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# Color Computer News

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The Color Computer Magazine for 6809 Users.

Issue 20 May 1983

“Second Birthday Issue”



Forum Sixty-Eight

Color Computer News



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Forum Sixty-Eight is the journal for Motorola Microprocessors. The forum covers business, scientific and recreational computing.

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# Color Computer News

The Color Computer Magazine for 6809 Users.

Issue 20 May 1983

## “Second Birthday Issue”

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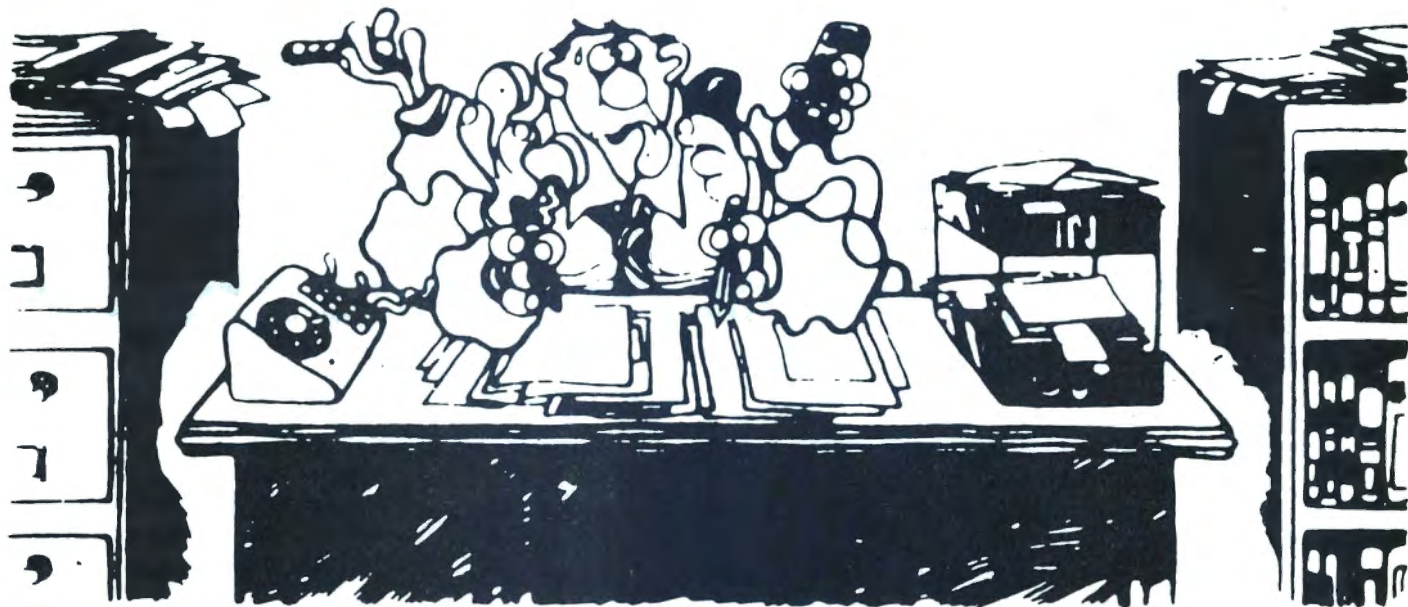


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### Happy Birthday

It seems like only a little while ago I was writing an editorial for our first anniversary issue, now here I am again writing an anniversary editorial. There have been so many changes in this short period of two years that it almost boggles the mind. As I think back I recall my first Color Computer having a "B" circuit board, now there's an "F" (or E1 or EA, depending on who you talk to). We've grown from 26 pages to the size of this one. The Color Computers have grown from 4K to 64K with rumors of more memory in the works. That alone causes my mind to wander back to my first computer, an Altair, which when I finally sold it had grown from 256 bytes of memory to 8K and I couldn't imagine ever needing that much. When we "old-timers" got our Color Computers the constant complaint was the lack of software, now there is more

*Color Computer News*

software than a single person can ever find uses for, imagine four operating systems, more languages than I can easily recall, literally a mountain of games and enough application (business) software to run any business.

I can see several similarities between raising my two children and this magazine. First of all when I started Color Computer News I had no experience at all with publishing just as I had no experience at being a father when my daughter was born. I made a lot of mistakes as both a father and a publisher when both were young (and continue to do so as they both get older). But I learned a lot from both experiences and hopefully I'm making new mistakes with both instead of repeating the old ones over and over. By the time I started to feel reasonably accomplished at fatherhood my son was born and while things appeared to go a bit

May 1983 5

smoother there were still some struggles. I think the same will be true of our new magazine Forum Sixty-Eight, while I gained some experience at publishing and hired several excellent employees to help carry the load there will be problems. But I guess the bottom line is that its really been a great two years. Just like with my children, I had a lot of fun in the process of directing the personality of our magazine.

I would like to extend my sincerest thanks to all of you readers, after all its you that have made our magazine the success its been, without you it wouldn't have been possible. Your support through your comments, suggestions and complaints are the backbone of this organization. Although it's not possible to implement every suggestion or to answer every letter I depend on you to guide me every step of the way after all this isn't my magazine its OURS. Without your input we're nothing.

As part of our birthday celebration we're having a back issue sale. We'll sell any back issue we still have in stock for only \$3.00, which includes third class postage. This is quite a savings when you consider the cost of postage and the fact that most back issues are really difficult to find.

#### Conventions

I think the most difficult part of my job is to write a May editorial when there's snow on the ground. So I'll not talk about flowers or sunshine or other May goodies (since those conversations probably don't fit well in a computer magazine anyway). So let's talk about the computer show season. This year I'll be attending the Muskegon Ham Radio convention, the National Computer Conference and the Microware (OS9) Seminar. By the time you read this the Ham Radio Convention will have come and gone but NCC will be the week of May 16 at the Anaheim Convention Center. If your there please look me up. The Microware Seminar is August 12 - 15. I learned a great deal at last years seminar and I'm certain this year will be even better. If you plan to use OS9 and can get free for four days you should plan to attend. This year will be a bit more difficult since I'll be attending as an exhibitor and trying to attend all of the classes. I'll keep you informed about other conventions as I decide to attend them.

6 May 1983

#### Articles

I recently received a letter from a fellow who thought we wouldn't accept his article because it wasn't by one of our "regular" reviewer. To say the least I was shocked, we have no "regular" reviewers. We do have four people that do our "Quickie Reviews" but these aren't really intended to be reviews at all, they are simply a statement of what products that have been sent to us by advertisers do, no more no less. These people are Old Father William, some people seem to think that I'm using Old Father William as a pen name which is totally false Old Father William is a local priest, Jeff Stipes, Linda Taylor and John Abbott. Our regular reviews are all submitted by readers like you. I feel like a broken record, and probably sound like one to long time subscribers, but I have a real problem with magazines that do "in house" reviews. Its far to easy to be influenced by advertisers which could cause a publisher to write only favorable reviews. The point to all of this is that we need your reviews and articles. Color Computer News is by color computer users for color computer users, which means you. If fact every member of my staff are color computer owners, of their own free will.

#### Dealer Program Update

The kits for the dealer program I mentioned last month should be in stock by now and in fact we've already had a few inquiries about the program. The objective of the program is to make Color Computer News and Forum Sixty-Eight available to every 6809 user through newstands, bookstores and computer stores. Since our best representatives have always been our readers we can now reward some financially for their efforts at placing our magazine(s) in local stores and at the same time reward all of our readers with a better magazine, since larger circulation means more of everything else. If you are unemployed or have a job that allows you to travel in your home town I suggest that you check out this opportunity I'm offering. We'll both be glad you did. Advertisers, this is a natural addition to your business. Since you are already in contact with computer stores it would be a simple matter to add Color Computer News to the items you're already shipping to your dealers.

Color Computer News

# Turn your color computer on to the power of FLEX

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FLEX is the world's most popular operating system for the 6809 and with over 150 programs, we are the largest supplier of software for FLEX. These programs are NOT games but serious programs for your Color Computer. They range from word processors thru business applications to software development tools. Many Fortune 500 companies use our software. FHL Color FLEX turns your Color computer into a powerful system more capable than systems costing several times as much.

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# STYLOGRAPH

## 6809 WORD PROCESSING SYSTEM

AVAILABLE FOR FLEX,<sup>™</sup> UniFLEX,<sup>™</sup> and OS-9<sup>™</sup>

The STYLOGRAPH text processing system is a very easy to use but powerful method of creating and printing text. It allows the operator to type text on the CoCo, modifying and correcting it as it's typed, and then print it out. The STYLOGRAPH SYSTEM is cursor-oriented with dynamic screen formatting. Cursor based editing means that any portion of the text may be worked on by moving the cursor to that point. Dynamic screen formatting means that the text is formatted on the screen in the same way it will appear on the printed copy. The display is continuously updated to show how the text will appear. This is a very important feature and is normally available only on very expensive commercial word processing systems. It significantly reduces the time required to produce a finished copy.

### FULL FEATURED TEXT EDITING

A full array of commands help in the creation and modification of text. The text displayed on the screen may be moved up, down, left or right. The cursor can be moved to any page or to any specified series of letters or words. The cursor itself can be moved left, right, up, down, to any tab position, or to the extreme left or right. Any block of text can be moved, copied or deleted. The operator may also do a **global replace** so that all occurrences of a given string will be replaced with or without a "prompt" asking if the item should be replaced.

### OPERATOR CONVENIENCE

Files longer than memory can be edited. The operator can move forward through a long text file by selectively dumping text to the disk or filling from the disk.

The supervisor mode is **menu driven** and self prompting so that the operator does not have to remember the syntax of commands. This makes it easier for new operators to use the system.

An "assist" or "**help**" function makes it easy to learn the system since it is normally not necessary to consult the manual to learn the commands. This function is menu driven and lists all of the keyboard functions and the formatting commands.

At the beginning of the text the operator normally types in a few simple commands indicating the line length, left margin, and so forth, and then enters the header and footer as they should appear. After that the operator need not worry about formatting since it is taken care of automatically. Words that extend beyond the end of the line are automatically removed and placed on the next line. **Headers** and **footers** are automatically inserted so that the operator always knows what portion of the page is being worked on. **Ghost hyphens** can be entered so that if the word falls at the end of a line, and a ghost hyphen has been inserted, the hyphen will automatically be added.

### FLEXIBLE DISPLAY

Lines longer than the screen width are allowed. STYLOGRAPH can scroll right and left on the screen so that tables can be constructed and appear on the screen exactly as they will appear on the print out.

A command allows viewing of the formatting commands on the screen. Another command allows the operator to see which characters will be modified at print out by underlining, superscripting or boldface. A page status command shows the current format values and other useful information.

### COMPLETE FORMATING CONTROL

The text of individual lines may be centered, left justified, right justified, or right and left justified. **Tab**s can be set or cleared at any point. Spacing of the lines on the page is under complete operator control with end of page, spacing and vertical tab commands.

While entering text, it may be specified that the characters have some kind of modification when they are printed, such as underlining, superscript, boldface, overline, or subscript. These character modifications are done with "control" key strokes. For example, to start underlining characters, simply hold down the "CTRL" key, hit the "U" key and continue entering text. To stop underlining, hit the "DEL" or "RUB" key.

### POWERFUL PRINTING OPTIONS

Underlining is supported on TTY type printers. For those people who have specialty printers there are a variety of additional capabilities including:

1.5 line spacing

**BOLDFACE**

superscript

subscript

underline, overline,

or any combination

Right and left justification of text is accomplished by incremental printing on TTY type printers. True proportional spacing is supported on the specialty printers.

Control codes may be embedded in the text for special applications. For example, some printers require special control sequences for double width, graphics or boldface. These sequences may be embedded in the text for those users that have these printers. In conjunction with this, it is possible to cause the printer to stop in the middle of a print out for changing printwheels. A backspace feature allows overstriking.

### OPERATING SYSTEM COMPATIBILITY

STYLOGRAPH is compatible with the FLEX, UniFlex, and OS-9 disk operating systems. Text files prepared using STYLOGRAPH are directly usable by other software such as BASIC and the assembler. (This significantly aids software development since cursor-based editing allows full viewing of the text being worked on, thereby reducing errors and decreasing programming time). File size is limited only by the capacity of the disk system. Files may be loaded into the text at any point making it possible to rapidly create "boiler plate" documents using portions of text that have been previously saved to a text file. Any portion of a text may be saved to a text file for use at a later point. The printer output may be directed to a disk file for later print spooling. Most operating system commands are directly accessible without leaving STYLOGRAPH.

### FULLY ADAPTABLE TO MOST PRINTERS

STYLOGRAPH is easily configured by the user for most terminals so there is no need to send for updates as equipment changes are made. Source code of the terminal interface is supplied so that users with unusual equipment configurations may adapt it to their systems. The source code for all of the "prompts" is also supplied so that foreign language versions may be easily constructed.

Printers currently included as standard are: Diablo, Qume, Starwriter, NEC 5515/25, NEC 5510/20; CENTRONICS 737/739; TTY type printer with backspace function; TTY type printer without backspace function.

### COMPLETE INSTRUCTIONS

A special tutorial section is included in the manual so that people with little or no computer experience can easily learn to use STYLOGRAPH in a few hours. A text file is included which demonstrates most of the features of STYLOGRAPH and allows the operator to practice most of the functions. The logical arrangement of the commands and the immediate display of the results greatly simplifies the learning process. In addition there is an "assistance" command which helps the new operator learn the commands.

### STYLOGRAPH MAIL MERGE

A major option of STYLOGRAPH is the related MAIL MERGE program. This program adds "form letter" capability to STYLOGRAPH. Variables such as names addresses, dates, may be taken from a disk file or the keyboard at print out time and inserted into the text. Successive letters may be printed out without operator intervention.

The second important capability of the MAIL MERGE program allows many STYLOGRAPH text files to be appended at print out time. This allows files to be edited in smaller, more convenient blocks and then appended at print out time so that the page numbers will remain consecutive and the headers and footers will automatically be retained through all of the print out.

### STYLOGRAPH SPELLING CHECKER

Another major option of STYLOGRAPH is the related SPELLING CHECKER program. This program reads through a text file and compares the words in the file with a dictionary. Words that are not found in the dictionary may be marked in the text for later editing, corrected on the spot, skipped, or added to the dictionary. Words may be added to or deleted from the dictionary to create unique vocabularies for particular applications.

STYLOGRAPH for the Color Computer FLEX	195.00
STYLOGRAPH MAIL MERGE	125.00
STYLOGRAPH SPELLING CHECK	145.00
STANDARD FLEX Version	295.00



**TEN MOST-ASKED QUESTIONS****ABOUT DYNACALC™****THE ELECTRONIC SPREAD-SHEET FOR 6809 COMPUTERS**

- 1. What is an electronic spread-sheet, anyway?**  
Business people use spread-sheets to organize columns and rows of figures. DYNACALC simulates the operation of a spread-sheet without the mess of paper and pencil. Of course, corrections and changes are a snap. Changing any entered value causes the whole spread-sheet to be re-calculated based on the new constants. This means that you can play, 'what if?' to your heart's content.
- 2. Is DYNACALC just for accountants, then?**  
Not at all. DYNACALC can be used for just about any type of job. Not only numbers, but alphanumeric messages can be handled. Engineers and other technical users will love DYNACALC's sixteen-digit math and built-in scientific functions. There's even a built-in sort command, so you could use DYNACALC to manage small data bases - up to 256 records.
- 3. What will DYNACALC do for ME?**  
That's a good question. Basically the answer is that DYNACALC will let your computer do just about anything you can imagine. Ask your friends who have VisiCalc, or a similar program, just how useful an electronic spread-sheet program can be for all types of household, business, engineering, and scientific applications.
- 4. Do I have to learn computer programming?**  
NO! DYNACALC is designed to be used by non-programmers, but even a Ph.D. in Computer Science can understand it. Built-in HELP messages are provided for quick reference to operating instructions.
- 5. Do I have to modify my system to use DYNACALC?**  
Nope. DYNACALC uses any standard 6809 configuration, so you don't have to spend money on another CPU board or waste time learning another operating system.
- 6. Will DYNACALC read my existing data files?**  
You bet! DYNACALC has a beautifully simple method of reading and writing data files, so you can communicate both ways with other programs on your system, such as the Text Editor, Text Processor, Sort/Merge, RMS data base system, or other programs written in BASIC, C, PASCAL, FORTRAN, and so on.
- 7. How fast is DYNACALC?**  
Very. Except for a few seldom-used commands, DYNACALC is memory-resident, so there is little disk I/O to slow things down. The whole data array (worksheet) is in memory, so access to any point is instantaneous. DYNACALC is 100% 6809 machine code for blistering speed.
- 8. Is there a version of DYNACALC for MY system?**  
Probably. You need a 6809 computer (32k minimum) with FLEX or UniFLEX operating system. A version for OS-9 is also in the works. You also need a decent CRT terminal, one with at least 80 characters per line, and direct cursor addressing. If your terminal isn't smart enough for DYNACALC, you probably need a new one anyway. The UniFLEX version of DYNACALC also allows you to mix different brands of terminal on the same system. There's also a special version of DYNACALC for Color Computers equipped with FLEX.
- 9. How much does DYNACALC cost?**  
The FLEX versions are just \$200 per copy; UniFLEX version \$395. Foreign orders add \$10 per copy for postage. We encourage dealers to handle DYNACALC, since it's a product that sells instantly upon demonstration. Call or write on your company letterhead for more information.

**ORDER YOUR DYNACALC™ TODAY****ALSO FROM FHL****DYNAMITE +  
"THE CODE BUSTER"****now available for UniFLEX  
OS-9 version soon**

DYNAMITE + is a new version of DYNAMITE, our popular 6809/6800 disassembler package for 6809 FLEX. Present users of DYNAMITE can upgrade to DYNAMITE + by sending us the original DYNAMITE diskette and \$40 (plus \$5 for foreign postage). DYNAMITE + does everything DYNAMITE

does, and more! A cross-reference generator has been added, label files are now maintained only in text form (LABEL EQU \$xxxx), and boundary file specifications have been tremendously simplified, which makes it easier to disassemble large programs containing lots of big tables.

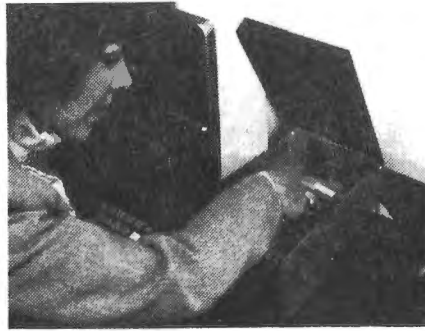
The UniFLEX version of DYNAMITE + does everything the FLEX version does, and also automatically handles system calls and 'info' areas.

DYNAMITE + is available for \$100 per copy on FLEX (specify diskette size), and \$300 on UniFLEX. Foreign orders add \$5 per copy for postage.





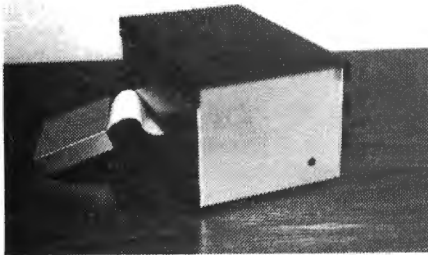
1. Here is Jeri plugging The Solution into the CoCo. Then she will move the main case up close to the CoCo. The cable is kept short to prevent noise and interference. The disk controller can be plugged into the side slot. The power supply plugs into a socket on the back of the case. All wires for the internal boards exit out the back of the case.



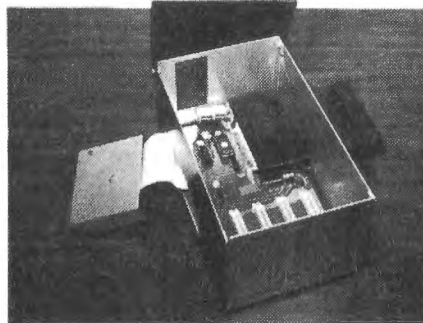
2. Here Jeri is setting the dip switches in The Solution. The hinged top makes the job easy. The switches can be set for three different things. Up to four boards can be installed inside the case.



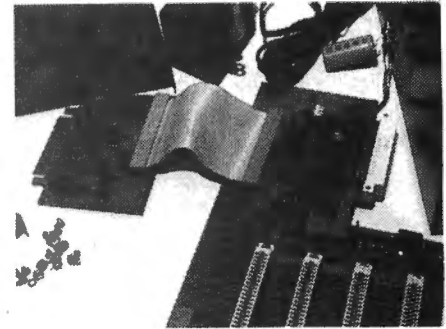
3. Here is The Solution at work. It makes a very nice addition to your CoCo with a black anodized top and a silver anodized main case both made from heavy aluminum stock.



4. Here's The Solution all by itself. The heavy aluminum anodized case is a thing to be proud of. The buffer board can be seen to the left of the main case. The LED indicator on the front comes on when you turn on the power to your CoCo. The Solution needs no on/off switch.



5. All that's missing from this picture is the plug in the wall power supply. You can see the 4K EPROM monitor and the 4 position dip switch. At the front are four of the five expansion slots with a disk controller plugged into the fifth slot on the side. The power LED is at the lower right front of the case.



6. Here's the real guts to The Solution. We took it all apart so that you could look at the parts. The 1 amp power supply can be seen in this picture. All the connectors are gold as you would expect. The small board is the buffer board. The white connectors are the same as the CoCo's.

## THE SOLUTION AND WHY WE BUILT IT

When we first introduced FLEX for the CoCo in February 1982 we received hundreds of calls from software and hardware developers who wanted to use the CoCo because it was so inexpensive compared to everything else on the market. However there is not enough expansion or I/O in the CoCo to make this possible for most of these users. I know that the CoCo is viable in most cases, but for many, there needed to be more. So that was the original reason for designing the expansion box we call "THE SOLUTION."

The motherboard has the 2K/4K EPROM socket with a 4K monitor EPROM in it. Also inside are 4 vertical connectors for internally mounted boards or ROM type cartridges. The fifth connector is horizontal and is made for the disk controller, ROM cartridges or additional expansion out the side of the The Solution. A four position dip switch allows for 3 options to be selected. One option will cause the CoCo to get its interrupt and reset vectors from the monitor instead of RS Basic.

If you choose to come up in the monitor, then it is not necessary to have RS Extended Basic in the CoCo to boot FLEX because the monitor has a built-in boot. This saves \$100.00 of the cost of The Solution. The power supply is a plug-in-the-wall type with a connector in the back of the case. The back of the case is open and it is thru this that all the cables for the different cards go. This makes for a very neat appearance.

### TECHNICAL SPECIFICATIONS

**Bus Structure...**Fully buffered Color Computer compatible bus. Priority daisy chained arrangement where each slot has a priority assigned to it. The farther out on the bus that you are, the less priority you have. The disk slot (0) has the highest priority with slot 1, 2, 3, and then 4 has the lowest. The pinout and the timing is the same as the Color Computers with the exception of the sound line. This is used on the motherboard for the priority line.

