 44056

I have enjoyed my association with CC80. I have suffered the long sessions using the tape recorder for data, programs,...well, it is certainly better than retyping!? Then into my life came disk 0. The entire disk operating system is beautiful. But, that is a subject for another article. The subject of this one is the command 'DIR'.

This command calls and lists, in a single column, the titles, extensions, type of file, format, and disk occupancy in granules. Neat!! Concise!!!..? It is OK if you have a list of 14 or less items in your directory. The directory sector is capable of holding 72 titles. Now, if you can do a fast SHIFT@ (you also can probably score 60,000+ at Pac Man too, can't you), you can catch every item on your directory. I cannot!!

Enter the command RUN 'DIR'. This command statement, combined with the 'DIR' program listed here, will present your active directory to your monitor. It will be listed in 2 numerically indexed columns. If your directory is full, there will be as many as 3 screens. The operator (Yeah, that's you- listen up) can read his directory at his own pace. When he is done with the current page, pressing (C) will print the next page.

Found your program yet. OK, just press (S). Key enter the index number and press (ENTER). Your program is now in operation. That sounds almost too good to be true. When loaded, the 'DIR' program occupies 2711 bytes, as it is listed here. By eliminating unnecessary spaces and comments, it only takes 1525 bytes. An additional 3898 bytes are used in running the program. That makes total memory required for the compressed version 5923. That leaves about 0.5K free memory in a 16K machine. How does the program work?, You ask. Here goes-

Lines 10-50 are format lines. They clear enough string space and DIMension the single subscripted variables C$, D$, and F$. Briefly, the field string F$(3), (4), (7), & (8) are titles; F$(2), (5), & (6) are fileds for print using statments; F$(0) is used for erasing single lines of information; and F$(1) provides a string used with the instruction call.

Lines 100-150 get the directory from the disk and store it. The DOS (Disk Operating System) assigns the directory to track 17, beginning with the sector 3. The 9 sectors (3-11 inclusive) may contain directory entries. Each entry is 32 bytes in length. Length * maximum entries (32*72)=2,304 bytes. One granule = 2,304 bytes, and also equals 9 sectors. That is where the 9 sectors comes from. (Congratulations, Eureka, you are absolutely right! The disk contains only 68 granules. Each disk entry uses a minimum of one granule. Therefore, the maximum number of titles is 67 - one granule goes to the directory. That's all you can list. The entries are in the directory in 32 byte chunks. These chunks are read as A$ & B$. These entry strings are concatenated into one string C$(N). The granule is saved in one single subscripted variable rather than the 2 that using A$(N) & B$(N) would require. (Yes, Topeka, it can be done that way. It only takes more memory to run the program. It is also more complex to manipulate.) When the disk is formatted, Hex FF is stored in each location. As the directory is filled, the leading character becomes something other than &HFF. When an entry is deleted, the leading character is 0. If &HFF is found, the remainder of the directory is empty.

Line 120 checks for this condition. If &HFF is found, the loop is exited. Otherwise, the loop is completed.

Line 150 resets the value of the loop index to the number of the last used value for C$(N). This is necessary whether the loop is completed or not. The 80CC raises the value of the index at the 'next' statement. Then the computer checks the value of the index against the upper limit of the range. (For those who did not get that, in the statement 'FOR X = 3 TO 11' X is the index. It is the variable that is to be incremented thru the range 3 thru 11. The value of X will increase each time the 80CC gets to the 'next' statement. This new value of X is then checked against the upper limit of the range (11 in this loop). If the value is not greater than the upper limit, the loop is repeated. This means the final value of X will be 12 if the computer finishes the loop. OK! With the loop complete, X=12. The last element value of C$ is C$(11). To make X=11, we need X-1. If the loop is exited before completion, it will be before the current value of X is used to subscript an element of C$. Again we need X-1 to make X equal the last element value of C$.) We now have the whole directory. We need to rearrange it for our purposes.

Line 200 sets up a loop that has a range thru the number of the last element of the array C$.

Line 210 breaks each C$ element into 32 byte chunks. That lets us find the start of each title string.

Line 220 sets the next element of the D$ array to the counter value (D$(C)). Into this element, we put the next 8 characters of C$. To that is 'ANDED' (concatenated) a slash and 3 characters needed to identify the extension.

Lines 230 & 240 combine to verify that the entry just read is not a 'KILLED' filename (CHR$(0)) or an unused string (CHR$(&HFF)). This unused entry check is done here because line 120 only looked at A$ strings. It is possible for B$ strings to be empty. If the entry passes the test, C is incremented and the loop continues.

Line 300 starts the output routine. If you want to use just a printer to capture your directory, this is the section to modify. Line 300 resets 'FLAG' to 0. This flag is used to determine which column has been printed into on the screen. (FLAG=0;L.H. COLUMN; FLAG=1;R.H. COLUMN.)

Line 310 sets the tab factor used in printing.

Lines 330-350 set up a nested loop which counts out 24 items (Z) for each page (P) of entries.

Lines 360 & 370 check for killed or unused entries and skips them.

Line 380 checks for an empty string which could be created by line 220 while finishing the Z index loop from line 210. If 380 detects a blank, it skips out of the loop. The logic here is blanks were created by the program after all entries were used. No consideration is given to filling out a title column with blanks.

Line 390 prints the index number and the title. This line insures that the item number and the number of the element of array D$ are the same. This will let us use the index number to select a program later on.

Lines 400-440 increment the tab factor. They also keep straight in which column to print.

Lines 480-520 give you an opportunity to quit or list again. This happens if continuation is requested beyond the last available page. I can hear 'What continuation?'. That takes us by way of line 460 to line 600.

Lines 600-650 print a message to press (C) for continue or (S) for select. After playing a tone to tell you it's ready, the CC80 waits until you push the right key. I put the tone in because it can take several seconds to process and print the first page of titles. If you find it annoying, delete line 610.

Line 630 finds the value for G by locating the key character you pressed in F$(1). The value of G is 0 for any key not in F$(1).

Line 640 makes sure G is between 1 thru 4.

Line 650 sends the program to one of 4 places -830 for (C) (return to loop); or 710 for (S). This subroutine is also used when too many (C)'s are pressed. For (A), branch to 300 (restart printing); or 940 for (Q) (end). This section can be customized for optional use of a printer. I suggest adding 'P' to F$(1) and the line number that starts the LPRINT routine to line 650. Don't forget a return statement.

Lines 700-830 are the select and run section.

Lines 710-730 clear and print instructions on the bottom line of the screen. They input the number of your selection as a string variable (L$).

Line 740 converts L$ to its numeric value. I did it this way because I did not want a '?' at the input request. If you don't care, you can shorten your program a little. Just enter line 730 input L and delete line 740.

Line 750 tests for L in the range of the elements of array D$.

Line 760 looks at the first character of the requested element of D$. This test is necessary because of the last element of D$ created by line 380. This line (760) prevents the possability of trying to load and run a 'title' of 8 orange pixels, a slash, and 3 orange pixels as an extension.

Lines 750 & 760 both set the value of E to 6. E is then used in line 910 to print a message. E must be either 5 or 6, and refers to these elements of array F$.

Line 770 gets the extension from the selected D$ element.

Line 780 will LOADM if the extension is 'BIN'.

Line 790 goes to the error routine if the extension is 'DAT'. 'DAT' will not load as a program, nor can it be 'RUN'.

If we pass that test, line 800 will load and run your selected program.

Line 810 is provided for a common return. It is also there because I believe good programming technique is put a return at the end of a subroutine.

As we mentioned, line 900-930 is an error handling routine. The value of the error is assigned to E in the calling line. This value selects the appropriate message format and embeds the number you (S)elected. I did it this way to help me see the error of my ways.

Line 940 indicates the end of the program. I've included it only because I feel it is good practice. It is not required by the CC80.

The application of this program is straight forward. After initializing a disk, I put this program on the disk. Then, to see the directory, type RUN quotation mark DIR (ENTER). True, that's 7 keystrokes and DIR is only 3. However, this program permits you to select and run your program with only 3 additional keystrokes, for a total of 10.

To use the DIR command is 3, plus RUN (3), plus TITLE (8), plus /EXT (4) and the QUOTES (2) is 20. You save 10 keystrokes. And even better, you can see your directory rather than a blurr. The only other cost is storage space. Since the compressed version is only 1525 bytes, the program will fit in only one granule of the disk. If you do use the compressed version, be sure to leave a space before and after the C in line 330.

In operation, the screen will turn cyan. Your disk drive will hum. Then silence. The screen stays cyan for about 12 seconds. (Seems like a day and a half but the computer needs the time to do housekeeping with the strings.) The first line of information is printed as index 0. The left hand column prints to item 11, then the right column prints. The (C)ontinue; (S)elect prompt will appear at the bottom of the screen. Press C to continue.

If the directory contains more than 24 items, the print routine will be repeated. If all of the directory has been printed, the screen will turn yellow, buzz, and print the (A)gain; (Q)uit prompt. Keep in mind, you may use any of the 4 keys (C, S, A, or Q) when there is a prompt message. The message does not trap the program to only the 2 keys mentioned in the prompt. Once you hit the (S)elect key, only the break key will halt execution.

Maybe you have as many thumbs as I (Far more than the national average of 2). Maybe you type by the Christopher Columbus School of Typing (Each letter is a new world of discovery). Either way I think this program will be of help to you.

```
1 '**=*=*=*=*=*=*=*=*=*=*=*=**
   **   WRITTEN BY JACK GREB   **

2 '**          31MAY1982        **

3 '**     DIR/ECTORY PROGRAM    **

4 '** LISTS CONTENTS OF DISK    **
   ** & ALLOWS USER TO SELECT  **
   ** A PROGRAM TO RUN.        **

5 '**=*=*=*=*=*=*=*=*=*=*=*=**

6 ':::       -VARIABLES-
   ::: A$&B$-@128 BYTES OF SECTOR
   ::: C$()-255 BYTES=FULL SECTOR
   ::: D$()- DIRECTORY ENTRIES
   ::: F$()- STRING FIELDS
   ::: G$-BRANCH STRING
7 ':::L$-SECTOR STRING
   ::: OK$-TEST STRING
   ::: P$-SOUND STRING
8 ':::C-TITLE COUNTER
   :::FLAG-COLUMN FLAG
   :::G-SUBR BRANCH VALUE
   :::L-SELECTION NUMBER
9 ':::P-PAGE INDEX
   :::T-TAB FACTOR
   :::X-SECTOR INDEX
   :::Y & Z-LOOP INDICES
10 CLEAR 3500
20 DIM C$(11),D$(68),F$(8)
30 F$(0)=STRING$(31,223):
   F$(1)="CSAQ":
   F$(2)="##" + CHR$(223) +
   "%          %":
   F$(3)="[C]ONTINUE; [S]ELECT"
40 F$(4)="ENTER YOUR SELECTION "
:  F$(5)=
  "YOU SELECTED ##\A NONPROGRAM"
:  F$(6)=
    "SELECTION ## NOT AVAILABLE"

50 F$(7)="THAT'S THE DIRECTORY":
   F$(8)="[A]GAIN; [Q]UIT"
60 CLS6
100 FOR X=3TO11    'GET DIR LIST
110 DSKI$ 0,17,X,A$,B$
120 IF (LEFT$(A$,1)=CHR$(&HFF))
   THEN150
130 C$(X)=A$+LEFT$(B$,127)
140 NEXT X
150 X=X-1:C=0    'SET; X=MAX. NO.
                      OF C$;
                COUNTER C=0
200 FOR Y=3 TO X 'SEPARATE EACH
                   DIRECTORY ITEM

210 FOR Z=0 TO 7 '"FILENAME/EXT"

220 D$(C) = MID$(C$(Y),Z*32+1,8)
   + "/" + MID$(C$(Y),Z*32+9,3)
230 OK$=LEFT$(D$(C),1)
240 IF (OK$ = CHR$(0) OR
   OK$ = CHR$(&HFF)) THEN260
250 C=C+1
260 NEXT Z
270 NEXT Y
300 FLAG=0   'RESET FLAG
```

```
310 T=32     'SET TAB FOR PRINT
320 'LOOP FOR NAMES
330 FOR P=0 TO C STEP 24
340 CLS 6
350 FOR Z=0 TO 23 'LOOP FOR PAGE

355 IF (Z+P>67) THEN460
360 OK$=LEFT$(D$(Z+P),1)
370 IF OK$=CHR$(&HFF) OR
   OK$=CHR$(0) THEN450
380 IF OK$="" THEN460
390 PRINT @ T,USING F$(2); Z+P;
   D$(Z+P);
400 T=T+32
410 IF (T<402) THEN 450
420 IF (FLAG=1) THEN 440
430 T=49:FLAG=1:GOTO450'2ND COL.

440 T=32:FLAG=0 'RESET 1ST COL.
450 NEXT Z
460 GOSUB 600
470 NEXT P
480 CLS 2
490 P$=STRING$(10,68)
500 PRINT @ 454,F$(7);
510 PRINT @ 488,F$(8);
520 PLAY"T250L200V30O1XP$;"
530 GOSUB 620
540 GOTO500
600 PRINT @ 486,F$(3);
610 PLAY"T100L2403AA#A;"
620 G$=INKEY$:IF G$="" THEN620
630 G=INSTR(1,F$(1),G$)
640 IF(G<1 OR G>4) THEN 620
650 ON G GOTO810,710,300,940
700 ' SELECTION
710 PRINT @ 480,F$(0);
720 PRINT @ 485,F$(4);
730 LINE INPUT L$
740 L=VAL(L$)
750 IF (L>Z+P-1 OR L<0) THEN E=6
   :GOTO910    '** TEST FOR RANGE

760 IF (LEFT$(D$(L),1) =
   CHR$(&HFF))THEN E=6 :GOTO910
770 OK$=RIGHT$(D$(L),3)
780 IF OK$="BIN" THEN LOADM
   D$(L) :GOTO940
790 IF OK$="DAT" THEN E=5
   :GOTO910
800 LOAD D$(L),R
810 RETURN
900 'ERROR ROUTINE
910 PRINT @ 482, USING F$(E);L
920 FOR Z=1 TO 1500: NEXT Z
930 GOTO300
940 END
```


R.S. COLOR DISK SYSTEM SOFTWARE

DISK EDITOR/ASSEMBLER - This package includes a full featured disk based text editor program and a disk to disk/tape/memory assembler. The text editor is an easy to learn full featured editor which allows files larger than memory to be created and edited with ease. It is compatible with ASCII formatted tape & disk files to allow easy conversion of tape based programs. The assembler supports the full 6809 processor instruction set and will cross assemble 6800 code to 6809 object code. The output object file can be directed to either disk, tape or memory with overwrite protection. The object listing can be output to the screen or printer and versions for printers with or without line feeds are provided. DISK EDITOR & ASSEMBLER $79.95

DISK TERMINAL PACKAGE - A disk based Terminal program for your color computer features full text buffering, baud rates from 300 to 9600 baud, programable word length, parity bits odd/even/none, stop bits. The buffer size is automatically set to the maximum size of your memory. Full control codes can be sent, display word wrap is automatic. The text buffer can be saved or loaded from/to tape or disk. The contents of the buffer can be sent as a file with automatic re-entry to terminal mode, also a file can be sent directly from disk to another user. The contents of the buffer can be displayed on the screen or optionally be output to a printer plugged into the RS 232 port. All file formats are directly compatible with our text editor and word processor programs. DISK TERMINAL PACKAGE $49.95

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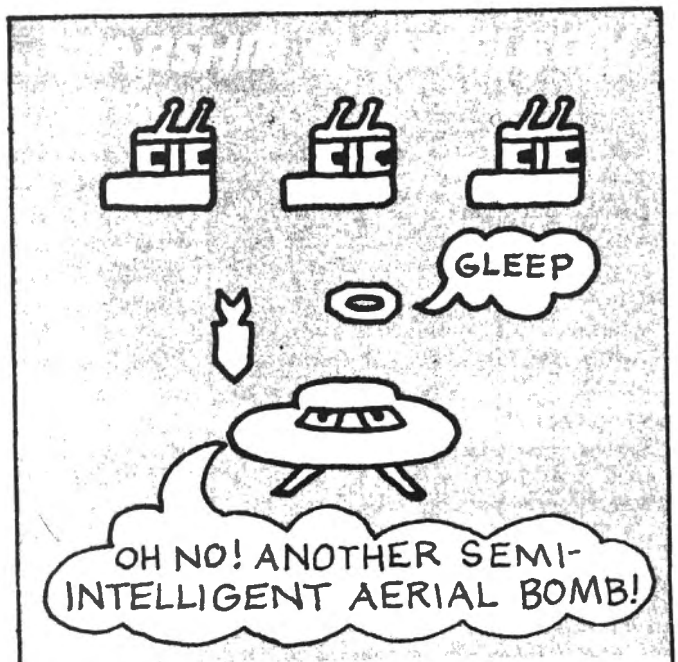

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DCBUG is a machine language monitor which allows examining and altering of memory, setting break points, etc.

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COMMENT CORNER

by Andrew Phelps
The Micro Works, Inc.

Envision a classroom full of Color Computers. Although the students have no disks or tape, they can quickly load whatever program they need from a large computer in the corner. This type of system is possible because of the DLOAD command.

The Quick Reference Card from Radio Shack lists DLOAD, but is not documented in the *reference manuals*. When you type DLOAD "FILENAME",1 the name of the file is transmitted over the serial line, and the program that is sent back is loaded as a Basic program.

Communication is via the serial connector on the back of the computer at 300 or 1200 baud, with 8-bit characters. All operations are timed, and will end in an I/O error if there is no response. A protocol including check bytes is followed so that any error will be detected.

There is also a DLOADM command, but, alas, it has a bug and doesn't operate at all. The bug is fixed in the Disk Basic, but that means that you need a disk controller to download machine language programs.

When the DLOAD statement is run, the Color Computer transmits a byte, and the host sends back a byte to say that it's there. The 8-byte name, and one check byte, are then transmitted. The host sends a record indicating that the file has been found, and what type of file. These file-type codes are the same as those used with disk and tape files.

If there is a check byte error or timeout at any point, an error byte is sent and the process is started over again. After five such retries, the computer gives up with an I/O error.

The input is done through a fictitious unit number -3. When the idle loop asks for a character from this unit, it is routed through the INCHR hook to $8CF1. There, the next byte is taken out of a buffer. When the buffer is empty, a request is sent up the line for the next record, and another 128 bytes are received. When a zero length record is received, this signifies end-of-file.

Variables, areas, and routines -

ADDR	COMMENTS
00D3	OFFSET
00E6	BAUD RATE
01D1	LENGTH OF FILE
01D2	FILE NAME
8C18	DLOAD COMMAND
8C85	DLOADM COMMAND
8CE2	GET NEXT RECORD
8CF1	HOOK TO INPUT CHARACTER
8D14	SEND FILE NAME

Line-by-line comments -

ADDR	COMMENTS
8C18	CLOSE TAPE UNIT
8C1B	RESERVE VAIRABLE = 0
8C1D	IS IT CLOADM?
8C1F	IF NOT, SKIP
8C21	SET VARIABLE NOT = 0
8C23	GET NEXT CHARACTER
8C25	GET FILE NAME TO 01D1
8C28	GET NEXT CHARACTER
8C2A	SKIP IF NO MORE
8C2C	MAKE SURE IT'S A COMMA
8C2F	ANOTHER COMMA?
8C31	SKIP IF IT IS
8C33	GET ONE BYTE NUMBER
8C36	A=B0 IF B=0
8C38	IS B ZERO?
8C39	SKIP IF SO
8C3B	A=2C IF B=1
8C3D	IS B ONE?
8C3E	ERROR IF NOT
8C42	SAVE BAUD RATE
8C44	SEND NAME AND GET TYPE
8C47	SAVE A
8C49	MINUS 3
8C4B	SET UNIT NUMBER
8C4D	RESTORE A
8C4F	TEST PARAMETER
8C51	IF CLOADM, SKIP
8C53	MAKE SURE END OF START
8C56	ASCII FILE?
8C57	SKIP IF NOT
8C59	DO A "NEW"
8C5C	GO READ A PROGRAM
8C5F	ERROR: BAD FILE MODE
8C85	IS IT BINARY FILE?
8C88	FM ERROR IF NOT
8C8A	X=0
8C8C	GET NEXT CHARACTER
8C8E	SKIP IF END OF STATEMENT
8C90	MAKE SURE IT'S A COMMA
8C93	GET 16 BIT INTEGER
8C96	SAVE OFFSET
8C98	SAVE IT
8C9B	INPUT A BYTE
8C9D	SAVE BLOCK LENGTH
8C9F	ADD OFFSET
8CA7	SAVE START ADDRESS IN CASE ITS EXEC ADDRESS
8CA9	MOVE ADDRESS TO X
8CAB	GET FIRST BYTE AGAIN
8CAD	GO CLOSE IF END
8CB1	GET A BYTE
8CB3	STORE IN MEMORY

```
8CB5   MAKE SURE
8CB7   I/O ERROR IF NOT RAM
8CB9   COUNT DOWN
8CBB   LOOP TILL DONE
8CBD   GET NEXT BLOCK
8CBF   INPUT BYTE TO B
8CC1   INPUT BYTE TO A
8CC3   MOVE LAST BYTE TO B
8CC5   RETURN
8CC6   INPUT BYTE
8CC9   END OF FILE?
8CCB   RTS IN NOT
8CCD   I/O ERROR
8CD0   SEND NAME AND GET TYPE
8CD2   SAVE TYPE
8CD4   TYPE=$FF?
8CD5   IF SO, FILE WASN'T FOUND
8CD7   CLEAR V
8CD9   READ FIRST RECORD
8CDB   GET TYPE AND RETURN
8CDD   ERROR "NE"
8CDF   JUMP TO ERROR
8CE2   GET LAST RECORD NUMBER
8CE4   BUMP RECORD COUNTER
8CE6   SAVE NEW RECORD NUMBER
8CE8   START OF BUFFER
8CEB   READ RECORD
8CEE   RESET PRINTER AND COUNTER
8CF1   GET UNIT NUMBER
8CF3   UNIT = -3?
8C5F   RTS IF NOT
8C57   REMOVE RETURN ADDRESS
8C59   END OF FLAG
8CFB   DATA IN BUFFER?
8CFD   YES, GO GET IT
8CFF   NO, SET END OF FILE
8D01   RETURN
8D02   SAVE REGISTERS
8D04   GET BUFFER POINTER
8D06   GET NEXT BYTE
8D08   SAVE IT
8D0A   SAVE POINTER
8D0C   COUNT DOWN BYTES
8D0E   IF STILL THERE, RETRIEVE
8D10   READ NEXT RECORD
8D12   RESTORE AND RETURN
8D14   RETRY COUNT = 0
8D15   MAKE ROOM ON STACK
8D17   POINT Y AT STACK DATA
8D19   SKIP FIRST TIME THROUGH
8D1B   COUNT RETRIES, EXIT ON 5
8D1D   SEND $8A
8D1F   CHECK IF $8A RECEIVED
8D21   ERROR IF NOT
8D23   ADDRESS OF FILE NAME
8D26   GET NEXT LETTER OF NAME
8D28   EOR AND SEND BYTE
8D2B   END OF NAME?
8D2E   LOOP IF NOT
8D30     SEND CHECK BYTE; CLEAR CHECK;
INPUT BYTE
8D32   SKIP IN NOT $C8
8D34   INPUT BYTE & FORM CHECK BYTE
8D36   BRANCH IF ERROR
8D38   SAVE THE BYTE
8D3A   INPUT ANOTHER
8D3C   BRANCH IF ERROR
8D3E   SAVE THE BYTE
8D40   GET CHECK BYTE
8D42   BRANCH IF ERROR
8D44   CLEAN UP STACK
8D46   RETURN WITH TWO BYTES
8D48   COUNT RETRIES
8D4A   GET RETRY COUNT
8D4C   FIVE TRIES ALLOWED
8D4E   IF LOWER, RETURN
8D50   BC=ABORT CODE
8D52   OUTPUT
8D55   I/O ERROR
8D58   SAVE EXPECTED BYTE
8D5A   SEND AND RECEIVE BYTE
8D5C   FORGET IT IF ERROR
8D5E   MAKE SURE CORRECT BYTE
8D60   RESTORE AND RETURN
8D62   GET CHECK BYTE
8D64   SEND; INPUT
8D66   IF ERROR, RTS
8D68   IS IT $C8
8D6A   RETURN .EQ. IF OK
8D6B   INPUT BYTE
8D6D   LEAVE IF ERROR
8D6F   GET CHECK BYTE RESULT
8D71   RETURN .EQ. IF OK
8D72   INPUT BYTE
8D74   SAVE RESULT
8D76   ADD INTO CHECK BYTE
8D78   SAVE CHECK BYTE
8D7A   RESTORE AND RETURN
8D7D   MAKE ROOM ON STACK
8D7F   MAKE LSB 7 BITS ONLY
8D81   MOVE BIT INTO MSB
8D83   POINT Y AT VARIABLES
8D87   SKIP FIRST TIME THROUGH
8D89   COUNT RETRIES, RTS IF >5
8D8B   SEND $97
8D8D   GET $97 BACK
8D8F   ERROR IF NOT
8D91   MSB RECORD NUMBER
8D93   EOR AND SEND BYTE
8D95   LSB RECORD NUMBER
8D97   EOR AND SEND BYTE
8D99   SEND CHECK BYTE; GET $C8
```