**Power Supply...**The power supply is a tracking power supply which means that the Color Computer itself turns The Solution on and off so that there is no need for an on/off switch. A LED on the front of The Solution indicates when the entire system is on or off. The tracking power supply means that The Solution's bus voltage will be the same as the Color Computers to within a very few millivolts. The power supply included with The Solution is a 1 amp supply for the 5 volt line only. The +12 and -12 voltages are taken from the Color Computer.

### Dip switch options...

1) Select the 4K ROM monitor when this option is selected. The system will come up in the monitor and get interrupt vectors from it rather than the Radio Shack Basic ROM. The reason you might want to do this is so you can boot FLEX from the monitor rather than Basic. This will allow running FLEX without having Extended Color Basic in the CoCo. This also ties in with the option on the serial card to come up on a terminal instead of the CoCo TV set and keyboard.

2) Disable the disk slot (0). This will allow using ROM cartridges in The Solution without unplugging the disk card. When the switch is on, the ROM is active. When it is off, whatever ROM cartridge is there is active. This infers that you could switch back and forth between a cartridge and the disk system. This is NOT necessarily true because of the need to initialize the disk software in the ROM and this may destroy what is in memory. It may be possible under special circumstances to do this but it is up to the user to work it out.

3) Select either a 2K or a 4K EPROM. This is set for a 4K EPROM which is included with The Solution. However, it can be changed if you have a need. The EPROM is addressed at \$E000.

4) User definable. This means that we didn't use this switch for anything, but you can if you want, or we could call it 'reserved for future expansion.' This means that we don't have any use for it now, but we may in the future.

The Solution I/O cards are addressed at either the \$FF60-\$FFBF area OR the \$FE00-\$FEFF area.

These prices and specs are subject to change without notice. Call for confirmation.

THE SOLUTION	\$249.00
(Price includes case and power supply.)	
CARDS FOR THE SOLUTION	
DUAL SERIAL PORT	\$130.00
Two 6551 ACIAs, programmable baud rates (110-19,200), full RS-232, DB-25 conn.	
CLOCK and PARALLEL PRINTER CARD	\$110.00
OKI clock w/battery backup and 1 parallel output port	
PROTOTYPE Cards	\$ 37.00
3 1/2 by 9 inch card	
EPROM/RAM Card	\$ 90.00
Up to 16K ROM (2732) or 8K static RAM (6116). Each device individually addressed anywhere in memory	
EPROM programmer	\$165.00
Program 2K, 4K or 8K EPROMS. Software included either on disk or on board ROM.	
TRIPLE PARALLEL I/O Card	\$105.00
Two 6821's and one 6522 for parallel I/O.	

Note: We are considering several other cards for The Solution. Please let us know what you want, if there is enough interest, we will make it.

**FRANK HOGG LABORATORY, INC., IS PROUD TO ANNOUNCE THE  
ADDITION OF SEVERAL NEW PROGRAMS TO OUR PRODUCT LIST!!**

**From Windrush, in England:**

**MACE - A 6809 Assembler and Co-resident editor.**

A co-resident EDITOR/ASSEMBLER written by Graham Trott, which takes most of the pain out of assembly language program development. Allows programs to be written, edited, assembled, and de-bugged without ever entering the disk operating system. Includes XMACE, a co-resident 6800/1/3 EDITOR/CROSS/ASSEMBLER.

6809 FLEX only                      \$98.00

**PL/9 - A 6809 compiler with co-resident editor and co-resident trace-debugger.**

A co-resident EDITOR/COMPILER/DEBUGGER written by Graham Trott. A single pass compiler that produces position independent machine code output. Supports many BASIC, SPL/M and PASCAL structures. Supports 8 bit and 16 bit signed AND 32 bit floating point variables. FLEX I/O, floating point, and scientific functions library (w/source) included.

6809 FLEX                              \$198.00

**From Computerware:**

**INVENTORY CONTROL FOR RETAILERS & DISTRIBUTORS:**

Designed to help you keep control of this important aspect of your business, this program allows you to store your cost and quantity information, updates it immediately, and offers key management reports with useful summaries at any time upon your request.

CC FLEX version                      \$195.00

**CHECK LEDGER SYSTEM:**

A single entry bookkeeping system which allows the user to define multiple income and expense accounts. Deposits are assigned to income accounts while cash disbursements by check are assigned to expense accounts. Multiple expense assignments may be made for a single check, allowing easy recording of petty cash, credit card payments, etc.

CC FLEX version:                      \$195.00

**GENERAL ACCOUNTS RECEIVABLE SYSTEM:**

Provides reliable and timely information regarding the status of all customers accounts. You can know instantly which accounts are past due, forecast how much money to expect to receive for cash flow planning, and keep on top of your customer credit position.

CC FLEX version:                      \$149.00

(These business programs are also available for FLEX and OS-9. Please contact us for prices. All of these require Computerware's Random Basic.)

**ACCOUNTS PAYABLE SYSTEM:**

Can give you the tools to plan your business growth by controlling expenditures and forecasting cash requirements. This system helps a small business manage and track its cash liabilities by collecting vendor invoice information and reporting the business cash commitments and payment history.

CC FLEX version:                      \$195.00

**PAYROLL PROCESSING SYSTEM:**

Records key information on all employees. Allows for entry of pay rates for standard hours, overtime hours, and salary. Handles hourly, salary, and commissioned employees, as well as, weekly, bi-weekly, semi-monthly, and monthly pay periods. Once all pertinent information is keyed in, processing takes seconds.

CC FLEX version:                      \$295.00

**CORRESPONDENCE SYSTEM:**

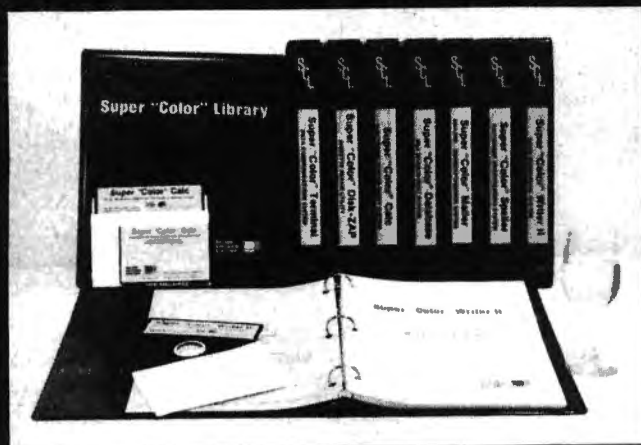
The system collects name and address information and then provides mailing labels or reports of the entire list or subgroups within the list upon your request. You can add names, delete names, or change information for a given name at any time, keeping your list accurate at all times.

CC FLEX version:                      \$149.00



# Super "Color" Library™

For the TRS-80 Color and TDP System 100 Personal Computers



No matter what kind of problem you are trying to solve with the Color Computer, there is a program in the ever-expanding integrated, **Super "Color" Library** that will give you the solution; Faster, Better, Smarter!

Every Library program features **MEMORY-SENSE** to determine your computer's memory, from 16 to 64K, and adjusts automatically to maximize work space. All programs, except the **Super "Color" Speller** and **Super "Color" Disk-ZAP**, feature a true lowercase display with below line descenders. Each program has been written specifically for the Color Computer in fast machine code to be totally compatible for optimum performance — Something a motley assortment of programs from diverse sources or a passel of overpriced, wallet-FLEXing software from a bygone era simply can not achieve.

The **Super "Color" Library** has all the power, speed, dependability and compatibility you will ever need so build your library a volume at a time or put the full power of the complete library of problem solvers to work right away.

**64K**  
Compatible

— NEW! —

## Super "Color" Writer II™

VERSION 3.0 By Tim Nelson  
THE INTELLIGENT WORD PROCESSOR

32x16 &  
51-64-85x21&24  
WITH REAL  
LOWERCASE  
DISPLAY

The **Super "Color" Writer II** is for those who desire the best. It is the most powerful, fastest, most dependable and versatile word processor available for the Color Computer, from 16 to 64K. The **Super "Color" Writer II** has features for the most demanding professional, yet it is easy enough for newcomers to master.

Of course the **Super "Color" Writer II** has all the features you would expect from the highest quality word processor, such as a clear, crisp and readable professional display with your choice of display colors, 9 display formats; standard 32x16 & 51-64-85x21 & 24 with real lowercase descenders; full 4-way cursor control, sophisticated edit commands, the ability to edit any BASIC program or ASCII textfile, seven delete functions, locate and change, wild card locate, a real block move & copy, word wrap-around, programmable tabs, display memory used and left, non-breakable space, multiple headers and footers, dynamic text formatting, comprehensive format parameters, use with ANY printer at any baud rate from 110 to 9600 baud, automatic justification, automatic pagination, automatic centering, automatic flush right, underlining, superscripts, subscripts, pause print, single-sheet pause, optionally print comments, append text files, available in a ROMPAK cartridge for maximum work space, but that's only half of the story. No other program can even begin to compare in features with the **Super "Color" Writer II**.

### Check These Exclusive Features

MEMORY-SENSE adjusts to computer's memory (16-64K) for maximum work space; TYPE-AHEAD, TYPAMATIC KEY REPEAT and KEY BEEP for the pros; 3 PROGRAMMABLE FUNCTIONS; AUTO PHRASE INSERT; COLUMN CREATION; TEXT FILE LINKING; HELP MENU; A TRUE EDITING WINDOW IN ALL 9 DISPLAY MODES; TRUE FORMAT WINDOW to display line lengths up to 255 characters, with horizontal and vertical scrolling to replicate the printed page including centered lines, headers, footers, page breaks, page numbers, margins, giving a perfect printed document every time. Also makes hyphenation a snap; **TRUE AUTOMATIC JUSTIFICATION** for neat, even left and right hand margins; Ability to use CHARACTER CODES for printing special characters available with your printer; freedom to embed as many PRINTER CONTROL CODES as desired anywhere in the text, **EVEN WITHIN JUSTIFIED TEXT**; 90-plus page tutorial manual.

**ADDITIONAL DISK FEATURES:** Read a directory, Display free granules, Save with Automatic Verification, Load and Append ASCII files, and BASIC programs, Kill files, and Link files from disk for continuous printing. 54K bytes of workspace available with a 64 K system. Only the best offers all of these features.

TAPE \$69.95

ROMPAK \$89.95

DISK \$99.95

Tutorial only \$15.00 (Refundable with purchase)

Tape & Disk require 32K for lowercase display

Previous **Super "Color" Writer II** owners call for upgrade policy

## Super "Color" Mailer™

By Tim Nelson

The **Super "Color" Mailer** is a powerful multi-purpose mailing list merging and sorting program including lowercase display that uses files created by the **Super "Color" Writer II**. Combine files, sort and print mailing lists, print "Boilerplate" documents, automatically insert text in standardized forms, address envelopes, the list is endless.

TAPE \$39.95

DISK \$59.95

Operators Manual only \$10.00 (Refundable with purchase)

## NEW Super "Color" Speller™

By Peter A. Stark

The **Super "Color" Speller** is a fast machine-code proofreading program to correct **Super "Color" Writer** files. Automatically proofreads your documents against a 20,000 word stock dictionary, plus your own customized dictionary and corrects typos or marks them for special attention.

AVAILABLE ON DISK ONLY \$69.95

Operators Manual only \$10.00 (Refundable with purchase)

# 32x16 & 51-64-85x21&24 Display With Lowercase Descenders And **16** Thru **64K** Too!

## **NEW** Super "Color" Calc™

ELECTRONIC SPREADSHEET By Kevin Herrboldt

Now you can answer those "What if?" financial projection, forecasting, budgeting, engineering and calculating questions with precision, speed and power using the **Super "Color" Calc**, truly the finest electronic worksheet and financial modeling program available for the Color Computer, from 16 to 64K. Now every Color Computer owner has access to a calculating and planning tool rivaling VisiCalc™, containing all its features and commands and then some. You need only change one variable and you instantly see how that change affects your assumptions. You can even use VisiCalc templates freely with **Super "Color" Calc!** Combine spread sheet tables with **Super "Color" Writer II** documents to create ledgers, projections, statistical and financial reports and budgets.

**Features include:** 9 display formats; standard 32x16 & 51-64-85x21&24 with real lowercase descenders \* MEMORY-SENSE to adjust to computer's memory (16-64K) for maximum work space; Full-size 63x256 worksheet \* Easy to use \* HELP Menus to make learning faster \* Machine code speed and high precision \* Total flexibility in calculating \* Up to FOUR VIDEO DISPLAY WINDOWS to compare and contrast results of changes \* Sine and Cosine functions, Averaging, Exponents, Algebraic functions, and base 10 or 16 entry \* Multi-layered Column and Row Ascending and Descending sorts \* Locate formulas or titles in fields \* Easy entry, replication and block moving of frames \* Global or Local column width control up to 81 characters each \* Create titles of up to 255 characters \* Typamatic Key Repeat \* Key beep \* Type-ahead \* Print up to 132 column worksheet \* Prints at any baud rate from 110 to 9600 \* Print formats savable along with worksheet \* Enter control codes for customized printing.

**DISK FEATURES:** Read a directory; Display free granules; Kill files. Save with Automatic Verification; Load files; Append disk files for complete worksheet printing. 54K bytes of worksheet space available with a 64K system.

Tutorial and sample templates are supplied with the program.

**ROMPAK \$89.95** **DISK \$99.95**

Tutorial only \$15.00 (Refundable with purchase)  
Disk requires 32K for lowercase display

## Super "Color" Disk-ZAP™

By Tim Nelson

Now the dreamed-of repair of I/O errors is a reality. The **Super "Color" Disk-ZAP™** is the ultimate repair utility for simple and quick repair of all repairable disk errors. Designed with the non-programmer in mind, the **Super "Color" Disk-ZAP™** will let you retrieve all types of bashed files, including BASIC and Machine Code programs.

This high-speed machine code disk utility has a special dual cursor screen display to show HEXIDECIMAL and ASCII displays simultaneously. You are able to: Verify or modify disk sectors at will \* Type right onto the disk to change unwanted program names or prompts \* Send sector contents to the printer or any other RS-232 device \* Search the entire disk for any grouping of characters \* Copy sectors \* Backup tracks or entire disks \* Repair directory tracks and smashed disks \* Full prompting to help you every step of the way \* 50-plus page Operators Manual which helps you simply and quickly fix the vast majority of disk errors, and teaches the rudiments of disk structure and repair.

**AVAILABLE ON DISK ONLY \$49.95**

Operators Manual only \$10.00 (Refundable with purchase)

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SOFTWARE  
SYSTEMS**



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**WE TAKE THE COLOR COMPUTER SERIOUSLY.  
AUTHORS' SUBMISSIONS ARE ENCOURAGED.**

## Super "Color" Terminal™

THE FINEST TERMINAL PROGRAM ANYWHERE!

Version 3.0 By Dan Nelson

The best has become even better, with many new features including 9 display formats; 32x16 & 51-64-85x21&24 with real lowercase descenders, plus compatibility with the 64K Color Computer. This user-friendly program makes communicating with ANY computer a breeze even for a newcomer. Communicate using your modem with all the popular information services such as Dow Jones, Compuserve, The Source, and local BBS's, clubs, friends, or the main-frame at work. You can also communicate directly with other microcomputers, such as the TRS-80 I/III, II, other Color Computers, Apples, IBM PCs, etc., via RS-232 without using a modem. Save the information or PRINT IT!

**FEATURES:** MEMORY-SENSE to adjust to computer's memory (16-64K) for maximum work space; Selectively print data at baud rates from 110 to 9600 \* 54K of data storage with 64K disk system. 128 character ASCII keyboard \* Automatic graphics mode \* Word mode (word wrap) for unbroken words \* Send & receive **Super "Color" Writer II, Database & Calc** files, ASCII files, Machine Language & BASIC programs \* Set communications baud rate from 110 to 9600. Duplex: Half Full/Echo, Word length: 5 6 7 or 8. Parity: Odd/Even or None. Stop Bits: 1-9 \* Local linefeeds to screen \* Save and load ASCII files, Machine Code & BASIC programs \* Unique CLONE feature for copying any tape \* Lower case masking \* 10 Keystroke Multiplier (MACRO) buffers to perform repetitive pre-entry log-on tasks and send short messages \* Programmable prompt or delay for send next line \* Selectable character trapping \* Files compatible with other Library programs.

**ADDITIONAL DISK FEATURES:** Works with up to four Disk Drives; Call a directory. Print free space. Kill disk files. Save with Automatic Verification and Load textfiles or BASIC programs. Save and Load KSM'S to the disk.

**TAPE \$49.95** **ROMPAK \$59.95** **DISK \$69.95**

Operators Manual only \$10.00 (Refundable with purchase)  
Previous **Super "Color" Terminal** owners call for upgrade policy.

## **NEW** Super "Color" Database™

This high speed machine language program including true lowercase displays fills all your information management needs, be they for your business or home. Inventory, accounts, mailing, lists, family histories, you name it, the **Super "Color" Database** will keep track of all your data.

The **Super "Color" Database** features MEMORY-SENSE to adjust to computer's memory (16-64K) for maximum work space. It is structured in a simple and easy to understand menu system with full prompting for easy operation. Your data is stored in records of your own design, each divided into as many fields as you need. All files are fully indexed for speed and efficiency. Full sort of records is provided for easy listing of names, figures, addresses, etc., in ascending or descending order. The math package performs arithmetic operations and updates other fields which is especially useful when used as an order entry and invoicing system. You can create reports, or lists for mailings, or whatever. Create files compatible with the **Super "Color" Writer II and Terminal**. Up to five different print formats are available, and control codes may be imbedded for customized printing.

**AVAILABLE ON DISK ONLY \$79.95**

Operators Manual only \$10.00 (Refundable with purchase)

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# MAIL CALL



Dear Bill:

I found Arthur Doyle's letter in the March Color Computer News at least moderately amusing. He seems to suffer from two afflictions that affect us all to some degree: "name brand" loyalty, and, probably due to that, partial blindness with respect to comparing his "favorites" to others.

I must admit to a certain amount of present loyalty myself to the 6809, but it wasn't always that way. The 6809 and CC both started out as underdogs. Over two years ago I had been thinking about buying a personal computer, and all the ones I considered except the IBM were on the market then and now. I read and studied the available literature on individual products, peripherals and expansion options, and CPU's for almost ten months before making a decision to buy a specific model. I will admit here to a very strong initial bias toward the Apple II or II+, with the TRS-80 Model III not far behind. A comparison of BASIC interpreters and the expansion options available appeared to put the CC on a very nearly equal footing, *very* much to my surprise!

Studying the CPU's involved was even

14 May 1983

more surprising: The Model III (Z-80) is a good, cost-effective machine, but the Z-80 is an "old" chip. As age is measured in the CPU business it is about a generation behind the 6502 (Apple), and even further behind the 6809 (CC). The Z-80 appears to be an excellent I/O processor but is somewhat cumbersome in really large number-crunching or programming applications. The 6502 is a large step in the right direction, with much more sophistication and power, and in fact, I almost bought the Apple. It appears that the 6809 is a blend of the best of the Z-80 AND 6502 with some extra goodies and enhancements thrown in for good measure. For stack-oriented languages and large block manipulation of data it is light-years ahead of whatever may be in second place (The tests I have seen indicated that the Z-80 isn't even number two!).

I still had some strong doubts about buying a Color Computer, but I kept on running head-on into the facts I had gathered with my own two hands: the CC with its 6809E was theoretically the most powerful machine of the bunch. Oh well, it was cheap, so I could afford to learn on it and then sell it off when I finally bought

Color Computer News

my "real" computer. That was almost a year and a half ago, and the only limitations I've run into with it have been my own.

"Will the CC ever be able to run sophisticated financial modeling programs?" Mr. Doyle asks (emphasis is mine). My "falling star" el cheapo Color can run FLEX9 and OS-9 Level I RIGHT NOW. I think that "Dynacalc", available to run under FLEX, would fit Mr. Doyle's description. And have you ever played with a machine-code data-base manager on a 6809? Talk about FAST! If Mr. Doyle needs any further proof of speed please steer him to the "BENCHMARK" article in that same 3/83 Color Computer News, or to earlier articles in "Interface Age". Even at normal speed the CC is respectable, and those figures are with the Tandy/Microsoft BASIC. Running TSC XBASIC under ccFLEX, its about 2-1/2 times as fast as the Apple or IBM! BASIC09 running under OS-9 is even faster yet: At present it's supposed to be *THE* fastest BASIC available for ANY 8-bit micro. And with a \$3 direct video buffer hooked up to a high-bandwidth monitor, my CC's 64 character/32 line screen size doesn't give away anything in that department, either!

Memory size seems to render all other considerations "inconsequential" to Mr. Doyle. Mr. Doyle, you haven't been doing your homework. Even some recent, specially optioned and enhanced Z-80's have memory management available. The 6809 was designed from the ground up to make it easier still: Using an on-board register and a chip called a Memory Management Unit, a 6809 can address up to 2 Megabytes of RAM! In fact, from the Motorola data sheets, it looks like you might be able to hang up to 8 MMU's on ONE 6809. How would SIXTEEN MEGABYTES of RAM sound? I can't answer for Mr. Doyle, but as for myself, 2 Megabytes of RAM is as much as I'll ever need for personal or light business and engineering computing.

I personally think that the "overwhelming wave of software for the IBM PC" will be slower in getting here than Mr. Doye seems to believe. I have my hands full just trying to really learn how to use the excellent 6809 (and much 6800) software that is available *right now!* My dream machine is nowhere near a "Big

Color Computer News

Blue:" No, give me something like a GIMIX, HELIX, SWTP or SSB 6809 system, something I can use for FLEX and OS-9; multi-user, multi-tasking, with that 2 Megabyte chunk of RAM.

One final consideration seems to have slipped by without any mention at all: COST. If you don't really NEED a 16- or 32-bit machine (and very few personal computerists *do*), then it is not cost-effective to buy and own such a monster. I understand that Motorola is thinking about releasing a 3- or 4-MHz. 6809. That, and the inherent efficiency of the 6809 would outrun a 10-MHz. Z-80 would probably put a good crimp in some 16-bit CPU's action! Right now the 6809 appears to be the "bang-for-the-buck" champ in 8-bit CPU's (\$2000 for a FLEX/OS-9 2-disk system with CC!) It may not be the same tomorrow, but I think the 6809 and its descendents will fill many needs for a long time to come. Some "falling star"!

John Sacrison  
Tumacacori, AZ

\* My sentiments exactly!

Dear Bill:

I'm happy to say that the Columbus and Central Ohio Color Computer Club has grown by leaps and bounds. We have a number of professional programmers and some competent hardware people among the membership, which has grown to over 75 people.

Anyone in the area is welcome to come to the meetings on the third Monday of the month, usually at the Compuserve building. For more information, contact me at the address below or call Gary or Susan Davis at Sugar Software.

Thank you.

Sincerely,  
John Boals  
494 Cline Avenue  
Mansfield, OH 44907  
(419) 756-4873

\* I'm pleased that your growth has been so rapid, be sure to keep us informed about the future.

Dear Sir,

We are pleased to announce the formation of the

REGINA TRColor COMPUTER CLUB

The aims of the club are to make its

## Mail Call

members more proficient in the use of their newly acquired computer, establish a software and information library and to schedule seminars and demonstrations on special techniques or new equipment.

Our club contact is:

REGINA TRColor COMPUTER CLUB

c/o Georges G. Glass

26 Tweedsmuir Bay

REGINA SASK. S4X 2B1

Tel (306) 949-3942 or (306) 565-2857

Kindly advise if your organization offers to computers clubs, general informations and or catalogs.

Sincerely Yours,  
Georges G. Glass

Dear Bill,

Here is a little bit of information about printers for John Livernash.

First, the LP VII was never the only printer available for the Color Computer. LP VII works very well with the Color Computer as will almost any printer with a standard RS 232 serial interface. If you have one of the older Color Computer's you're in luck. It uses one start bit, two stop bits and seven data bits. This is an old communication format. With the free eight bit driver from Radio Shack, your Color Computer is compatible with more printers than most micros. Before I bought my LP VII (all I could afford), I used a LP VIII, DS-40 and a variety of other printers (whose names I can't remember) with baud rates up to 9600.

The Color Computer allows memory POKEs to change baud rate, line delay, comma field, etc. But these changes only affect the computer. They are used to make the computer compatible with various printers not vice versa. Changing line delay or baud rate in the Color Computer when using an LP VII or the new DMP 100 will only cause garbage to be printed. Baud rate is the term used to express the electrical speed at which the microprocessor communicates with the printer. Even if you could increase the baud rate to the printer, the mechanical speed (cps) is the limiting factor in any printer. Increasing the buffer size of the LP VII or using a spooler would allow your Color Computer to execute other program instructions while the printer is printing but the printer will still print at the same character speed.

Dennis H. Weide  
Albuquerque, NM

16 May 1983

Dear Sir:

There's a new "kid" in town. Strictly Communications, Inc., based in Queens, New York, has just started a new Bulletin Board Service for our town, and any town, U.S.A.. We'd like to tell everyone about us. It's for the fun and use of Color Computer owners and it's free to all; no service charge. We want to share our fun with others, as a means of seeing what's out there for the Color Computer.

Our Bulletin Board Service, CoCo's Nest, is operated by two 64K color computers, two double-sided MPI (B52) disk drives, an auto answer modem, and a lot of patience.

The program being used was written by Lee F. Blitch, and it's a super system. We also promote ads for callers, such as selling or buying, and new items on the market. Anyone and everyone is invited to use our Bulletin Board Service by calling in on CoCo's Nest.

We would like to appear in your magazine as:

New Bulletin Board Service  
"CoCo's Nest"

Available 24 hours a day  
Phone (212) 423-4623-Data Line  
or

(212) 423-4626-Voice Line

With all our appreciation and thanks.

Yours truly,  
Arnold Schiffman  
Glen Oaks, NY

Dear Bill:

Has anyone commented to you that the cover of your February issue should be called "View from the Cabin?" I can see snow, icicles, and pine trees. It's straight out of "Sanctum".

Yours Truly,  
Arnold H. Kahn  
Chevy Chase, MD

Dear Bill,

Horror of horrors! I write a review for your magazine on DynaSpell, a spelling checker, send it in on a FLEX-formatted disk, check it with DynaSpell itself before I send it, and the review ends up in your January issue with all those misspellings!

What happened? One of us has a reputation at stake.

Sincerely,  
William Ball  
Dale City, VA



\* Can you see my red face? We checked the spelling with another spelling checker.

Dear Editor,

It has been a pleasure to spend the last two years reading your magazine. It signifies for me the very best with regards to a journal for the Color Computer. Many questions have perplexed me and I thought that now might be the best time to place them before the community of computerists, who read your column. The first regards the ROM. With regard to the comment corner your magazine seems to be the only entity even attempting to release a commented version of the operating system. I would very much like to have a complete annotated and disassembled printout of these great dark 24 pin brutes thus saving me the agony of doing myself, or trying to obtain copy from back issues. Next I would wonder if there is anyone out there doing any work on using the cassette (audio) I/O for a modem line. The hardware interface seems simple and my own limited experiments have proven rather encouraging. Given the state of the art in hi-speed image acquisition hardware, other communications experiments such as slow scan video transmission might seem far fetched now but remain to me as distinct possibilities. Other applications I am interested in relate once again to the analog input features of the color computer. I am specifically interested in medical telemetry acquisition kits which would allow such vital statistical information as temperature, brainwave and cardiac monitoring to be processed again, through the D to a port. Finally I have heard that Tandy may be considering the installation of a memory management unit in a new model color computer. This would allow for expanded (128K?) of addressable memory. Could you please comment or encourage commentary on these topics or direct me to a good BB for the answers?

Kindest Regards,  
Paul Flint III  
Washington, DC

\* First things first, Comment Corner will soon be reappearing under new authorship, and sometime this summer we will be releasing a book on the same subject. I've heard the same rumors about a large

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memory Radio Shack computer using both a 6809 and a Z80. However, nothing has been announced yet.

Dear Sir:

Why has the Non Extended Color Computer become obsolete? I would really appreciate an answer. There are very few programs available for it and virtually nothing published in your magazine can be used on it. The title of your publication should be Extended Color Computer News.

With the price on this computer during the last few months, there are going to be a lot of Color Computers without Extended Basic in this country with no good source of information for it. It is very discouraging for those of us who think we have a good Personal Computer and no program for it.

By the way, if anyone could tell me where I could find a good loan analysis program for the Non Extended Color Computer, I would be most appreciative.

Yours Truly,  
Wendell Davis  
Lake Park, IA

P.S. Please remind your advertisers to state in the ads which programs will work on the Color Computer and which ones require Extended Basic. I have discovered that programs require Extended Basic after I have purchased them.

\* Our lack of support for non-extended BASIC is simply that we really don't receive articles for it. We can't publish what we don't have. How about some of you folks without Extended BASIC sharing some of the software you've written with us.

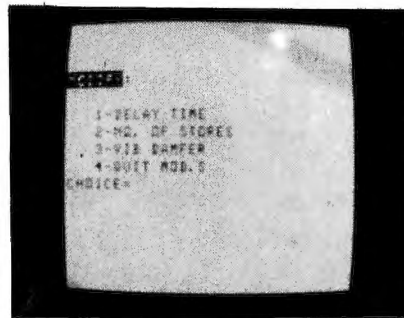
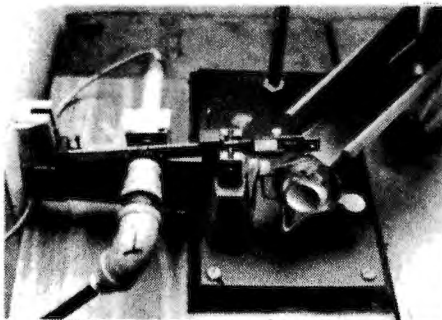
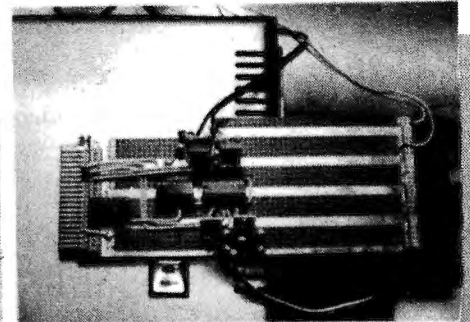
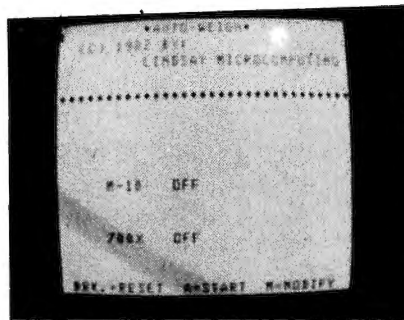
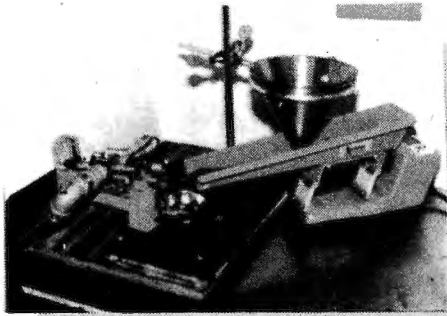
Dear Bill;

There now is a TRS-80 Color Computer users group in the Milwaukee, WI area, called Color Computer-Milwaukee Users Group (CoCo-MUG), it's been in existence for three months and has well over 75 members. If you live in the Milwaukee area and want to learn more about your Color Computer contact:

CoCo-MUG  
C/O Tom Fandre  
2420 Misty Lane  
Waukesha, WI 53186  
(414) 542-0600

Thanks,  
Steve Koszuta  
Milwaukee, WI

# 6809 ACHIEVEMENT AWARD



**THE APPLICATION:** Automatic weightout of propellant charges which must be more precisely controlled than the common volumetric methods usually employed. Automatic weighing equipment of the type used in Military Ordnance applications generally costs in the vicinity of \$20,000 to \$30,000. The system I designed and built was set up for less than \$2000. It uses a 4K Color Computer and a rather simple I/O board (which plugs into the expansion port) to control not 1, but 2 vibratory powder feeders which dump propellant into the scale pan of 2 separate balances.

**DETAIL:** The balances are the common Reloader's type fitted with a photocell/light source tube. The balance beam, when at rest, blocks the light beam completely. As the beam rises (due to the weight of powder dumped into the pan) a proportional amount of light is allowed to pass through to the photo cell. The voltage across the photocell is monitored by the A to D converter in the computer's joystick circuitry, thus providing a quite accurate feedback of the individual beam's position to the computer. When the beam begins to

rise from its rest position, the computer sends a signal via the I/O board to switch the feeder to a trickle speed. This reduced feed is continued until the beam reaches the set cut-off point, at which time the feeder is stopped completely. The operator can visually verify that a correct charge has been dispensed, and empty the pan.

**THE PROGRAM:** Operation of the dual balance system is controlled completely by a cassette loaded, auto-start type, 100% 6809 machine language program. Initially both vibrators are sent a STOP command, then the single Start button is monitored. When the button is pressed, both feeders are turned on full. The program then alternately monitors both photocells several thousand times a second, waiting for any indication of movement, at which time the corresponding feeder is set to low speed. After both feeders have been stopped, the button monitor loop is re-entered. During normal operation, the CRT displays current status of both feeders and a continuously changing byte in the upper left corner to indicate that the program is running properly. At the extreme bottom of the screen is a one line



mini-menu which allows the operator to start or stop the feeders from the console, or redefine the hi-lo or lo-off set points without the assistance of a programmer.

**OPERATION:** Without an automatic system such as this, each balance would require an operator who could manually weigh 500 to 700 charges in an 8 hour day. Currently my system requires only one operator for both balances, producing 100 to 1800 charges per balance per day (total of 3,000 to 3,600) with consistently higher accuracy than the manual method. Since the light beam has no effect on the balance's accuracy, 100 % hands-off visual verification of each charge is easily accomplished. The computer and monitor are isolated in a separate room from the balances for safety reasons there by allowing the building supervisor to randomly observe the efficiency of the equipment and operator.

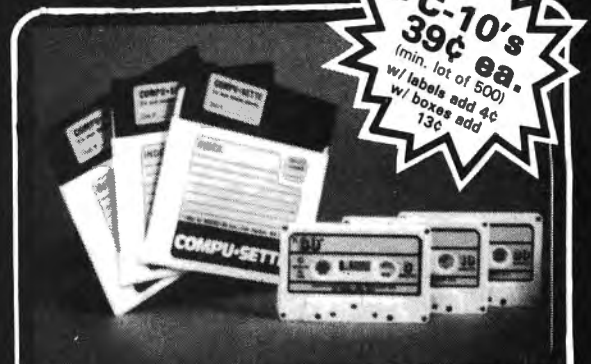
**CONCEPTION:** As Quality Assurance Director for a small prime Government contractor now using this system, it was my job prior to beginning production, to find some way to assure that no bad charges could make their way into the finished production round. This application of the 6809 microprocessor seemed to be the most economical approach to the problem. The large number of instructions, the additional registers and the overall flexibility of the 6809 made writing this type of machine language program possible for an otherwise BASIC programmer like myself. (Basic is far too slow to keep up with a moving beam).

**BIOGRAPHY:** Barron LeRoy Lindsay, born August 11, 1943 in Herrin, Illinois attended the University of Missouri at Rolla where he majored in Electrical Engineering. Left 24 semester hrs. short of a BSEE to work in Aerospace Ordnance development and production as a Reliability and Test Engineer. Currently, Mr. Lindsay and wife, Marianne, are 17 year residents of Macon, Georgia where he is employed by a small Military Ordnance Company as Director of Quality Assurance. The Lindsays operate a part time microcomputer software and consulting business from their home. Their one child, Michelle, is 13. Mr. Lindsay's other interests include music and river tubing.

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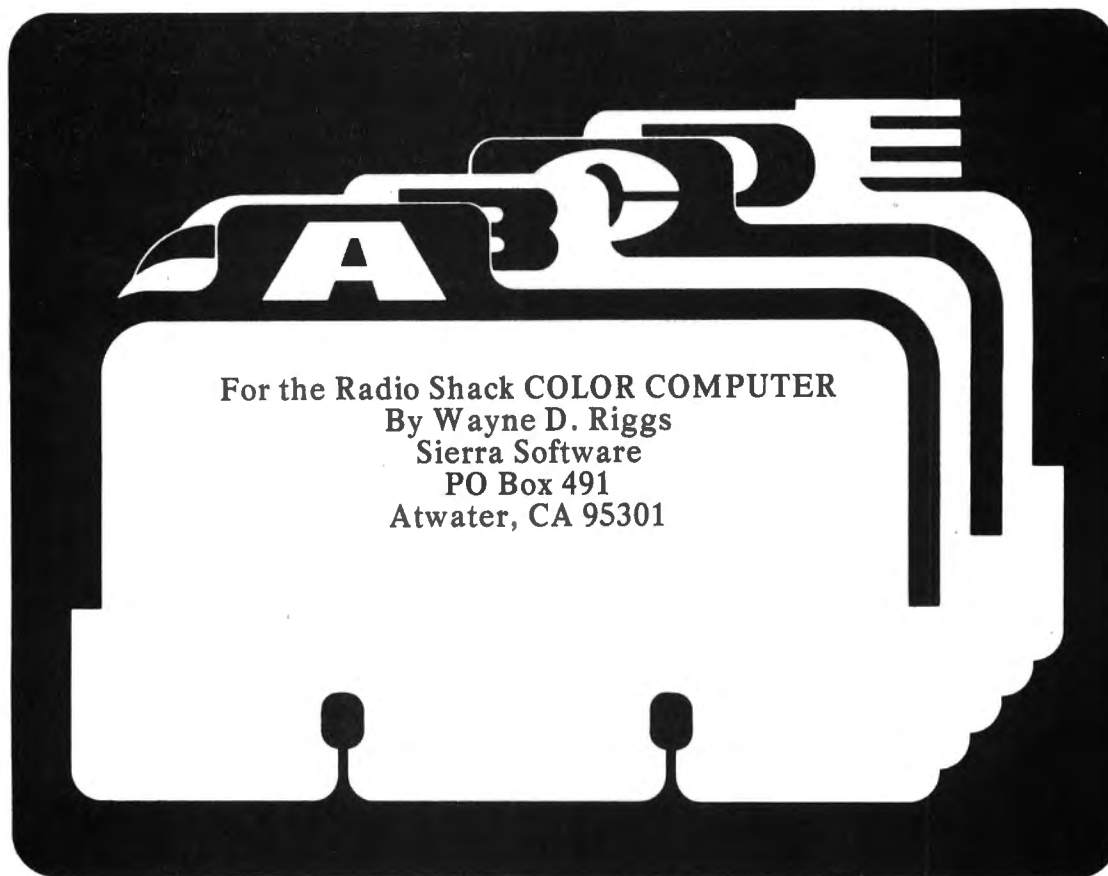


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# COLOR COMPUTER DISK INVENTORY SYSTEM SSDIS



## INTRODUCTION

SSDIS is a multi-featured disk inventory system for the Radio Shack Color Computer. This system requires a minimum of one Radio Shack compatible drive and 32K of RAM to operate. Of course, if the hardcopy printout features are used then an 80 column printer is required for the print functions available and is self-prompting during program execution. The SSDIS works equally well with one or multi-drive systems. The program issues prompts based on the number of drives in your system and makes full utility of the second drive if available.

The Disk Inventory System will allow you to see and control an index of the contents of over 500 disk files. Problems caused by disk files being scrolled off the top of the screen by the DOS are corrected by the program. SSDIS gives full menu control of nine different functions. File names, extensions, type, format, and granules, and machine language start, end, and execution addresses are printed to screen or printer for each file in the index. On listings by disk, free granules

available are computed and displayed.

The master menu includes the following functions: you can review all disk files on the monitor, number and name a new disk adding it to the contents of the index, update the directory contents of a disk already in memory, delete a disk from the index, find a particular disk, review it on the television monitor and print a label for the disk jacket, search the index for a specific program / file name, print out a complete index by disk number, print out a complete alphabetized list of all programs / file names in the index memory, and store the contents of the index in memory into a disk catalogue file for use at a later date.

A detailed description of each of these functions is found in the section entitled Menu Selections.

## PROGRAM INFORMATION

Selection of menu item two, Add New Disk to Index, causes the program to read the disk directory and store all files in the form of formatted strings. Subroutine 1010 is critical to proper operation, in that

it reads the disk directory information with the `DSKIS` function. Carefully type it and check to ensure the disk information is correctly read and automatically stored into memory. Subroutine 60 decodes packed string information in memory and converts it into a useable format. The same decode subroutines are used throughout the program. No special print codes are used for printer compatibility but may be inserted where desired.

#### AFTER PROGRAM DEBUGGING:

Notice the remark on lines 220 and 230. After the program is typed in, run, and debugged sufficiently for a disk file of the index to be written with menu selection nine, the REM on program line 230 should be removed. This will enable the automatic loading of the index into memory each time the program is run.

The easiest way to use SSDIS is to have all of the disk index information stored on the SSDIS program disk. This is not required but you will find it most convenient. Therefore, because data often is written to the program disk it is recommended that a backup copy of the debugged program be used as the working program disk. The original disk will remain in case of disk crash problems.

#### PROGRAM OPERATION

Insert the SSDIS program disk (working copy) into drive zero. Load the SSDIS program as you would any disk based basic program: type `RUN "SSDIS"`. If it is not the first time run, the disk directory information will be loaded into memory automatically. After a few seconds of title, the date of last update will be displayed and the program will ask for the present date. Enter as shown to save space.

Follow program prompts as to when to change disks. If you have more than one disk drive the SSDIS disk will remain in drive zero throughout use. For a one drive system you will have to switch disks into drive zero when directed.

The program now asks if you have more than one disk drive. For all yes-no questions in the program, press the 'Y' key for yes or the 'N' key for no. The master menu will now appear.

#### MASTER MENU SELECTIONS

*Color Computer News*

#### SELECTION ONE: REVIEW DISK INDEX FILE

This selection lets you look at the index information that presently resides in computer memory on your television monitor. If you want to look at a specific disk rather than all of them, use menu selection number five. This selection may be used anytime after directory information is in memory.

Information will appear by disk number following the name and number of each disk. Name, extension, type of file, format type, granules, and disk number will appear under the appropriate heading for each file on a disk. A machine code program will also have start, end, and execution addresses listed in hex following each standard file listing.

Pressing the up arrow will scroll you through the index. An index complete prompt will appear when you have viewed all items in memory. Any time the scroll prompt appears touch the 'M' key to return to master menu.

#### SELECTION TWO: ADD NEW DISK TO INDEX.

**WARNING:** this selection writes number and name to each disk inserted, do not use with copy or write protected software.

This function numbers, names, and puts disk directory information into memory for a new disk. Based on the number of disk drives in your system, you will be directed to the correct drive to insert the disk. The program then displays the last disk number on files and asks for a disk number, and name. Then the program will read directory information and store it in memory. If a disk number has been deleted (with menu selection four) and you wish another disk to have the same number, number it appropriately. The 'last disk on file' prompt is just for your information. When complete the master menu appears.

#### SELECTION THREE: UPDATE EXISTING DISK INDEX

This function allows you to update a disk that is already on file. Added or deleted files on a disk are treated the same way. You will be directed to the proper drive to insert the disk and told to press

any key to start. When complete the master menu will appear.

#### SELECTION FOUR: DELETE DISK FROM INDEX

Use this selection to eliminate a particular disk and its files from the index. SSDIS will ask you to input the disk number you wish deleted. The program will search for the disk information in memory and delete it from the index. When complete the master menu will again appear.

#### SELECTION FIVE: FIND DISK NO./PRINT LABEL

This selection allows you to look at a particular disk's directory in the index without searching through the entire index. SSDIS will ask you to input the disk number you want to see. You will be given the disk number and name followed by the file information. Free granules will be computed and displayed after you have scrolled through the disk file information. Scrolling is done with the up arrow key as in menu selection one.

#### DISK LABELS:

When you've seen all the disk file information, you will be asked if you want a disk label. A yes will get you into the printer routine. The disk labeling routine is designed to print name, date, free granules, disk number, and all file names in the disk's directory on each label. Standard commercially available one across, 4 by 1 7/16 inch, form feed labels are used. This size will fit on either the disk jacket or the top of the disk itself. If the number of files on a disk exceeds 28 the the additional file names will be printed on a second label automatically.

Carefully align the labels in the printer so the name and number will print at the very top of a label. Press 'ENTER' as directed. After each label is printed you will be asked if 'You want to see another?' A yes, will let you select another disk number to see and label; a no, will return you to the master menu.

#### SELECTION SIX: SEARCH FOR PROGRAM NAME

24 May 1983

This one searches the entire index and looks for a particular program / file name. Each time it finds the program it will print the file information and what disk number it's on. Sure makes it easy to track one down.

You will be asked to input the program / file name you want to find. SSDIS will print "searching" as it scans the index. File information is printed as found in memory. If the file name cannot be found, you will be advised and asked if you wish to look for another. A yes, will start the above sequence over again. A no, will return you to the master menu.

#### SELECTION SEVEN: HARDCOPY PRINT BY DISK

This selection prints the entire disk index by disk. (See sample printout). Pagination is performed automatically. You will be reminded to turn your printer on. Carefully align the paper so the printer will start printing about one inch below the paper perforations. Press 'ENTER' and away it goes. When complete touch 'M' for the menu.

#### SELECTION EIGHT: HARDCOPY PRINT BY PROGRAM

This selection shows how smart your computer is. It prints all programs / file names in alphabetical order no matter what disk they are on. Included with each file name is the extension, disk number, type of file, format, granules used, and for machine language programs the start, end and execution addresses.

The sort routine used is a self destructive with the index information to save processing time. However the program automatically insures that information in memory is saved to disk prior to sorting and then it is reloaded into memory for further use. After a reminder to turn on the printer, an 'ENTER' will get it running. The menu will appear when complete.