TOM MIX SOFTWARE

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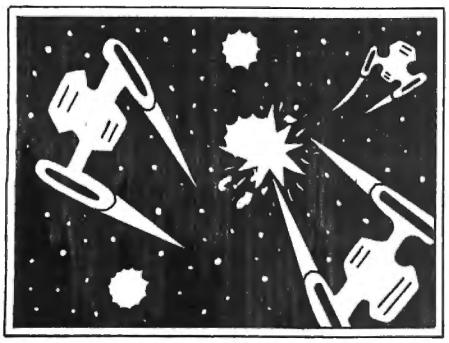

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```
8D9B    IF NOT, ERROR
8D9D    GET BYTE IN
8D9F    IF ERROR, RETRY
8DA1    SAVE TYPE=LENGTH
8DA3    GET BUFFER ADDRESS
8DA5    BUFFER SIZE
8DA7    INPUT BYTE
8DA9    RETRY ON ERROR
8DAB    SAVE BYTE
8DAD    COUNT DOWN
8DAE    LOOP TILL DONE
8DB0    CHECK THE CHECK BYTE
8DB2    ERROR IF NOT ZERO
8DB4    CLEAN UP STACK
8DB6    RESTORE AND RETURN
8DB8    CLEAR CHECK BYTE
8DBA    SEND ONE BYTE
```


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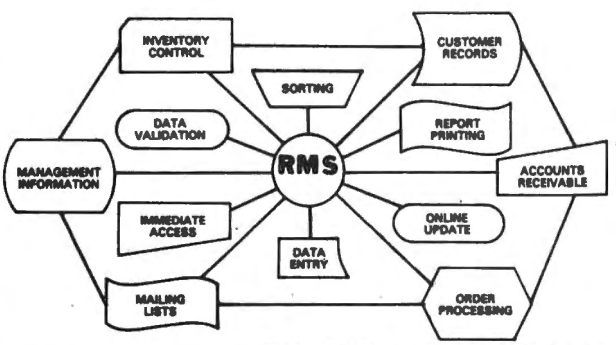
RMS is a complete DATABASE MANAGEMENT package for the 6809 computer. It is made up of five machine language programs that make up the most powerful business programming tool available for the 6809. It can be used by the relative novice, to implement an incredible variety of information storage and retrieval applications, without any programming. However, the programmer can use RMS as part of the solution to a larger problem, saving many hours of unnecessary program development time. RMS can be used to handle data input, editing, validation, on-line retrieval, sorting and printed reports. Custom data manipulation can be filled in by the user's BASIC programs.



SINGLE CPU LICENSE

FLEX*	$200
OS-9+	$250
UNIFLEX*	$300

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64K KORNER
OS-9 - FLEX - RS DOS
By Frank Hogg

What's new on the 64K scene? I'm afraid there isn't much yet. If you look at our ad you will see that we now are offering OS-9 for the 64K CC. We hope to ship on Oct. 1st. but knowing how software is we may miss it. (This is being written the weekend of Aug 20th)

There are now three Disk Operating Systems (DOS) for the color computer disk system. You can have one or all three, just depends on how much money you want to spend. But if you had to choose just one, what would it be?

Lets compare.

The RADIO SHACK system is somewhat limited in that it is only an extension to the Basic and not a real DOS. However it does come with the system and is required by both FLEX and OS-9 for booting them. Its drawbacks are that it only leaves about 30K for user programs and the Basic in ROM does not have many of the features needed for serious programming. (like ON-ERROR) However if you are new to computing or just have light computing needs then there is nothing wrong with staying with it.

Level IV products (an advertizer in CCN) has a program that uses the 64K to enhance the RS DOS for use with 40 and 80 track drives. It copies the Basic in ROM to RAM and then modifies it to work with 40 or 80 track drives. With 40 track drives you get 78 grans instead of 68. In the 80 track I would suppose you end up with 156 grans. the program costs about $22 and is available from Level IV. I hope that we will see other programs that enhance the RS DOS by using 64K, so keep an eye out and let me know of anything you see.

The FLEX system has many advantages, first it is a true DOS. From it you can run any number of languages, with many applications. FLEX leaves 48K available for user programs, which is 18K more than RS DOS. FLEX has been talked about before so I won't belabor it here.

OS-9 is new to the 64K scene. It is quite different from FLEX and RS DOS. OS-9 is UNIX* based. UNIX is a buzzword that you may have heard but aren't familar with. UNIX is what Bell Labs designed to run their computers. As an operating system it is considered to be the best there is. Most of the new 16 bit computers (like the 68000) are claiming to be able to run true UNIX. It is too big to run in 64K and that is why you will see the term 'UNIX like' tacked onto many of the new operating systems for 8 bit computers. OS-9 is one of these and was tailored after the operation and concepts of UNIX.

OS-9 is very easy and nice to use. Over a year and a half ago we decided to support OS-9 with our software. One of the major reasons that we made that decision was the reaction we got from our programmers when they used it. We heard things like, 'OS-9 is neat' or 'OS-9 is nice to work with' and in the case of one programmer, I was told me that over 40% of his FLEX program would not have been necessary if it was written for OS-9. What is it about OS-9 that makes it so hot? Well, I can't go into it in too great a detail, but let me cover the major points.

Let's look at the command level first. This is the part where you type something in to the computer. In RS DOS, you have the 'READY' prompt on the screen. OS-9, like FLEX, is a DOS and not a language. The command level lets you call up different things such as languages and utilities like. Lets look at COPY. In RS DOS you type:

COPY "0:FILE/BAS" to "1:FILE/BAS"

and this is all you can do with it. Here is the same thing in OS-9,

COPY /D0/file.bas /D1/file.bas

Not much different is it? Look at this one:

COPY /D0/file.bas /D1/file.bas&

See the '&' at the end of the line? What happens here is while the copy is going on you will be able to do something else with the computer. The '&' tells OS-9 to do the COPY in the BACKGROUND as a task while you can do something else. You can do this with ANYTHING in OS-9! This is called 'Multi-tasking'.

How about this:

COPY /D0/TXT/file.bas /D1/TXT/TXT2/file.bas

Study this one because here is what's happening. On drive zero in a directory called 'TXT', is a file called 'file.bas' that we are going to copy into the directory called 'TXT2' that is in

another directory called 'TXT' that is on drive one. Got that?

This is what is meant by 'tree structered multilevel file directories' It is like dividing the disk up into many smaller disks. One disk with two directories would be simular to two different disks.

Here is an example of how you would use it in text processing. Suppose you write three different types of letters, one type personal, another business, and the last is to your mistress. You would create three different directories for these three things and keep the appropriate letters in their respective directories.

The last thing I want to cover is random files in OS-9. In most systems, there is some set size for random files, usually the size of a sector. In applications programs, this is taken into account and greatly affects the complexity of the program and the amount of disk space used for the data. In OS-9 there is no set size for any record. This means that you tell the system how big the record is and which one you want. This saves disk space and programming complexity.

To conclude this little tour, I would like to finish with the advice I give everyone who is trying to decide which one to buy. "Buy them all!" Just kidding. What I really say is this. "If your needs require canned software then, FLEX has a larger base of applications software. However if you want or need to create your own or you don't need other applications, then OS-9 is the choice for you" Seeing that you have RS DOS already you know it's strong and weak points. Besides, you don't loose it when you get the other two; it's still there when you want it.

One final point is the fear that we all have about expanding our systems beyond where we are now. RS DOS is NOT upward expandable. What you have is all there is. With FLEX there is a partial upward expansion with UniFLEX. UniFLEX is also UNIT* based but will NOT run on anything less than 96K. Programs written in TSC's XBASIC will transport with some modifications to UniFLEX, but machine language programs will not. Also, there is a smaller software base for UniFLEX.

OS-9 Level I is what is available for the CC. ALL software for OS-9 Level I will run under OS-9 Level II with NO modifications. Level II works with extended memory up to 2 million bytes! Thats like 32 64K CC's. It also makes Multi-user more practical because there are only so many things you can do with 64K.

IN CONCLUSION

RS DOS, because it comes free with the computer, will have the largest user base, but because of its limitations, it will have little high level software.

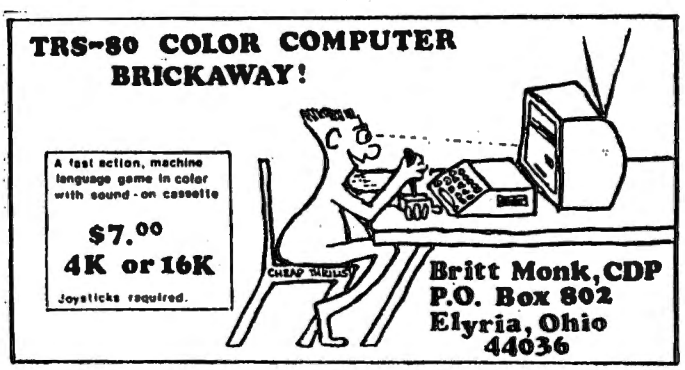
FLEX has been around a long time and will continue to hang in there. It has a large user base and a large software base but is not as powerful as OS-9.

OS-9 is where the future is for the 6809. With its ease of use, powerful capabilites and expandability into OS-9 Level II, OS-9 will be the system of choice for anyone wanting the state of the art in a DOS. In our new quarters we are installing a GIMIX computer with OS-9 Level II and 5 users. We also plan to have several CC's running both FLEX and OS-9, doing tasks around the office. With this at work and a CC at home, I will be able to work on programs at home on the CC OS-9 and bring them into work on the GIMIX Level II OS-9 system. That kind of capability can't be beat.

The choice is not a simple one. Everyone will have to evaluate their own needs and wants and make up there own minds. One thing is certain. No more powerful systems are available for any other computer than is available for your color computer.

Till next month-

*UNIX is a trademark of Bell Labs, FLEX and UniFLEX are trademarks of TSC, OS-9 is a trademark of Microware and Motorola.



REVIEW-SPELL 'N FIX

by Curtis Pratt
Route 1 Box 242-B
Camden, Delaware 19934

Were the last words from your English teacher, "You better get a job with a secretary that can spell, because you sure can't." Now the Color Computer, with a little help from your word processor and SPELL 'N FIX, can help you avoid having to hire a secretary that can spell.

SPELL 'N FIX is a series of programs that allow the user to use the Color Computer to proofread ASCII files. There are two SPELLFIX programs, one in machine language and one in BASIC, that permit the average user to easily modify the operation but still have the speed of machine language. Besides the two SPELLFIX programs to build text files, list text files, convert files from binary code to ASCII code, reset the computer to power up configuration, and a program to expand the dictionary from its compressed version to an expanded version. All these programs are provided with both the tape and disk versions, but not all of the programs can be used with the tape version but are provided if you ever decide to expand up to a disk system. The 27 page manual explains how to modify the tape version to be used on a disk system.

The dictionary is user expandable to any size that is necessary, limited only by the amount of disk space available. You can create custom dictionaries that include technical, medical or other specialized terms. The original dictionary file is quite large and requires almost half a disk. If the dictionary becomes too large to fit on one disk it is possible to split the file over two or more disks.

SPELL 'N FIX is compatible with any word processor that produces an ASCII file. For the other word processors that create binary files, such as TELEWRITER, there is a program that translates these binary files to ASCII files. The manual also explains a modification to the SPELLFIX/BAS program so that special characters generated by some word processors will automatically be ignored.

The SPELL 'N FIX manual is written for people like me who prefer to get right down and see what the program can do instead of reading about how each individual instruction works. The program grouping includes a very short sample file with a single spelling "mistake" in it. The manual explains step by step how SPELL 'N FIX may be used to proofread this file to find and correct this "mistake". after completing the sample problem you are ready to use the program to proofread any file you wish.

On a single disk drive system you simply place the disk containing the programs SPELLFIX/BAS, SPELLFIX/BIN, DICT/DAT and your ASCII file to be proofread in the drive unit. Run the program SPELLFIX/BAS and answer the questions about the use of a printer and what file you are proofreading. The computer will then read in the file you are going to be proofreading. Only the uique words in the text are stored in the computers memory. That is to say, if the text file contains the word "the" 500 times it will only be stored in the computer memory once. The manual claims this method of storage will permit a 32K computer to proofread files of up to 400K.

After reading the file into memory the computer will ask you for the name of the dictionary file you will be using. Then you are asked if you wish to create a new dictionary file. Only the disk version will permit you to add new words to either a new or existing dictionary file. The tape version is unable to add words to the dictionary because it would require two tape files to be open at the same time, which the Color Computer is unable to do.

From here the program begins checking each word in your text against the dictionary. If a word is not found in the dictionary you are shown the word and given the several choices to make. You may add the word to the dictionary, add all new words to the dictionary without review (handy if you merging two dictionaries together), ignore the word, mark only this word for future action, mark all new words without displaying them, or quit SPELL 'N FIX. Not all these choices may be available depending on how you answered earlier questions.

When it is finished proofreading you are permitted to either quit the program right then, save the text with the questionable words marked, or fix all marked words. If you decide to correct the misspelled words you are shown each word that you marked and permitted to change, ignore, or mark the word. all words are shown as they appear in the text to help you decide what type of action you wish to take.

You now have a paper that an English teacher can not find a single spelling mistake. All you have to worry about is if you used the proper words in the proper order along with the proper punctuation.

Although the SPELL 'N FIX program package is able to be run on either a tape or single disk system, it is best suited to be used on a multiple disk drive systems. The size of the

TELEWRITER™
the Color Computer Word Processor

TELEWRITER

Telewriter is the powerful word processor designed specifically for the Color Computer. It can handle almost any serious writing job and it is extremely easy to use. It has all the advanced features you need to create, edit, store, format and print any kind of text. With Telewriter you can quickly produce perfect, finished copy for letters, reports, term papers, articles, technical documentation, stories, novels, screenplays, newsletters. It is also a flexible and efficient way to take notes or organize ideas and plans.

51 × 24 DISPLAY

The Color Computer is an incredibly powerful and versatile computer, but for text editing it has some major drawbacks. The small 32 character by 16 line screen format shows you too little of the text and, combined with its lack of lower-case letters, bears little resemblance to the way text really looks on the page. Reverse video in place of lower case just adds confusion.

Telewriter eliminates these shortcomings with **no hardware modifications required.** By using software alone, Telewriter creates a new character set that has **real lower case letters,** and puts 24 lines of 51 characters on the screen. That's more on-screen characters than Apple II, Atari or TRS-80 Model III. That's more than double the Color Computer's standard display.

FULL SCREEN EDITOR

The Telewriter editor is designed for maximum ease of use. The commands are single key (or single key plus control key), fast, and easy to remember. There is no need to switch between insert modes and delete modes and cursor movement modes. You simply type. What you type is inserted into the text at the cursor, on the screen. What you see on the screen is always the current state of your text. You can move quickly through the text with one key cursor movement in all 4 directions, or press the shift key simultaneously for fast, auto-repeat. You can jump to the top or bottom of the text, the beginning or end of a line, move forward or backward a page at a time, or scroll quickly up or down. When you type past the end of the line, the wordwrap feature moves you cleanly to the next.

You can copy, move or delete any size block of text, search repeatedly for any pattern of characters, then instantly delete it or replace it with another. Telewriter gives you a tab key, tells you how much space you have left in memory, and warns you when the buffer is full.

. . . truly a state of the art word processor. . . outstanding in every respect.

— The RAINBOW, Jan. 1982

The only one with all these features for your TRS-80 Color:

51 column × 24 line screen display
Sophisticated full-screen editor
Real lower case characters
Powerful text formatter
Works with any printer
Special MX-80 driver
Runs in 16K or 32K
Disk & cassette I/O
requires absolutely no hardware modifications

FORMAT FEATURES

When it comes time to print out the finished manuscript, Telewriter lets you specify: left, right, top, and bottom margins; line spacing and lines per page. These parameters can be set before printing or they can be dynamically modified during printing with simple format codes in the text.

Telewriter will automatically number pages (if you want) and automatically center lines. It can chain print any number of text files from cassette or disk without user intervention. You can tell it to start a new page anywhere in the text, pause at the bottom of the page, and set the Baud rate to any value (so you can run your printer at top speed).

You can print all or any part of the text buffer, abort the printing at any point, and there is a "Typewriter" feature which allows you to type straight to your printer. Because Telewriter lets you output numeric control codes directly (either from the menu or during printing), it works with any printer (LPVII, LPVIII, MX-80, Okidata, NEC 8023, C. Itoh 8510, Centronics, GE Terminet, Smith Corona TP-1, etc.). There's even a special driver for the Epson MX-80 that lets you simply select any of its 12 fonts and do underlining with a single underline character.

CASSETTE AND DISK I/O

Because Telewriter makes using cassette almost painless, you can still have a powerful word processor without the major additional cost of a disk. The advanced cassette handler will search in the forward direction till it finds the first valid file, so there's no need to keep retyping a load command when you are lost in your tape. The Verify command checks your cassette saves to make sure they're good. You can save all or any part of the text buffer to disk or cassette and you can append pre-existing files from either medium to what you have in the buffer already.

The disk version can be simply customized to the precise number of drives in your system. From the disk menu, you can list any directory (including free space) to the screen or to the printer, rename or delete files, set the default drive and return to BASIC.

ASCII COMPATIBLE

Telewriter turns your Color Computer into the most powerful, lowest cost, word processor in the world today. But that's not all. The simple ASCII conversion program provided with Telewriter (for both cassette and disk) means you can use the full power of the Telewriter editor for creating and editing BASIC and assembly language programs. It means you can use Telewriter to prepare or edit text files used with any data communications program.

Telewriter costs $49.95 on cassette and $59.95 on disk. To order, send check or money order to:

Cognitec
704 Nob Ave.
Del Mar, CA 92014

Or check your local software store. If you have questions about Telewriter, call us at (714) 755-1258 weekdays, 7AM-4PM PST.

And now you can get a complete text processing/communications package direct from Cognitec.

Telemaster-1: gives you Telewriter along with Colorcom/E, the most flexible smart terminal program available for the Color Computer. Package price: $94.95.

Telemaster-2: gives you Telewriter plus Spell 'n Fix—the professional FLEX spelling checker, now available for the Color Computer. Package Price: $109.95.

Telemaster-3: includes Telewriter, Spell 'n Fix, and Colorcom/E—all 3 for $154.95.

Please specify cassette or disk. For disk versions add $10.00 to package price. Mastercard/Visa accepted. Allow 2-3 weeks for personal checks. Add $2.00 for shipping and handling. California residents add 6% state tax. Send SASE for copies of reviews from major Color Computer and TRS-80 magazines.

. . . one of the best programs for the Color Computer I have seen . . .

— Color Computer News, Jan. 1982

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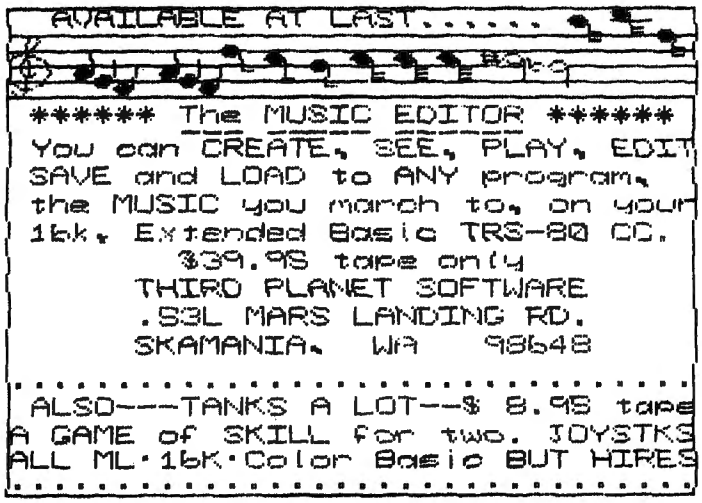
dictionary file is the main problem because it requires half a disk or more leaving little room for the text file and the other program necessary for proofreading.

Overall I would recommend the SPELL 'N FIX program package to anyone with a Color Computer disk system and who does a lot of writing. You can buy the SPELL 'N FIX program package for $69.29 from Star Kits, P.O. Box 209, Mt. Kisco, NY 10549.



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KATERPILLAR

Reviewed by: John G. Eichenlaub
294 Eastwood Avenue
Delaware, OH 43015

Well, it had to get here eventually. I'm sure there are many color computer owners who remember the "early days" (a year ago or more). Those were the days when you scoured every piece of computer literature you could find, looking for programs that really "did something" with the TRS-80C.

Then you discovered COLOR COMPUTER NEWS and RAINBOW magazines, and found that the Color Computer was even more versatile than you had thought. And, hey, there ARE programs available for the CC. Somewhere during this time period you signed up for Chromasette Magazine, and soon a cassette tape arrived with a good mix of programs, ready to load and run. Now things were beginning to roll.

But what about the Arcade games? Well, during the past few months, the availability of Arcade-style games has gone from "If you can find it, buy it" to the present, where most of the popular Arcade games are available for the TRS-80C. Many of the games are available in several versions, so that one often has to decide not only which game, but which version to buy.

One of the big Arcade hits that has been unavailable thus far has been "Centipede". Now Tom Mix Software has filled the gap with "Katerpillar", and it is sure to be a hit.

"Katerpillar" is VERY similar to the original. When my son, John, showed off the game to two of his friends, each had the same comment: "Hey, that's exactly like Centipede." Well, not exactly, but odds are that anyone worrying about the slight differences has already dropped enough quarters in the Arcade game to buy this program.

The play is the same as the original. The Katerpillar starts at the top of the screen, weaving its way down through a field of mushrooms. The player roams the bottom of the screen, trying to destroy the Katerpillar. Our old friend the Flea drops down, leaving a trail of mushrooms behind him. And of course the ever-present Spider flits across the screen, ready to pounce on the unwary player. The only critter not present is the Scorpion. Note that I didn't say "missing" as this machine language program is FAST, and keeps the player busy as is.

Personally, I prefer the joystick action over the roller-ball of the original. This factor, along with the fast action, excellent color graphics and sound, rates "Katerpillar" quite favorably with the Arcade game.

"Katerpillar" should make a welcome addition to any Gamester's library, especially that of the "Centipede" fan.

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*Requires Color Computer (®Tandy Corp.) with 32K, Extended Basic and cassette or disk.

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COMPARISON CHART	SUPER COLOR WRITER			THE COMPETITION		
System Size	4K	16K	32K	4K	16K	32K
TAPE Text space	N/A	8K	24K	N/A	2K	18K
ROMPAK Text space	2.5K	15K	31K	N/A	N/A	N/A
DISK Text space	N/A	6.5K	22.5K	N/A	0.5K	16.5K
Right Justify		YES			NO	
Video Window		YES			NO	
Edit any ASCII File		YES			NO	

The figures speak for themselves and with professional features like PROGRAMMABLE function string commands to perform up to 28 commands automatically. PROGRAMMABLE text file chaining, PROGRAMMABLE column insert & delete, and right hand JUSTIFICATION with punctuation precedence, the choice is clear but there's still more!

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NEATPRINT

by E.J. Haas
3448 S. Marcella Ave
Stow, OH 44224

When looking at the flow and logic of a program, I find it much easier to do it on paper than on the screen, especially if there is no way to scroll backwards through the listing as is the case with the COLOR COMPUTER. Therefore I always keep a hard copy of my programs.

My Line Printer VII does a satisfactory printing job but the LLIST function of BASIC does not observe page boundries and the printer "folds" long lines at a fixed number of characters rather than at a logical point in the line.

Furthermore if you use the "compressed" method of entering programs with minimum blanks to save memory space as I do, the listings are very difficult to read.

To overcome these shortcomings I wrote a program which would read a tape containing the program I wished to list (CSAVE'd in ASCII format, of course), break each statement into logical lines and print each logical line separately with keywords surrounded by blanks.

A logical line for this purpose is defined as one that ends with a carriage return character or begins with a colon or apostrophe, or with the keywords THEN, ELSE, or REM. Thus the "IF" statement will appear as:

IF condition
THEN statement
ELSE statement.

A header line consisting of the program name (as used on the tape) and the page number is printed at the top of the page and blank lines are printed at the bottom to space over the perforations.

While I was at it, I decided to print all REM lines in double width characters so that significant program divisions could be easily discerned.

This resulted in a neat easily readable listing with practically no folded lines.

There was one thing that did bother my parsimonious nature-almost half the page was blank! It seems that, in most cases, the 32 character line length of the COLOR COMPUTER is adequate to display logical statements. This gave me the idea of printing the listing in two columns reading down the left side and continuing on the right side.

When this was done the folded line problem again became serious. To correct this code was inserted in the program to examine the first 32 characters of long lines for a blank or puctutation character closest to but not beyond the 32nd character position. If such a character is found the line is folded at that point, otherwise it is folded at the 32nd character position.

The final result is the program which I called "NEATPRNT" listed here.

The program begins at line 90 where certain variables are initialized and most of the remaining memory is cleared for string storage. The AUDIO ON statement is not required-it was just to test lines 190 through 210. You see I am so frugal I used the program to debug itself.

Lines 100 through 120 are the lists of keywords (contained in DATA statements) which may require a space following them to make reading easier. Note that the keywords which require a left parenthesis (e.g. CIRCLE) following them are not listed since a space inserted before the parenthesis would not improve readability.

As a point of interest note that a string constant in a DATA statement need not be enclosed in quotation marks. The single exception I have found is the colon which would be otherwise interpreted as the end of the line. The other notable peculiarity is that while a comment (beginning with an apostrophe) may appear at the end of most lines they may not appear at the end of a DATA statement line or it will be interpreted as data.

The next 3 lines introduce the program, obtain the file name to be listed from the user and when found print the page header.

Following this is the main program loop which reads a record and dispatches to various program segments depending on the presence of certain keywords.

Only 12 keywords require special processing. These are generally multiple word keywords such as MOTOR ON or GO TO; constructs containing multiple keywords such as IF/THEN/ELSE or FOR/TO/STEP; keyword statements that may contain keywords not enclosed in quotation marks such as the DATA statement; and finally the REM statement which is processed specially to print double width characters.

After processing the special keywords or if a non-special keyword is detected, control is sent to lines 470 & 480 where a space may be added following the keyword.

At statement 490 the program flow is joined with the processing of non-keyword statements, where lines 490 through 560 detect

and process the end of logical lines plus any imbedded keywords such as AND, OR and NOT.

Lines 570 through 620 handle the folding of long lines while 630 pads short lines and begins the printing when sufficient lines have accumulated.

The main program ends with lines 640 and 650 which close the tape file and space the printer to the top of the next page.

The subroutines at 660 and 740-750 do the actual printing and paging. The one at 670 clears leading spaces from the input line while the one at 690 removes the portion of the line which has been processed.

Finally the subroutine at 680 examines the beginning of the line for any of the keywords listed in the DATA statement while the one at 710-730 transfers the contents of the input line to the output line, removing excess spaces except when enclosed in quotes and the one at 760-800 which searches for special keywords and characters.

Now if I could figure out an easy way to print on both sides of the paper.....