#### SELECTION NINE: STOP / SAVE TO DISK

This selection serves two related functions. Use it to update the disk file of the index information in memory and / or to finish use of the program.



## A WORD FROM THE SPONSOR

Number five in these chats, and it is still too early to judge the results in our *Name the Column* contest. But I have received some excellent entries, and will have the winner next month. Stay tuned.

At this point, I'd like to thank a few more magazines for giving our products great reviews in the past few months — in March, *Color Computer News* reviewed NEWTALK and *Rainbow* reviewed REMOTERM, while in April 80 *Micro* reviewed STAR-DOS. They all loved them . . . naturally.

This month I thought you might be interested in some of my cassette procedures.

While a number of outfits make leaderless computer cassettes, I distrust them. From my audio days, I know that the beginning and end of a reel-to-reel or cassette tape tend to get crinkled and develop dropouts. This can destroy a program copy, and so I wouldn't use the beginning of a leaderless tape anyway. In that case, why pay extra for leaderless tape when you don't use it?

Instead, I buy 10-minute C-10 cassettes. These cassettes are available from a variety of sources, and cost about 50 to 80 cents each. I prefer to use one cassette per program, rather than put many programs on one tape and then have to search for them.

All of these tapes have a leader, and so when you use them you must be careful not to record your program on the leader instead of the tape. Using fast forward to get past the leader may leave a bit of an old program on the tape just before the new one, and CoCo will have trouble separating them. Instead, my method is to do the following: First, make sure the tape is fully rewound. Then place the recorder in RECORD, and type the command MOTOR ON on the computer. This starts the recorder motor, so that you are recording although the computer is not yet writing anything to tape. This erases the beginning of the tape. In the meantime, type your CSAVE or CSAVEM command, but do not hit ENTER until you see that the tape is well past the leader. I usually give it about ten seconds before typing ENTER. This procedure not only makes sure that I get past the leader, but also guarantees that there is blank space before the program to make reading it easier. Works every time.

For the disk users among you, I would like to announce two new products: STAR-DOS 64 and STAR FLEX. Both are disk operating systems for 64K computers. STAR FLEX is the famous FLEX system by Technical Systems Consultants, adapted for the CoCo, while STAR-DOS 64 is our own STAR-DOS, but modified for 64K computers. Both come with high resolution screens and have many features for the more advanced disk user. STAR FLEX is, of course, compatible with the large amount of software developed over the years for FLEX systems. STAR-DOS 64 will also run much of that software, but its big advantage (besides the fact that it is cheaper) is that its disk format is the same as Radio Shack's.

If you do not have a 64K system, then by all means consider the original STAR-DOS. The upgrade from STAR-DOS to STAR-DOS 64 is just the price difference between the two, so you can upgrade at any time. (But before getting any DOS for your CoCo, read our February advertisement!)

That's it for this month. Until June, just remember: *On a Clear Disk, You Can Seek Forever.*

*Peter Stark*

# STAR-KITS

## SPELL 'N FIX

Regardless of whose text processor you use, let SPELL 'N FIX find and fix your spelling and typing mistakes. It reads text faster than you can, and spots and corrects errors even experienced proofreaders miss. It is compatible with all Color Computer text processors. \$69.29 in the Radio Shack disk or cassette versions; \$89.29 in the Flex version. (20,000 word dictionary is standard; optional 75,000 word Super Dictionary costs \$50 additional.)

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## STAR-DOS

A Disk Operating System specially designed for the Color Computer, STAR-DOS is fully compatible with your present Color Computer disk format — it reads disks written by Extended Disk Basic and vice versa. STAR-DOS for 16K or 32K systems costs \$49.90; STAR-DOS 64 for 64K systems costs \$74.90.

## STAR FLEX

The best implementation of FLEX for the Color Computer. Complete with all utilities, text editor, macro assembler, and HUMBUG debug monitor, \$250.00.

## ALL IN ONE — Editor Etc.

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## DBLS for Data Bases

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## CHECK 'N TAX

Home accounting package combines checkbook maintenance and income tax data collection. Written in Basic for either RS Disk or Flex, \$50.

## REMOTERM

REMOTERM — makes your CoCo into a host computer, operated from a remote terminal. \$19.95.

## NEWTALK

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

## SHRINK

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

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You will be told to place the disk in drive zero. Pressing 'ENTER' will store index information in memory to a file on the disk in drive zero for later use. Next you will be asked if you're finished. A yes will end the program while a no will (you guessed it) bring you back to the menu.

**NOTE:** periodic use of this function when loading a number of disks into the index is an excellent technique to ensure disk index information available on disk in case of problems with one disk's directory. It may prevent you from having to start over. In case of any kind of disk I/O error, type "GOTO 330" to attempt recovery. This will give you the menu with index information intact in memory in most cases.

### SYSTEM UPKEEP

As disks are added to your collection, they can be numbered / named and added to your index as you get to it. You will find the printouts most valuable in keeping up with what you have as your number of programs increase. Note: SSDIS writes a file with disk number and name to each disk. I back up important software and add the backup only to the index to avoid writing to the original disk which I have write protected.

The SSDIS print outs and disk labels may be updated as needed. The dated labels and listings provide positive reference as to the last update. Additions or deletions may be hand written on labels then updated periodically when convenient. The hand written labels now appear as sloppy reminders to me that the index needs an update. The convenience of the label printing function makes update a pleasure. As a matter of fact, I think the label printing feature of this program alone has made it worth the work.

If you have problems with debug or don't like to type: write Sierra Software, P.O. Box 491, Atwater CA 95301. I will answer questions or can provide a ready to run disk for \$17.00 plus \$2.00 shipping.

#### *Color Computer News Tip*

To eliminate Extended BASIC's default to screen 0,0 POKE 359,57. To restore it POKE 39,126

**WARNING:** POKEing 359 with other values could cause the system to lock up!

26 May 1983

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UTILITY1	BJAN83	FREE G:	37 NO:	1
DISASM	SAVEM	CCDIS1		
TAPE	IFILE	DISASM		
TAPETYPE	DSKDMP2	CCDIS1		
DN	WORDDISK	CCDIS		
DIRECT	TPTYPLS	DSKDUMP		
TPTODSK	DISKDUPE			
MDISASM	DISKDUMP			

## DISK LABEL WITH MORE THAN 28 FILES:

TEST	BJAN83	FREE G:	17 NO:	5
TEST	TEST16	TEST31	TEST46	
TEST2	TEST17	TEST32	TEST47	
TEST3	TEST18	TEST33	TEST48	
TEST4	TEST19	TEST34	TEST49	
TEST5	TEST20	TEST35	TEST50	
TEST6	TEST21	TEST36	DN	
TEST7	TEST22	TEST37		

TEST8	TEST23	TEST38
TEST9	TEST24	TEST39
TEST10	TEST25	TEST40
TEST11	TEST26	TEST41
TEST12	TEST27	TEST42
TEST13	TEST28	TEST43
TEST14	TEST29	TEST44
TEST15	TEST30	TEST45

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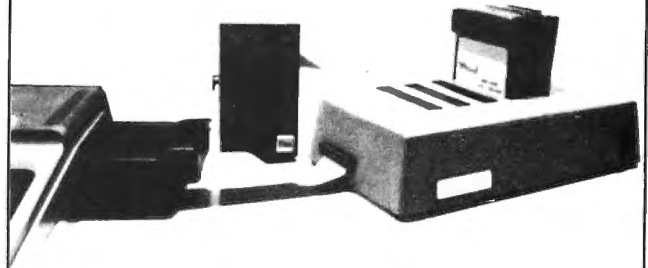
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## SSDIS INDEX BY DISK 20JAN83

NAME	DISK NUMBER - 1		UTILITY1		START, END, EXEC		
	TYPE	FORMAT	GRANULES				
DISASM /BAS	BASIC PROGRAM	BINARY	5				
TAPE /BIN	MACHINE LANGUAGE	BINARY	1		\$0989	\$0C7D	\$0989
TAPETYPE/BIN	MACHINE LANGUAGE	BINARY	1		\$118B	\$195B	\$118B
DN /DAT	BASIC DATA	ASCII	1				
DIRECT /BAS	BASIC PROGRAM	BINARY	2				
TPTODSK /BIN	MACHINE LANGUAGE	BINARY	1		\$0E00	\$0EE9	\$0E00
MDISASM /BIN	MACHINE LANGUAGE	BINARY	2		\$09E8	\$17EF	\$A30A
SAVEM /BAS	BASIC PROGRAM	BINARY	1				
IFILE /DAT	BASIC DATA	ASCII	1				
DSKDMP2 /BAS	BASIC PROGRAM	BINARY	1				
WORDDISK/BAS	BASIC PROGRAM	BINARY	3				
DISKDUPE/BAS	BASIC PROGRAM	BINARY	1				
DISKDUMP/BAS	BASIC PROGRAM	BINARY	1				
CCDIS1 /BAS	BASIC PROGRAM	BINARY	5				
DISASM /DAT	BASIC DATA	ASCII	1				
CCDIS1 /DAT	BASIC DATA	ASCII	1				
CCDIS /DAT	BASIC DATA	ASCII	1				
DSKDUMP /BAS	BASIC PROGRAM	BINARY	1				

FREE GRANULES = 38

NAME	DISK NUMBER - 2		UTILITY2		START, END, EXEC		
	TYPE	FORMAT	GRANULES				
CCDIS1 /BAS	BASIC PROGRAM	BINARY	5				
MAILLIST/BAS	BASIC PROGRAM	BINARY	2				
DISASM /BAS	BASIC PROGRAM	BINARY	5				
TAPE /BIN	MACHINE LANGUAGE	BINARY	1		\$0989	\$0C7D	\$0989
DRAWPICT/BAS	BASIC PROGRAM	BINARY	3				
TAPETYPE/BIN	MACHINE LANGUAGE	BINARY	1		\$118B	\$195B	\$118B
DN /DAT	BASIC DATA	ASCII	1				
DIRECT /BAS	BASIC PROGRAM	BINARY	2				
TPTODSK /BIN	MACHINE LANGUAGE	BINARY	1		\$0E00	\$0EE9	\$0E00
MDISASM /BIN	MACHINE LANGUAGE	BINARY	2		\$09E8	\$17EF	\$A30A
SAVEM /BAS	BASIC PROGRAM	BINARY	1				
IFILE /DAT	BASIC DATA	ASCII	1				
CCDIRF2 /BAS	BASIC PROGRAM	BINARY	5				
WORDDISK/BAS	BASIC PROGRAM	BINARY	3				
DISKDUPE/BAS	BASIC PROGRAM	BINARY	1				
DISKDUMP/BAS	BASIC PROGRAM	BINARY	1				
TPTYPPLS/BIN	MACHINE LANGUAGE	BINARY	1		\$217E	\$2620	\$217E

FREE GRANULES = 32

NAME	DISK NUMBER - 3		TEXTF		START, END, EXEC		
	TYPE	FORMAT	GRANULES				
OER /DAT	BASIC DATA	ASCII	3				
DN /DAT	BASIC DATA	ASCII	1				
MOTIONT /DAT	BASIC DATA	ASCII	2				
MOVETEST/DAT	BASIC DATA	ASCII	3				
MOVE1 /DAT	BASIC DATA	ASCII	3				
MOVE3 /DAT	BASIC DATA	ASCII	3				

NAME	EXT	DISK	TYPE	FORMAT	GRANULES	START	END	EXEC
MOVE4L	/DAT		BASIC DATA	ASCII	3			
MOVE5F	/DAT		BASIC DATA	ASCII	4			
DER 2	V DAT		BASIC DATA	ASCII	3			
PHONES	/DAT		BASIC DATA	ASCII	1			
R DER L	/DAT		BASIC DATA	ASCII	3			
SOCFIN	/DAT		BASIC DATA	ASCII	4			
SOCEND	/DAT		BASIC DATA	ASCII	4			

FREE GRANULES = 31

		DISK NUMBER - 4		MEMTEST				
NAME	EXT	DISK	TYPE	FORMAT	GRANULES	START	END	EXEC
MEMTEST	/TXT		BASIC DATA	ASCII	2			
MEMTEXT	/DAT		BASIC DATA	ASCII	2			
MEMLOAD	/BAS		BASIC PROGRAM	ASCII	1			
MEMTSTD	/BIN		MACHINE LANGUAGE	BINARY	1	\$7D44	\$7EFD	\$7D44
DN	/DAT		BASIC DATA	ASCII	1			

FREE GRANULES = 61

		DISK NUMBER - 5		FACTAC				
NAME	EXT	DISK	TYPE	FORMAT	GRANULES	START	END	EXEC
FACTAC	/BIN		MACHINE LANGUAGE	BINARY	3	\$2610	\$3AD9	\$2610
DN	/DAT		BASIC DATA	ASCII	1			

FREE GRANULES = 64

		DISK NUMBER - 6		SSDIS				
NAME	EXT	DISK	TYPE	FORMAT	GRANULES	START	END	EXEC
SSDIS	/ASC		BASIC PROGRAM	ASCII	6			
SSDISTXT	/DAT		BASIC DATA	ASCII	6			
SSDIS	/BAS		BASIC PROGRAM	BINARY	5			
IFILE	/DAT		BASIC DATA	ASCII	1			
DN	/DAT		BASIC DATA	ASCII	1			

FREE GRANULES = 49

NAME	EXT	DISK	TYPE	FORMAT	GRANULES	START	END	EXEC
TAPETYPE	/BIN	1	MACHINE LANGUAGE	BINARY	1	\$118B	\$195B	\$118B
TAPETYPE	/BIN	2	MACHINE LANGUAGE	BINARY	1	\$118B	\$195B	\$118B
TPTODSK	/BIN	1	MACHINE LANGUAGE	BINARY	1	\$0E00	\$0EE9	\$0E00
TPTODSK	/BIN	2	MACHINE LANGUAGE	BINARY	1	\$0E00	\$0EE9	\$0E00
TPTYPLS	/BIN	2	MACHINE LANGUAGE	BINARY	1	\$217E	\$2620	\$217E
WORDDISK	/BAS	1	BASIC PROGRAM	BINARY	3			
WORDDISK	/BAS	2	BASIC PROGRAM	BINARY	3			

10 'SSDIS REV 3.0

20 PMODE0,1

30 GOTO3270

40 CLEAR11000: DIMGR(68), I\$(600),  
B\$(69): DR=0: LDN=0

50 CL\$=STRING\$(32, " "): GOTO210

60 NM\$=LEFT\$(I\$(R), 8): EX\$=MID\$(  
I\$(R), 9, 3): FL\$=MID\$(I\$(R), 13, 1):  
FA\$=MID\$(I\$(R), 15, 1)70 GR\$=MID\$(I\$(R), 17, 1): BR=VAL(B  
R\$): DN\$=MID\$(I\$(R), 19, 3): IF VAL(  
FL\$)=2 THEN 120

80 DN=VAL(DN\$)

90 GOTO110

100 NM\$=RIGHT\$(I\$(R), 8): LN=(LEN(  
I\$(R)))-8: DN\$=LEFT\$(I\$(R), LN)

110 RETURN

120 F\$=RIGHT\$(I\$(R), 12): BPR\$=LEF  
T\$(F\$, 4): BPR\$=" "+BPR\$130 IF LEN(I\$(R))=33 THEN DN\$=MI  
D\$(I\$(R), 19, 3) ELSE IF LEN(I\$(R)  
)=32 THEN DN\$=MID\$(I\$(R), 19, 2)140 IF LEN(I\$(R))=31 THEN DN\$=MI  
D\$(I\$(R), 19, 1)

```

150 EPR$=MID$(F$,5,4):EPR$=" "+E
PR$
160 EAD$=RIGHT$(F$,4):EAD$=" "+E
AD$
170 GOTO80
180 FL$(0)=" PROG":FL$(1)=" DATA
"
190 FL$(2)=" MACH":FL$(3)=" SOUR
CE":FA$(0)=" BINARY"
200 FA$(1)=" ASCII ":RETURN
210 HDR$=STRING$(32,"%"):YON$="P
RESS (Y)ES OR (N)O"
220 REM REMOVE THE REM IN THE FO
LLOWING LINE AFTER DEBUG.
230 GOSUB3040
240 CLS:PRINT@32,HDR$:PRINT@448,
HDR$
250 PRINT@131,"TRS-80C DISK INDE
X SYSTEM":PRINT:PRINTTAB(14)"BY"
:PRINT:PRINTTAB(7)"SIERRA SOFTWA
RE"
260 PRINT:PRINTTAB(7)"WAYNE RIGG
S 1982":SCREEN0,1:FOR S=1 TO 230
0:NEXT
270 CLS:PRINT@193,"LAST UPDATED
: ";DATE$
280 PRINT@325,"EXAMPLE : 10
JAN82":PRINT@257,"ENTER TODAY'S D
ATE: ";:LINEINPUT DATE$
290 CLS:PRINT@161,"SSDIS WILL DI
RECT DISK CHANGES"
300 PRINT@257,"DO YOU HAVE MORE
THAN ONE DISK":PRINT " DRIVE? "
+YON$:Y$=INKEY$
310 IF Y$="Y" THEN DR=1 ELSE IF
Y$="N" THEN DR=0 ELSE IF Y$="" T
HEN FOR S=1 TO 599:NEXT:PRINT@25
7,CL$
320 FOR S=1 TO 100:NEXT:IF Y$<>
" THEN330ELSE300
330 CLS:PRINT HDR$
340 PRINTTAB(8)"menu of options"
350 PRINT" 1-REVIEW DISK INDEX
FILE"
360 PRINT" 2-ADD NEW DISK TO IN
DEX"
370 PRINT" 3-UPDATE EXISTING DI
SK INDEX":PRINT" 4-DELETE DISK
FROM INDEX"
380 PRINT" 5-FIND DISK NO./PRIN
T LABEL":PRINT" 6-SEARCH FOR PR
OGRAM NAME"
390 PRINT" 7-HARDCOPY PRINT BY
DISK":PRINT" 8-HARDCOPY PRINT B
Y PROGRAM"
400 PRINT" 9-STOP/SAVE TO DISK"
410 PRINT:PRINT" PRESS SELECTIO
N NUMBER"

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30 May 1983

```

420 C$=INKEY$:IF C$=""THEN420 EL
SE IF VAL(C$)<1 OR VAL(C$)>9 THE
N SOUND100,1:GOTO330
430 SN=VAL(C$)
440 ON SN GOTO 530,730,1790,1810
,1900,2330,2520,2810,3140
450 REM DISK LOAD SUBROUTINE
460 PRINT@161,"** INSERT THE DIS
K IN DRIVE";DR:PRINT
470 PRINT" ** PRESS ANY KEY WHEN
READY":PRINT:PRINT" WHEN DONE,
PRESS 'M' FOR MENU"
480 M$=INKEY$:IF M$="" THEN480
490 PRINT@161,CL$:PRINT:PRINTCL$
:PRINT:PRINTCL$:PRINT:PRINTCL$
500 RETURN
510 GOSUB3040
520 GOTO330
530 CLS:PRINT@5,"review disk ind
ex file":PRINT HDR$
540 FOR S=1 TO 1000:NEXT
550 N=64:R=1:GOSUB180
560 CLS:PRINT"NAME/EXT*TYPE*FORM
AT*GRANS*DISK":PRINT@32,STRING$(
32,"=")
570 IF (LEN(I$(R))=0) OR (LEN(I$
(R))>13) THEN590ELSE GOSUB100
580 GOTO640
590 IF I$(R)="" THEN650
600 GOSUB60
610 PRINT@N,NM$+ "/" +EX$:FL$(VAL(
FL$));FA$(VAL(FA$));GR;DN
620 IF VAL(FL$)=2 THEN N=N+32:PR
INT "START="+BPR$;" END="+EPR$;"
EX="+EAD$
630 GOTO650
640 PRINT@N,"disk number: ";DN$;"
name: ";NM$
650 N=N+32:R=R+1:IF R>IE THEN700
ELSE IF N>=416 THEN660ELSE690
660 N=64:PRINT@448,"PRESS ^ TO S
CROLL / M FOR MENU"
670 C$=INKEY$:IF C$="^" THEN680E
LSE IF C$="M" THEN330ELSE670
680 IF R>=IE THEN700ELSE560
690 GOTO570
700 PRINT"INDEX COMPLETE: TOUCH
'M' FOR MENU"
710 C$=INKEY$:IF C$=""THEN710ELS
E720
720 IF C$="M" THEN330ELSE550
730 GOSUB740:GOTO750
740 CLS:PRINT:PRINTTAB(12)"new d
isk":PRINT HDR$:RETURN
750 GOSUB450
760 IF M$="M" THEN330
770 GOSUB740:PRINT@226,"LAST DIS
K ON FILE IS =";LDN

```

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780 PRINT:PRINT" INPUT NEW DISK
NUMBER":INPUT DN
790 CLS:GOSUB740:PRINT@226,"INPU
T DISK NAME, IF ANY":PRINT@298,"
";:INPUTDN$
800 IF LEN(DN$)>8 THEN SOUND50,3
:GOTO790
810 IF LEN(DN$)<8 THEN820ELSE830

820 L=8-LEN(DN$):FOR S=1 TO L:DN
$=DN$+" ":NEXT S
830 ON DR+1 GOTO840,850
840 OPEN "O",#1,"DN/DAT:0":GOTO8
60
850 OPEN "O",#1,"DN/DAT:1"
860 WRITE#1,DN:PRINT#1,DN$:CLOSE
#1
870 CLS:PRINT:PRINTTAB(5)"add ne
w disk to index"
880 PRINT HDR$
890 ON DR+1 GOTO 900,910
900 OPEN "I",#1,"DN/DAT:0":GOTO9
20
910 OPEN "I",#1,"DN/DAT:1"
920 IF EOF(1)=-1 THEN 950
930 INPUT#1,DN:LINEINPUT#1,DN$
940 GOTO920
950 CLOSE #1
960 DIN$=STR$(DN)+DN$
970 OI=IE:IE=IE+1:I$(IE)=DIN$
980 GOSUB1010
990 NI=IE:IF DN<=LDN THEN GOSUB1
320ELSE IFDN>=LDN+1 THEN LDN=DN
1000 GOTO330
1010 PRINT@235,"PROCESSING":DSKI
$ DR,17,2,A$,B$:BF$=LEFT$(A$,68)

1020 FOR BT=0 TO 67
1030 GR(BT)=ASC(MID$(BF$,BT+1,1)
)
1040 NEXT BT
1050 FOR SC=3 TO 11
1060 DSKI$ DR,17,SC,AA$,BB$:AA$=
AA$+LEFT$(BB$,120)
1070 FOR EN=0 TO 7
1080 NM$=MID$(AA$,EN*32+1,8):EX$
=MID$(AA$,EN*32+9,3)
1090 GR=ASC(MID$(AA$,EN*32+14,1)
):FGR=GR
1100 FL$=MID$(AA$,EN*32+12,1):FA
$=MID$(AA$,EN*32+13,1)
1110 IF LEFT$(NM$,1)=CHR$(0) THE
N1170ELSE IF LEFT$(NM$,1)=CHR$(2
55) THEN1180
1120 FA=ASC(FA$) AND 1
1130 FOR S=1 TO 68:IF GR(GR)<128
THEN GR=GR(GR):NEXT S
1140 IF ASC(FL$)=2 THEN1190

```

```

1150 IE=IE+1:I$(IE)=NM$+EX$+STR$
(ASC(FL$))+STR$(FA)+STR$(S)+STR$
(DN)
1160 IF ASC(FL$)=2 THEN I$(IE)=I
$(IE)+BPR$+EPR$+EAD$
1170 NEXT EN,SC
1180 RETURN
1190 GL=GR(GR):LSC=GL AND 31
1200 GLL=GR:LBT=ASC(MID$(AA$,EN*
32+16,1))
1210 IF FGR<34 THEN NT=INT(FGR/2
) ELSE NT=INT(FGR/2)+1
1220 NS=1+(FGR AND 1)*9
1230 DSKI$ DR,NT,NS,A$,B$:BPR=AS
C(MID$(A$,4,1))*256+ASC(MID$(A$,
5,1))
1240 BPR$=HEX$(BPR):BPR$=STRING$
(4-LEN(BPR$),"0")+BPR$
1250 EPR=BPR+ASC(MID$(A$,2,1))*2
56+ASC(MID$(A$,3,1))-1
1260 EPR$=HEX$(EPR):EPR$=STRING$
(4-LEN(EPR$),"0")+EPR$
1270 IF GLL<34 THEN NT=INT(GL/2
) ELSE NT=INT(GL/2)+1
1280 NS=(GLL AND 1)*9+LSC:DSKI$
DR,NT,NS,A$,B$:A$=A$+LEFT$(B$,12
7)
1290 EAD=ASC(MID$(A$,LBT-1,1))*2
56+ASC(MID$(A$,LBT,1))
1300 EAD$=HEX$(EAD):EAD$=STRING$
(4-LEN(EAD$),"0")+EAD$
1310 GOTO1150
1320 GOSUB1330:GOSUB1410:RETURN
1330 PRINT@235,"PROCESSING":SS=D
N:S1=0:E1=0
1340 FOR R=1 TO OI
1350 IF (LEN(I$(R))=0) OR (LEN(I
$(R))>13) THEN1400
1360 GOSUB1000
1370 IF VAL(DN$)=SS THEN S1=R
1380 IF VAL(DN$)=SS+1 THEN E1=R-
1
1390 IF SS=LDN THEN E1=OI
1400 NEXT R:RETURN
1410 IF S1>0 THEN1600
1420 GOSUB1440:GOTO1510
1430 RETURN
1440 REM FIND NEW DISK
1450 SS=DN:S2=0:E2=0
1460 FOR R=OI TO NI
1470 IF (LEN(I$(R))=0) OR (LEN(I
$(R))>13) THEN 1500
1480 GOSUB1000
1490 IF VAL(DN$)=SS THEN S2=R
1500 NEXT R:E2=NI:RETURN
1510 DD=(E2+1)-S2:B=1
1520 FOR A=S2 TO E2:B$(B)=I$(A):
B=B+1:NEXT A

```

```

1530 BD=E1+1
1540 IF S1>0 THEN BD=S1
1550 FOR A=01 TO BD STEP-1:I$(A+
DD)=I$(A):NEXT A
1560 IE=01+DD
1570 B=1:Z=BD+DD-1
1580 FOR A=BD TO Z:I$(A)=B$(B):B
=B+1:NEXT A
1590 GOTO1430
1600 PRINT@224,"DISK NUMBER ";SS
;"ALREADY ON FILE":PRINT:IF SN=3
THEN1640
1610 PRINT " DO YOU WISH THIS D
ISK TO BE":PRINT" NUMBER ";SS;"
? (Y)ES OR (N)O"
1620 Y$=INKEY$: IF Y$="" THEN 16
20 ELSE IF Y$="Y" THEN1640
1630 IE=01:GOTO330
1640 CLS:PRINT@235,"PROCESSING":
BL=(E1+1)-S1:S=S1
1650 GOSUB1450
1660 B=1:DD=(E2+1)-S2
1670 FOR A=S2 TO E2
1680 B$(B)=I$(A):B=B+1:NEXT A
1690 REM DELETE OLD DISK
1700 FOR A=(E1+1) TO E2
1710 I$(S)=I$(A):S=S+1:NEXT A
1720 IE=IE-BL
1730 REM MAKE ROOM
1740 FOR A=IE TO S1 STEP-1
1750 I$(A+DD)=I$(A):NEXT A
1760 B=1:Z=S1+DD-1
1770 FOR A=S1 TO Z:I$(A)=B$(B):B
=B+1:NEXT A
1780 RETURN
1790 CLS:PRINTTAB(5)"change to d
isk in index":PRINT HDR$
1800 GOSUB450:GOTO890
1810 CLS:PRINTTAB(5)"delete disk
from index":PRINT HDR$
1820 PRINT@227,"INPUT DISK NUMBE
R YOU WISH DELETED FROM IND
EX";:INPUT SS
1830 IF SS>LDN OR SS<=0 THEN SOU
ND100,1:CLS:PRINT@228,"LAST DISK
ON FILE IS :";LDN:FOR S=1 TO 20
00:NEXT:GOTO1810
1840 01=IE:S1=0:E1=0:GOSUB1340
1850 S=S1
1860 FOR A=(E1+1) TO IE:I$(S)=I$
(A):S=S+1:NEXT A
1870 BL=E1-S1:IE=IE-(BL+1):IF LD
N=SS THEN LDN=LDN-1
1880 PRINT@224,CL$
1890 GOTO330
1900 CLS:PRINTTAB(9)"search for
disk":PRINT HDR$:GOSUB180
1910 PRINT@224," INPUT DISK NUMB

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32 May 1983

```

ER YOU WANT TO REVIEW";:INPUT
SN
1920 IF (SN>LDN) OR (SN<1) THEN1
930ELSE1940
1930 PRINT@224,CL$:PRINT@228,"LA
ST DISK ON FILE IS :";LDN:FOR S=
1 TO 2000:NEXT:GOTO1900
1940 SG=0:N=96:R=1:GOSUB1950:GOT
02030
1950 IF LEN(I$(R))<=12 THEN1960E
LSE1980
1960 GOSUB100:DN=VAL(DN$)
1970 IF DN=SN THEN1990ELSE1980
1980 R=R+1:GOTO1950
1990 BC=R+1
2000 R=R+1
2010 IF LEN(I$(R))<=12 THEN2020E
LSE2000
2020 DC=R-1:R=BC:Y$=NM$:RETURN
2030 CLS:PRINT"disk number: ";DN
;"name: ";Y$
2040 PRINT" NAME /EXT *FILE TY
PE* GRANS";:PRINTSTRING$(32,"="
)
2050 GOSUB60:SG=SG+GR
2060 PRINT@N,NM$+"/"+EX$;" "+FL$
(VAL(FL$));FA$(VAL(FA$));" ";GR
2070 IF VAL(FL$)=2 THEN N=N+32:P
RINT"START="+BPR$;" END="+EPR$;"
EX="+EAD$
2080 IF R>=DC THEN2130
2090 N=N+32:IF N>=416 THEN2100EL
SE R=R+1:GOTO2050
2100 R=R+1:N=96:PRINT@448,"PRESS
^ TO SCROLL THROUGH INDEX"
2110 C$=INKEY$:IF C$="^" THEN 21
20 ELSE 2110
2120 IF R>DC+1 THEN2130ELSE2030
2130 PRINTTAB(6)"FREE GRANULES=
";68-SG:PRINTTAB(4)"thats all on
this disk"
2140 PRINTSTRING$(32,"*");
2150 PRINTTAB(4)"WANT A DISK LAB
EL?":PRINTTAB(4)YON$
2160 C$=INKEY$
2170 IF C$="" THEN2160ELSE IF C$
="Y" THEN CLS:GOSUB2220:GOTO2240
2180 IF C$="N" THEN2190ELSE2160
2190 CLS:PRINT@227,"DO YOU WANT
TO SEE ANOTHER?":PRINTTAB(3)YON$
2200 C$=INKEY$:IF C$="" THEN2200
2210 IF C$="Y" THEN1900ELSE330
2220 PRINT@224,CL$:PRINT@234,"PR
INTER ON?":PRINT" PRESS <ENTER>

```



# FINALLY!

## A REAL SPREAD-SHEET PROGRAM FOR THE COLOR COMPUTER

# DYNACALC™

Business people use spread-sheets to organize columns and rows of figures. DYNACALC simulates the operation of a spread-sheet without the mess of paper and pencil. Of course, corrections and changes are a snap. Changing any entered value causes the whole spread-sheet to be re-calculated based on the new constants. This means that you can play, 'what if?' to your heart's content.

But DYNACALC isn't just for accountants. DYNACALC can be used for just about any type of job. Not only numbers, but alphanumeric messages can be handled. Engineers and other technical users will love DYNACALC's sixteen-digit math and built-in scientific functions. There's even a built-in sort command, so you can use DYNACALC to manage small data bases - up to 256 records.

DYNACALC will let your computer do just about anything you can imagine. Ask your friends who have VisiCalc, or a similar program, just how useful an electronic spread-sheet program can be for all types of household, business, engineering, and scientific applications.

DYNACALC is designed to be used by non-programmers, but even a Ph.D. in Computer Science can understand it. Built-in HELP messages are provided for quick reference to operating instructions.

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```

WHEN READY";:INPUT C#
2230 RETURN
2240 FOR B=1 TO 68:B$(B)="" :NEXT
B
2250 PRINT#-2,TAB(1)Y#;TAB(11)DA
TE#;TAB(20)"FREE G:";68-SG;TAB(2
9)"NO:";DN
2260 B=1:FOR R=BC TO DC:B$(B)=LE
FT$(I$(R),B):B=B+1:NEXT R
2270 C=1:Z=INT(B/4):IF Z<7 THEN
Z=7 ELSE IF Z>7 AND Z<15 THEN Z=
15
2280 FOR PL=1 TO Z
2290 PRINT#-2,TAB(1)B$(C);TAB(11
)B$(C+Z);TAB(21)B$(C+(2*Z));TAB(
31)B$(C+(3*Z)):C=C+1
2300 IF (C=8) OR (C=16) THEN PRI
NT#-2.
2310 NEXT PL
2320 GOTO2190
2330 CLS:PRINTTAB(4)"search for
program name":Y#="" :GOSUB180
2340 PRINT@226,"INPUT PROGRAM NA
ME YOU WANT TO FIND:";:LINEI
NPUT PN#:PRINT@224,CL#
2350 IF LEN(PN#)<8 THEN2360ELSE2
370
2360 L=8-LEN(PN#):FOR S=1 TO L:P
N#=PN#+"" :NEXT
2370 R=1:PRINT@32,"NAME/EXT*TYPE
*FORMAT*GRANS*DISK":PRINTSTRING#
(32,"=");
2380 PRINTTAB(10)"searching"
2390 GOSUB60
2400 IF PN#=NM# THEN2420ELSE2410

2410 R=R+1:IF R>=IE THEN2470ELSE
2390
2420 IF Y#<>"Y"THEN PRINT@128,CL
#;
2430 Y#="Y"
2440 PRINTNM#+"/"+EX#;FL$(VAL(FL
#));FA$(VAL(FA#));GR;DN
2450 IF VAL(FL#)=2 THEN PRINT"ST
ART="+BPR#;" END="+EPR#;" EX="+E
AD#
2460 GOTO2410
2470 PRINTTAB(9)"that's all!!":I
F Y#="Y" THEN2480ELSE:PRINT@134,
"entire index searched":PRINT:PR
INT:PRINT " "+PN#+"" IS NOT IN IN
DEX FILE"
2480 PRINT:PRINT" WANT TO SEAR
CH FOR ANOTHER?":PRINTTAB(4)YON#

```

```

2490 PRINT HDR#
2500 C#=INKEY#:IF C#=""THEN2500
2510 IF C#="Y" THEN2330ELSE330

```

34 May 1983

```

2520 GOSUB2530:GOTO2550
2530 FL$(0)="BASIC PROGRAM":FL$(
2)="MACHINE LANGUAGE"
2540 FL$(3)="SOURCE CODE":FL$(1)
="BASIC DATA":RETURN
2550 CLS:PRINT@4,"hardcopy print
by disk":PRINTSTRING$(32,"#")
2560 GOSUB2220
2570 DP=1:PL=1:A=1:SG=0:TE=IE
2580 PRINT#-2,TAB(15)"SSDIS INDE
X BY DISK ";DATE#:PRINT#-2:PL=
PL+1
2590 FOR R=A TO TE
2600 IF (LEN(I$(R))=0) OR (LEN(I
$(R))>13) THEN 2690 ELSE GOSUB10
0
2610 IF SG=0 THEN 2620 ELSE GOSU
B2760:PRINT#-2,TAB(28)"FREE GRAN
ULES = ";68-SG:SG=0
2620 GOSUB2760:PRINT#-2:GOSUB276
0
2630 PRINT#-2,TAB(20)"DISK NUMBE
R - ";DN#;TAB(45);NM#:X=X+1
2640 GOSUB2760
2650 PRINT#-2,TAB(5)"NAME";TAB(2
1)"TYPE";TAB(38)"FORMAT";TAB(47)
"GRANULES";TAB(58)"START, END, E
XEC"
2660 GOSUB2760
2670 PRINT#-2,TAB(3)STRING$(12,"
=");TAB(18)STRING$(16,"=");TAB(3
8)STRING$(6,"=");TAB(47)STRING$(
8,"=");TAB(58)STRING$(17,"=")
2680 GOTO2780
2690 IF I$(R)=""THEN2780
2700 GOSUB60
2710 GOSUB2760
2720 X=X+1:SG=SG+GR:PRINT#-2,TAB
(3)NM#+"/"+EX#;TAB(18)FL$(VAL(FL
#));TAB(37)FA$(VAL(FA#));TAB(49)
GR;
2730 IF VAL(FL#)=2 THEN PRINT#-2
,TAB(58)BPR#+""+EPR#+""+EAD#;
2740 PRINT#-2
2750 GOTO2780
2760 PL=PL+1:IF PL>=55 THEN2770E
LSE RETURN
2770 FOR S=1 TO 12:PRINT#-2:NEXT
:PL=1:RETURN
2780 NEXT R
2790 PRINT#-2,TAB(28)"FREE GRANU
LES = "68-SG:SG=0:CLS:PRINT@224,
"INDEX COMPLETE. TOUCH 'M' FOR
MENU"

```

```

2800 Y#=INKEY#:IF Y#="M" THEN330
ELSE2800

```

```

2810 GOSUB2530
2820 CLS:PRINT@3,"hardcopy print

```

```

by program":PRINT HDR$
2830 GOSUB3180:GOSUB2220
2840 PRINT#-2,TAB(15)"SSDIS INDE
X BY PROGRAM ";DATE$:PRINT#-2:
PL=PL+1
2850 A=1:TE=IE:C=1:PL=1
2860 B$="ZZZZZZ"
2870 FOR R=A TO TE
2880 IF (LEN(I$(R))=0) OR (LEN(I
$(R))<13) THEN C=C+1:GOTO2900
2890 IF I$(R)<B$ THEN B$=I$(R):B
=R
2900 NEXT R
2910 R=B
2920 IF I$(R)="" THEN 3020
2930 IF PL=1 THEN 2940ELSE2960
2940 PRINT#-2,TAB(5)"NAME";TAB(1
1)"/EXT";TAB(17)"DISK";TAB(28)"T
YPE";TAB(41)"FORMAT";TAB(49)"GRA
NULES";TAB(59)"START, END, EXEC"
2950 PRINT#-2,TAB(3);STRING$(8,"
=");TAB(12)STRING$(3,"=");TAB(17
)STRING$(4,"=");TAB(23)STRING$(1
6,"=");TAB(41)STRING$(6,"=");TAB
(49)STRING$(8,"=");TAB(58)STRING
$(17,"=")
2960 GOSUB60
2970 GOSUB2760:IF PL=1 THEN 2940
2980 PRINT#-2,TAB(3)NM$+ "/" +EX$;
TAB(18)DN$;TAB(23)FL$(VAL(FL$));
TAB(40)FA$(VAL(FA$));TAB(51)GR;
2990 IF VAL(FL$)=2 THEN PRINT#-2
,TAB(58)BPR$+" "+EPR$+" "+EAD$;
3000 PRINT#-2:I$(R)=""
3010 GOTO 2860
3020 GOSUB3040
3030 GOTO330
3040 OPEN "I",#1,"IFILE/DAT:0"
3050 INPUT #1,IE,LDN
3060 TE=IE
3070 FOR S=1 TO TE
3080 IF EOF(1)=-1 THEN 3120
3090 LINEINPUT #1,I$(S)
3100 NEXT S
3110 LINEINPUT #1,DATE$
3120 CLOSE #1
3130 RETURN
3140 CLS:PRINTTAB(5)"update inde
x file disk":PRINT HDR$
3150 GOSUB3180:CLS:PRINT@224,"AR
E YOU FINISHED? (Y)ES OR (N)O"
3160 Y$=INKEY$:IF Y$="Y" THEN 31
70ELSE IF Y$="" THEN3160ELSE330
3170 END
3180 PRINT@224,"INSURE CCDIS DIS
K IS IN DRIVE 0":PRINT" PRESS

```

Color Computer News

```

<ENTER> WHEN READY";
3190 INPUT Y$
3200 OPEN "O",#1,"IFILE/DAT:0"
3210 WRITE #1,IE,LDN:TE=IE
3220 FOR S=1 TO TE
3230 PRINT #1,I$(S)
3240 NEXT S
3250 PRINT #1,DATE$
3260 CLOSE #1:RETURN
3270 PCLEAR 1:GOTO40

```

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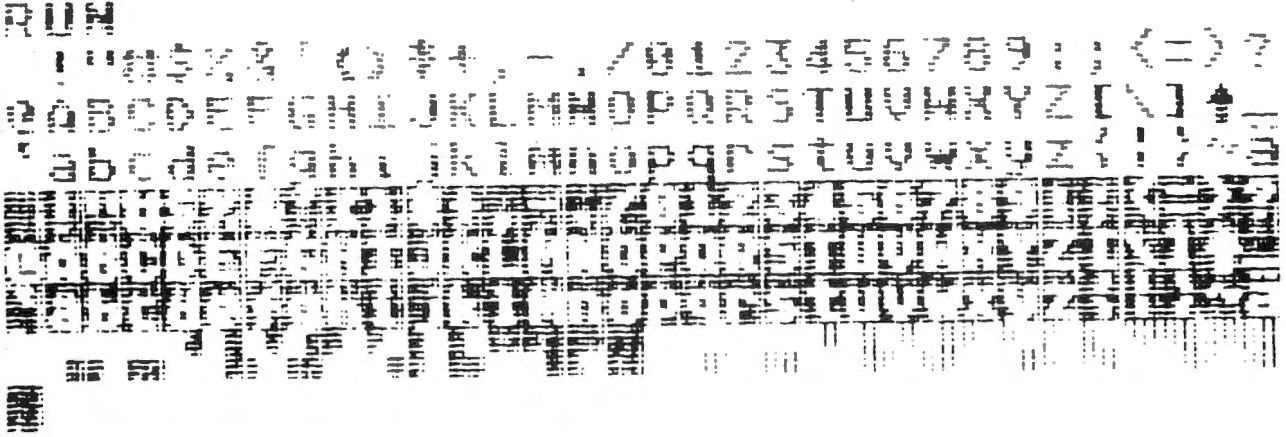
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# COLORED FONTS

Reviewed by John Abbott  
5075 Hillview Drive  
Muskegon, MI 49441



Are you sick and tired of looking at that green screen with that sickening black upper case writing? Have you tried to do word processing with that inverse upper case pretending to be lower case? If you want the characters to be the way you want then you may like Colored Fonts from Renaissance Game Designs. Colored Fonts comes with six fonts to start you off with: Future font, Giant font, Typeset font, Standard ASCII font, Apple font, and Profile font. If you feel that none of these is right, then you can use the font editor and make your own set or just change an existing set. If you use the Radio Shack screen print program you should be able to use the Colored Fonts on your RS printer, and if you have an Epson MX-70/80 then they provide a program to save the fonts on your printer (I don't know how well either of these ideas work, because I do not have a printer).

One of the items that I noted was the ability to change the SCREEN that you were in, and the computer would stay there until you changed it or hit the reset button. The normal default mode is PMODE 4,1 and SCREEN 1,1.

This program has two problems (compared to a home made lower-case generator, this is nothing!), which prevents it from being used with all programs. One, it does not recognize the CLS command, however it does clear the screen if you enter PRINT CHR\$(12). Two, it does not recognize the PRINT @ command, but you can specify the X and Y positions of the cursor with memory locations 220 and 2210. The following program will serve as a PRINT @ routine: (Note: there are 768 screen locations with Colored Fonts).

```
10 Y=INT(PA/32)
20 X=PA-Y* 32
30 POKE 220,X:POKE 221,Y
40 PRINT PS;
50 RETURN
```

Being in the Hi-res modes (the graphics modes) means that you can mix hi-res graphics with the text. Colored Fonts uses the first four graphics pages, so if you want a text window (only possible at the top of the screen) then you can use PMODE 4,4 to have a 6 line window. You have to get the cursor down to the 18th line by either PRINTing 18 times or by POKE 221,18. Colored Fonts allows you to

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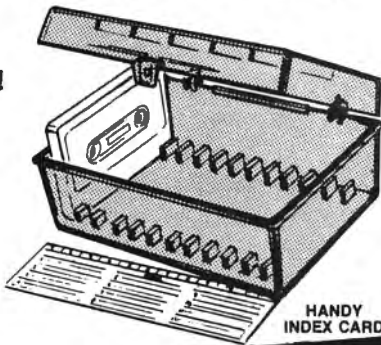
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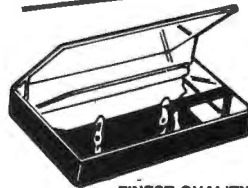
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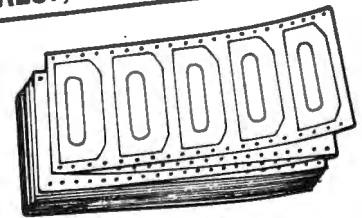
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## Colored Fonts

have a 32x24 or 16x24 or 32x12 or 16x12 screen (char/line x # of lines), but when using the enlarged modes (less than 32x24) the computer will write off the screen if you are not careful.

When using Colored Fonts you must make sure that you don't PCLEAR less than 4 or else it will cause total havoc. You must also be sure that you don't change the amount of protected memory with the CLEAR X,Y command (if you don't use the "Y" you'll be O.K.)