```
10 'NEAT PRINT
20 '(c) 1982 by
30 'E.J.Haas
40 '      3448
50 'So.Marcella
60 '    Ave.
70 '  Stow, OH
80 '    44224
90 AUDIOON:PMODE0:CLEAR200:PCLEA
R1:CLEARMEM-500:LM=46:DIML$(62):
CL=0:FI=-1:LETPR=-2
100 DATA5,CLEAR,6,CLOADM,5,CLOAD
,5,CLOSE,3,CLS,5,COLOR,6,CSAVEM,
5,CSAVE,3,DEL,3,DIM,6,DLOADM,4,D
RAW,4,EDIT,3,END,4,EXEC,5,INPUT,
3,LET,5,LLIST,4,NEXT,5,OPEN,6,PC
LEAR,4,PCLS,5,PLAY,5,PMODE,4,POK
E,5,PRINT,4,READ,5,RENUM,6,RETUR
N,3,RUN,6,SCREEN,5,SKIPF
110 DATA5,SOUND,4,STOP
120 DATA5,AUDIO,4,DATA,3,DEF,4,E
LSE,3,FOR,2,GO,2,IF,4,LINE,5,MOT
OR,2,ON,3,REM,4,THEN,1,',1,":"
130 CLS:PRINT@10,"NEAT PRINT"
140 INPUT"ENTER FILE NAME";NA$:I
FNA$=""THENAUDIOOFF:ENDELSEOPEN"
I",FI,NA$:PG=1
150 I=0:LN=40-LEN(NA$):PRINT#PR:
PRINT#PR:PRINT#PR,STRING$(LN," "
);CHR$(31);NA$;CHR$(30);CHR$(16)
;"66";"Page";PG:PRINT#PR:PG=PG+1
160 IFEOF(FI)THEN640ELSELINEINPU
T#FI,I$:IFI$=""THEN160ELSELN=INS
TR(1,I$," "):L$(I)=L$(I)+MID$("
   "+I$,LN-1,6):GOSUB690
170 GOSUB680:IFJ>48THEN490ELSEGO
SUB710:IFJ<35THEN470
180 ONJ-34GOTO200,230,250,360,28
0,300,320,380,200,400,420,360,42
0,170
190 ' PROCESS AUDIO & MOTOR
200 LN=3:IFLEFT$(I$,2)="ON"THENL
N=2
210 GOSUB700:GOTO490
220 'PROCESS DATA
230 L$(I)=L$(I)+" ":J=LEN(I$):M=
256:S$=":":GOSUB760:GOTO550
240 ' PROCESS DEF
250 LN=4:IFLEFT$(I$,2)="FN"THENL
N=2
260 GOSUB700:IFLN=4THEN490ELSE47
0
270 ' PROCESS FOR
280 LN=INSTR(1,I$,"TO")-1:GOSUB7
00:LN=2:GOSUB700:LN=INSTR(1,I$,"
STEP")-1:IFLN<0THEN470ELSEJ=INST
R(1,I$,":")-1:IFJ>0ANDJ<LN THEN4
70ELSEGOSUB700:LN=4:GOSUB700:GOT
O470
290 ' PROCESS GO
300 LN=3:IFLEFT$(I$,2)="TO"THENL
N=2
310 L$(I)=L$(I)+LEFT$(I$,LN):GOS
UB690:GOTO470
320 'PROCESS IF
330 J=LEN(I$):L$(I)=L$(I)+" ":S$
="THEN":GOSUB760:IFK<J THENJ=K:G
OTO520
340 S$="GO":GOSUB760:IFK<J THENJ
=K:GOTO520ELSE520
350 ' PROCESS ELSE & THEN
360 L$(I)=L$(I)+" ":GOTO170
370 ' PROCESS LINE
380 IFLEFT$(I$,5)="INPUT"THENLN=
5:GOSUB710:GOTO470ELSE470
390 ' PROCESS ON
400 LN=INSTR(1,I$,"GO")-1:GOSUB7
00:L$(I)=L$(I)+" ":GOTO170
410 REMPROCESS REM & '
420 J=LN:I$=CHR$(31)+I$+CHR$(30)
:LN=LEN(I$)
430 IFLN<4THENI$=LEFT$(I$,LN-1)+
STRING$(4-LN," ")+CHR$(30):LN=4
440 IFLN>(29-J)/2THENI$=LEFT$(I$
,(27-J)/2)+STRING$((23-J)/2,CHR$
(30))+CHR$(31)+RIGHT$(I$,LN-(27-
J)/2)ELSEI$=I$+STRING$(LN-4,CHR$
(30))+STRING$(29-J-2*LN," ")
```

```
450 LN=25-J:Q=2:GOSUB700:IFLEN(I
$)>2THENGOSUB740:LN=LEN(I$):J=-1
:L$(I)=L$(I)+"      ":GOTO430ELSE
LN=0:I$="":GOTO630
460 'PROCESS OTHER KEYWORDS
470 IFLEFT$(I$,1)<"A"THENIFLEFT$
(I$,1)>"9"ORLEFT$(I$,1)<"0"THEN4
90
480 L$(I)=L$(I)+" "
490 J=LEN(I$):S$="ELSE":GOSUB760
:IFK<J THENJ=K
500 S$=":":GOSUB760:IFK<J THENJ=
K
510 S$="'":GOSUB760:IFK<J THEN J
=K'COMMENT AT END OF STATEMENT
520 L=3:M=256:S$="AND":GOSUB760:
IFK<M THENM=K
530 S$="OR":GOSUB760:IFK<M THENM
=K:L=2
540 S$="NOT":GOSUB760:IFK<M THEN
M=K
550 IFM<J THENLN=M:J=LEN(I$)-J:G
OSUB710:L$(I)=L$(I)+" ":LN=L:GOS
UB710:J=LEN(I$)-J:L$(I)=L$(I)+"
":GOTO520
560 LN=J:IFLN>0THENGOSUB710
570 IFLEN(L$(I))<33-38*CL THEN63
0ELSELN=0:FORK=7-38*CL TO32-38*C
L:FORL=1TO12:IFMID$(L$(I),K,1)=M
ID$("() *+,-/;<=>",L,1)THENLN=K:
L=12
580 NEXTL,K:IFLN=0THENLN=32-38*C
L
590 IFMID$(L$(I),LN,1)="("THENLN
=LN-1
600 IFL$(I+1)=""THENL$(I+1)=STRI
NG$(-40*CL," ")
610 L$(I+1)=L$(I+1)+"      "+RIGH
T$(L$(I),LEN(L$(I))-LN):L$(I)=LE
FT$(L$(I),LN)
620 GOSUB740:LN=LEN(I$)-1:GOTO57
0
630 GOSUB740:IFLEN(I$)>0THENIFL$
(I)=""THENL$(I)=L$(I)+STRING$(5-
32*CL," "):GOTO170ELSEL$(I)=L$(I
)+"      ":GOTO170ELSEIFI<LM THEN
160ELSECL=NOT CL:IFCL THENI=0:GO
TO160ELSEGOSUB660:GOTO150
640 CLOSEFI:IFNOT CL THENI=0
650 GOSUB660:GOTO140
660 IFL$(I)<>""THENPRINT#PR,"
  ";L$(I):L$(I)="":I=I+1:GOTO660
ELSEFORI=I TO61:PRINT#PR:NEXTI:R
ETURN
670 IFLEFT$(I$,1)<>" "THENRETURN
ELSEI$=RIGHT$(I$,LEN(I$)-1):GOTO
670
680 RESTORE:FORJ=1TO48:READLN,KW
$:IFLEFT$(I$,LN)=KW$THENRETURNEL
SENEXTJ:RETURN
690 I$=RIGHT$(I$,LEN(I$)-LN):GOS
UB670:RETURN
700 L$(I)=L$(I)+" "
710 IFLN<1THENRETURNELSEFORK=1TO
LN:IFMID$(I$,K,1)=CHR$(34)THENQ=
NOTQ
720 IFQ THENL$(I)=L$(I)+MID$(I$,
K,1)ELSEIFMID$(I$,K,1)<>" "THENL
$(I)=L$(I)+MID$(I$,K,1)
730 NEXTK:Q=0:GOSUB690:RETURN
740 IFCL THENPRINT#PR,"      ";L$
(I):L$(I)=""ELSEL$(I)=LEFT$(L$(I
)+STRING$(26," "),32)
750 I=I+1:RETURN
760 Q2=0
770 K=INSTR(Q2+1,I$,S$)-1:IFK>0A
NDS$=>"A"THENIFMID$(I$,K,1)=>"A"
THENQ2=K+2:GOTO770
780 Q1=INSTR(Q2+1,I$,CHR$(34)):I
FQ1>0THENQ2=INSTR(Q1+1,I$,CHR$(3
4)):IFQ2<K THEN780ELSEIFK=>Q1 AN
DK<Q2 THEN770
790 IFK<0THENK=256
800 RETURN
```


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A REVIEW - COLOR BONANZA

by: Theodore Hasenstaub
17401 Dartmouth Avenue
Cleveland, OH 44111

What's that you're saying? You have finally saved enough money to purchase your first 4K "COLOR COMPUTER", and realize that now you face two choices; one, program the computer yourself, or, two, purchase some ready to run software. Well, with a quick trip down to your local Radio Shack Store, you should be able to remedy this problem; maybe. True, Radio Shack is now providing good support for the "COLOR COMPUTER", over 25 plug in program cartridges, memory upgrades, disc drives, and more things promised to come in the future. However, you soon find out that these program cartridges start out with a price tag of $29.95 and up attached to them, and that they only contain one program on them! No doubt, some of these programs are well worth the price, but you undoubtably hesitate a little on purchasing one because of the cost. Two of these programs could run your purchase up to around $58.00 or more! But what are alternatives? One solution to this dilemma may be the "COLOR BONANZA" package, distributed by Soft Sector Marketing.

"COLOR BONANZA" is being advertised as 50 ready to run programs for your "COLOR COMPUTER", at less than a dollar per program. Well, lets take a closer look at this. My thinking has always been under the assumption that, "If it sounds to good to be true,....it probably is". Well, I've changed my thinking, now that I've found and tried "COLOR BONANZA".

"COLOR BONANZA", at a price of $49.95 comes to you on six cassette tapes in a folding plastic album. It also contains a pamphlet explaining loading procedures, and instructions necessary to run certain programs. This package of programs is unique in the fact that it contains a variety of programs for all configurations of the "COLOR COMPUTER", from 4K to 32K Extended BASIC. I know of no other cassette based software package that offers you this. These options enable you to already have on hand, a collection of programs to run at a future date, as you upgrade your "COLOR COMPUTER".

For the 4K users, 14 programs are available for you to run. Yes, before you ask, there are some very simple programs here that undoubtably will not appeal to most users. You will also find a few grammatical errors. But if you're just starting out with computers and programming, you should, without much difficulty, be able to learn some basic programming techniques, by listing out the program and then changing some of the programs variables. I'm sure you will like the "DODGE" program, which is

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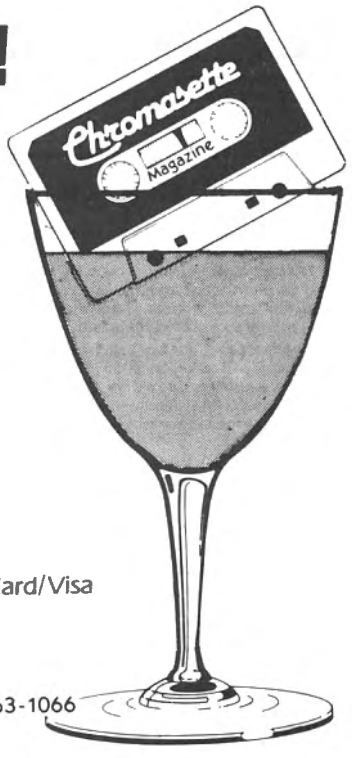

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The Fine Print:
All issues from July 1981 available — ask for list. Programs are for the Extended BASIC model and occasionally for disks.

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COLOR COMPUTER DISK SYSTEM

We offer a complete disk drive interface system for the color computer, featuring the Tall Grass Technologies Double Density, buffered disk controller card. The disk interface board plugs into the color computer expansion socket and provides for doubling the storage capacity of single density type disk drives by using GCR encoding / decoding techniques. Power may be taken internally from the system or from an external power supply (not normally required even with piggyback 4116's installed)..This controller will support up to 4 single/double density, single/double sided 5 & 1/4 inch disk drives. These include Shugart 400 series, Siemens 82, TEAC 50 series, Pertec FD200, MPI B51/52/91/92, Tandon and others. The controller uses standard 10 sector diskettes and does not read or write the soft-sectored IBM style formats used by TRS-80 or FLEX systems. Two reasons for not using a soft sectored system are cost and reliability:

The Tallgrass double density format offers more margin for worn diskettes, dirt etc. and less expensive single density disk drives & diskettes. All you need to add to have a complete disk system is a disk drive / cable.

DISK OPERATING SYSTEM (DOS)

The Disk Operating System for the Tallgrass Technologies Disk controller (CCMD+9) is a full featured "BASIC" compatible operating system. It is fully integrated with the ROM basic system already in the color computer and automatically is initialized upon system power on much the same as the R.S. disk system does. But there is a big difference between that disk system and CCMD+9. First of all we support any mix of 35, 40 or 80 track single or double sided disk drives, which allows a minimum of 4 times the storage capacity of the "other" disk system. We also make far better use of the disk storage space by using sector allocation for each file instead of the granual method of 8 sector blocks which can waste anywhere from 1 to 7 sectors for each file on the disk. For example, on their DOS, if 5 files each required only 2 sectors there would be 40 disk sectors allocated, a waste of 30 disk sectors or almost 4 "granuals". This is not the case in our disk system, only the required number of sectors would be used.

Many other disk systems using a sector allocation system have a problem with file fragmentation and excessive seek time after a disk is used over and over adding and deleting files until it becomes so bad that the disk must be re-formatted to correct the problem. With CCMD+9 this is not the case, as files are deleted the disk space is automatically repacked to help keep files from being fragmented and decrease access time.

The DOS is contained in a ROM on the disk controller the same as the R.S. disk system so you don't have to "bootstrap" the DOS off of a disk and it doesn't get clobbered easily by a runaway program as most ram based systems do. The DOS does "NOT" require Extended Basic and will run on a 4, 16 or 32K system without any modifications. CCMD+9 uses approximately 1K of ram for the disk system which is taken from the top of memory, this allows all previously purchased tape software to function with the disk system, this is not so with the R.S. disk system.

CCMD+9 supports both Basic and Machine language programs. It is easily accessible to the beginner or advanced machine language programmer with easy to use and well documented entry points to perform disk as well as screen/printer/keyboard input & output. It includes 10 disk file functions to open, close, read/write random or sequential files, read specific sector of file, flush sector buffer to file, close & rewind file (re-open) and process disk system errors. The screen/printer/keyboard I/O functions include: input character, output character, output text string, output carriage return, output 2/4 hex characters, output space character and read/write single disk sector.

The "BASIC" interface system allows Basic and Basic programs to communicate with the disk system much the same as the R.S. disk system does with a few added features. It includes both Direct and Indirect basic commands, Direct commands can be executed any time and Indirect commands are contained with "Basic" programs. The Direct commands include: LOAD or SAVE (binary/ASCII basic program disk file), CHAIN (load & execute basic program) and CDOS "disk command". The "CDOS command allows you to execute a specific disk command from the free standing disk system, these include: LOAD/SAVE machine language or memory file, REMOVE one or more disk files, CHANGE disk file name, CHECK disk file for errors, ANALYZE disk directory, STRACK set tracks & sides for disk drive, SCMP set compare on/off, RUN load & execute machine language disk program. GOTO execute machine language program at specified address, and NEW initialize disk. If the "CDOS" command is executed without any command following control is passed to CCMD+9 where any of the previously mentioned commands can be executed directly thus providing total control of the entire system. The command system is easy to learn and remember with a minimum of effort on the users part. The BASIC interface system was designed to be compatible with the existing I/O commands used with tape files for easy conversion and upgrading to disk. When using Basic disk files up to 9 files can be active at once with all disk file memory allocation being done automatically at run time, you don't have to reserve file space as with the R.S. disk system. The indirect basic commands include: Open, Print, Input, Line Input (ext. Basic), EOF, Rewind, Close, Print Using (Ext. Basic), these all function in the same manner as basic tape file I/O.

CCMD+9 has one other unique feature not found in most disk systems. Each disk initialized by the system is assigned a disk label which can be used instead of a disk drive number, the system will automatically locate which drive the diskette is on and use it accordingly. This can be very usefull in basic programs which use files on multiple disks, you don't have to worry which disk belongs in which drive.

Part of the power and flexibility of CCMD+9 lies in the Disk Utility System which allows the system commands to be greatly expanded by adding utility or transient disk commands. These commands are automatically handled by the system so as not to overwrite Basic programs in memory and can even be called by a Basic program in some cases. For example you can perform a disk copy or backup while still preserving a basic program currently in memory, no other system that we know of has this ability. We currently have a list of utilities available and will be adding to it constantly to improve the system.

SOFTWARE SUPPORT

This disk system is the most recent one to enter the color computer disk market and is currently the only one with any disk software to support it. There should be no problem in the future with a lack of software for this system because, it is extremely easy to interface software to. We currently have available for the disk system: a Disk Assembler which allows files larger than memory to be assembled, a Disk Text Editor which makes writing Basic and Assembler programs easy and also will edit files larger than memory, a Disk Text Editor/Processor (WORD PROCESSOR) "TEXTPRO1 which is easy to learn and extremely powerful for its price range, TEXTPRO II is an advanced version with expanded features: programmable tabs, 3 line processable headers, decimal/center/right justify/ horizontal tabs, keyboard input processing and more. A Disk Disassembler/Source generator, a Disk system monitor which includes all of the "TRSMON" monitor commands & has access to all of CCMD+9 disk commands & automatically locates itself at the top of memory to stay out of the way, and a full compliment of disk utilities. The utility disk includes: full disk backup, build disk text file from keyboard, 24 hour screen clock, single or multiple disk file copy, text file executive processor, ASCII/HEX file dump/list/map utility, ASCII file lister/printer, and a disk relabel utility. All at prices far below what other disk system software sells for.

TG-99 Disk Controller w/CCMD+9 DOS ROM	**$159.95**
CCASM9 Disk Assembler	**$ 34.95**
CCEDT9 Disk Text Editor	**$ 24.95**
CCDISS Disk Disassembler Source Generator	**$ 29.95**
CCTPR1 Disk Text Editor/Word Processor TEXTPRO 1	**$ 39.95**
CCTPR2 Disk Text Editor/Word Processor TEXTPRO 2	**$ 59.95**
CCUTLY Disk Utilities	**$ 19.95**
DOSMON Disk system monitor/utility program	**$ 29.95**
CGAME1 HI-RES Graphic games Space Invaders, Meteriolds, Space War	**$ 49.95**
CGAME2 Mixed games Battle Fleet, Space Traders, Adventure	**$ 39.95**

SPECIAL LIMITED OFFER

We have a complete disk system package available that includes: a 40 track single sided disk drive with power supply, case, 2 drive cable, TG-99 controller w/CCMD+9 and a disk containing CCUTLY disk utilities and CCEDT9 disk editor all assembled and tested for $499.00
Additional 40 track drive with power supply & case tested. $300.00

For double sided drives add $100.00 per drive. Add $5.00 per drive for shipping, NO COD's on disk drives or disk system special. Shipping for disk controller add $2.50, for Disk software only add $1.00. Visa & M/C add 3% (this is what the bank charges us).

Manufactured under license from Tall Grass Technologies.

CO RESIDENT EDITOR/ASSEMBLER

Co-resident Editor/Assembler that will allow the user to create, edit and assemble machine language programs for the color computer. The editor portion of the program is similar to the text editor in TEXTPRO. The assembler will output machine object code to either cassette tape in a 'CLOADM' readable format or directly to memory for direct execution. The assembly listing can optionally be output to the printer connected to the RS-232/Printer port on the color computer. All errors are displayed with a full text message for easy identification. The assembler supports the full compliment of the M6809 instruction set and also will cross assemble 6800 source code to produce M6809 compatible object code.

CO-RES9 **$39.95**

SYSTEM MONITOR

TRSMON is a 2K system monitor program that will allow you to explore the workings of the color computer. It features 9 debuging commands, tape load and save compatible with Basic "CLOADM", up/down load via RS232 port, terminal package that allows the color computer to be used as a terminal at baud rates up to 9600 baud and a printer driver to direct display output to the printer for memory dumps, disassemblies etc. The program is position independent so it can be moved anywhere within the system memory. A very powerful tool at a very reasonable price. Commands include:

Memory examine & change, Goto defined address, Load Tape program (w/offset), Load Motorola S1-S9 file (RS232), Save Tape program, Send memory file S1-S9 (RS232), Set and/or display breakpoints, Remove one or all breakpoints, Define printer/terminal baud rate, Set and/or display registers, Dump memory in Hex & Ascii format, Disassemble memory file, Terminal mode & optional buffer, Fill memory, Move block of memory, Find memory byte sequence, Exit monitor to Basic, Exit monitor to Rom Pack ($C000), Re-initialize monitor, Direct output to printer.

TRSMON ON TAPE	**$19.95**
TRSMON on 2716 Eprom	**$34.95**

8K COLOR RAM/EPROM CARTRIDGE HOLDS 4-2716 EPROM or RAM	**$24.95**
2K RAM CHIPS $19.95	**2716 EPROMS $14.00**
5¼" DISKETTES, SOFT OR HARD SECTOR, BOX OF 10	**$30.00**
MOTOROLA 6809 PROGRAMMERS MANUAL	**$11.95**
+ $2.50 SHIPPING 1ST CLASS	

TEXTPRO
TEXT EDITOR/PROCESSOR

TEXTPRO is a complete text editor & text processing program for the Color Computer. The program includes our powerful full function text editor plus the added features of a text processor. The entire program utilizes only 6K of memory space including the tape, screen and keyboard buffers. It is extremely fast in editing and processing text files and is compatible with Basic ASCII formatted tape files.

The Editor itself includes 24 commands including string search & replace; line and automatic line edit modes which allow you to insert, delete, change or add characters. Automatic line editing allows you to skip forward and backward for checking and editing, all screen editing immediately updates the screen so you know exactly what you are doing at all times. The Editor also has commands to move or copy single lines or blocks of text from one place to another. Some of the other commands include Tape load, save and append; Automatic line numbers, delete line, set input line length and printer output.

The Text Processor includes 29 commands for formating the output, some of them include: page length, left margin, top & bottom margin, line length, justify & fill modes, page heading, center line, double width print, margin control, single, multiple & special indent modes, test lines left on page, display & input from keyboard and even special control codes can be sent to the printer for different print densities etc. It even has a repeat command with a next command to redo all of or a portion of the file as many times as needed. TEXTPRO will turn your color computer into a full fledged text processing machine at a price you won't believe. Available on 'CLOADM' compatible cassette.

SPECIAL INTRODUCTORY PRICE $29.95
RS. DISK VERSION $49.99

DATAPACK
DATA COMMUNICATIONS PACKAGE

DATAPACK is a Terminal package program for the COLOR COMPUTER, allowing you to use the color computer as a buffered computer terminal through a modem to a time sharing network or as a direct connect terminal to another computer system at rates up to 9600 baud. This program is more than a standard "Videotext" type program in that it will allow you to save data stored in the buffer either to cassette tape, or output a hard copy to a printer. The data buffer is automatically set to the maximum size of your system memory when entered to allow maximum space for saving data. The program includes features to send control codes and to enable or disable keyboard echo. When the terminal mode is exited the contents of the buffer may be viewed on the screen or saved to tape for later loading. Also the RS-232 port can be used to plug your printer back in for sending the screen buffer to the printer. An additional feature is the ASCII format that is used on tape is compatible with the CER-COMP Text Editor program and BASIC, enabling you to edit or delete unwanted information.

PRICE: $24.95 ON CASSETTE
RS. DISK VERSION $49.95

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a race track simulation in Low Resolution graphics. The "STOCK MARKET" simulation is also challenging.

For 16K Non Extended users, there are 28 programs (these include the 14-4K programs). Some of these include; "FIND", which enables you to create your own number puzzles (printer required), an ARTIFICIAL INTELLIGENCE program, a WORD PUZZLE game, and a demo of "MASTER CONTROL", which will give you auto line numbering and a custom programmable key. Also included are a RAM TEST program, a TRACE program (enables you to trace through machine language programs), and a DISASSEMBLER which includes a printer output option.

For 16K Extended users, you will be able to run 46 programs (includes all above programs plus 18 more). These include a good variety of graphic programs and games. "LUNAR LANDER", "FOOTBALL", "PROTECT" (defend your cities), "FLIP/FLOP" (Othello), and "ATTACK", to name a few. You will also find some home programs, "CHECKBOOK", "MORTGAGE", and some educational programs for the children.

Finally, the 32K Extended users. You will be able to run the entire package of 50 programs. All the above mentioned programs, plus 4 High Resolution graphic games, my favorite being "CARTEL", a board game based on the popular game of MONOPOLY (almost identical). No instructions are given to play "CARTEL" (also FLIP/FLOP), because they are based on Copyrighted games, but they are very easy to understand. In the game "CARTEL", six people may play simultaneously. For those "ATHLETIC JOCK'S", the "HURDLER" program will most likely appeal to you. It is a game which enables you, the track runner, to hurdle over an everchanging set of hurdles. "DRAWER II" is a program that enables you to draw in High Resolution graphics (PMODE 3), on individual graphic pages. You may then view the graphics and edit them before saving them to tape. There is also a TANK battle game, which puts a tank against incoming aircraft.

In a quick summary, the "COLOR BONANZA" package, at a price of $49.95, has something that will appeal to almost everyone, regardless of the configuration of their "COLOR COMPUTER". It is my personal opinion that 2 to 3 of the programs that are contained within the 50, are alone worth the price of the entire package. If you would like a variety of programs, which will allow you to get started with your 4K "COLOR COMPUTER", and still have quite a lot of programs on hand when you upgrade, then "COLOR BONANZA" may be the package to fill your software needs.

JUST GOOD SOFTWARE

DISK DATA HANDLER

A generalized tool which will allow you to design disk data files for your specific applications. Provides a powerful on-screen editing facility for input and update, a capability for fast selection and sorting, user defined output of reports to screen or printer, and output of information to disk files which may be read by your BASIC programs for any computational or special formatting requirements. You define a basic record of up to 14 fields and 246 characters. Sort or select records based on any field or combination of fields in this record. Maximum number of records you may work with at one time will depend on record size (500 - 23 character records, 50 - 246 char records). An optional Extended record linked to the basic record may also be defined. The size of the Extended record is not a factor in determining maximum number of records. Comes with 12 pages of instructions which include examples of use. Disk Data Handler is more than a program – it is the type of tool which will provide the growth capability needed for your increasingly sophisticated applications. REQUIRES 32K

$44.95 in BASIC with Machine Language subroutines.

ALL PROGRAMS require Extended Color Basic and are delivered on cassette. All, except Tape Date-O-Base Calendar, are DISK System compatible.

(TRS-80* is a trademark of Tandy Corp.
GRAFTRAX is a trademark of Epson America, Inc.
PROWRITER is a trademark of C. Itoh)

DATE-O-BASE CALENDAR

Puts you in charge of your schedule. Graphically displays any monthly calendar between 1700 and 2099. You put in up to twelve 28 character memos per day – calendar shows where the memos are – call up of day shows details. Use for appointments and a log of past activity. Study the chronology of the American Revolution or note the day your mortgage will be paid off. Search capability allows you to list or print all memos between specified dates or only those meeting key word criteria. Date computation shows elapsed time between two dates in days, weeks, months, and years. IN BASIC – REQUIRES 32K.

TAPE DATE-O-BASE CALENDAR - $16.95
(max. 400 memos/tape file)

DISK DATE-O-BASE CALENDAR - $19.95
(over 4,000 memos/disk - max 300 memos/month)

GRAPHIC SCREEN PRINT PROGRAM

Works in ALL PMODES and lets you shift screen image anywhere on the printed page. Relocatable code lets you use all of your 16K or 32K machine. Available for both Color Basic 1.0 and 1.1. Use EXEC 41175 to see which you have and specify with order. IN MACHINE LANGUAGE.

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FOR PROWRITER* Printers - $9.95

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MEMORY TEST

By: Jim Brown
31 Richie Drive
Pleasant Hill, CA 94523

Enclosed is a 64K RAM memory test for the TRS80 COLOR COMPUTER. The program is patterned after the program by Frank Hogg published in the February 1982 issue of Color Computer News, but has been expanded to detect virtually any defective 4164 RAM chip used in the COLOR COMPUTER.

64K X 1 bit dynamic RAM failures result in one or more of five apparent (LOGICAL) conditions. The actual cause of failure may be the result of a myriad of internal die or package (PHYSICAL) conditions. The five LOGICAL conditions are as follows:

1)STUCK LO: A cell is always in the low state (It's output may be shorted to GND)

2)STUCK HI: The reverse of STUCK LO (shorting to VCC)

3)STUCK ADJACENT: A cell follows the state of a neighboring cell due to leakage between cells. Note that the neighbor may only be able to pull high or low but not both.

4)ADDRESS DECODE: The same cell may be selected by more than one address.

5)LOW CAPITANCE: The capacitive charge decays before periodic refresh can occur.

The memory test program first clears all of memory under test. This is followed by two delay periods. Each period equals the time required for the SAM to refresh memory. The delay instructions cannot cause incidental refresh since opcode fetch is from different rows of the RAM for the two delay periods. If the SAM chip cannot refresh all other rows before charge decay, then a RAM chip must fail one of the tests which follow the delays.

The first pass of "MAIN TEST LOOP" sequentially sets, tests & then resets each cell while all other on chip cells remain cleared. Any cell which is stuck lo or pulled lo by a neighbor will not go to the set state and fail this pass. Possibly only one of the adjacent cells may fail, but this is sufficient to flag a bad chip.

The second pass of "MAIN TEST LOOP" sequentially resets, tests & then sets each cell while all other on chip cells remain set. Any cell stuck hi or pulled hi adjacent will fail this pass.

Before the second pair of refresh delays and second pass of "MAIN TEST LOOP", memory is sequentially complemented. Just prior to the compliment operation each cell is tested for being in the reset state. Any cell which is selected by more than one address will be prematurely set and fail this test.

One last note is that the complement memory operation causes a rapid pair of accesses to the same cell. This can flush out most dynamic (time related) failures which don't show up when using store to memory operations. This operation also propagates memory faults undetected by one test so that a later test may detect the fault.

The test program should be run with the highest & lowest ambient room temperatures in which you expect to use your COLOR COMPUTER. It is also a good idea to run the tests over night in an infinite loop. To do this replace the last BASIC instruction with a GOTO LLL where LLL is the line containing the USER call to the test program. Depressing the <BREAK> key for about six seconds will break the loop.

Basic initialization & machine code load require 3 seconds. Full range test time for good RAM takes less than 3 seconds.

Non matching bit positions in "WRITE" & "READ" data indicate the last digit of the faulty memory device. For example:

ADDRESS: XXXX WROTE 00 READ 01 => bit 0 => U20 is faulty

ADDRESS: XXXX WROTE FF READ DF => bit 5 => U25 is faulty

```
10 'TEST MEMORY IN MODIFIED
20 '32K TRS80 COLOR COMPUTER
30 'FOR FULL 64K ADDRESSING
40 'RANGE WHEN MAP TYPE = 1
50 '
60 CLEAR 50,&H3000
70 '
80 B=&H1D00 : 'RELOCATION BASE
90 '
100 'MACHINE CODE :
110 '
120 'SETUP & CLR MEM
130 DATA 34011A50B7FFDF4F
140 DATA AE8CEBA780AC8CE8
150 DATA 23F943
160 'WAIT FOR REFRESH
170 DATA 8E02A0301F26FC
180 DATA 8E02A0301F26FC
190 'MAIN LOOP
200 DATA AE8CD26384A184
210 DATA 27028D1F6380
220 DATA AC8CC723F11F894D
230 DATA 271A
240 'MID LOOP
250 DATA AE8CBB4FA1842702
260 DATA 8D096380AC8CB1
```

For Your Color Computer

MASTER CONTROL

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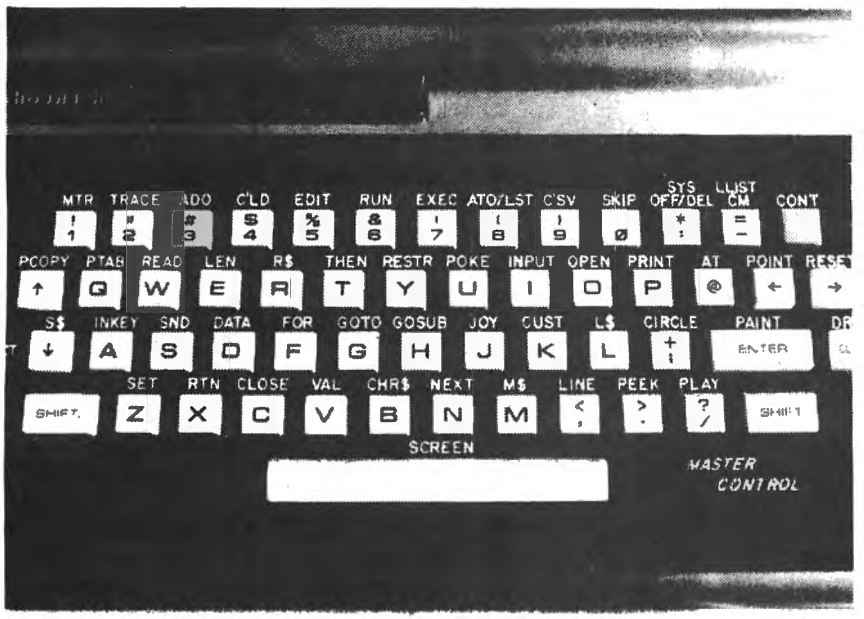

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For The Radio Shack
Color Computer*

COLOR BONANZA

Some 4K, Some 16K, Some 32K

Written by E.R.I.

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*The Color Computer is a product of Radio Shack, division of the Tandy Corporation

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Tape 1		
Keys	4k	NE
Bagels	4k	NE
Find	16k	NE
Darts	4k	NE
Motor	4k	NE
Bomber	4k	NE
Football	16k	EXT
Kapow	4k	NE
Dodge	4k	NE
Tape 2		
Bounce	16k	EXT
Tank	32k	EXT
One Arm	4k	NE
Chute	16k	EXT
Where is it	16k	EXT
Lunar Lander	16k	EXT
Stock Market	4k	NE
Tape 3		
Multiply	16k	EXT
Divide	16k	EXT
Add Sub	16k	EXT
Simple Simon	4k	NE
Hangman	16k	NE
Beast	16k	NE
Count Down	4k	NE
Acey	16k	NE
Genie	16k	NE
Protect	16k	EXT
Tape 4		
Graphics	16k	EXT
Songs	16k	EXT
Joy	16k	EXT
Mortgage	16k	EXT
Checkbook	16k	EXT
Draw 1	16k	EXT
Morris	16k	EXT
Sound	16k	EXT
Tape 5		
Ram	16k	MA
Trace	16k	MA
MMaster	16k	MA
Demo	16k	NE
Disassembler	16k	NE
Basbug	16k	NE
Ohmlaw	4k	NE
Convert	4k	NE
Drawer 2	32k	EXT
Degrees	4k	NE
Tape 6		
Hurdler	32k	EXT
Entrap	16k	EXT
Search	16k	NE
Flip Flop*	16k	EXT
Lost Atom	16k	EXT
Attack	16k	EXT
Cartel*	32k	EXT

MA = Machine language
NE = Non Extended Basic
EXT = Extended Basic

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```
270 DATA 23F320C8
280 'EXIT SEQUENCE
290 DATA E6843540EF8CAC
300 DATA ED8CA7AF8CA2
310 DATA B7FFDE3581
320 'RESUME SEQUENCE
330 DATA 34011A50B7FFDF
340 DATA EE8C97AE8C90
350 DATA A68C8F6EC4
360 '
370 'DEFINE CONSTANTS
380 '
390 H$="&H"
400 SA=B+&H00 : 'START ADDR
410 EA=B+&H02 : 'END ADDR
420 XA=B+&H04 : 'EXIT ADDR
430 DA=B+&H06 : 'RD/WR DATA
440 E0=B+&H0A : 'START ENTRY
450 E1=B+&H67 : 'RESUME ENTRY
460 LA=B+&H78 : 'LAST CODE BYTE
470 DEFUSR0=E0 : DEFUSR1=E1
480 '
490 'LOAD MACHINE CODE
500 '
510 FOR A=E0 TO LA
520 IF HX$="" THEN READ HX$
530 POKE A,VAL(H$+LEFT$(HX$,2))
540 HX$=MID$(HX$,3,255)
550 NEXT
560 '
570 'INPUT MEM TEST BOUNDARIES
580 '
590 PRINT"LOWEST,HIGHEST: ";
600 PRINT"3000,FEFF"
610 PRINT"LOWER,UPPER BOUND ";
620 INPUT I$,J$
630 BT=VAL(H$+MID$(I$,1,2))
640 POKE SA,BT
650 BT=VAL(H$+MID$(I$,3,2))
660 POKE SA+1,BT
670 BT=VAL(H$+MID$(J$,1,2))
680 POKE EA,BT
690 BT=VAL(H$+MID$(J$,3,2))
700 POKE EA+1,BT
710 '
720 'TEST MEMORY SEGMENT
730 '
740 X=USR0(0)
750 '
760 'PRINT TEST RESULTS
770 '
780 WD=PEEK(DA) : RD=PEEK(DA+1)
790 IF WD=RD THEN 960
800 FA=PEEK(XA)*256+PEEK(XA+1)
810 PRINT"ADDRESS: ";HEX$(FA);
820 PRINT" WROTE ";HEX$(WD);
830 PRINT" READ ";HEX$(RD)
840 '
850 'RESUME TESTING
860 '
870 X=USR1(0)
880 '
890 'LOOP BACK FOR REPORTING
900 '
910 GOTO 780
920 '
930 'END OF CURRENT TEST
940 'ALLOW FURTHER TESTING
950 '
960 PRINT"TEST COMPLETED"
970 PRINT
980 GOTO 590
 0 '
960 PRINT"TEST COMPLETED"
970 PRINT
980 GOTO 590
```