The following is a word processor that I wrote for use with Colored Fonts. It has to use 32K, Colored Fonts and 1 disk (a second drive cannot be used unless you change the program because it adds an extension of "WPD" to your files automatically). The word processor will even allow you to play music by using strings for the PLAY command. Whenever you are typing music, use the first three lines for title or whatever you need and write your music on line 4 and beyond. To edit your file type "E" while at the menu, then it will ask for your filename, then it displays line 1. Use the left and right arrows to move in the line your want to edit, and use the up and down arrows to move through the text. To change something, type over it. To exit edit mode (or any mode except printing or music) press ENTER. To add information to a file or to start a new one press "A". It will prompt you with a ":" then you can type your text, press ENTER to go on to the next line. If you press CLEAR it will automatically center your text on that line. The back arrow works to erase text in both add modes. To exit the add mode get a fresh ":" then type END in capitals.

```

0 CLEAR5000: DIM MU$(1000): GOTO 1
0
1 A$=INKEY$: IFA$="" THEN 1: ELSE RETURN
2 PRINT "Old file: "; CHR$(34); FO$; CHR$(34): LINE INPUT "Filename: "; FI$: GOSUB 4: IFFI$="DIR" THEN DIR: GOTO 2: ELSE FI$=FI$+"/WPD": OPEN "D", #1, FI$, 29: FIELD #1, 29 AS TX$: FO$=FI$: RETURN
3 CLOSE: PRINT: GOTO 100
4 IFFI$="" THEN FI$=LEFT$(FO$, LEN(FO$)-4)
5 RETURN

```

```

10 CU$=CHR$(9): CL$=CHR$(12): CO$=" "+CHR$(8): CR$="": CW$=STRING$(30, 32)
20 CLS: PRINT CL$: "Word Processor": PRINT "By John Abbott": PRINT
100 PRINT CU$: "Choose: ": PRINT "Add text": PRINT "Print text": PRINT "Edit text": PRINT "Music": PRINT "Copy text": PRINT "Font change": PRINT "Stop"
110 GOSUB 1: PRINT CU$:
120 IFA$="A" THEN 200
130 IFA$="P" THEN 500
135 IFA$="F" THEN 1500
140 IFA$="E" THEN 1000
145 IFA$="C" THEN 3000
150 IFA$="S" THEN PRINT CL$: END
155 IFA$="M" THEN 2000
160 GOTO 110
199 'Adds to file
200 GOSUB 2: TE$=""
205 R=LOF(1)+1
207 TE$=""
208 PRINT CR$:
210 GOSUB 1
212 IFA$=CHR$(8) AND LEN(TE$)>0 THEN TE$=LEFT$(TE$, LEN(TE$)-1): A$=""
215 IFA$=CHR$(13) THEN 249
220 IFA$=CHR$(12) THEN 300
225 IFA$<" " AND A$<>" " THEN 210
228 IF LEN(TE$)>28 THEN 210
229 TE$=TE$+A$
230 POKE 220, 1: PRINT CU$: TE$: CU$: CO$:
248 GOTO 210
249 IF TE$="END" THEN 3
250 PRINT CO$: LSET TX$=TE$
260 PUT #1, R
270 R=R+1
280 GOTO 207
300 X=INT(16-LEN(TE$)/2): Y=PEEK(221): POKE 220, 1: PRINT CU$: PRINT CW$: POKE 220, X: PRINT TE$: CU$: CO$:
310 GOSUB 1
315 IFA$=CHR$(13) THEN TE$=STRING$(X, 32)+TE$: GOTO 249
317 IFA$=CHR$(8) AND LEN(TE$)>0 THEN TE$=LEFT$(TE$, LEN(TE$)-1): POKE 220, 1: PRINT CU$: CW$: CU$: A$=""
318 IF LEN(TE$)>28 THEN 310
319 IFA$<" " AND A$<>" " THEN 310
320 TE$=TE$+A$
330 X=INT(16-LEN(TE$)/2)
340 POKE 220, X
350 PRINT CU$: TE$: CU$: CO$:
360 GOTO 310
499 'Prints a file

```

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```

500 PRINTCL$;:GOSUB2
505 PRINT"Print to printer?":GOS
UB1
510 FORR=1 TO LOF(1)
520 GET#1,R
525 PRINTUSING"## ";R;
526 IFA$="Y" THENPRINT#-2,USING"
## ";R;TX$
530 PRINTTX$;
540 NEXTR
550 PRINT:PRINT
560 GOTO 3
999 'Edit a file
1000 GOSUB2:PRINTCU$;
1010 MI=1:MA=LOF(1)
1020 PRINTCL$;"Editor:"
1025 Y=MI:X=0
1030 POKE220,0:POKE221,1:GET#1,Y

1035 TE$=TX$
1040 PRINTTE$;:POKE220,10:POKE22
1,0:PRINTY;
1050 IFPEEK(342)=247 AND Y<MA TH
EN Y=Y+1:GOTO 1030
1060 IFPEEK(341)=247 AND Y>1 THE
NY=Y-1:GOTO 1030
1070 IFPEEK(343)=247 AND X>0 THE
NX=X-1:GOTO 1090
1080 IFPEEK(344)=247 AND X<LEN(T
Color Computer News

```

```

X$) THENX=X+1:GOTO 1090
1082 A$=INKEY$:IFA$=CHR$(13) THE
NPRINICU$;:GOTO3:ELSEIFA$="" OR
A$<" " OR A$="^" THEN1090
1083 MID$(TE$,X+1,1)=A$:X=X+1
1085 GOTO 1110
1090 POKE220,0:POKE221,2:PRINTS1
RING$(32,32):POKE220,X:POKE221,2
:PRINTCU$;CO$;CU$;
1100 GOTO 1050
1110 LSET TX$=TE$:PUT#1,Y:GOTO10
30
1500 PRINTCL$;
1510 LINE INPUT"Name of font: ";
F$
1515 IFF$="DIR" THENDIR:GOTO1510

1520 F$=F$+"/SET"
1530 LOADM F$
1535 PRINTCL$;
1540 GOTO 3
2000 PRINTCL$;
2010 GOSUB2
2050 FORR=4 TO LOF(1)
2060 GET #1,R
2065 M$=TX$+" "
2070 MU$(R)=LEFT$(M$, INSTR(1,M$,
" ")-1)
2080 NEXTR
2090 FORR=4 TO LOF(1)
2100 PLAY MU$(R)
2110 NEXT
2120 GOTO 3
3000 PRINTCL$;"Text copier":PRIN
T:GOSUB2
3010 LINE INPUT"START: ";S$:S=VA
L(S$)
3020 LINE INPUT"END: ";E$:E=VAL(
E$)
3025 LINE INPUT"DESTINATION: ";D
$:D=VAL(D$):IFD=0 THEND=LOF(1)
3030 DI=(E-S)
3040 FORR=1 TO DI
3050 GET#1,S+R:PUT#1,R+D
3060 NEXTR
3070 GOTO 3
5000 REM LINES OF SUBROUTINES
200 ADD TO FILE
500 PRINT FILES
1000 EDIT FILES
1500 CHANGE FONTS
2000 PLAY MUSIC
3000 COPY TEXT

```

# DEFENDERS OF THE COCO'S ARK

Reggie Hollingshurst  
2886 Sarah Dr.  
Clearwater, FL 33519



So you want to guard the CoCo's sacred ark (or whatever else you'd like to imagine) against the infidel invaders?? Well, there are a number of CoCo clones of the popular "Defender" arcade game genre which have recently appeared on the scene which will give you that chance. The two I will be taking a look at for you are "Protectors" from Tom Mix Software and "Starfire" from Intellectronics. By the way, this is the second time I have done a comparative review of a similar programs from these same two software houses (see the article entitled "King of the Kongs").

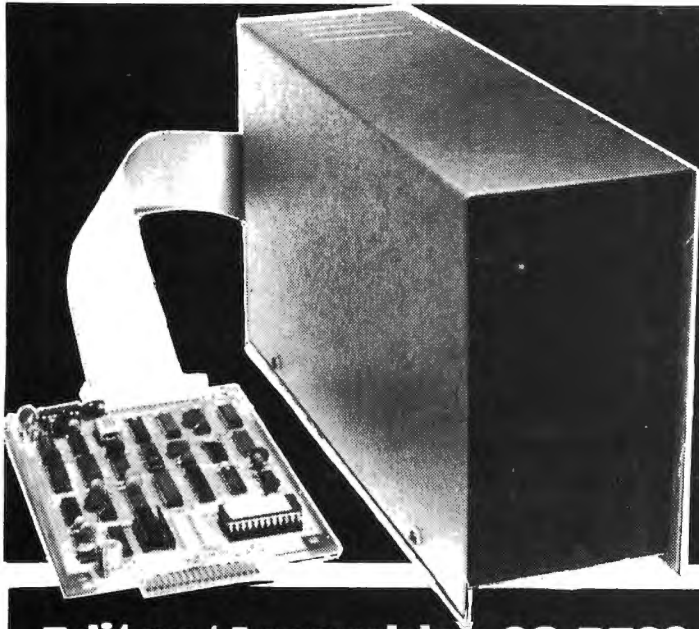
I can apply to these "Defender" type programs my previous sentiments from the "Kong" article and praise the sophistication and graphic marvels these program authors have accomplished. You see, I was one of the real *early* purchasers of the Color Computer, getting my first 4K model (with a 3 digit serial number!!) well over two years ago. Oh, how I remember the scoffing of the Apple and Atari owners at the "crude" graphics and capabilities of what they mockingly called Tandy's new toy. With programs like these (and

many others), the availability of FLEX and OS-9, and the basic superiority of the MC6809 chip itself, there is far less scoffing these days!!! Anyway, down off my soapbox and back to the matter at hand . . .

## PROTECTORS

The Tom Mix Software entry is a neatly put together 21K program providing you with three different levels of difficulty which is a plus for the rank beginner (like me!!) The sound routines and colors used are better than those Starfire, (I particularly liked the ship destruction sequences) however I didn't like the "choppy" way in which the various sprites moved about on the screen when using the slower speeds. I would have liked this program all the more if I had a better sense of forward motion which makes the arcade original such a "trip." Yes, there is a scrolling screen, and a nice touch was the mountain terrain, but I felt that my *ship* was on an elevator rather than getting the feeling I was moving from side to side.





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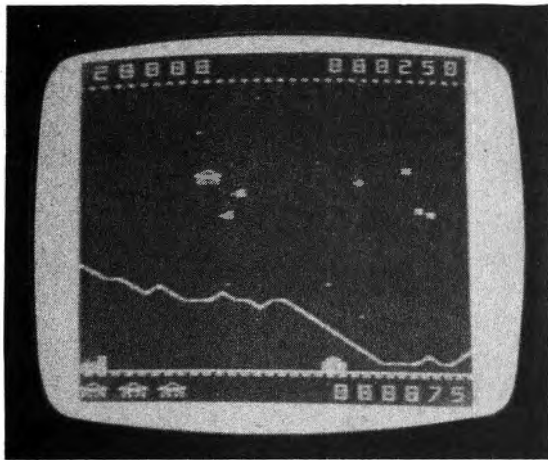
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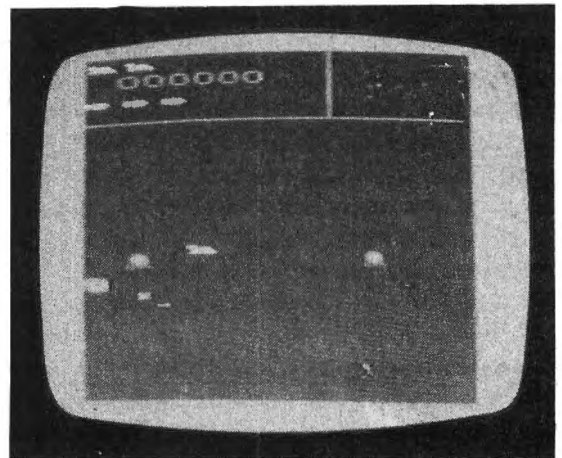
Another minor drawback for most people would be that *two* joysticks are required to play. The left stick controls the direction of the ship and that fire button is your speed control. Only by pressing *both* fire buttons at the same time can you use your four "smart" bombs. Unless you have something like Jarb's dual joystick unit, I seriously doubt that you will avail yourself much of the left stick's functions. That clearly takes away from this program's playability.

I uncovered no play "bugs" but did discover that the letters "A" and "D" activated the fire button. By abandoning my joystick fire button in favor of those two keys, I was able to lay down quite a barrage! It is a good thing that you have the three difficulty levels, without which one might tire of this program in fairly short order. It only take 5000 points to get back another ship, and with four smart bombs with each craft, you have quite an arsenal at your disposal. Even fumble fingered "Indiana Reggie" (that's me!) was racking up the points after just a few games. In spite of the minor difficulties cited, all in all, Protectors is a good program and may be the choice for you if has the features *you* prefer. [Available from Tom Mix Software, 3424 College N.E., Grand Rapids, MI 49505. The 32K machine language cassette is \$24.95, disk is \$27.95]

### STARFIRE

The Intellectronics version takes a bit different approach than Protectors, and in  
42 May 1983

so doing, is a lot closer in format and tactics to the original arcade game. The graphics, while not as exotic or colorful as the other program, are on the whole, a lot smoother (though there are occasional problems of sprite figures overlapping each other.) I *do* get my desired simulation of lateral motion of my ship. While recognizing that the graphics and sound routines are not as exotic as Protectors, I'd like to point out that this program runs in a 16K machine, and most impressively, it uses about 65 percent *less* code!



*Starfire's Screen*

As I mentioned, the Starfire game plays much closer to the original and includes features such as having your men snatched and if you save them, you get bonus points (lose them all and you have to grope around in the dark!) You only get three smart bombs (which wipe all enemies on the screen) but you have a hyperspace option to (hopefully) get you out of trouble. However, use that with the knowledge that you can pop out of it in worse shape than before! Although it takes a bit to get used what the tiny blips represent, there is also a radar scanner in the top righthand corner which helps keep you aware of what is going on off screen.

As opposed to the three difficulty levels in Protectors, there is only one play mode in Starfire, but because it takes 40,000 points to gain back a ship and another smart bomb, it is more difficult to master this game than you might think. The next bonus level is at 80,000 points at which point you get ten new men. I assume that this is the way things are from the written instructions, because I came no where

near either of those bonus levels!!

Starfire controls are totally on the keyboard, which I didn't like *at first* but which actually improve playability once you get used to them. The control responses are lightning fast and reliable. An odd choice to me was the selection of the "2" and "Z" keys to control the up/down movement with the number "3" key reversing your present direction. I would have used the up/down arrows and the "Z" key to change direction instead (said he who still can't program very well in BASIC!!) But anyway, the right arrow fires your laser and the left arrow is your forward thrust control, with the spacebar activating hyperspace and the clear key releasing your smart bombs. (Available from Intellectronics, 22 Churchill Lane, Smithtown, NY 11787. The 16K machine language cassette tape is \$21.95)

### CONCLUSIONS

As I brought up in the beginning, both of these programs are well done. But

despite its graphic limitations, I would give an edge to the Starfire version because of better playability and the fact that it only requires a 16K machine. The author must be commended for packing so much into a limited amount of memory usage. I hope that we can all look forward to many more such offerings in the future!

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# AVENGER

By Robert P. Bussell  
104 Barley Court  
Lexington Park, MD 20653



The Cornsoft Group  
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The Avenger is an adaptation of the arcade game Defender written for the TRS-80 Color Computer by the Cornsoft Group. This program is written in machine language and offers fast action and dynamite sound.

In this arcade game you are a crop duster charged with the mission of saving your planet from the pests that are destroying it. You are armed with a laser cannon and five pesticide bombs. You also have a long range scanner to view what's coming at you next. You can maneuver your ship up and down and thrust forward into the next group of droid pests. This all sounds easy but beware, these pests come in a variety of forms and all can be hazardous to your health. There is another character called the Avenger who flies around in a saucer and is all over you. Wave after wave of pests appear. If you make it to the eighth wave, an alert appears on the screen that says VEN-

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GEANCE ENCOUNTER. I will not describe a vengeance encounter to you. This is something you must experience for yourself.

At the beginning of the game you have five ships and five pesticide bombs. As you accumulate points you receive bonus ships and bombs. The pesticide bombs will destroy everything on the screen but you only have five of them so use them with care. The pests come in many sizes and shapes. Some fire at you, others are attracted to you, and some of them just get in your way. You are awarded points for every pest you destroy. Some of the pests however, when hit with a laser cannon break into smaller pests. It will take many, many playings of this game just to find out all of the tricks the pests have in store for you.

The Avenger is the fastest action arcade game for the Color Computer that I have tried to date. The sound effects when played on a TV with a good speaker are on a level with the arcade version. The graphics are very smooth and fast. The long range scanner shows where you are and where the enemy is. It does not, however, show what kind of enemy pest is coming.

The only weak point in this program is the instructions printed on the back of the program package. The first problem I encountered was trying to determine which version of the computer the program would run on. By experimenting I have determined that the program requires 16K but does not appear to require Extended BASIC. Also, the instructions state that you can play the Avenger with the keyboard or with joysticks. The program would not work with the joysticks. I tried switching them with no results. By pressing all the keys on the keyboard I found that you can switch between the keyboard and the joysticks by using the "K" and "J" keys respectively, during game startup.

I can recommend this game heartily. It is not a program that is easily mastered and then put on the shelf to rest. I particularly like the way the author comes up with new surprises as you progress through the game.

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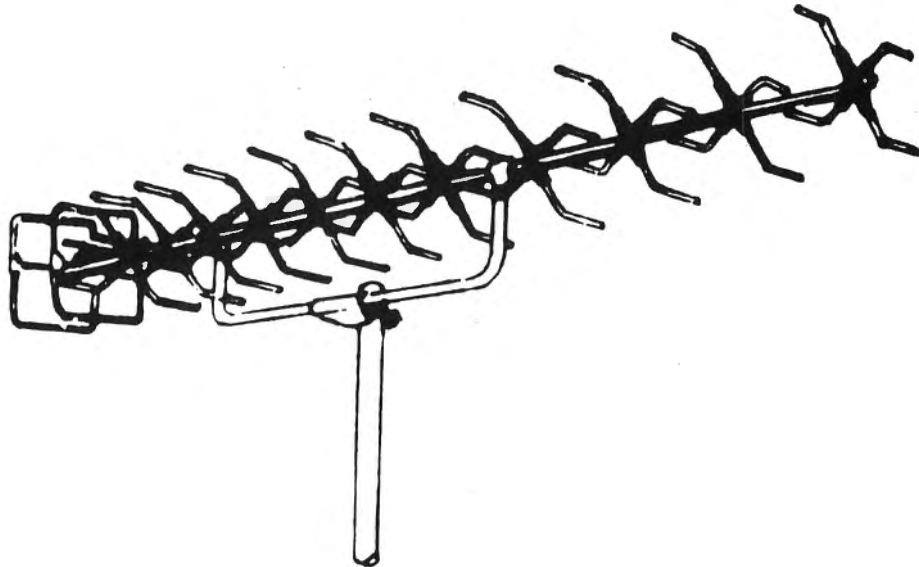
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# CALLDUPE

By Ken Newman  
81 Holly Drive  
Woodbury, NJ 08096



## PROGRAM SPECIFICATIONS: 'CALLDUPE'

USE: Finds duplicate call signs in Ham Radio contests.

SYSTEM: TRS-80CC Extended Color Basic, 16/32KB, & Cassette.

AUTHOR: Ken Newman, N2CQ

## OVERVIEW:

After the initial setup, the program accepts keyboard input of international call signs, checks them for duplicates in memory, prints them on the screen, and puts them on tape backup. The tape can be used with another program for printing a call summary sheet. (Dupesheet). If there is a power failure, the tape can be loaded into memory, and operation can resume. Audible prompts are sounded for error messages and for keyboard input, in the main routine.

## OPERATING DETAILS:

The system prompts and operator responses follow:

OPER: Power up the system. Key in: POKE25,6:NEW 'ENTER'

OPER: CLOAD 'ENTER'. RUN (when OK)

SYS: ENTER FILE NAME FOR THIS CONTEST?

OPER: 'filename' 'enter'. (Name for the tape file).

SYS: LOAD QSOS FROM TAPE (Y/N)?

OPER: (N) 'ENTER'. (Nothing on tape yet) or,

(Y) 'ENTER'. (See Note #3 to load the tape file).

SYS: PREPARE RECORDER FOR output. PRESS 'ENTER' WHEN READY?

OPER: 'ENTER'. (Opens the tape file to write)

SYS: ENTER MODE: OFF=OFFLINE. ON=ONLINE.

OPER: (ON) 'ENTER' or, (OFF) 'ENTER'. (See note #1)

SYS: (Display menu of bands available).

OPER: 'LETTER' 'ENTER'. (Select band to operate).

SYS: NEXT CALL?

OPER: 'callsign' 'ENTER'. (The callsign to check in memory)

SYS: LOG 'callsign'. (Means the call was not a duplicate)

OPER: 'ENTER'. (to log the call). or,

'spacebar' (Not to be logged)

SYS: NEXT CALL?

OPER: (Continue with entering more callsigns) (see note #2)

NOTE #1:

OFFLINE is for keying in a log after the contest.

ONLINE is the mode for operating in the contest. It allows you to enter calls, and gives the operator a chance to decide to log them or not.

NOTE #2:

The 'NEXT CALL' system prompt has three commands which can be used besides entering a callsign:

To change bands, key in: 'BAND' 'ENTER'. (The Band Menu is displayed).

To delete a call from memory and put a delete message on tape, key in: (DEL= (callsign)) 'ENTER'. (The total number is decremented).

To finish inputting calls, put the last record on tape, and close the file, key in: 'STOP' 'ENTER'. If you think you may want to load the tape file again to continue processing, note the last call before the 'STOP' command.

NOTE #3:

Loading calls from tape:

It is quite possible the tape file could be segmented. Each time the 'STOP' command has been used, the file is closed. If the file is loaded to continue operation, the file has another segment. It is up to the operator to keep tabs what the callsign was for the last 'STOP'. The system prompt, 'LOAD QSOS FROM TAPE (Y/N)?' expects keyboard input (Y) until the last segment. When the operator recognizes the last callsign in the last segment, key in: (N) 'ENTER'. Processing can now continue.