THE COMPOSER

SPEECH SYSTEMS, A MANUFACTURER OF SPEECH, MUSIC, AND SOUND EFFECT SYNTHESIZERS FOR THE SS-50 BUS, INTRODUCES THE COMPOSER FOR THE COLOR COMPUTER. THE COMPOSER IS A 4 VOICE MUSIC COMPILER WHICH ALLOWS ONE TO EASILY DEVELOP MUSIC. EACH VOICE USES ITS OWN WAVESHAPE TABLE. BOTH A BASIC AND A MACHINE LANGUAGE PROGRAM ARE INCLUDED, NO ADDITIONAL HARDWARE IS NECESSARY. THE COMPOSER ALLOWS THE ORGINAL MUSICAL SCORE TO BE SAVED. IN ADDITION, THE COMPILED MUSIC MAY BE SAVED AND BEST OF ALL IT MAY BE PLAIED WITHOUT ANY OTHER SOFTWARE. EXAMPLES OF HOW THE COLOR COMPUTER CAN BE USED TO REPRODUCE SOUND EFFECTS ARE ALSO INCLUDED. YOU HAVE TO HEAR THE DIFFERENCE TO REALLY COMPARE, BUT JUST LOOK AT SOME OF THESE FEATURES:

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EIGTH NOTE TRIPLETT	YES	NO
THIRTY SECOND NOTE	YES	NO
SOUND EFFECTS	YES	NO

Requires 16K Extended BASIC

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REVIEW-SUPER "COLOR" WRITER II

by Robert A. Sherer
Miller Hill Drive
Lagrangeville, NY 12540

My first experience with word processing was using an APL based system on a large mainframe. Having typed many a term paper in college, I welcomed the freedom it offered over the laborious type, erase, type more, erase more, etc. So when I bought my Color Computer I purchased the Radio Shack VIII printer and eagerly awaited the arrival of their word processor. When Color Scripsit arrived I bought a copy immediately, for $39.95 I figured it was a bargain. In fact it was a good product for the money but for my needs I wanted more which was promised by Super "Color" Writer II advertising from Nelson Software Systems.

Briefly, what I found lacking in the Radio Shack offering was the ability to use the full capabilities of my VIII programable printer, e.g. I could not change type fonts, use superscripts, underline, or anything else requiring embedded printer commands. Additionally, it could not right justify text which I thought rather odd to leave out.

All of the above shortcomings were fixed with the Writer II. Since I did not particularly enjoy watching a tape load and I wanted the additional 7K of free memory, I bought the ROMPAK version for $74.95. Also available is the tape version for $49.95 and the disk version for $99.95. I'm pleased to report that all features operated as advertised. The commands consist of two keystrokes (the "clear" key followed by a letter, e.g. "d" for delete) and all keys repeat after depressed more than 1/3 second. All of the standard word processing features are here such as find, find/replace, find/delete, text move, text copy, insert, cassette save, centering, delete, etc. The cursor can be moved around the screen using the "arrow" keys and typing from the keyboard will replace whatever is on the screen at the cursor position unless the typing was preceded by a command such as insert in which case the action appropriate to the command is taken. It is obvious that the author Tim Nelson is well versed in the essentials of word processing. The find command doesn't just find a specified string of characters (max of 21) but also allows the use of "don't care" positions in the character string, very handy for finding and correcting spelling errors (did I type receive or recieve? - the letters "ie" can be "don't care" positions). Furthermore, the feature can be used to replace both spellings of "receive" ("ei" and "ie") simultaneously with another word such as "take". The thought that went into the find command is typical of all the commands in the word processor. I will concentrate on differences between Writer II and Color Scripsit with additional comments on unique Writer II features. The program is cursor oriented as is the Radio Shack version but with a difference. "Color" II has a text mode where all entered information is visible, e.g. printer commands, carriage returns, format instructions, etc. To see how the printed page will look, the mode is switched to "window mode" where the screen replicates the appearance of the printed page complete with right justification for any chosen page width and margins. The user is not confined to one "ideal" line width such as 64 or 80. In order to see a complete line, the window can be moved throughout the text to check right and left margins as well as page breaks - with the line width fully selectable, handy for nonstandard outputs such as 130 column reports. Changes can now be made to "fine tune" the printed copy and check for formatting errors. If desired, a page break can be forced to prevent one or two lines of the next paragraph appearing at the bottom of the page. A check can also be made of exactly where the extra spaces are added to achieve right justification, adjustments can be made using a "non-breakable space" code. Since format codes can also be embedded in the text, changes to margins, headers, footers, line spacing, page length, etc. can all be made during the printing of the text. This technique offers greater flexibility than using only universal format statements (as used by Color Scripsit) which cannot be changed during the printing of text. The ability to change margins is especially useful in representing material in the text quoted from an outside source, i.e. the quoted text is indented from the regular text on both the right and left sides.

Additional features include the ability to define ASCII codes outside the range of the Color Computer keyboard but still used by the printer. Examples of use include generating the "degree" symbol for temperature reporting and the "copyright" symbol when using copyrighted names or even graphic symbols if desired. Finally, the user is also permitted to chain commands together, very useful in chaining files together for large printouts using the cassette recorder.

The documentation consists of a 53 page manual and is well written with many examples. An especially helpful aid is the ability to display a summary of the most used commands on the screen without disturbing the text or cursor location. For those wanting more details on capabilities, I would refer them to the "Color" II

advertising with the comment that I have found it to be accurate. My only disappointment was in discovering that the right justification feature did not work with my printer's proportional font style, the justification capability is confined to uniform type pitches. Perhaps the author Tim Nelson who already spent a year of his life writing the program will invest a few more weeks (hopefully). However, I consider it a minor point compared to the other outstanding features and would recommend the Super "Color" Writer II to anyone requiring a professional word processing system for the Color Computer.

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You can now tell which computer you are on by examining your mailing label. If the top line of your label contains a string of alphanumerics you are on the Gimix. The first number on the top of the label is your expiration date (YMM), the next string of characters are your code and the last number is your key position in the main file.

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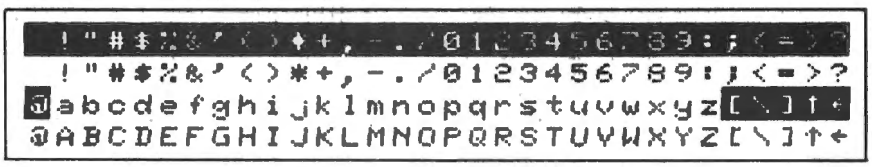

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Compatibility: The LCA-47 is fully compatible with all TRS-80C software that we know of, including Color Scripsit. It has no effect on any semi-graphics or full-graphics modes. Also works great with Micro-Chroma-68 Kits and others using the 6847 VDG chip! The LCA-47 will not fit under the RF shield if Computerware's "16-plus" memory board is installed.

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GRADES, A COMPUTERIZED GRADEBOOK

by Richard A. White
44 Dow Ct.
Fairfield, OH 45014

My wife returned to full time teaching at the elementary level a few months before the computer arrived. Her style is to grade most of her student's daily word as well as tests and average all these grades at report card time. Forty grades for thirty students is a major calculating effort. Accurate data entry is a significant problem and there is no way of knowing when keying errors have been made. The traditional method of recalculating to check, doubles the work. Of course, the computer can remember the individual entries which can be reviewed and edited with a suitable program. Such was the inital objective of this program.

With the additions of 16K memory, Extended Color BASIC and the printer, the program grew to take advantage of the capabilities available. Now the program will make tape files by subject so mid terms can be calculated and then more grades added for final averages. At the start of a new term, the student names only can be read from the previous term's tape to start a fresh file. Withdrawn students can be deleted and new students added at the end just as most gradebooks are kept. Finally, a printed record of student averages, a few statistical calculations and the class average are provided. The program is designed to work in 16K and is dimensioned to handle up to 60 grades for each of 40 students.

Operation of the program is fairly straight forward with menus and prompts appearing as needed. Since grades are stored in as hex characters in a string, integer values up to 255 can be entered. This allows some latitude for extra credit. Other than entering a grade a number of times or perhaps doubling it before entry, no weighing is provided. Admittedly, the correction routine is fairly primitive requiring the user to count up to the grade to be changed and then enter its number and the new value. I leave improvement as a programming challenge for the user, as I have found the present system adequate to my needs.

Some BASIC program information is provided in Lines 1230 to 1290. The most important information there are the three "GOTO" line numbers that can be used to reenter the program without data loss if the program is broken for some reason. Remember that all pointers are preserved at a break, reset or error and that entering GOTO XXX will restart the program. If you use RUN or edit a line all data will be lost.

I use the Line Printer VIII and have included POKE 150,41 in Line 75 to set the baud rate at 1200. Be sure to change this as necessary to fit your printer's requirements.

Storing grades as hex in strings is a very memory efficient technique for handling integer data. The code to handle this is in Lines 660 - 700. String disassembly code is in Lines 950 to 970.

The grade entry screen is formatted using PRINT@ P0,"" where the position variable P0 is read from data statements. The same proceedure and data is used to format the "Change, Add or Delete" screen. This proceedure was substituted for a calculated position used in an earlier version of the program.

Before calculating the average for a student, the program tests that at least two grades have been entered. This avoids a /O error that can inavertantly occur if the ENTER key is hit twice after entering a students name. If names are being typed in, the program asks for the name again. If names only are coming in from tape, the program goes on to the next student. A perhaps better way, and another programming challenge, would be to return to the grade entry screen. The program will accept high side errors like 900 instead of 90. These will be seen on the entry screen or show up as high averages. A brief tour through the Change Mode will allow correction.

```
60 CLS
70 GOTO9000
80 'GRADE AVERAGES AND ANALYSISF
OR EXTENDED BASIC AND 16K  JULY1
981 BY RICHARD WHITE, 44 DOW   C
T., FAIRFIELD, OH, 45014.
90 'COPY-RIGHT 1981. REVISED ADD
ING PRINTER AND CLASS AVERAGES D
EC.1981
100 DIMG$(61),SN$(41)
110 CLS:PRINT"ENTER YOUR CHOICE
 BY TYPING    THE SELECTION NUMB
ER.":PRINT@109,"MENU":PRINT
120 PRINT"   1. PROGRAM DESCRIPT
ION","   2. LOAD PREVIOUS FILE F
ROM          TAPE.",,"   3. ENTER
 GRADES- NO PREVIOUS          FILE.
"
130 PRINT:PRINT:PRINT:PRINT"DO N
OT ENTER MORE THAN 60 GRADESPER
STUDENT OR MORE THAN 40     STUD
ENTS.";
```

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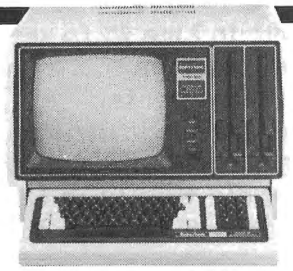

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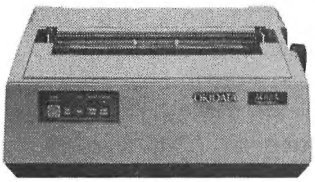
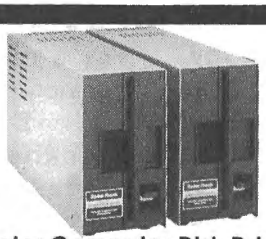


Okidata 82A $425



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```
140 GOSUB110:EY=IK:IFIK=1 THEN 1
230
150 CLS:PRINT:PRINT:PRINT"DO YOU
 WANT TO PRINT RESULTS?":GOSUB11
0:IFIK$="Y"THENPOKE150,41:GOSUB1
300ELSEPT=0
160 GOTO140
170 PRINT"----PRESS ANY KEY TO P
ROCEED----";
180 IK$=INKEY$:IK=VAL(IK$):IFIK$
="" THEN 110
190 RETURN
200 CLS:PRINT:PRINT:INPUT"ENTER
SUBJECT AS WRITTEN IN      GRADEB
OOK";SJ$:SB$=LEFT$(SJ$,8)
210 TG=0:NT=0
220 IFPT=0THEN170ELSEPRINT#-2,""
:PRINT#-2,"":PRINT#-2,TAB(5)"SUB
JECT",SJ$:PRINT#-2,""
230 PRINT#-2,TAB(5)"NAME"TAB(25)
"NATURAL"TAB(35)"NUMBER"TAB(45)"
NUMBER"TAB(55)"LOWEST"
240 PRINT#-2,TAB(25)"AVERAGE"TAB
(37)"OF"TAB(47)"OF"TAB(55)"GRADE
"
250 PRINT#-2,TAB(35)"GRADES"TAB(
45)"GRADES":PRINT#-2,TAB(46)"> 7
0":PRINT#-2,"":PL=1
260 S0=0:PN=0:IFEY=2THEN880ELSE8
20
270 FOR K=1 TO 40:G$(K)="0":NEXT
:G=0:LO=100:NZ=0:NL=0:NH=0:GT=0:
N=0:NM=0:G1=0:RETURN
280 CLS:PRINTSN$:PRINT:PRINT"TYP
E IN GRADE AND PRESS ENTER.  AFT
ER LAST GRADE PRESS ENTER    TWI
CE."
290 K=K+1:READPO:PRINT@PO,"";
300 LINEINPUTG$(K):IF G$(K)="" T
HEN 300
310 IFVAL(G$(K))=0ANDG$(K)<>"0"
THEN PRINT@PO,"    ":PRINT@PO,"";
:GOTO250
320 N=N+1:IFPO=474 THEN PRINT"60
 GRADES ENTERED":GOTO300
330 IFPO=480 THEN PRINT@0,SN$
340 GOTO240
350 POKE65495,0:RESTORE:FOR K=1
TO N:G=VAL(G$(K)):IF G=0 THEN NZ
=NZ+1
360 IFG<70 THEN NL=NL+1
370 IFG>70 THEN NH=NH+1
380 IF G<LO THEN LO=G
390 GT=GT+G:NEXT
400 IFLO<=50THENLW=50ELSELW=LO
410 GD=GT-LO:ND=N-1:GOTO530
420 GOTO530
430 CLS:FORK=1 TO N:READPO:PRINT
@PO,VAL(G$(K));:IFPO=480 THEN PR
INT""
440 NEXT:RESTORE:PRINT:PRINT"GRA
DES ARE NUMBERED 1-6 1ST ROW,7-1
2 2ND ROW ETC. TO-","CHANGE OR A
DD ENTER #,NEW- 5,70 DELETE ";
450 PRINT"ENTER #,D-   5,D"
460 INPUT M,G$(M):IF M>N THEN N=
N+1
470 IF G$(M)="D" THEN G$(M)=G$(N
):N=N-1
480 G=0:LO=100:NZ=0:NH=0:GT=0:NL
=0:IF M=0 THEN 300 ELSE 480
490 CLS:PRINTUSING"%         %";S
J$;:PRINT"  "+SN$;:PRINT"NUMBER
OF GRADES = "N:PRINT"NUMBER OF G
RADES ABOVE 70 ="NH
500 POKE65494,0:IF N*ND=0 THEN 1
140
510 PRINT "   THIS IS "INT(NH*10
0/N+.5)"%":PRINT"NUMBER OF ZEROS
 = "NZ:PRINT"LOWEST GRADE = "LO:
PRINT TAB(17)"ALL";TAB(24)"LOWES
T"
520 PRINT TAB(17)"GRADES";TAB(24
)"DELETED":PRINT:PRINT"RAW AVERA
GE";TAB(17)INT(GT/N+.5);TAB(24)I
NT(GD/ND+.5):PRINT
530 PRINT"1. CHANGE, ADD OR DELE
TE GRADES.2. START NEW SUBJECT O
R END.    3. START NEXT STUDENT.
";
540 GOSUB110:IF(IK-1)*(IK-2)*(IK
-3)<>0 THEN 645
550 EZ=IK:IFIK=1 THEN 430
560 IFPT=1THENPRINT#-2,TAB(27)IN
T(GT/N+.5)TAB(37)N TAB(47)NH TAB
(57)LO
570 IFPT=1THENPL=PL+1:IFPL=4THEN
PL=1:PRINT#-2,""
580 TG=TG+GT:NT=NT+N
590 POKE65495,0:FORK=1TON:G$(K)=
HEX$(VAL(G$(K))):IF 1=LEN(G$(K))
 THEN G$(K)="0"+G$(K)
600 SN$(S0)=SN$(S0)+G$(K):NEXT:N
$=STR$(N):IF N<10 THEN N$="0"+N$

610 N$=STR$(N):IF N<10 THEN N$="
0"+N$
620 SN$(S0)=SN$(S0)+N$:POKE65494
,0:IFIK=3THENCLS:GOTO810ELSE1040
```

```
630 CLOSE-1:CLS:PRINT"IF YOU WAN
T TO SAVE THE LAST    GRADES TO
CASETTE FILE TYPE 'Y'":GOSUB110:
IFIK$="Y" THEN PN=0ELSE40
640 GOSUB1400
650 PRINT"SET TO RECORD ":PRINT:
GOSUB1420:AUDIOON
660 PRINT"RECORDING FILE TWICE"
670 OPEN"O",-1,SB$
680 PRINT#-1,SO:FORK=1 TO SO:PRI
NT#-1,SN$(K):NEXT
690 CLOSE-1:IFPN=1 THEN PN=0:CLS
:PRINT:PRINT"PRESS <Y> TO SAVE F
ILE TO A","BACKUP CASETTE.":GOSU
B110:IFIK$="Y" THEN 720:PN=0ELSE
40
700 TIMER=0:MOTORON:PN=1
710 IF TIMER<120 THEN 790
720 GOTO750
730 IFEY=2 THEN 1030
740 PRINT:PRINT:PRINT:LINE INPUT
"ENTER STUDENT IDENTIFICATION AS
 IT APPEARS IN GRADE BOOK.
 ";SN$
750 IFPT=1THENPRINT#-2,TAB(5)SN$
;
760 LS=LEN(SN$):IFLS<20 THEN SN$
=SN$+" " ELSE 860
770 GOTO840
780 IFLS>20 THEN SN$=LEFT$(SN$,2
0)
790 SO=SO+1:SN$(SO)=SN$:GOSUB190
:K=0:GOSUB230:GOTO820
800 CLS:PRINT@98,"KEY IN FUNCTIO
N NUMBER ",,,"  <1> LOAD FILE WI
TH GRADES",,,"  <2> LOAD names O
NLY":GOSUB110:IFIK<1ORIK>2THEN88
0
810 F2=IK
820 GOSUB1400:PRINT:INPUT"SET TO
 PLAY AND PRESS enter";I$
830 OPEN"I",-1,SB$:INPUT#-1,SI:K
J=0
840 KJ=KJ+1:SO=KJ:IFEOF(-1) THEN
 KJ=SI:GOTO1040990
850 INPUT#-1,SN$(KJ):POKE65495,0
:SN$=LEFT$(SN$(KJ),20):IFF2=2THE
NCLS:SN$(KJ)=SN$:PRINT:PRINTSN$:
PRINT:GOSUB190:GOTO1000
860 CLS:NO=VAL(RIGHT$(SN$(KJ),2)
):PRINT:PRINT"GRADES IN THE FILE
 FOR",SN$" ARE "
870 GOSUB190:FORJ=1TONO:L=19+2*J
:G$(J)=MID$(SN$(KJ),L,2)
880 G$(J)="&H"+G$(J):G$(J)=STR$(
VAL(G$(J))):PRINT" "G$(J);:N=N+1
:IF POS(0)>28 THEN A$=CHR$(13):P
RINTA$;
890 NEXT
900 POKE65494,0:SN$(KJ)=SN$:PRIN
T:PRINT:PRINT:INPUT"ENTER 'W' IF
 STUDENT IS WITH-   DRAWN";W$
910 IF W$="W" THEN SO=SO-1:KJ=KJ
-1:SI=SI-1:GOTO1030
920 IFPT=1THENPRINT#-2,TAB(5)SN$
;
930 K=N:GOTO230
940 IFKJ<SI THEN 910
950 EY=0:CLOSE-1
960 CLS:LINEINPUT"ENTER 'Y' TO E
NTER NEW STUDENTS";IK$:IF IK$="Y
" THEN 810
970 IFPT<>1THEN710
980 PRINT#-2,"":PRINT#-2,"":PRIN
T#-2,TAB(9)"NATURAL CLASS AVERAG
E = "INT(10*TG/NT)/10
990 GOTO710
1000 IK=2:EZ=2:GOTO660
1010 CLS:PRINT"/0 ERROR TRAPPED.
 TWO GRADES    MUST BE ENTERED F
OR PROGRAM TO  WORK.":SO=SO-1:GO
TO810
1020 DATA192,197,202,207,212,217
,224,229,234,239,244,249,256,261
,266,271,276,281
1030 DATA288,293,298,303,308,313
,320,325,330,335,340,345,352,357
,362,367,372,377
1040 DATA384,389,394,399,404,409
,416,421,426,431,436,441,448,453
,458,463,468,473
1050 DATA480,453,458,463,468,474

1060 CLS:PRINT"THIS PROGRAM CALC
ULATES GRADE   AVERAGES TWO WAYS
."
1070 PRINT:PRINT"  1. STRAIGHT N
UMERICAL AVERAGE   2. THE  AVERA
GE AFTER THE          LOWEST GRA
DE HAS BEEN","     DELETED."
1080 PRINT:PRINT"BOTH AVERAGES A
RE SHOWN GIVING  THE GRADER A CO
MPARISON  AND A  CHOICE.":GOSUB1
00
1090 CLS:PRINT"THE PROGRAM HAS C
APACITY FOR 60 GRADES FOR EACH O
F 40 STUDENTS. THE PROGRAM MAY B
E CHANGED TO"
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```
1100 PRINT"TO PROVIDE FOR MORE G
RADES AND  FEWER STUDENTS OR VIC
E-VERSA."
1110 PRINT:PRINT"THE PROGRAM ALS
O INCLUDES CAPA- BILITY TO STORE
 GRADES TO CAS-  ETTE FILE AND L
OAD THE FILE"
1120 PRINT"LATER FOR ADDITION OF
 MORE       GRADES. TWO FILE COPI
ES WILL BE MADE TO PROVIDE BACKU
P.":GOSUB100
1130 CLS:PRINT@64,"in the event
of error, break or reset- the fo
llowing options to save data are
 available."
1140 PRINT"     1 TO RESUME INPUT
 FROM TAPE      WITH NEXT STUDENT
 type ","    GOTO910 AND ENTER."
,"     2 TO SAVE FILE TO CASETTE"

1150 PRINT"     type GOTO710 AND
ENTER.","     3 TO RESUME DATA EN
TRY","     without tape input typ
e","     CLOSE:GOTO 820 AND ENTER
."
1160 GOSUB100:CLS:GOTO40
1170 PRINT"PREPARE PRINTER AND P
APER","TURN PRINTER ON AND PUT O
NLINE":GOSUB100
1180 IFPEEK(65314)/2=INT(PEEK(65
314)/2)THENPT=1:RETURNELSEPT=0
1190 PRINT:PRINT"      PRINTER IS
 NOT READY":PRINT:GOSUB100:GOTO7
5
1200 CLS:PRINT:PRINT"LOAD CASETT
E WITH FILE INTO      RECORDER. I
F YOU NEED TO REWIND CASETTE PRE
SS <Y>.":GOSUB110
1210 :IFIK$<>"Y" THENRETURN
1220 PRINT:INPUT"PRESS <ENTER> F
OR MOTORON.";E:MOTORON:AUDIOON:I
NPUT"PRESS <ENTER> FOR MOTOROFF.
";E:MOTOROFF:RETURN
1230 INPUT"WANT TO RUN PAST LEAD
ER";I$:IFI$="Y"THENMOTORON:FORX=
1TO6000:NEXT
1240 RETURN
1250 PCLEAR1:CLEAR(0):CLEAR(MEM-
1700):PRINTMEM:FORX=1TO600:NEXT:
GOTO10
1260 AUDIOON:GOSUB1400:GOSUB1420

1270 FORX=1TO2:CSAVE"GRADES",A:M
OTORON:FORY=1TO800:NEXT:NEXT:MOT
OROFF
```


™TRS80 color

From the January 1981 issue of the CSRA Computer Club newsletter:

> There was some amusement at the November meeting when the Radio Shack representatives stated that the software in the ROM cartridges could not be copied. This month's 68 Micro Journal reported they had disassembled the programs on ROM by covering some of the connector pins with tape. They promise details next month. Never tell a hobbyist something can't be done! This magazine seems to be the only source so far of technical informations on the TRS-80 color computer™. Devoted to 6800 and 6809 machines up to now, 68 Micro Journal plans to include the TRS-80 6809 unit in future issues.

NOTE: This and other interesting and needed articles for the Radio Shack TRS-80 color computer™ are being included monthly in 68 Micro Journal—The Largest specialty computer magazine in the world!

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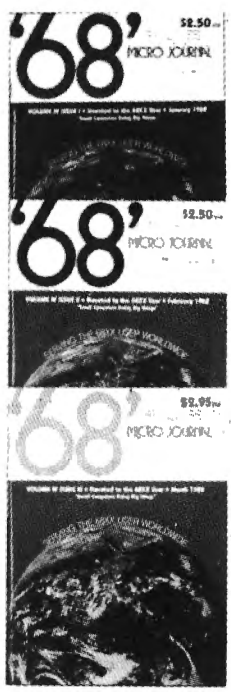

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Currently, and even before the Color Computer™ hit the stores, **68 Micro Journal™** was devoting more space to the TRS-80C Color Computer™ and information concerning the Motorola 6809 (which is the CPU in the Color Computer™) than ANY OTHER Computer Magazine. Examples include:

REVIEWS of the three major Disk Control Systems for the Color Computer™, most of the Monitors, Assemblers, and Disassemblers, Word Processors and Editors, "Terminal" Programs (for use with Modems, Communications with other Computers, etc.), and of course, Games.

HINTS for Expanding Memory, Power Supply Cooling, repairing sticky keyboards, disabling the ROM PAK "Take Over", hooking up to Printers, etc.

DISCUSSIONS of the 6883 Synchronous Address Multiplexer, using the Color Computer™ with 64K and 96K memory (which it is ALREADY capable of handling), thoughts on Programming, etc.

I suggest that you subscribe to **68 Micro Journal™**, SOON, as many back issues are sold-out.

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Bob Nay
Color Computer Editor

REVIEW-EDTASM+

by Robert Fane
3129D Montana Ave (FV)
Great Lakes, IL 60088

Radio Shack has been advertising its Editor/Assembler since late '81. I had considered the purchase of a ROM based considered the purchase of a ROM based Editor/Assembler for some time but was put off by the price of those already on the market, so I kept waiting. It finally made its appearance on the shelves in June. After looking over the documentation I decided it was in fact just what I wanted.

Until now I have been "sitting by" with a BASIC Language Editor/Assembler/De-bugger due to its low cost ($6.95). The primary disadvantages of it were its slow speed when assembling, having to load the program and then the source code after making any changes, and the amount of memory the program itself took up. Because of this, any assembly language programming was kept to a minimum and restricted to only short routines.

With the EDTASM+ you can easily switch back and forth between the ROMPAC and BASIC, practically all 16K of memory is available for source code and it assembles so fast that there is no reason not to assemble just to ensure that there are no errors up to a given point.

The documentation is in the form of a 68 page booklet. Although well written it would have benefited from the use of more examples of source code listings to illustrate the formats required by different addressing modes and Pseudo Ops, especially in those cases where MICROSOFT strayed from 'normal' 6809 assembler conventions. With all of the appendixes provided it is laid out well for later use as a reference for looking up unfamiliar commands.

Since the program is really three programs in one I'll address them seperately.

ZBUG MONITOR

Typing a "Z" gets you into ZBUG, a powerful Monitor and debugger. Input and output can be independantly set for decimal, octal or hexidecimal. Memory can be examined in any of four modes; byte, word (two bytes), ASCII or Mnemonic. In any of these modes when an address is typed in followed by "/" the contents appear to the right of the address. When in byte mode this will be a single 8 bit hexidecimal number, in word mode a 16 bit hex, in ASCII mode the ASCII representation of the contents (if any) and in Mnemonic mode it will be an assembly language disassembly of the instruction starting at the input address. The defualt mode is Mnemonic. It acts like a full disassembler since you can specify start and end addresses and have it output to screen or printer. In any mode you can scroll through memory using the up and down arrow keys. If you are inspecting a program you have assembled, you can refer to it by the labels used in the assembly. For example, if the beginning of your program was labelled 'START' then typing START/ would show the first instruction of your program, 'START', to execute the first instruction, 'GSTART' would execute your whole program.

ZBUG COMMANDS ARE:

C - Continues execution of the program after interruption at a break point.
D - Displays all the breakpoints that have been set (up to seven)
E - Goes to Editor.
G - Followed by an address, executes the program at address.
L - Loads machine code file from cassette.
P - Saves the contents of memory to tape
R - Displays all 6809 registers.
T - Displays contents of memory from start to end addresses.
TH - prints contents of memory from start to end addresses.
U - Transfers a block of memory from one location to another.
V - Verifies a saved program or file like "SKIPF" from BASIC.
X - Sets a breakpoint at address.
Y - Deletes a breakpoint at a specified address.

ZBUG also has a calculator which can perform addition, subtraction, multiplication, integer division, modulus, relational tests, logical operations and conversion to ASCII codes.

EDITOR

The Editor can be used for inputing source code or BASIC Programs. Like a BASIC program the lines of source code are numbered, however the editor automatically numbers lines in the selected increment when in the input mode. The left and right arrow keys are used to "tab" over to fixed fields for labels, operators, operands and comments. Comments can start at the beginning of a line if started with an asterisk.

Since this program is written by Microsoft it uses almost the same conventions for editing of lines as are used in Extended Color BASIC. The differences are minor such as the use of E100 instead of EDIT100 to edit line number 100. Therefore it is easy to learn for anyone already familiar with Extended BASICs editing commands.

When loading a file or program from tape, anything in memory remains unless manually deleted. The new file loaded is appended to the existing file. This makes it easy to build a library of subroutines and append them as necessary to the program being written.

EDITOR COMMANDS ARE:

Cstartline, range, increment - Copies range to a new location beginning with startline using the specified increment.
Drange - Deletes range.
Eline - Enters a line for editing.

EDITING SUBCOMMANDS

A - Cancels all changes and restarts the edit.
nCstring - Changes n characters to string.
nD - Deletes n characters.
E - Ends line editing and enters all changes without displaying the rest of the line.
H - Deletes the rest of the line and allows insert.
Istring - Inserts string starting at the current cursor position.
nKcharacter - Deletes all characters from the current cursor position to the nth occurance of character.
L - Lists the current line and continues edit.
Q - Quits the edit and ignores all changes.
nScharacter - Searches for the nth occurance of character.
X - Extends the line.
<ENTER> - Ends line editing, enters all changes and displays the rest of the line.
<SHIFT><UP ARROW> - Escapes from subcommand.
n<SPACEBAR> - Moves the cursor n spaces to the right.
n<-> - Moves the cursor n characters to the left.
Fstring - Finds the string of characters.
Hrange - Prints range to the printer.
Istartline, increment - Inserts lines beginning at startline using the specified increment.
Lfilename - Loads the specified textfile from tape.
Mstartline, range, increment - Move command, works like copy except the original lines are deleted.
Nstartline, increment - Renumbers beginning at startline, using the specified increment.
Prange - Displays range on the screen.
Q - Returns to BASIC. Use EXEC49152 to return to EDTASM+.
Rstartline, increment - Replaces startline and then inserts lines using increment.
Trange - Prints range on the printer with no line numbers.
Vfilename - Verifies filename to ensure that it is free of checksum errors.
Z - To go to ZBUG.
<UP ARROW> - Scrolls up one line in text.
<DOWN ARROW> - Scrolls down one line in text.

ASSEMBLER

Entering "Afilename/switch" assembles the text into machine code. When assembling there is a delay of a few seconds, then the listing appears on the screen as fast as LISTING a BASIC program. Any of the following "switches" may be used:
/AO Absolute Origin. Assembles the code according to the ORG command used in the text.
/IM Assembles in memory.
/LP Sends assembly listing to the line printer.
/MO Manual Origin. Uses two memory locations to determine the location of EDTASM+'s buffer and the location of the machine code.
/NL No listing printed.
/NO No object code generated.
/NS No symbol table generated.
/SS Short screen display.
/WE Waits on errors.

When assembling EDTASM+ normally sends the object code to a tape file. Use of the above "switches" allows complete control of the output of the assembler.

PSEUDO OPERATIONS

END - Tells the assembler to quit assembling the program.
EQU - Equates a symbol to an expression.
FCB - Stores a value at the current address in memory.
FCC - Stores an ASCII string into memory.
FDB - Stores a word into memory at the current location.
ORG - Tells the assembler to originate the program at a specified address.
RMB - Reserves a specified number of bytes of memory for data.
SET - Sets a symbol to be equal to an expression. May be changed anywhere in the program.

SETDP - Allows setting of the Direct Page register.

COMPLAINT DEPARTMENT

Unlike other assemblers I've seen the FDB & FCB Ops do not permit entering a list such as;

TABLE FCB 24, 15, 11, 93, 21

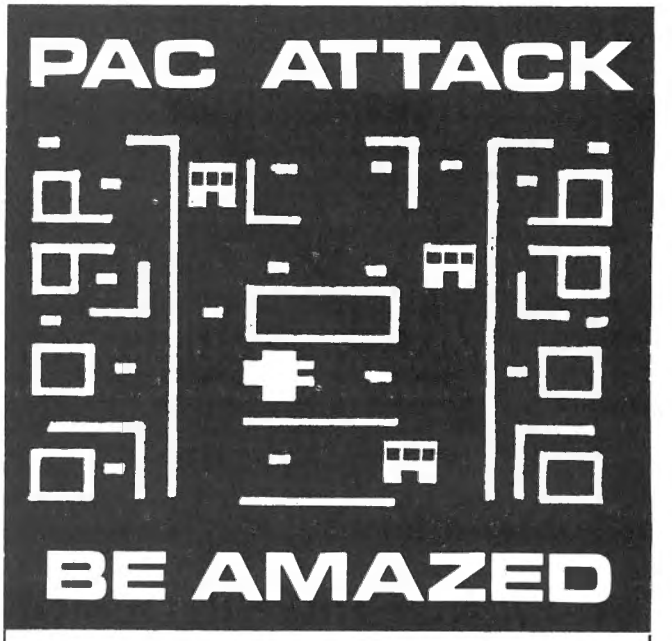
Instead you need one line for each byte or word depending on the Pseudo Op used (FCB for byte, FDB for word). This constitutes my main complaint about the program.

Secondly it does not permit entry of Binary numbers preceded by the percent sign. This feature is very useful for entering masks so it's hard to believe they left it out.

The other problem is minor. Entery and output of Hex numbers starting with a letter are preceded by a "0", such as 0A002. At times this can be confusing, especially when using ZBUG in the word mode.

SUMMARY

All in all I'm very happy with EDTASM+. It offers both speed and versatility, as evidenced by the numerous commands, at a reasonable cost. The deficiencies are few and not all that serious.



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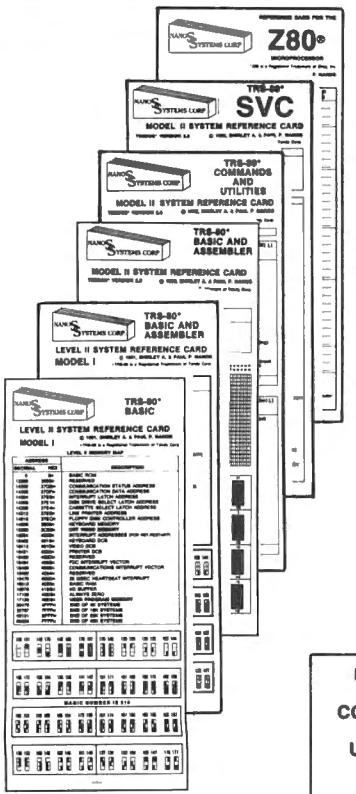

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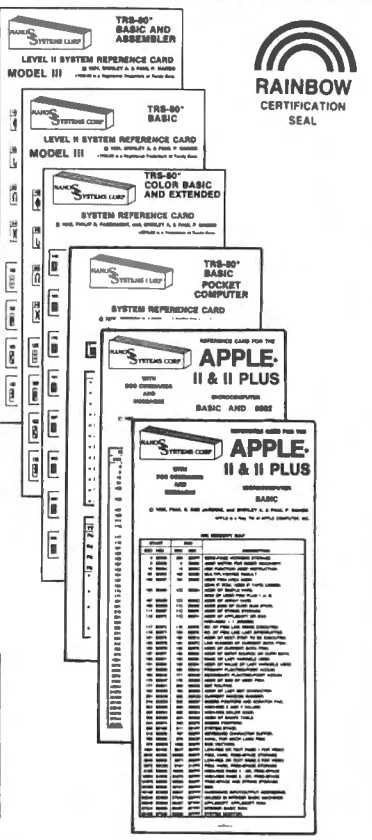

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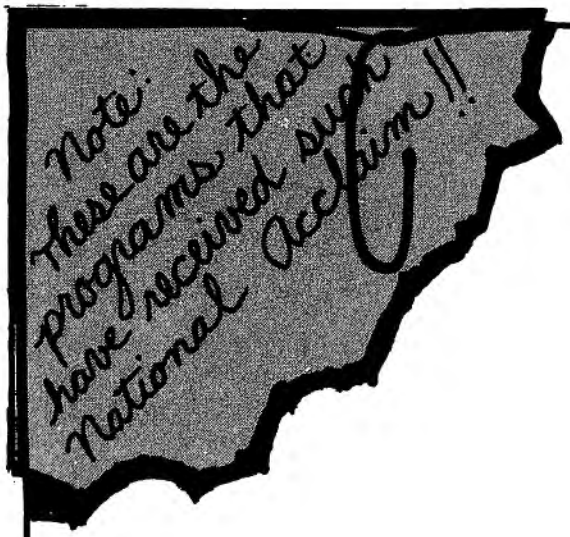

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REVIEW- RAAKA-TU, PYRAMID, BEDLAM

Three New Radio Shack Programs

by Ron Horton
Star Rt. Box 30-A
Valhermoso Spgs., AL 35775

Radio Shack has recently added three new programs to its Color Computer Software line. These programs are significant because they show that Radio Shack has finally made a definite commitment to the Color Computer.

Two of these programs are simply conversions from existing versions of Model I and Model III programs. These are PYRAMID and RAAKA-TU.

RAAKA-TU is an adventure where the player has to find his or her way into an Oriental temple, find some treasure, and then find a way back out. Getting in and out is made difficult by the guards, who tend to deal with intruders in an uncompromising fashion. Once inside, the situation changes only slightly. Most of the treasures are simple to get, but others are guarded quite well, requiring unusual and imaginative methods. This adventure is good but not very complex. The temple is soon explored throughout and nothing else is left to do. RAAKA-TU does make a good starter adventure for beginners, but veteran adventurers will soon tire of it.

The setting of PYRAMID is a pyramid (amazing!) somewhere in some desert. The first problem the player has to deal with is a rather large serpent which blocks any attempts to search the lower levels of the pyramid. After that, the player has to find and carry the treasures back to the entrance of the pyramid, where the adventure originally starts. PYRAMID has only two drawbacks: the player can only use one or two word commands and there is only a limited set of these commands. While "HIT SERPENT" might be alright for some, others might rather "HIT SERPENT WITH SCEPTER". All in all, this is only a minor problem, as the treasure can still be collected. Anyone playing PYRAMID will probably notice a mummy sooner or later. What happens to this mummy is of great concern to the player as it makes off with some of the treasure, but without a lot of luck, the player will never know. This program is very well constructed, very complicated, and well worth the $15.00 Radio Shack asks for it. By the way, the player should watch how long it takes to get the treasures because batteries do run down after a while.

The other program referred to at the beginning of this article is BEDLAM. This program is not a conversion, but there is another version for models one and three. BEDLAM takes place in a mental institution (adventures make you crazy?). The player is a patient looking for a way out. Some are helpful, others hinder but all are interesting. This adventure is confusing at first, but rapidly becomes boring because escape is so simple. True, there is more than one path out, but only one escape route is active per game. Finding the active route is the hardest part of the adventure and that is no trouble at all. BEDLAM does have one redeeming quality: the effect of a lobotomy on the patient. Yes, the patient can receive a lobotomy; an almost ever-present 'doctor' sees to that. However, the lobotomy can sometimes even be useful. This effect does not make up for the simpleness of the rest of the program. Overall, the money paid for this program is better spent elsewhere.

Hopefully, the release of these programs is just the beginning. Maybe Radio Shack will finally begin converting some of its utilities, such as Scripsit and VisiCalc, and putting them on disks. Until then, though, we can pass the time by looking for the mummy.

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MARK DATA SOFTWARE REVIEW

By: Steven Ostrom
12612 Cedar Lake Road
Minnetonka, MN 55343

I have never been the type of person who enjoyed buying software for my Color Computer. The challenge of writing my own programs, even trying to duplicate games such as Pac Man or Space Invaders, is what keeps me interested. I may be changing somewhat.

Of the three or four computer magazines I subscribe to, yours is by far the most interesting. It was your Nov./Dec. 1981 issue that changed some of my ideas about software-for-sale. In this issue was a letter to Bill Sias from Tom Mix of Grand Rapids. The adventure game "Black Sanctum" was enough of an influence to entice Mr. Mix to buy his own Color Computer. I had never seen an "adventure" game before but if this type of entertainment had the kind of effect on someone not originally even interested in computers, then I wanted to see what it was like.

Mark Data Products was selling Black Sanctum and Calixto Island adventure games for $19.95 each. To me it was worth the twenty bucks to check out one of these adventures. To be as safe as possible I bought Black Sanctum, knowing nothing at all about Calixto Island. It arrived exactly six days after I sent in my check, unbelievable service these days. Shortly after loading in the program I was hooked; absolutely, completely hooked. My wife and I, along with two coworkers, eventually solved the mystery independently a few days, many saved games and much scratch paper later.

Without hesitation this time I ordered Calixto Island and an arcade game called Color Berserk. Calixto Island adventure was nothing short of fascinating. My Mom and Dad, who think my love of computers is insane, and my wife who shares their feelings, had a great time solving Calixto Island. Both Black Sanctum and Calixto Island were great but very different. I am now tempted to write my own adventure and let someone else try to solve it. After playing Calixto Island, my Dad even asked me how much one of these Color Computers would cost. Maybe these adventures should be required to bear the label: "Warning, the playing of this game may be habit forming!".

Color Berserk is also great fun, and a very good duplicate of the original arcade game Berserk. You are placed into a room with various shaped walls with enemies firing at you. You get 50 points for each alien you hit and 100 points for successfully leaving the room after hitting all the aliens. You then find yourself in a new and different room. But watch out for Evil Orville. He will come bouncing through the rooms to get you. All you can do is run from Orville. Bullets don't harm him or even slow him down. The resolution and smooth action are impressive. Our top score so far is about 7,000. Can anybody top this? We've discovered two small program bugs, neither of which affect the game to any great extent. In one room, an enemy is found in the lower right corner. He trips over the corner of the wall and dies. All the other enemies always *avoid touching* the walls. A slightly more serious problem occurs when either a bullet or stray piece of the man is left motionless on the screen. If you or an enemy touches this little piece, that character acts as if he was shot. These are small programming problems but may be corrected by Mark Data Products. Neither have any effect on the games excitement.

Two weeks ago I got an announcement from Mark Data about a new arcade game called Cave Hunter. I sent for the new game immediately, received it in about 5-6 days and have been playing it for about a week now. It is a variation of Pac Man but definitely different. The object is to travel to the bottom of a maze, pick up a gold brick and return it to the top without being touched by the enemy cave dwellers. The resolution of the game does not seem to be quite as good as Berserk, but it is a lot of fun. Inadvertently we discovered a method to make the game easier. By grabbing a brick and returning it to the mouth of the enemies home, then sacrificing your man, the brick is left at that spot. Since you get three men per turn, doing this same thing again with another brick on the other enemy slot, you can completely block them from coming out. Getting the next two bricks is easy with no pursuers. By going over an energizer, you can get the two blocking bricks in two trips. This can be repeated turn after turn until you make a mistake or until the speed increases making it too difficult. A score about 11,000 is possible using this trick. I feel that Mark Data should prevent this by a slight programming change. The game seems to lose its excitement this way, but of course, no one has to use this trick.

All-in-all Mark Data Products has done a great job in both the quality of their games and in their service. I would highly recommend their products and I am looking forward to more adventure games in the future.

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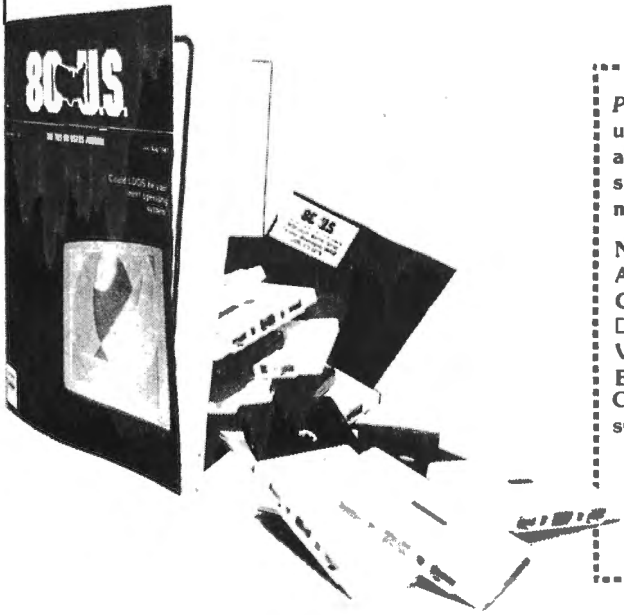

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230 IF L=206 THEN GOTO 250
240 GOTO 380
250 IF M >= OG AND M< (OG+16) THEN GOTO 280
260 IF M >= (OG+16) AND M < (OG+32) THEN
GOTO 330
270 NEXT I
280 PRINT #-SW,"ADDR = ";I;" CODE = ";L;"
OPERAND = ";M
290 DI=M-OG
300 NW=DI+RL
310 POKE I+1,NW
320 GOTO 380
330 PRINT #-SW,"ADDR = ";I;" CODE = ";L;"
OPERAND = ";M
340 DI=M-(OG+16)
350 NW = DI+RL+16
360 POKE I+1,NW
370 GOTO 380
380 NEXT I
390 PRINT "DECIMAL ADDRESS OF "
400 INPUT "FIRST ADDR CONSTANT = ";AD
410 PRINT "DECIMAL ADDRESS OF "
420 INPUT "LAST ADDR CONSTANT = ";LA
430 FOR I = AD TO LA STEP 2
440 M=PEEK(I)
450 DI=M-OG
460 NW=DI+RL
470 POKE I,NW
480 NEXT I
```