```

10 '*****
20 'CALLDUPE
30 'Revision A
40 '*****
50 '
60 '(C) 1982 by
70 'N2CQ
80 'Ken Newman
90 '81 Holly Dr.
100 'Wodbury NJ
110 '08096
120 '

```

Color Computer News

```

130 'INITIALIZING
140 CLEAR0:CLEARMEM-1900:DIMA$(9
,25),BN$(8):CLS
150 DATA (A) 1.8 MHZ,(B) 3.5 MHZ
,(C) 7 MHZ,(D) 10 MHZ,(E) 14 MHZ
,(F) 18 MHZ,(G) 21 MHZ,(H) 24.5
MHZ,(I) 28 MHZ
160 FORA=0 TO 8:READ BN$(A):NEXT
A
170 XN$="04T200V15L1A":XE$="04T2
00V30L1AGAGAGAGAG"
180 '
190 'SETUP
200 CLS:PRINT@160,"ENTER FILE NA
ME FOR THIS CONTEST":INPUTFI$:CL
S:PRINT
210 INPUT "LOAD QSOS FROM TAPE?
<Y/N>";A3$
220 IFA3$="N"THEN280 ELSE IFA3$<
>"Y" THEN 210
230 CLS:PRINT@(32*4),"PREPARE RE
CORDER FOR INPUT";:PRINT:INPUT "
PRESS <ENTER> WHEN READY";A3$:CL
S:PRINT@160,"SEARCHING: (";FI$;"
)"
240 OPEN "I",#-1,FI$:T=1
250 IF EOF(-1) THEN 270
260 INPUT#-1,C$,BN$:BN=ASC(BN$)-
65:GOTO370
270 CLOSE #-1:T=0:GOTO 210
280 CLS:PRINT@32*4,"PREPARE RECO
RDER FOR output":PRINT:INPUT" PR
ESS <ENTER> WHEN READY";A3$
290 OPEN"O",#-1,FI$:T=0
300 CLS:PRINT@32*4, "ENTER MODE:
":PRINTTAB(12)"OFFLINE=OFF":PRIN
TTAB(12)"ONLINE=ON":INPUTOL$
310 CLS
320 C$="BAND":GOTO390
330 '
340 'MAIN ROUTINE
350 IFT=1THEN250
360 PLAYXN$:PRINT"NEXT CALL";:IN
PUTC$:PRINTSTRING$(32,8);
370 IF LEFT$(C$,4)="DEL=" THEN C
$=RIGHT$(C$,LEN(C$)-4):DE=1
380 IF C$="STOP" THEN CLOSE#-1:C
LS:PRINT"READY TO POWER OFF":INP
UT"ENTER TO CONTINUE QSOS, OR EL
SE POWER OFF NOW!";A3$:OPEN"O",#
-1,FI$:GOTO350
390 IFC$<>"BAND"THEN410ELSECLS:P
RINTTAB(7)"FREQ. BAND (MHZ)":PRI
NT
400 FORA=0 TO 8:PRINTTAB(9)BN$(A
):NEXTA:PRINT:INPUT"WHICH LETTER
";BN$:BN=ASC(BN$)-65:CLS:GOTO350

```

```

410 'SET ARRAY
420 IF LEN(C$)<3 THEN470
430 FOR A=3 TO 2 STEP-1
440 B=ASC(MID$(C$,A,1))-48
450 IF B<10 AND B>-1 THEN 480
460 NEXT A
470 PLAYX$:PRINT" CALL FORMAT E
RROR ";C$:GOTO350
480 IFLEN(C$)=A THENE=25:GOTU500
490 E=ASC(MID$(C$,A+1,1))-65:IFE
<0THENE=25ELSEIFE>25THEN470
500 'FIND CALL
510 A=INSTR(C$,"/");IFA>0THENCA$
=LEFT$(C$,A-1)ELSECA$=C$
520 A=INSTR(A$(B,E),CA$+BN$+"%")
530 IFDE=0THEN560ELSEIFA>0THENA$
(B,E)=LEFT$(A$(B,E),A-1)+RIGHT$(
A$(B,E),LEN(A$(B,E))-LEN(CA$+BN$
+"%")-(A-1)):DE=0:PRINT" DELETED
"C$:C$="DEL="+C$:Z=Z-1:IFT=0THE
NPRINT#-1,C$,BN$
540 GOTO350
550 IFA=0THENPLAYX$:PRINT" NOT
FOUND. NOT DELETED ";C$:DE=0:GOT
O350
560 IFA>0 THEN PLAYX$:PRINT" DU
PLICATE CALL ";C$:GOTO350
570 IFT=1THEN660
580 IFLEN(A$(B,E))+LEN(CA$)=>254
THENPLAYX$:PRINT" ARRAY OVERFLO
W ERROR. LOG THIS CALL MANUAL
LY ";C$:GOTO350
590 IFOL$="OFF"THEN650
600 'LOG CALL
610 PLAYX$:PRINT"log ";C$
620 A3$=INKEY$:IFA3$=""THEN620
630 A=ASC(A3$):PRINTSTRING$(32,B
);
640 IFA=32THEN350
650 PRINT#-1,C$,BN$
660 A$(B,E)= A$(B,E)+CA$+BN$+"%"
670 Z=Z+1
680 PRINT"#";:PRINTUSING"###";Z;
:PRINT" "C$";:PRINTTAB(12)RIGH
T$(BN$(BN),LEN(BN$(BN))-4)
690 GOTO350
    
```

**COLOR COMPUTER NEWS TIP**

Entering POKE25,6:NEW for a PCLEAR0 does not work on a disk system as it destroys the file buffers and file control blocks. Instead, do the following for a PCLEAR0 on a disk system:

```

PMODE0 (ENTER)
POKE25,14 (ENTER)
NEW (ENTER)
?MEM (ENTER) (should return 28,967)
    
```

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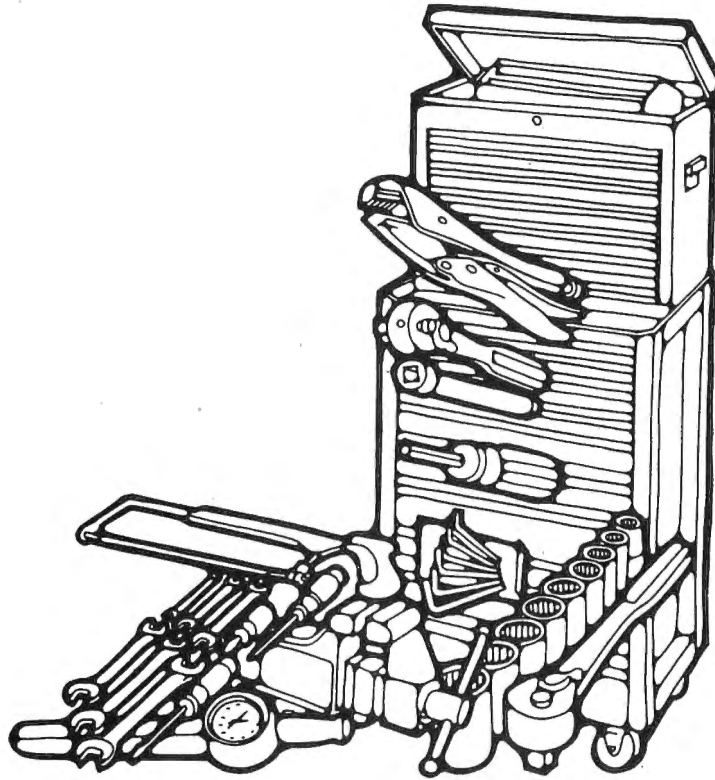
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By Russell T. Delaney  
P.O. Box 186  
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- (5) A Soft Padded Mat.
- (6) Two screwdrivers: one flathead and one phillips.

## (7) Patience!

Please Note: Step 7 is a very crucial one. It can make or break the upgrade!

## DISASSEMBLY

Now you are ready for the disassembly. Find a nice place where you have plenty of room to work, and access to an outlet for your soldering iron. Now do the following:

- (1) Place the Color Computer face down on the padded mat and remove the seven screws from the bottom of the case. Don't shy away because there are 3 screw holes not filled, this is normal.
- (2) Carefully place the computer face up, lift off the case top and set it aside.
- (3) Carefully lift the keyboard from the plastic bosses and remove the keyboard cable.
- (4) Remove the tie wraps, if any are there, on the top cover of the RFI shield and lift the shield off.
- (5) Remove the three screws supporting the transformer assembly (two on the transformer, one on the board) and disconnect all jumper cables. (IMPORTANT: BE SURE TO NOTE WHICH COLOR OF WIRE CONNECTS TO TERMINALS E5, E6, E7).

(6) Remove the ten screws fastening the CPU PC Board and lift the board off its plastic bosses.

(7) Notice the sixteen fasteners which hold the metal Ground Plane and its insulator to the back of the PC Board. It is necessary to remove all sixteen fasteners. Use a screwdriver or small thin tool to pry off the fasteners from the board.

**REVISION D PROCEDURE (For 32K and 64K upgrades)**

(1) Check the number stamped on U#. It should be 8040364A. If the number is not followed by an A, you must replace it with a revision 1.1 ROM which has that number. Some of the advertisers in Color Computer News sell this ROM.

(2) Remove the following capacitors:

C61, C31, C64, C35, C67, C45, C70, C48

(3) Move the jumper plug at the right of U10 to the 16K position and remove the jumper plug between U8 and U4.

(4) Make the following cuts and add the following jumpers to the Printed Circuit Board.

**CUTS**

**JUMPERS**

+5V to pin 9 of the RAM's

+5V to the RAM's pin 1

+12V to pin 8 of the RAM's

+5V to the RAM's pin 8

-5V to pin 1 of the RAM's U4

12 to U8 pin 17

(5) Remove the RAM's currently in the U20 through U27 positions and install the 32K or 64K RAMs in their places. (To preserve the old RAM's, place them in some conducting black foam for protection against static).

(6) Be sure that the notches in the chips are carefully positioned in the direction of U4 and U10.. If not.. I hope your pocketbook is in good shape!

(7) Carefully, yes CAREFULLY, check your work. Be sure all traces are clean and all solder work is good. A good technician always double checks.

(8) Replace the Ground Plane and its Insulator on back of the PC board and install all fasteners except the five along the front edge of the PC board. You may need to close the tips of the fasteners with pliers then insert.

(9) Now it is time to reassemble the Computer.

**RE-ASSEMBLING THE COMPUTER**

(1) Since you should have all the fasteners back in I will take you from the point of PC board re-installation... So carefully set

your CPU board back onto the plastic bosses and replace the ten screws which hold it down.

(2) Replace the transformer assembly, making sure that the wire connectors to terminals E5, E6, and E7 are back into their proper locations... and also, place the three support screws back in (two on the transformer, and one on the board).

(3) Place the RFI shield back on. It might be a good idea to place two pieces of Electrical Tape on the shields sides, thus holding it down in place, or tie wraps if you prefer.

(4) Place the keyboard back onto its plastic bosses and replace the cable back to its proper position on the CPU board. **MAKE SURE THAT YOU WATCH AS YOU CONNECT IT BECAUSE, IT IS VERY EASY TO PLACE THE KEYBOARD CONNECTOR ON WRONG SO THAT THE PINS DO NOT MATCH UP!**

(5) Now, simply place the top cover back on the Color Computer.

(6) Once the computer is turned over, install the seven screws back where they had originally come from. **NOTE: MAKE SURE THE TWO SMALLEST SCREWS RETURN BACK TO THE FRONT POSITION OF THE COMPUTER! IF YOU ATTEMPT TO SUBSTITUTE LARGE SCREWS IN THEIR PLACE, YOU WILL HAVE TWO NICE PRETTY HOLES IN THE TOP CASE OF YOUR COLOR COMPUTER! REMEMBER, THREE HOLES, THE ONES JUST BEHIND THE LABEL ON THE BOTTOM ARE EMPTY.**

(7) Refer to step 8

(8) **YOU'RE DONE!**

Now you have a finished upgraded D revision board, and if you are interest in how much money you have just saved... about \$30.00 some places are charging to do this procedure... I outta know.. I work for one...

*Color Computer News Tip*

If a disk drive will not perform a proper DSKINI to format a disk, yet all other disk functions seem to work, remove the drive cover and shine a fluorescent light on the drive wheel on the left side of the unit. With the drive unit running, the 60 cycle hash marks on the drive wheel should appear to stand competely still. If not, adjust the yellow potentiometer to the lower left of the drive wheel until the hash marks appear to stand still.

# KIDSTUFF 2/ KIDSAVENTURE

By T. Gray  
Box 39  
Sunnybrook, Alberta  
Canada T0C 2M0



Forthright Software  
278 Connecticut Avenue  
Newington, Conn. 06111

The first tape, Kidstuff 2, promises a word program and six games in Extended Basic. The games first. My five-year-old son enjoyed "Drawing", moving a red block (no choice of color) around the screen, but he soon tired of guessing a number between one and ten. "Asteroids", the third game, seemed to be right out of the Color Basic manual. The three math games had few sounds or graphics. One, Addition, had a bug that had my son adding decimal numbers instead of whole numbers, but I didn't bother to fix this because I have other programs that do a better job of math drill. The final game, intended to provide practice with inequalities (greater than / less than / equal to) used a vertical format that was both unusual and confusing. Last, but far from least, on these math games my son found the display for a wrong answer more attractive than that for a right answer!

If "Games" had been the only program on the tape, it would have gone back to  
52 May 1983

Forthright. Fortunately, the second program, "Words", is by itself worth the modest cost (\$6) of the tape.

One section, "Billboard", allows the player to enter five lines of up to 10 letters each. The message is then printed in huge black letters centered on a colored screen. Great fun for kids and parties.

The screen color is set to red in line 150. Changing that line to  
150 INPUT "ENTER NUMBER OF COLOR (1 TO 8);C:C1 = C  
will allow you to choose one of the standard screen colors.

For some more variety in the display of the billboard, add  
2105 FOR W = 1 TO 700:NEXT W: GOTO 2070  
which gives a flashing billboard (press BREAK to quit); or insert pauses (FOR W = 1 TO 1000:NEXT W) at 2065, 2075, 2085 and 2095 to make the billboard slowly print one line at a time.

The second half of Words is called "Flashcards". This uses the same block graphic letters as Billboard but flashes one word at a time onto the screen. The player then types the word shown. Correct

answers get a sound/text reward; but misspelled answers are displayed with the original word. There are two levels based on the length of words involved but there is no way to control the length of presentation, nor is there any provision for a second look at the word (useful for young children or slow learners). The words are stored in data statements and so can be modified.

After a set of ten words has been presented, there is a not particularly interesting display called "Fireworks" (if the name hadn't been in a REM statement in the program, I'd never have known what they were) followed by a happy or sad face, depending on the score.


The documentation says to BREAK and RUN to go from Billboard to Flashcard or back, but entering @ in either program will return you to the menu.

Since "Games" was poor and "Words" was better, you can guess that I've saved the best till last. The second tape, KIDS ADVENTURE, showed such a difference in presentation and performance that it's hard to believe they have the same author. This is a full graphics adventure that is easy to understand, challenging for children, and lots of fun. The hi-res green on black maze contains various obstacles such as moving (but unaggressive) monsters, locked doors, and scary caves. To help these problems, there are object such as a key, rubber boots, and swords. The player uses a joystick to move through the maze, collecting items or stumbling into obstacles. Objects collected are "stored" in a box at the bottom of the screen, while simple descriptions of objects, obstacles, and events are printed just below the storage area. It took Mom and Dad about 30 minutes to explore the entire maze; members of my Grade six class took about the same; and Number One Son may need several weeks.

The maze has two skill levels, two speeds of play, and two message speeds to adjust for reading rate. This one is for kids 12 and under, I'd say. It is DEFINITELY worth its \$9 cost!

### Color Computer News Tip

POKEing 359,0 eliminates all output to the screen. The cursor will move only for PRINT @ commands.



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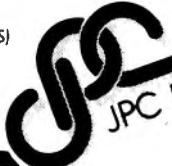
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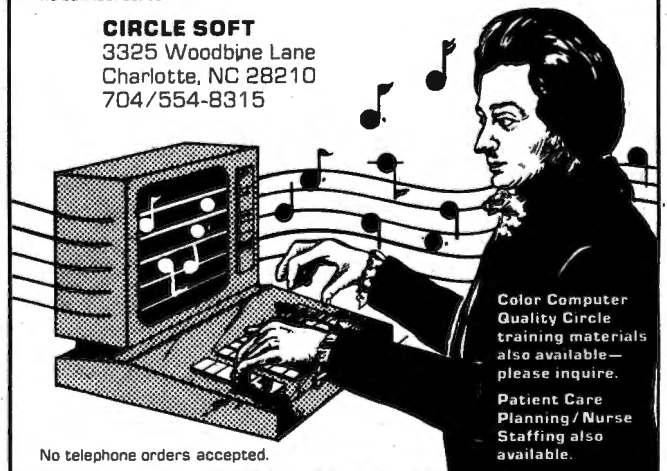
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# TUNNELS OF TERROR

By Miles Jagusch  
R.R. 1  
Red Wing, MN 55066



## INTRODUCTION:

Last year, my best friend (who happened to own a Color Computer) first introduced me to computers. I was immediately hooked! I took every opportunity I had to use his computer. He even taught me how to program. Well, to make a long story short, I soon bought my own Color Computer and my first adventure "The Black Sanctum" (story sound familiar? Read "Mail Call"-Nov./Dec. 1981). Since then I've spent all my free time trying to improve my programming. I originally wrote this program last November, and I've been refining and debugging it since then. I hope you enjoy it!

## PROGRAM DESCRIPTION:

The key to this program is the use of arrays. All the data needed to operate the program is included with these arrays. Be especially careful when you enter lines 40, 50 and 60 as this data is responsible for movement within the program. If there is an error in this data it will result in an error in the map of the dungeon. The data in line number 80 is for the location of objects, and the objects themselves are in lines 100 and 110. Finally, the data in lines 130 and 140 are for room descriptions.

The way this system works is when you enter a room, the computer reads the arrays, and if a member of an array equals the room number, that string of the array is printed as a visible object (or room description). For example: if L(10)=your room #, then L\$(10) is printed as a visible object. As far as the direction array goes, when a movement is made, the computer will read that member of the array and change the room number to that number.

The next important part of this program comes in line numbers 150 and 160 which contain the strings containing the command verbs and the command objects respectively. If the computer doesn't recognize the correct command words, this is the first place to check. Lines 550 to 580 are responsible for determining which command word numbers are used. For example, the first command word, the second command word, etc. Line 640 sends program operation to the correct section of the program depending on the command number. If a command doesn't give the expected result, this is where to look.

The final thing needing explanation is the sub-routine for the inputting of

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commands. This is found in line numbers 1630 to 1660. What this does is to find the first four letters of each word (if there are four letters) so they can be used in the determination of the command numbers. By the way, only the first four letters of each word are needed for an acceptable command.

P.S. For this program to fit onto a 16K computer, you must POKE 25,6: POKE 27,6: POKE 29,6: POKE 31,6:CLOAD. This is also necessary for loading the program.

## PROGRAM OPERATION:

As stated in the instructions within the program, commands are to be given in one or two word sentences. In order for the computer to understand your commands, there must be a space between the command verb and the command object. The only exceptions to this are directions which only require the first letter. For example, to go north, just type "N" and then enter. As far as the "help" and "hint" commands go, they will give you a full list of possible command verbs. For those of you who are adventure 'purists', you may not wish to use this command as it may give away answers to some of the problems. Two of the most commands are "save" and "load". These commands are used to save or load a game already in progress. They simply save or load all the data necessary for the game in progress to or from a cassette file. The file name is the name that you input as your character's name (CH\$).

This adventure contains many things including weapons, armor, monsters and magical items. You will need every item that you come across (excluding non-moveable items such as a bed or a table) at one time or another during the course of the game. Some things you will only need once, while others you will need several times. You may only carry seven items at one time, so you must decide which ones you will need and at what time. Many of the objects are also hidden, so you may have to search (examine) in order to find them.

One more thing I feel needs explanation is winning the game. In order to win the game, you must defeat the evil Vrock in mortal combat. One warning- DO NOT attempt this until you are sure you have all the things you will need to accomplish this task. The Vrock is very powerful.

One final comment. It will be extremely helpful to map the dungeon. It contains well over 50 different locations and is very easy to get lost in.

## CONCLUSION:

I truly hope you enjoy this adventure. If anyone has any questions or comments about this program, I would deeply appreciate a letter from you. Also, if anyone is concerned about learning the secrets to this program while typing it in, I will gladly send you a copy of this program on cassette tape for \$5.00. My address is:

Miles Jagusch

R. R. 1

Red Wing, MN 55066

```

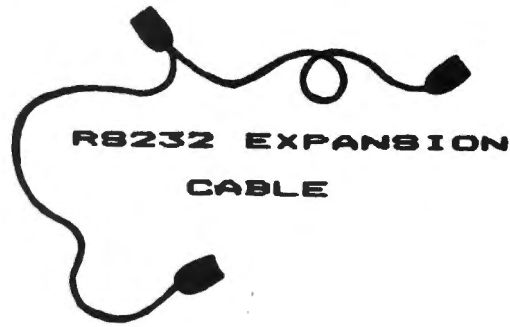
1 'TUNNELS OF TERROR
2 'WRITTEN BY MILES JAGUSCH
3 'R.R. 1
4 'RED WING, MN 55066
10 CLEAR400:DIMD(59,4),L(30),L$(
30),R$(17):CH=40:MH=50:R=16
20 CLS:PRINT@199,"ONE MOMENT PLE
ASE.":PRINT@227,"I AM PREPARING
THE DUNGEON."
30 FORX=1TO59:FORY=1TO4:READD(X,
Y):NEXT Y,X
40 DATA17,,,22,4,,,,,22,21,20,,
,,38,,23,40,34,,,39,,35,,33,50,,
,,49,,,30,,,31,,,,,10,,,,,53,,
53,,,55,,,47,56,22,59,,,18,1,,,
17,19,44,,,20,18,23,4,,19,39,,3,
,45,16,1,3,36,20,24,5,25,,,23,26
,24,,,27,25,,,28,26,,,,,27,,29,,,
28,30,10,33,29,50,,11,52
50 DATA32,,58,31,,30,,7,,51,6,,,
7,36,,37,35,23,,,30,35,46,37,5,
,,57,21,6,,41,,5,,40,,42,47,43,
41,,42,44,,51,43,45,18,,44,22,,,
,,37,47,48,42,46,15,49,47,,,9,48
,50,53,,8,30,49,52,34,43,,,51,,3
1,,14,49,13,58,,57,,,56,14,,55,,
15,,,39,,54,32,54,,,16,59
60 DATA59,59
70 FORX=0TO29:READL(X):NEXT
80 DATA,3,3.5,1,1.5,2,8,7,11.5,5
,5.5,15.5,15.5,1,4,11,5,15,13,13
,10,12,7,,,,,,9
90 FORX=0TO29:READL$(X):NEXT
100 DATA,"A LONG CANE","A JAVELI
N","A PEWTER CANDLEHOLDER","A LA
RGE, GREEN GEM","A SILVER CROSS"
,"A ROUND SHIELD","A SET OF KEYS
","A GOLD RING","A SEALED TUBE",
"AN ANCIENT SCROLL","A WAR HAMME
R","A SET OF ARMOR","AN OAK TABL
E","A LARGE BOOKCASE"