Dear Bill,

I have been alerted to a bug in My XMASCARD program which appeared in May/June issue. The error is mine and occured when I attempted to clean it up for publication. I guess I have learned the hard lesson once again - Any change in a program (no matter how minor) not exhaustively tested will result in the program bombing.

Now for the changes required:
Line 1950 to be "DY$=STR$(C)"
Line 2000 to be "PRINT#-2,DY$"
Line 2010 to be "FOR Y=1 TO C"
This will correct the bug that I put in.

Now for the bug that Radio Shack has in the ROM. If more than 1 page has been reserved for graphics, there will be a syntax error at line 60 when the program is "RUN" the first time. It appears the computer gets lost when it relocates the program. This situation can be prevented by putting the PCLEAR statement at the end of the program when decreasing the number of graphics pages. I understand if you want to increase the number the PCLEAR should be at the beginning but I have not verified this. Now for the change.
Add "2390 PCLEAR 1:GOTO 70"
Line 60 to be "GOTO 2390"

I must apologize to both you and to the readers who have had a problem with my program.
Yours truly,
Frank N. Malaney
8708 Mink Street SW
Pataskala, OH 43062

Dear Bill,

Thanks for printing my "TTYPELOG" program (July '82 issue). I've received some queries about how to put it together. "TAPLOG" must be located immediately after "TAPETYPE" in memory. If "TAPETYPE" starts at $7600 and ends at $78DF, then "TAPLOG" must be appended at $78E0. If you have this situation you need only change one line in the source code for "TAPLOG":

Change
```
420 TAPTYP EQU $0600
```
to
```
420 TAPTYP EQU $7600
```

Now, I'll give the procedure for merging "TAPETYPE" and "TAPLOG" together. For this example, "TAPETYPE" starts at $0600 and ends at $08DF, and "TAPLOG" starts at $08E0. If your TAPETYPE is at $7600, change the addresses accordingly.

1. < CLOADM"TAPETYPE" > ... BUT DON'T < EXEC > IT
2. < CLOADM"TAPLOG" > ... BUT DON'T < EXEC
4. < CSAVEM"TTYPELOG", &H0600, &H0A9F, &H0600 >

Note: If your "TAPETYPE" is at $7600, change the POKE &H0 above to POKE &H7.

For those wishing to purchase, send me $5.00 to cover the price of tape, postage, and handling. You'll promptly receive a tape of "TAPELOG", and instructions for merging it to "TAPETYPE".
Sincerely,
Jesse W. Jackson
2522 Maytime Drive
Gambrills, MD 21054

Dear Bill,

Two errors appeared in the listing of my word processor program in the August issue of CCN.

1. There should be a space between the variable K and the comparison command AND, in line 19.

2. Line 82 should read J$(K)= J$(K)+K$: IF

```
LEN (J$(K))>=200 THEN K=K+1.
```

Sincerely,
Jeff Harper
Findlay, OH

Dear Bill;

When "CCXREF" was first written (for a 16K system), I could not see any possible way for a program to contain more than 122 references for an item as a single string. After I upgraded to 32K, that 122 reference limitation quickly gave way to a "LS ERROR LINE 470" error message. Judging from the number of calls that I received from some of the readers of CCN, I was not the only one to discover this limitation.

The following changes to "CCXREF" will alleviate this problem. All line numbers relate to the original listing in the September issue. The number of references for any item is now limited only by the amount of memory available, and is not dependent on the maximum length of a string.

```
390 SS = INT (CE/2+.999)
392 IF LEFT$(R$(SS),5) = "     " THEN
SS=SS-1:GOTO 392
394 IF LB$ > LEFT$(R$(SS),5) GOTO 400 ELSE
SS=1
420 IF LB$ = LEFT$(R$(Y),5) GOTO 468
468 IF LEN(R$(Y)) > 254 GOTO 474
474 Y = Y+1
476 IF LEFT$(R$(Y),5) = "     " GOTO 468 ELSE
LB$ = "  "
972 IF Y+1 > CE GOTO 980
974 IF LEFT$(R$(Y+1),5) <> "     " GOTO 980 ELSE
Y=Y+1:GOTO 940
```

Below are my suggested changes to allow the user of a 32K system to take full advantage of all the available memory in his system.

```
530 CLEAR 16000,32730
600 DIM R$(500)
610 FOR X = 32731 TO 32767:READ I:POKE
X,I:NEXT X
620 DEF USR0=32731
630 DEF USR1=32739
```

Also, the following line should be changed, for those readers using the high speed option.

```
660 IF EOF(-1) THEN POKE 65494,0:GOTO 760
```

Because of the length of this program, I am sure some readers will not want to key it in. I am willing to provide both the 16K and 32K versions of this program on tape for $6.50. My address is 342 Hillcrest Ave., Blackwood, NJ 08012.

Sincerely,
Mike Donahue

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```
|
0600                    NAM JUSTPRIN
                *      JAMES A. HORNSBY
                *       COPYRIGHT 1982
0600                    ORG $7C00
8E0C            RSOUT   EQU $8E0C
B4F4            GIVABF  EQU $B4F4
FF22            RSINPT  EQU $FF22
7C00            FRSTEL  RMB 2          FIRST VARPTR
7C02            LASTEL  RMB 2          LAST ELEMENT
7C04            PAGLEN  RMB 1          PAGE LENGTH
7C05            PAGCHK  RMB 1          PAGE CHECK
7C06            LINLEN  RMB 1          LINE LENGTH
7C07            TABWTH  RMB 1          TAB WIDTH
7C08            HEDTAB  RMB 1          HEADING TAB
7C09            PROPOR  RMB 1          PROPORTIONAL FLAG
7C0A            JYFLAG  RMB 1          JUSTIFY FLAG
7C0B            CURPTR  RMB 2          CURRENT POINTER
7C0D            CURLEN  RMB 1          CURRENT LENGTH
7C0E            POINTR  RMB 2          TEMP POINTER
7C10            LENGTH  RMB 1          TEMP LENGTH
7C11            TABLE   RMB 2          JUSTIFY TABLE 1
7C13            NXTABL  RMB 2          JUSTIFY TABLE 2
7C15            TEMPOS  RMB 1          TEMP. TAB
7C16            HEDLEN  RMB 1          HEADING LENGTH
7C17            HEDPTR  RMB 2          HEADING POINTER
7C19            TABNUM  RMB 1          TAB NUMBER LINES
7C1A            TABTBL  RMB 2          TAB TABLE

7C1C 3468       START   PSHS U,Y,DP
7C1E 8D64               BSR VIDEO
7C20 AF8CDD             STX FRSTEL,PCR
7C23 1F12               TFR X,Y
7C25 AE22               LDX 2,Y
7C27 3001               LEAX 1,X
7C29 A6A4               LDA 0,Y
7C2B 2701               BEQ A@
7C2D 4A                 DEC A
7C2E A78CE5     A@      STA HEDLEN,PCR
7C31 AF8CE3             STX HEDPTR,PCR
7C34 8601               LDA #$01
7C36 A7A4               STA 0,Y        MAKE BLANK LINE
7C38 6F8CDE             CLR TABNUM,PCR
7C3B 6F8CC7             CLR PAGCHK,PCR
7C3E 6D8CC8             TST PROPOR,PCR
7C41 270A               BEQ B@
7C43 861B               LDA #$1B
7C45 BD8E0C             JSR RSOUT
7C48 8611               LDA #$11
7C4A BD8E0C             JSR RSOUT
7C4D 8D7E       B@      BSR PRINT
7C4F 861B               LDA #$1B
7C51 BD8E0C             JSR RSOUT
7C54 8613               LDA #$13
7C56 BD8E0C             JSR RSOUT
7C59 3568               PULS U,Y,DP
7C5B 7EB4F4             JMP GIVABF
```

```
0054 7C5E 4A55535450  A@      FCC "JUSTPRIN"
0055 7C66 4A414D4553          FCC "JAMES A. HORNSBY"
0056 7C76 434F505952          FCC "COPYRIGHT 1982"
0057 7C84 3410        VIDEO   PSHS X
0058 7C86 8E0400              LDX #$0400
0059 7C89 8660                LDA #$60
0060 7C8B 1F89                TFR A,B
0061 7C8D ED81        B@      STD ,X++
0062 7C8F 8C0460              CMPX #$0460
0063 7C92 2DF9                BLT B@
0064 7C94 338CC7              LEAU A@,PCR
0065 7C97 8E040C              LDX #$040C
0066 7C9A C608                LDB #$08
0067 7C9C 8D10                BSR C@
0068 7C9E 8E0428              LDX #$0428
0069 7CA1 C610                LDB #$10
0070 7CA3 8D09                BSR C@
0071 7CA5 8E0449              LDX #$0449
0072 7CA8 C60E                LDB #$0E
0073 7CAA 8D02                BSR C@
0074 7CAC 3590                PULS X,PC
0075 7CAE A6C0        C@      LDA ,U+
0076 7CB0 8A40                ORA #$40
0077 7CB2 A780                STA ,X+
0078 7CB4 5A                  DECB
0079 7CB5 26F7                BNE C@
0080 7CB7 39                  RTS

0081 7CB8 EE8DFF5E    GETTAB  LDU TABTBL,PCR
0082 7CBC A6C0                LDA ,U+
0083 7CBE A78DFF45            STA TABWTH,PCR
0084 7CC2 A6C0                LDA ,U+
0085 7CC4 A78DFF51            STA TABNUM,PCR
0086 7CC8 EF8DFF4E            STU TABTBL,PCR
0087 7CCC 39                  RTS

0088 7CCD CE0460      PRINT   LDU #$0460
0089 7CD0 EF8DFF46            STU TABTBL,PCR
0090 7CD4 CE0500              LDU #$0500
0091 7CD7 EF8DFF36            STU TABLE,PCR
0092 7CDB 33C90080            LEAU $80,U
0093 7CDF EF8DFF30            STU NXTABL,PCR
0094 7CE3 17013E              LBSR JSTIFY
0095 7CE6 1700CB      NEWPAG  LBSR HEADIN
0096 7CE9 3125        PREPNX  LEAY 5,Y          INCREMENT Y
0097 7CEB A68DFF2A            LDA TABNUM,PCR
0098 7CEF 2602                BNE SAMTAB
0099 7CF1 8DC5                BSR GETTAB
0100 7CF3 4A          SAMTAB  DEC A
0101 7CF4 A78DFF21            STA TABNUM,PCR
0102 7CF8 EE8DFF17            LDU NXTABL,PCR
0103 7CFC AE8DFF11            LDX TABLE,PCR
0104 7D00 EF8DFF0D            STU TABLE,PCR
0105 7D04 AF8DFF0B            STX NXTABL,PCR
0106 7D08 AE8DFF02            LDX POINTR,PCR
0107 7D0C AF8DFEFB            STX CURPTR,PCR
0108 7D10 A68DFEFC            LDA LENGTH,PCR
0109 7D14 A78DFEF5            STA CURLEN,PCR
```

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```
0110 7D18 2740            BEQ PRDONE
0111 7D1A A68DFEE9        LDA TABWTH,PCR
0112 7D1E A78DFEF3        STA TEMPOS,PCR
0113 7D22 1700D5          LBSR POSSUB
0114 7D25 C601            LDB #$01
0115 7D27 B6FF22    A@    LDA RSINPT
0116 7D2A 44              LSRA
0117 7D2B 25FA            BCS A@            LOOP TILL NOT BUSY
0118 7D2D A680            LDA ,X+
0119 7D2F 815C            CMPA #$5C         DNJ MARK
0120 7D31 2727            BEQ PRDONE
0121 7D33 815F            CMPA #$5F         DNJ MARK
0122 7D35 2723            BEQ PRDONE
0123 7D37 BD8E0C          JSR RSOUT         SEND CHR
0124 7D3A 861B    NLASPA  LDA #$1B
0125 7D3C BD8E0C          JSR RSOUT         SEND CNTRL
0126 7D3F A6C5            LDA B,U
0127 7D41 8109            CMPA #$09         IF <=9 THEN
0128 7D43 230B            BLS LASPA         GO SEND SPACES
0129 7D45 8009            SUBA #$09
0130 7D47 A7C5            STA B,U
0131 7D49 8609            LDA #$09
0132 7D4B BD8E0C          JSR RSOUT
0133 7D4E 20EA            BRA NLASPA
0134 7D50 BD8E0C    LASPA JSR RSOUT         SEND SPACES
0135 7D53 5C              INC B
0136 7D54 6A8DFEB5        DEC CURLEN,PCR
0137 7D58 26CD            BNE A@
0138 7D5A 860D      PRDONE LDA #$0D         END OF LINE
0139 7D5C BD8E0C          JSR RSOUT
0140 7D5F C601            LDB #$01          JSTIFY FLAG
0141 7D61 B6FF22    CKAGIN LDA RSINPT
0142 7D64 44              LSRA
0143 7D65 2409            BCC NTBUSY
0144 7D67 5D              TST B             IF JSTIFY DONE THEN
0145 7D68 27F7            BEQ CKAGIN        DON'T JSTIFY
0146 7D6A 1700B7          LBSR JSTIFY
0147 7D6D 5F              CLR B
0148 7D6E 20F1            BRA CKAGIN
0149 7D70 6C8DFE91  NTBUSY INC PAGCHK,PCR
0150 7D74 A68DFE8D        LDA PAGCHK,PCR
0151 7D78 A18DFE88        CMPA PAGLEN,PCR
0152 7D7C 270F            BEQ ENDPAG
0153 7D7E EE8DFE80        LDU LASTEL,PCR
0154 7D82 335F            LEAU -1,U
0155 7D84 EF8DFE7A        STU LASTEL,PCR
0156 7D88 102AFF5D        LBPL PREPNX       GO NEXT LINE
0157 7D8C 39              RTS                 ALL DONE
0158 7D8D C641      ENDPAG LDB #$41
0159 7D8F E08DFE71        SUBB PAGLEN,PCR
0160 7D93 6F8DFE6E        CLR PAGCHK,PCR
0161 7D97 860D      B@    LDA #$0D          FILL PAGE
0162 7D99 BD8E0C          JSR RSOUT
0163 7D9C B6FF22    C@    LDA RSINPT
0164 7D9F 44              LSRA
0165 7DA0 25FA            BCS C@
0166 7DA2 5A              DEC B
```

```
0167 7DA3 26F2            BNE B@
0168 7DA5 EE8DFE59        LDU LASTEL,PCR
0169 7DA9 335F            LEAU -1,U
0170 7DAB EF8DFE53        STU LASTEL,PCR
0171 7DAF 102AFF33        LBPL NEWPAG      GO NEXT PAGE
0172 7DB3 39              RTS                ALL DONE

0173 7DB4 A68DFE50  HEADIN LDA HEDTAB,PCR
0174 7DB8 A78DFE59        STA TEMPOS,PCR
0175 7DBC 8D3C            BSR POSSUB
0176 7DBE AE8DFE55        LDX HEDPTR,PCR
0177 7DC2 E68DFE50        LDB HEDLEN,PCR
0178 7DC6 2726            BEQ CARRET
0179 7DC8 861B            LDA #$1B
0180 7DCA BD8E0C          JSR RSOUT
0181 7DCD 860E            LDA #$0E         START ELONGATION
0182 7DCF BD8E0C          JSR RSOUT
0183 7DD2 860F            LDA #$0F         START UNDERLINE
0184 7DD4 BD8E0C          JSR RSOUT
0185 7DD7 A680      A@    LDA ,X+          PRINT HEADING
0186 7DD9 BD8E0C          JSR RSOUT
0187 7DDC 5A              DEC B
0188 7DDD 26F8            BNE A@
0189 7DDF 860E            LDA #$0E         END UNDERLINE
0190 7DE1 BD8E0C          JSR RSOUT
0191 7DE4 861B            LDA #$1B
0192 7DE6 BD8E0C          JSR RSOUT
0193 7DE9 860F            LDA #$0F         END ELONGATION
0194 7DEB BD8E0C          JSR RSOUT
0195 7DEE 860D      CARRET LDA #$0D
0196 7DF0 BD8E0C          JSR RSOUT
0197 7DF3 B6FF22    B@    LDA RSINPT
0198 7DF6 44              LSRA
0199 7DF7 25FA            BCS B@
0200 7DF9 39              RTS

0201 7DFA 861B      POSSUB LDA #$1B        PRINTER POS
0202 7DFC BD8E0C          JSR RSOUT
0203 7DFF 8610            LDA #$10
0204 7E01 BD8E0C          JSR RSOUT
0205 7E04 6D8DFE01        TST PROPOR,PCR
0206 7E08 2704            BEQ A@
0207 7E0A C60A            LDB #$0A
0208 7E0C 2002            BRA B@
0209 7E0E C606      A@    LDB #$06
0210 7E10 A68DFE01  B@    LDA TEMPOS,PCR
0211 7E14 3D              MUL
0212 7E15 BD8E0C          JSR RSOUT
0213 7E18 1F98            TFR B,A
0214 7E1A BD8E0C          JSR RSOUT
0215 7E1D B6FF22    C@    LDA RSINPT
0216 7E20 44              LSRA
0217 7E21 25FA            BCS C@           LOOP TILL NOT BUSY
0218 7E23 39              RTS

0219 7E24 3474      JSTIFY PSHS U,Y,X,B
0220 7E26 A6A4            LDA 0,Y          GET LENGTH
```

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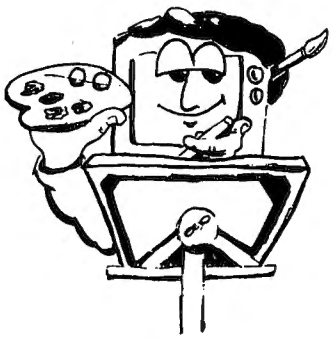

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```
0221 7E28 A78DFDE4          STA LENGTH,PCR
0222 7E2C AE22              LDX 2,Y          GET ADDRESS
0223 7E2E AF8DFDDC          STX POINTR,PCR
0224 7E32 E68DFDD4          LDB JYFLAG,PCR
0225 7E36 1027007E          LBEQ JYDISA
0226 7E3A 8102              CMPA #$02
0227 7E3C 257A              BLO JYDISA       IF LENGTH <2
0228 7E3E 4A                DECA
0229 7E3F E686        CHKSPC LDB A,X         DEL LAG SPACES
0230 7E41 C120              CMPB #$20
0231 7E43 2609              BNE NOTSPC
0232 7E45 6A8DFDC7          DEC LENGTH,PCR
0233 7E49 4A                DECA
0234 7E4A 8100              CMPA #$0
0235 7E4C 22F1              BHI CHKSPC
0236 7E4E 8102        NOTSPC CMPA #$02
0237 7E50 2766              BEQ JYDISA       IF LENGTH<2
0238 7E52 C15C              CMPB #$5C
0239 7E54 2762              BEQ JYDISA       IF CHR=92
0240 7E56 C15F              CMPB #$5F
0241 7E58 275E              BEQ JYDISA       IF CHR=95
0242 7E5A 6D8DFDAB          TST PROPOR,PCR
0243 7E5E 2729              BEQ STNDRD
0244 7E60 8D0C              BSR DOTCAL
0245 7E62 43                COM A
0246 7E63 53                COM B
0247 7E64 C30001            ADDD #$01        NEGATE D
0248 7E67 8E04B0            LDX #$04B0       X=NUMBER OF
0249 7E6A 308B              LEAX D,X         DOTS TO ADD
0250 7E6C 202A              BRA SPRDSP

0251 7E6E AE22        DOTCAL LDX 2,Y         X=STRING POINTER
0252 7E70 318D0036          LEAY DOTABL-32,PCR
0253 7E74 CE0000            LDU #$0000
0254 7E77 E68DFD95          LDB LENGTH,PCR
0255 7E7B 2709              BEQ EXITLO
0256 7E7D A680        GETNXT LDA ,X+         GET CHARACTER
0257 7E7F A6A6              LDA A,Y          GET DOT LENGTH
0258 7E81 33C6              LEAU A,U         ADD DOTS TO U
0259 7E83 5A                DECB             DECREMENT LENGTH
0260 7E84 26F7              BNE GETNXT
0261 7E86 1F30        EXITLO TFR U,D
0262 7E88 39                RTS

0263 7E89 E68DFD79    STNDRD LDB LINLEN,PCR
0264 7E8D E08DFD7F          SUBB LENGTH,PCR
0265 7E91 2325              BLS JYDISA       IF LENGTH>LINE
0266 7E93 860C              LDA #$0C
0267 7E95 3D                MUL
0268 7E96 1F01              TFR D,X
0269 7E98 EE8DFD77    SPRDSP LDU NXTABL,PCR
0270 7E9C 8601              LDA #$01
0271 7E9E 6FC6        CLRTAB CLR A,U
0272 7EA0 4C                INC A
0273 7EA1 A18DFD61          CMPA LINLEN,PCR
0274 7EA5 23F7              BLS CLRTAB
0275 7EA7 8601        BEGLIN LDA #$01
```

```
0276 7EA9 301F          MAKTAB LEAX -1,X
0277 7EAB 271A                 BEQ JYDONE
0278 7EAD 6CC6                 INC A,U
0279 7EAF 4C                   INC A
0280 7EB0 A18DFD5C             CMPA LENGTH,PCR
0281 7EB4 26F3                 BNE MAKTAB
0282 7EB6 20EF                 BRA BEGLIN
0283 7EB8 8601          JYDISA LDA #$01          DON'T JUSTIFY
0284 7EBA EE8DFD55             LDU NXTABL,PCR
0285 7EBE 6FC6          A@     CLR A,U
0286 7EC0 4C                   INC A
0287 7EC1 A18DFD41             CMPA LINLEN,PCR
0288 7EC5 23F7                 BLS A@

0289 7EC7 3574          JYDONE PULS U,Y,X,B
0290 7EC9 39                   RTS

0291 7ECA 09090C1211    DOTABL FCB 09,09,12,18,17
0292 7ECF 1311090909           FCB 19,17,09,09,09
0293 7ED4 0F0F090F09           FCB 15,15,09,15,09
0294 7ED9 0F0F0F0F0F           FCB 15,15,15,15,15
0295 7EDE 0F0F0F0F0F           FCB 15,15,15,15,15
0296 7EE3 0F09090D0F           FCB 15,09,09,13,15
0297 7EE8 0D0F                 FCB 13,15

0298 7EEA 1113121113           FCB 17,19,18,17,19
0299 7EEF 111113130C           FCB 17,17,19,19,12
0300 7EF4 1113111513           FCB 17,19,17,21,19
0301 7EF9 131211130F           FCB 19,18,17,19,15
0302 7EFE 1113131713           FCB 17,19,19,23,19
0303 7F03 130D0F0F0F           FCB 19,13,15,15,15
0304 7F08 1113                 FCB 17,19

0305 7F0A 09100F0C0F           FCB 09,16,15,12,15
0306 7F0F 0F0C0F0F0A           FCB 15,12,15,15,10
0307 7F14 090F0A130F           FCB 09,15,10,19,15
0308 7F19 0F0F100C0F           FCB 15,15,16,12,15
0309 7F1E 0C0F0F130F           FCB 12,15,15,19,15
0310 7F23 0F0D0C090C           FCB 15,13,12,09,12
0311 7F28 0F                   FCB 15

0312 7F29 3468          START2 PSHS U,Y,DP
0313 7F2B 17FD56               LBSR VIDEO
0314 7F2E 1F12                 TFR X,Y
0315 7F30 E6A4                 LDB 0,Y
0316 7F32 E78DFCDA             STB LENGTH,PCR
0317 7F36 17FF35               LBSR DOTCAL
0318 7F39 3568                 PULS U,Y,DP
0319 7F3B 7EB4F4               JMP GIVABF

0320 7F3E               ULTIMA END START
```

MICRO COMPUTER INTERFERENCE CONTROL HOT LINE

ELECTRONIC SPECIALISTS announce installation of a new Toll Free Interference Control Hot Line. Call 1-800-225-4876 between 9 AM and 4 PM Eastern Time Monday thru Friday to discuss micro computer interference control problems.

Experienced staff will analyze the problem situation and make specific recommandations for control of troublesome processor or peripheral interference.

Or, analyze system electrical interference problems with the help of many typical situations and solutions outlined in the FREE 40 page Interference Control Product catalog.

For more information contact ELECTRONIC SPECIALISTS, INC., 171 South Main Street, P.O. Box 389, Natick, MA 01760. Phone: 617-655-1532.

ANOTHER FIRST FOR CONNECTION-80 OF WOODHAVEN, NY

Bob Rosen, the system operator of CONNECTION-80 of WOODHAVEN, NY, which was the first BBS to fully support the COLOR COMPUTER, has now gone one step further into Color Computer history.

He has started a second BULLETIN BOARD, but not only does his BBS#2, as it's called, support the TRS-80C, it runs on one.

His new BBS#2 runs on a 32K Color Computer with 3 disk drives, software written by J. Blech, which will soon be available to all.

Access to the new BBS#2 can be made in two ways, by dialing directly into it at 212 441-3766 or if you call his BBS#1 and it's in use you automatically transfer into BBS#2 if it's not busy.

BBS#2 is still in its infancy stages with many modifications still yet to come, but they're both up and running 24 hours a day, seven days a week.

STAR-DOS (tm)

We are happy to announce a major new enhancement for Radio Shack Color Computer disk systems - the STAR-DOS Disk Operating System.

STAR-DOS extends the Color Computer disk system past the limits imposed by Radio Shack's Disk Extended BASIC by adding a full Disk Operating System which can be used not just by BASIC programs, but by machine and assembly language programs as well. Now you can run all those fast and powerful machine language programs which cannot be used with just BASIC.

The STAR-DOS Disk Operating System is a unique new concept which greatly extends the speed and power of the Color Computer disk system by blending the best of two worlds:

* From the user's viewpoint, STAR-DOS disk format is identical with that used by standard Color Computer Disk Extended BASIC. Files written by BASIC can be read by machine language programs running under STAR-DOS, and vice versa. Since STAR-DOS is compatible with BASIC, there is no need to buy a new BASIC to go with a new DOS.

* From the system or applications programmer's viewpoint, STAR-DOS looks just like a standard 6809 DOS. There are provisions for multiple 320-byte File Control Blocks, routines to open and close named files, or delete files, read or write single sectors, search or modify the directory, and more. STAR-DOS is so powerful that many machine language programs written for the popular big-system 6809 DOS can be run on the Color Computer with STAR-DOS just by changing a few addresses.

STAR-DOS is supplied on disk with a comprehensive user and programmer's manual, which explains all available routines and entry points, along with examples showing how to use them. It also comes with a number of utilities to make use of your disk system even easier and faster. It costs $49.90 and is available NOW. Other 6809 software running under STAR-DOS (such as the All-In-One Editor/Processor and Mailing List Program) will be released soon.

For further information contact Star-Kits, P.O. Box 209, Mt. Kisco, NY 10549.

ANOTHER FIRST FROM THE PROGRAM STORE

DISKOVERY....A new idea from The Program Store to capture the attention and loyalty of the rapidly growing diskette market. By offering consumers an opportunity to purchase diskettes from six different manufacturers in one package. The Program Store has given them an opportunity to decide which diskette is best without having to purchase 60 diskettes.

The Program Store, which was the first to have a Retail Store with the emphasis on Software; the first to have a successful chain of such stores; the first to offer third party Software for Radio Shack, Apple, and Atari Personal Computers in Mail Order ads in national publications; the first to offer franchises for

Software stores; and one of the first to publish third party Software for the Radio Shack Personal Computer now has 4 company owned stores and has contracted for 8 franchise locations.

The emphasis of The Program Store is bringing the finest and most innovative Software and Software related ideas to the public ..... FIRST.

For further information contact Terry Kemple.

INTELLIGENT SERIAL I/O PROCESSOR BOARD NOW AVAILABLE

The GIMIX Intelligent Three-port RS-232C Serial I/O Interface can significantly increase throughput of a multi-user system by reducing the number of interrupts between user terminals and the host CPU. The Intelligent I/O Board accomplishes this by buffering data transfers between system and users and preprocessing of the data.

Appropriate on-board software and operation system drivers are required. Software and drivers for OS-9 Level 2 will be available shortly for GIMIX.

*INDEPENDENT ON-BOARD 2MHZ 68B09 CPU
*UP TO 20K OF ON-BOARD MEMORY (EPROM AND RAM)
*BUFFERED DATA TRANSFER BETWEEN HOST AND ON-BOARD CPU USING A Z8038 FIO I/O INTERFACE UNIT
*THREE RS-232C SERIAL I/O PORTS (6551As) WITH SOFTWARE SELECTABLE BAUD RATES, WORD LENGTH, STOP BITS, PARITY
STANDARD VERSION INCLUDING 4K RAM WITHOUT SOFTWARE...$438.11
PARALLEL VERSION COMING SOON

UNIFLEX FOR GIMIX WINCHESTER SYSTEMS

TSC will be providing UniFLEX compatible with GIMIX Winchester systems. The NEW versions of UniFLEX for use with the Winchester systems will be delivered on 5" media as well as 8" media.

GIMIX 30 PIN PROTOTYPING BOARD NOW AVAILABLE

*Double sided with plated thru holes and gridded power and ground lines.
*8 rows of pads on .100 x .300 centers; up to 41 fourteen pin ICs.
*Accepts standard 6, 8, 14, 16, 20, 24, 28, and 40 pin DIP devices.
*The entire top edge has pads for .100 x .100 header (ribbon) connectors.
*Pads for solder connections or .100 center headers on all 30 bus lines.
*Accepts 3 TO-220 regulators, 1 on the +8V & 1 ea. on the +/- 16V lines.
*Provisions for decoupling caps distributed throughout the array.
*Can be used with wire wrap, wiring pencil, solder wiring, etc.
WITH GOLD BUS CONNECTORS AND HEAT SINKS -- UNASSEMBLED...$38.33.

KRAFT INTRODUCES DUAL-MODE JOYSTICKS FOR HOME COMPUTER GAMES

After one-and-a-half years of intensive design study, Kraft Systems, Inc. of Vista, California, has introduced a line of precision, plug-in "joystick" controls for home computer games.

Currently available are joysticks for Apple II, TRS-80 Color and IBM Personal computers. Interfaces with additional home computer systems are under development.

For exceptional high performance, Kraft has incorporated two modes of operation into its joystick design. Players may select either "spring-center return" or "free-floating" modes by means of external switches.

"Our two-mode feature is unique in the industry," says H.W. "Ben" Larson, Kraft's national sales manager. "Most joysticks are exclusively spring-center return. Research told us players sometimes wanted the versatility and speed of a free-floating control, depending on the game they were playing, and were willing to make temporary internal spring modifications to get the free-floating feature. Our joysticks allow them to easily switch back and forth between modes as often as they like."

"The linear potentiometers we use in our joysticks translate the movement of the gimbal to electrical impulses, providing more accurate cursor control and faster motion," Larson continues. "Cursor centering tabs on top of the unit permit fine tuning for accurate response."

Kraft controls are color coordinated to the home computer hardware. Designs are tested for durability to over 1.5 million cycles. All models offer a one-year limited warranty.

Kraft Systems recent entry into the personal computer peripheral market follows twenty years of production experience as a

producer of precision controls for industrial and hobby applications. The patented gimbal mechanics, which insure accurate response in *Kraft joysticks*, have been thoroughly proven in demanding industrial radio control, R/C model aircraft and CAD/CAM computer applications.

Kraft is currently the nation's largest manufacturer of high-technology stick-type controls, and employs over 200 people in its 40,000 sq. ft. production facility.

Kraft joysticks are available through personal computer retailers nationwide. Inquiries should be directed to: Kraft Systems, Inc. 450 W. California Avenue, Vista, CA 92083. Telephone 714/724-7146.

RADIO SHACK BREAKS TRADITIONAL PRICE BARRIER WITH NEW 212A-COMPATIBLE HIGH SPEED DIRECT CONNECT MODEM.

Radio Shack, a division of Tandy Corporation, now offers a high speed direct connect modem that operates at either 0-300 or 1200 baud. The new TRS-80 DC-1200 High Speed Direct Connect Modem (76-1005) is available for $699.00 at Radio Shack Computer Centers; an optional add-on dialer accessory module (76-1009) is also available for $149.95.

With high speed 1200 baud operation, time charges (and in some cases, affiliated long distance charges) for timesharing or information retrieval services may be greatly reduced.

The DC-1200 Modem can operate asynchronously at 0-300 baud (Bell 103/113 compatible), and either synchronously or asynchronously at 1200 baud (Bell 212A compatible). Both full-and half-duplex operation are supported at both speeds. The unit features manual originate (plus auto-dialer option available), automatic answer operation, and is self-adjusting to the incoming baud rate. A selftest mode has also been incorporated.

Connection to telephone circuits is made via a standard modular connector (the DC-1200 Modem is FCC registered). Connection to single lines is direct; a similar connection to multiple lines may be made with Radio Shack's DuoFone Multi-Line Controller (43-233), available separately for $39.95 at Radio Shack stores, Computer Centers and participating dealers; this may be user-installed in-line with standard telephone 6-button keysets (it sandwiches into the standard connector), and allows pushbutton selection of any of five lines while providing normal operation of telephone signal lights and "hold" functions.

Connection to TRS-80 computers is made to its DB 25 connector with standard RS232C cables (available separately; 26-1408 cable for Model I and Model III; 26-4403 for Model II, Model 16 and the DT-1 terminal; and 26-3012 cable for the Color Computer).

Receive sensitivity for the DC-1200 is -48 dBm. Three switches select ORIGINATE (vs answer) mode, HIGH SPEED (1200 baud vs 0-300 baud) operation, and initiate the local (ANALOG LOOP) test function. Eight LED indicators display "Terminal Ready", "On-Hook", "Transmit Data", "Receive Data", "High Speed", "Ring Indicator", "Carrier Detect" and "Power On".

The DC-1200 High Speed Direct Connect Modem measures 1-3/4 x 6-2/3 x 11-1/4 inches, and uses a UL-listed 117 VAC power module (included).

July 1, 1982, Chatsworth, California. REM Industries today announced the availability of their new SECUR-IT line of computer media storage containers.

Offering safe, no-spill portanilty and secure, orderly storage for wafers, the containers are made of high-impact plastic with removeable tops that are securely snapped in place for safe, convenient transport. Ideal for people on the move or going to club meetings.

The wafer file holds 20 stringies, has non-skid rubber feet and a handy index on the lid. Available in black only and priced at $14.95 each. For a free catalog featuring this and other REM products including Model I & III software, write to REM Industries, Inc., 9420 B Lurline Ave., Chatsworth, CA., 91311, (213)341-3719.

July 1, 1982, Chatsworth, California. REM Industries today announced the availability of their new SECUR-IT line of computer media storage containers.

Offering safe, no-spill portability and secure, orderly storage for diskettes, the containers are made of high-impact plastic with removeable tops that are securely snapped in place for safe, convenient transport. Ideal for people on the move, or going to club meetings.

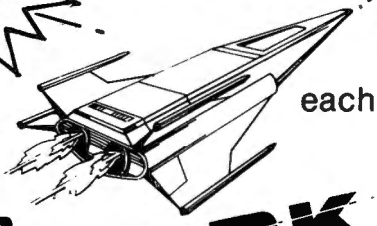
The disk file holds 50 diskettes, has five index tab dividers, and non-skid rubber feet. Available in walnut wood grain or black finish for 5 1/4" or 8" diskettes. Pricing is $29.95 for 5 1/4" containers and $39.95 for the 8" models. For a free catalog featuring this and other REM products including Model I & III software, write to REM Industries, Inc., 9420 B Lurline Ave., Chatsworth, CA., 91311, (213) 341-3719.

COLOR COMPUTER
ACTION GAMES
FAST=EFFICIENT=MACHINE LANGUAGE

ARCADE GAMES

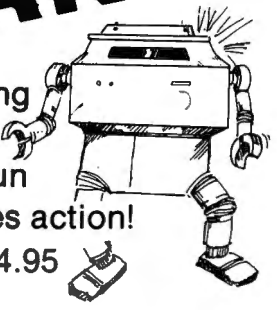
NEW!

ASTRO BLAST



A new super hi-res space game.
Wave after wave of alien attackers. . .
each one a different and unique challenge to your skills.
CASSETTE (16K) . . . $24.95
DISC (32K) . . . $29.95

COLOR BERSERK



They're calling this one a "classic". You'll have hours of fast-paced fun zapping robots. Super hi-res action!
CASSETTE (16K) . . . $24.95
DISC (32K) . . . $29.95

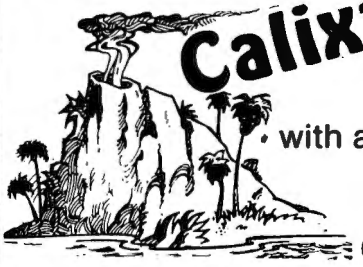
CAVE HUNTER

Outsmart the creatures that pursue you as you hunt for treasure in a maze of cave passages. Lots of colors and sounds!
CASSETTE (16K) . . . $24.95
DISC (32K) . . . $29.95

"Finally . . . software worthy of the Color Computer." K.C. Westerly, RI
"The ads and reviews were right. Great stuff!" R.S. Los Angeles, CA

ADVENTURE GAMES

Calixto Island



A challenging puzzle with an occasional twist of humor. There's a treasure waiting to be discovered!
CASSETTE (16K) . . . $19.95

The Black Sanctum

For the player who enjoys suspense. . You'll encounter the forces of black magic in this spooky adventure.
CASSETTE (16K) . . . $19.95

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We are always looking for quality machine language programs. Contact us for details.

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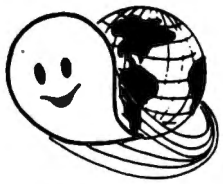

2MHZ 6809 SYSTEMS

GIMIX offers you a variety to choose from!

38 MB WINCHESTER SYSTEM $17,498.99

HARDWARE FEATURES:

- ★ 2MHz 6809 CPU
- ★ 512KB Static RAM
- ★ 8 RS232C Serial Ports
- ★ 2 Parallel Ports
- ★ DMA Double Density Floppy Disk Controller
- ★ Dual 8" DSDD Floppy Disk System
- ★ Dual Winchester Subsystem with Two19 MB 5¼" Winchester Drives

SOFTWARE FEATURES:

- ★ OS-9 LEVEL TWO Multi-User Operating System
- ★ OS-9 Debugger
- ★ OS-9 Text Editor
- ★ OS-9 Assembler

19 MB WINCHESTER SYSTEM $8998.09

HARDWARE FEATURES:

- ★ 128K Static Ram
- ★ 2MHz 6809 CPU
- ★ 19 MB 5¼" Winchester DMA Subsystem
- ★ 4 RS232C Serial Ports
- ★ 1 MB 5¼" Floppy Disk Drive
- ★ DMA Double Density Floppy Disk Controller

SOFTWARE FEATURES:

- ★ OS-9 LEVEL TWO Multi-User Operating System
- ★ OS-9 Debugger
- ★ OS-9 Assembler
- ★ OS-9 Text Editor

128KB MULTI-USER SYSTEM $6997.39

HARDWARE FEATURES:

- ★ 2MHz 6809 CPU
- ★ DMA Double Density Floppy Disk Controller
- ★ 128KB Static Ram
- ★ 2 RS232C Serial Ports
- ★ Dual 8" DSDD Floppy Disk System

SOFTWARE FEATURES: Your choice of either UniFLEX or OS-9 LEVEL TWO. Both are Unix-like Multi-User/Multi-Tasking Operating Systems.

56KB FLEX/OS-9 "SWITCHING" SYSTEM $4148.49

HARDWARE FEATURES:

- ★ 2MHz 6809 CPU
- ★ 56K Static Ram
- ★ 2 RS232C Serial Ports
- ★ DMA Double Density Floppy Disk Controller
- ★ 2 Built-in 5¼" 40tr DSDD Disk Drives (80 Track DSDD Drive Option . . add $400.00)

SOFTWARE FEATURES:

- ★ GMXBUG monitor — FLEX Disk Operating System
- ★ OS-9 LEVEL ONE Multi-tasking operating system for up to 56K of memory

WINCHESTER SUBSYSTEMS

Winchester packages are available for upgrading current **GIMIX** 6809 systems equipped with DMA controllers, at least one floppy disk drive, and running FLEX, OS-9 LEVEL ONE or OS-9 LEVEL TWO. The packages include one or two 19MB (unformatted) Winchester drives, DMA Hard Disk Interface, and the appropriate software drivers. The Interface can handle two 5¼" Winchester Drives, providing Automatic Data Error Detection and Correction: up to 22 bit burst error detection and 11 bit burst error correction.

Dual drives can be used together to provide over 30 MBytes of on line storage -- or use one for back-up of the other. (More convenient and reliable than tape backup systems.

#90 includes one 19MB Drive, Interface, and Software **$4288.90**
#91 includes two 19MB Drives, Interface, and Software **$6688.91**

Contact GIMIX for systems customized to your needs or for more information.

50 HZ Export Versions Available

GIMIX Inc. reserves the right to change pricing and product specifications at any time without further notice.

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