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## Tunnels of Terror

```
110 DATA"A WOODEN CHEST","A OAK
TABLE","A NASTY LITTLE DWARF","A
BRASS BED","A WOODEN CHAIR","A
HUGE, IRON DOOR","A RATHER LARGE
, MEAN-LOOKING VROCK","A DUMP
Y OLD CARETAKER",,,,,,"A TRANSY
LVANIAN VAMPIRE"
120 FORX=1TO17:READR$(X):NEXT
130 DATA"THE TEA ROOM","A PRIVAT
E STUDY","THE ENTRY HALL","THE L
IBRARY","THE KITCHEN","THE SITTI
NG ROOM","A SMALL CHAMBER","THE
ARMORY","THE GUARD ROOM","A WELL
-LIT CORRIDOR","A STORAGE CLOSET
","THE VROCK'S LAIR","A SMALL BE
DROOM","AN EMPTY ROOM"
140 DATA"A LARGE DINING HALL","A
DARK PASSAGEWAY","THE WILDERNES
S"
150 L(16)=0:FW$="N S E WTAKEINV
ELOOKDROPGET EXAMREADOPENREMOUSE
SWINTHROWEARHIT HOLD)MELKUNLOKIL
LHELPHINTSAVELOAD"
160 SW$="CANEJAVECANDGEM CROSSHI
EKEYSKINGTUBESCROHAMMARMOTABLBOO
KCHESDWARBED CHAIDOURVROCCAREBOI
TEND MANUHANDWORDHEADABATVAMP"
170 CLS:PRINT@136,"tunnels";CHR
$(128);"of";CHR$(128);"terror";
180 PRINT@203,"written";CHR$(128
);"by";
190 PRINT@265,"miles";CHR$(128);
"h";CHR$(128);"jagusch";
200 FORX=1TO1500:NEXT
210 FORX=0TO20:PRINT@(70+X),CHR$
(166);:NEXT
220 FORX=0TO7:PRINT@(102+32*X),C
HR$(166);:NEXT
230 FORX=0TO7:PRINT@(122+32*X),C
HR$(166);:NEXT
240 FORX=0TO20:PRINT@(326+X),CHR
$(166);:NEXT
250 FORX=0TO63:PRINT@X,CHR$(166)
;:NEXT
260 FORX=352TO479:PRINT@X,CHR$(1
66);:NEXT
270 FORY=0TO9:FORX=0TO5:PRINT@(6
4+Y*32+X),CHR$(166);:NEXTX,Y
280 FORY=0TO9:FORX=0TO5:PRINT@(9
0+32*Y+X),CHR$(166);:NEXTX,Y
290 FORX=1TO2000:NEXT
300 CLS:PRINT@225,"WHAT IS YOUR
CHARATER'S NAME ";:INPUTCH$
310 CLS:PRINT@228,"DO YOU NEED I
NSTRUCTIONS?"
320 Z$=INKEY$:IFZ$=""THEN320
330 IFZ$="N"THEN430
340 IFZ$="Y"THEN360
350 GOTO320
360 CLS:PRINT"IN THIS ADVENTURE
YOU WILL ENCOUNTER MANY THI
NGS.":PRINT"THE COMPUTER WILL AS
K YOU WHAT TO DO, AND YOU WILL
ANSWER USINGTWO-WORD SENTENCES (
EXCEPT FOR DIRECTIONS WHICH YOU
MUST USE SINGLE-LETTER ANSWER
S).":PRINT"EXAMPLES:":PRINT"N
370 PRINT"GET KEYS":PRINT"DROP G
EM":PRINT"USE HAMMER"
380 PRINT@451,"PRESS ANY KEY TO
CONTINUE."
390 Z$=INKEY$:IFZ$=""THEN390
400 CLS:PRINT"IF YOU BECOME TOTA
LLY STUMPED, YOU MAY WANT TO TY
PE 'HELP' OR 'HINT' TO GET A FU
LL LIST OF POSSIBLE COMMANDS.
":PRINT"YOU MAY NOT WANT TO USE
THIS FUNCTION IF YOU LIKE MOR
E OF A CHALLENGE.":PRINT:PRINT:
PRINT"P.S. IT MAY BE HELPFUL
410 PRINT"THE DUNGEON.":PRINT@40
3,"PRESS ANY KEY TO CONTINUE."
420 Z$=INKEY$:IFZ$=""THEN420
430 CLS:PRINT"YOU HAVE JUST DESC
ENDED ABOUT 1000 FEET DOWN A L
ONG, DARK TUNNEL.":PRINT:PRI
NT"YOU ARE NOW AT THE ENTRANCE T
O THE TUNNELS OF TERROR!!!":PRI
NT@235,"GOOD LUCK!":PRINT@453,"P
RESS ANY KEY TO BEGIN."
440 Z$=INKEY$:IFZ$=""THEN440
450 CLS:PRINT"YOU ARE IN ";
460 IFR=59THENPRINTR$(17):GOTO49
0
470 IFR>15THENPRINTR$(16):GOTO49
0
480 PRINTR$(R)
490 PRINT"VISIBLE PASSAGES:":GO
SUB1550
500 PRINT:PRINT"VISIBLE OBJECTS:
":GOSUB1600
510 IFR=15THENGOSUB1700
520 PRINT:GOSUB1630
530 F=0:S=0
540 IFR=9THENTU=TU+1
550 FORX=1TOLEN(FW$)STEP4:IFMID$
(FW$,X,4)=A$THENF=(X+3)/4:GOTO57
0
560 NEXTX
570 FORX=1TOLEN(SW$)STEP4:IFMID$
(SW$,X,4)=B$THENS=(X+3)/4:GOTO59
0
580 NEXTX
590 IFF<5ANDF<>0THEN1750
600 IFF=7ANDS=0THEN450
610 IFF=6ANDS=0THEN730
```

```

620 IFF=25THEN2060ELSE IFF=26 THEN
2120
630 IF (F=23ORF=24) ANDS=0 THEN1510
ELSE IFF<1ORS<1 THENPRINT"I DON'T
UNDERSTAND YOUR REQUEST.":GOTO52
0
640 ON(F-4)GOTO680,730,810,780,6
80,810,970,1010,1090,1140,1140,1
270,1330,1370,1380,1410,1440,148
0,2060,2120
650 IFR=9 THENGOSUB1670
660 IFR=12 THENF9=F9+1:GOSUB1810
670 GOTO520
680 IFS<13ANDS<>7ANDW<>7ANDL(S)=
R THENL(S)=100:PRINT"OK.":W=W+1
690 IFS=24ANDR=4 THENPRINT"HEY!
THE BOOKCASE MOVED REVEA
LING A PASSAGE TO THE SOUTH
!":D(4,2)=2:GOTO650
700 IFS=7ANDR=7 THENPRINT"THE CA
RETAKER WON'T LET YOU."
710 IFS>12 THENPRINT"DON'T BE RI
DICULOUS."
720 GOTO650
730 CLS:PRINT"YOU ARE CARRYING:"
:FORX=1TO12
740 IFL(X)=100 THENPRINTL$(X)
750 NEXTX:PRINT@451,"PRESS ANY K
EY TO CONTINUE."

```

```

760 Z$=INKEY$:IFZ$="" THEN760
770 GOTO450
780 IFS=4ANDL(S)=100ANDR=7 THENPR
INT"THE CARETAKER GRABS THE GEM
AND HANDS YOU THE KEYS.":L(7)=10
0:L(4)=0:GOTO650
790 IFL(S)=100 THENPRINT"OK.":L(S
)=R:W=W-1:GOTO650
800 PRINT"YOU DON'T HAVE IT!":GO
TO650
810 IFS=4AND(L(S)=R ORL(S)=100)
THENPRINT"IT LOOKS VERY EXQUISIT
E.":GOTO650
820 IFS=10AND(L(S)=R ORL(S)=100)
THENPRINT"IT HAS WORDS WRITTEN
ON IT.":GOTO650
830 IFS=9AND(L(S)=R ORL(S)=100)
THENPRINT"IT HAS A LOOSE END.":G
OTO650
840 IFS=4AND(L(S)=R ORL(S)=100)
THEN700
850 IFS=17 ANDL(17)=R ANDL$(17)=
"A DEAD DWARF" THENPRINT"HE IS W
EARING ARMOR.":L(12)=R:GOTO650
860 IFS=1AND(L(S)=R ORL(S)=100)
THENPRINT"IT HAS A LOOSE HEAD.":
GOTO650
870 IFS=16ANDL$(17)<>"A DEAD DWA
RF"ANDL(S)=R THENPRINT"I CAN'T D

```

## Master Control For Your Computer JOB CONTROL PROGRAM

by Peter Murray

JCP Coordinates your FLEX computer

- Features and Applications**
- parameter substitution
  - conditional branching/loop control
  - error trapping and recovery options
  - built-in text editor
  - compact . . . all commands reside in 2K by bytes
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  - software producers: make systems user-friendly, easier to use and operate
  - computer dealers: demonstrate software/hardware automatically
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plus 60-page  
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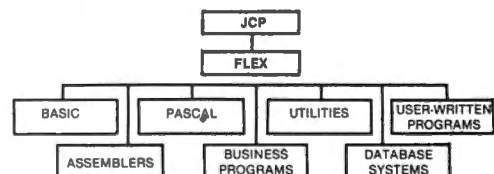
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See July 1980

'68' Micro Journal

review of JCP



#### What is JCP?

JCP, field-tested by satisfied users for over two years, is a program which loads into memory, then controls operation of the computer. Sequences of FLEX programs, utilities, language processors, etc. are executed, with JCP supplying all parameters, options, and operator inputs as required (or, allowing direct operator input, if desired). You define a JCP procedure (job stream) once; thereafter, you type a simple one-line command to initiate the job. You don't have to remember all those operational details required to run a routine job. Just tell JCP to run a procedure. JCP even handles error situations under user options — JCP can handle the error or can BREAK to give you the chance to look at the situation, take corrective action, then CONTINUE the procedure from the point of interruption! JCP allows conditional branching within a job stream. JCP will substitute parameters into the job stream, allowing general purpose procedures to handle complex compiles, assemblies, link-edits, sorts and so forth. JCP puts you in control of your computer!

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#### Trademark Credits

FLEX is a registered trademark of Technical Systems Consultants, Inc.  
TRS-80 Color Computer is a registered trademark of the Tandy Corp. \*Frank Hogg  
Laboratory supplies a version of FLEX which runs on the TRS-80 Color Computer.

## Tunnels of Terror

```

0 THAT NOW.":GOTO650
880 IFS=15ANDL(S)=R THENPRINT"IT
  IS SEALED SHUT WITH NO      VI
SIBLE LOCK.":GOTO650
890 IFS=14ANDL(S)=R THENPRINT"IT
  HAS ONE MANUSCRIPT THAT      ST
ICKS OUT FROM THE REST.":GOTO650

900 IFS=3AND(L(S)=R ORL(S)=100)
THENPRINT"IT HAS A LOOSE BOTTOM.
":GOTO650
910 IFS=24ANDR=4THEN690
920 IFS=19ANDR=10THENPRINT"IT'S
LOCKED!":GOTO650
930 IFS=20ANDR=12THENPRINT"YOU'R
E CRAZY!":GOTO650
940 IFS=21ANDR=7THENPRINT"HE WON
'T LET ME.":GOTO650
950 IF(S=2 ORS=5 ORS=6 ORS=7 ORS
=8 ORS=11 ORS=12 ORS=13 ORS=17 O
RS=18)AND(L(S)=R ORL(S)=100)THEN
PRINT"I SEE NOTHING SPECIAL.":GO
TO650
960 IFS<28AND(L(S)<>R ORL(S)<>10
0) THENPRINT"I DON'T SEE IT HERE
.":GOTO650
970 IFS=10AND(L(S)=R ORL(S)=100)
THENPRINT"IT SAYS-'MELKURION ABA
TH'":FORZ=1TO920:NEXTZ:CLS:PRINT
"THE SCROLL DISAPPEARS IN A PUFF
OF SMOKE!"
980 IFS=26AND(L(10)=R ORL(10)=10
0)THENPRINT"IT SAYS-'MELKURION A
BATH'":FORZ=1TO920:NEXTZ:CLS:PRI
NT"THE SCROLL DISAPPEARS IN A PU
FF OF SMOKE!"
990 IFL(10)<>R ANDL(10)<>100THEN
PRINT"HERE IS NOTHING HERE TO R
EAD."
1000 GOTO650
1010 IFS=9ANDFS=0AND(L(S)=R ORL(
S)=100)THENFS=0:PRINT"HERE APPE
ARS TO BE AN ANCIENT SCROLL INS
IDE.":L(10)=R:F12=1:GOTO520ELSEI
FS=9AND(L(S)=R ORL(S)=100)THENPR
INT"IT'S OPEN!":GOTO650
1020 IFS=23AND(L(9)=R ORL(9)=100
)ANDFS=0THENL(10)=R:PRINT"HERE
APPEARS TO BE AN ANCIENT SCROLL
INSIDE.":FS=1:GOTO520ELSEIFS=23
AND(L(9)=R ORL(9)=100)THENPRINT"
IT'S OPEN!":GOTO650
1030 IFS=19ANDL(7)=100THENPRINT"
THE DOOR OPENS REVEALING A
CHAMBER TO THE NORTH.":D(10,1)=1
2:L$(19)="AN OPEN DOOR":GOTO650
1040 IFS=15ANDL(S)=R THENPRINT"I
T IS SEALED SHUT WITH NO      V
ISIBLE LOCK.":GOTO650
1050 IFS=3ANDFC=0AND(L(S)=R ORL(
S)=100)THENFC=1:PRINT"THE BOTTOM
OPENS REVEALING A      LARGE GEM
INSIDE.":L(4)=R:GOTO520ELSEIFS=3
AND(L(S)=R ORL(S)=100)THENPRINT"
IT'S OPEN!":GOTO650
1060 IFS=22ANDFC=0AND(L(3)=R ORL
(3)=100)THENFC=1:PRINT"THE BOTTO
M OPENS REVEALING A      LARGE GEM
INSIDE.":L(4)=R:GOTO520ELSEIFS=
22AND(L(3)=R ORL(3)=100)THENPRIN
T"IT'S OPEN!":GOTO650
1070 IFS=19ANDR=10ANDL(7)<7100TH
ENPRINT"IT'S LOCKED":GOTO650
1080 PRINT"I CAN'T DO THAT.":GOT
O 650
1090 IFS=23AND FS=0AND(L(9)=R OR
L(9)=100)THENFS=1:PRINT"HERE AP
PEARS TO BE AN ANCIENT SCROLL I
NSIDE.":L(10)=R:GOTO520ELSEIFS=2
3AND(L(9)=R ORL(9)=100)THENPRINT
"IT'S OPEN!":GOTO650
1100 IFS=22ANDFC=0AND(L(3)=R ORL
(3)=100)THENFC=1:PRINT"THE BOTTO
M OPENS REVEALING A      LARGE GEM
INSIDE.":L(4)=R:GOTO520ELSEIFS=
22AND(L(3)=R ORL(3)=100)THENPRIN
T"IT'S OPEN!":GOTO650
1110 IFS=24ANDR=4THEN690
1120 IFS=27AND(L(1)=R ORL(1)=100
)THENPRINT"YOU DISCOVER IT'S REA
LLY A      JAVELIN.":L(2)=R:L(1)
=0:GOTO650
1130 GOTO1080
1140 IFS=11ANDL(S)=100ANDR=11THE
NPRINT"YOU SMASHED IT OPEN.":PRI
NT"YOU SEE A GOLD RING IN THE
DEBRIS.":L$(15)="A SMASHED CH
EST":L(8)=R:GOTO650
1150 IFR=12THEN1200
1160 IFS=25THENPRINT"NO EFFECT."
:GOTO650
1170 IFS<13ANDL(S)=100THENPRINT"
NO EFFECT.":GOTO650
1180 IFL(S)<>100THENPRINT"YOU DO
N'T HAVE IT!":GOTO650
1190 GOTO1080
1200 CLS:IFS=11ANDL(S)<>100THENP
RINT"YOU DON'T HAVE IT!":GOTO650

1210 IFS=25THEND=3
1220 IFS=11ANDL(S)=100THEND=6
1230 PT=RND(20):IFPT>10THEN1250
1240 PRINT"YOU MISSED HIM.":GOTO
650
1250 PD=RND(D):MH=MH-PD
1260 PRINT"YOU HIT HIM FOR ";PD;

```



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 help you create your title screen with the graphics editor. The graphics editor allows you to choose a background color and border style. Using the arrow keys and several other commands you can draw pictures, block letters and also include text.

Auto Run will generate a machine language loader program to precede your program on the tape. Then, to start up your program, simply type CLOADM to load in the Auto Run loader program, which will then automatically start itself up, display your title screen, load your program and then RUN or EXEC it.

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.

Auto Run is \$14.95 and includes complete documentation and an assembly source listing. Requires 16K Extended Basic.

## Galactic Hangman



A great new twist to the popular, educational word guessing game for the Color Computer. Large (700 words) and sophisticated vocabulary. Or enter your own words, your child's spelling list, foreign language vocabulary, etc.

Outstanding high resolution graphics, animation and sound effects.

For \$14.95 you get both the 16K and 32K versions of Galactic Hangman.



## Tape Information Management System

A user-oriented, easy to use personal database management system for the TRS-80\* Color Computer with these outstanding features:

- \* keeps files of programs, names, addresses, birthdays, recipes, class or club rosters, anything
- \* variable record and field lengths
- \* phrase substitution editor
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- \* 2 search modes — range and item
- \* user-definable printer format, for any printer
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For \$24.95 you get the database management system, our full documentation which includes a reference guide and a programmer's guide, and our 1981 Bibliography of articles relating to the Color Computer. Requires 16K Extended Basic. 32K recommended.

1982 TIMS Bibliography — \$9.95

## Silly Syntax



A sensational and educational version of a popular party game for the TRS-80\* Color Computer . . .

For 1 to 10 players. Load a story into the computer. The players are asked to supply a noun, verb, part of body, celebrity, etc. which the program uses to complete the story. The story, which is displayed when all words are entered, will be hilarious. Silly Syntax requires 16K Extended Basic (32K for disk version). For \$19.95, you get a user guide and a tape containing the Silly Syntax game and 2 stories. You can create your own stories or order story tapes from the selection below.

**Silly Syntax stories — Ten stories per tape.**

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| SS-001 - Fairy Tales | SS-004 - Current Events   |
| SS-002 - Sing Along  | SS-006 - Adventure/Sci-Fi |
| SS-003 - X-Rated     | SS-007 - Potpourri        |

Each story tape is \$9.95. 10% off for 3 or more story tapes. Disk is \$24.95 for Silly Syntax and 2 stories or \$49.95 for Silly Syntax and all 62 stories.



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# Tunnels of Terror

```

" POINTS.":GOTO650
1270 IF(S=2 ORS=11)ANDL(S)=100ANDR=14ANDL$(17)<>"A DEAD DWARF"ANDL(17)=R THENPRINT"GOOD JOB! YOU KILLED HIM!":L(S)=R:L$(17)="A DEAD DWARF":W=W-1:GOTO650
1280 IFS=2ANDL(S)=100ANDR=12THENW=W-1:GOTO1900
1290 IFS=11ANDL(S)=100ANDR=12THENW=W-1:GOTO1900
1300 IFS<13ANDL(S)=100THENPRINT"OK.":L(S)=R:W=W-1:GOTO650
1310 IFL(S)<>100THENPRINT"YOU DO N'T HAVE IT!"
1320 GOTO650
1330 IFS=6AND(L(S)=R ORL(S)=100)ANDF5=0THENBO=BO+1:L(S)=100:F5=1:PRINT"OK.":GOTO650
1340 IFS=8AND(L(S)=R ORL(S)=100)ANDF6=0THENBO=BO+1:F6=1:PRINT"OK.":GOTO650
1350 IFS=12AND(L(S)=R ORL(S)=100)ANDF7=0THENF7=1:BO=BO+3:PRINT"OK.":GOTO650
1360 PRINT"HERE IS NOTHING HERE TO WEAR.":GOTO650
1370 PRINT"TRY 'USING' SOMETHING.":GOTO650
1380 IFR=9ANDF1=0ANDS=5THENRA=RA+1:PRINT"O.K.":GOTO650
1390 IFL(S)=100THENPRINT"OK.":GOTO650
1400 PRINT"YOU DON'T HAVE IT!":GOTO650
1410 IFR=9ANDF1=0ANDS=28THENRA=RA+1:PRINT"O.K.":GOTO650
1420 IFS=28THENPRINT"NOTHING HAPPENS.":GOTO650
1430 PRINT"WHAT?!?!":GOTO650
1440 IFS=9ANDL(7)=100ANDR=10ANDL$(9)<>"AN OPEN DOOR"THENPRINT"IT'S OPEN NOW.":L$(19)="AN OPEN DOOR":D(10,1)=12:GOTO650
1450 IFS=15ANDR=11THENPRINT"THERE'S NO LOCK TO UNLOCK!":GOTO650
1460 IFS=9ANDR=10ANDL$(9)="AN OPEN DOOR"THENPRINT"IT'S ALREADY OPEN.":GOTO650
1470 GOTO1080
1480 IFS=21ANDR=7THEN2030
1490 IF(S=20 ANDR=12) OR(S=29 ANDR=9)THENPRINT"TRY 'USING' SOMETHING.":GOTO650
1500 GOTO1080
1510 CLS:PRINT"COMMAND WORDS ARE -":PRINT"GET","TAKE","DROP","INVENTORY","LOOK","EXAMINE","READ","OPEN","REMOVE","SWING","USE","T

```

```

HROW","WEAR","UNLOCK","KILL","HELP","HINT","SAVE","LOAD":PRINT"SECRET WORD (YOU MUST FIND IT YOURSELF)"
1520 PRINT@451,"PRESS ANY KEY TO CONTINUE."
1530 Z#=INKEY$:IFZ#=""THEN 1530
1540 GOTO650
1550 IFD(R,1)<>0THENPRINT" N";
1560 IFD(R,2)<>0THENPRINT" S";
1570 IFD(R,3)<>0THENPRINT" E";
1580 IFD(R,4)<>0THENPRINT" W";
1590 PRINT:RETURN
1600 FORX=1TO29:IFL(X)=R THENPRINTL$(X)
1610 NEXTX
1620 RETURN
1630 A$="":B$="":INPUT"WHAT NOW";A$:IFLEN(A$)<4THENFORX=1TO(4-LEN(A$)):A$=A$+" ":NEXTX
1640 FORX=1TOLEN(A$):IFMID$(A$,X,1)=" "ANDLEN(A$)>(X+2)THENB$=MID$(A$,X+1,4):IFLEN(B$)<4THENB$=B$+" ":GOTO1660ELSEGOTO1660
1650 NEXTX
1660 A$=LEFT$(A$,4):RETURN
1670 IFRA=2ANDF1=0THENFORX=24TO50STEP-5:SOUNDX,1:NEXTX:PRINT"THE VAMPIRE LETS OUT A BLOOD-CURDLING SHRIEK AND DISAPPEARS.":CH=50:F1=1:L(29)=0:RETURN
1680 IFTU=5ANDF1=0THENPRINT"IT LOOKS LIKE HE GOT YOU IN THE NECK!":GOTO1930
1690 RETURN
1700 IFFD=1THENRETURN
1710 PRINT"THE NASTY LITTLE DWARF THROWS A WAR HAMMER AT YOU.":L(11)=R:GOSUB1740
1720 IFA$<>"DUCK"THENPRINT"OOOPPSSS!":PRINT"HE TOOK YOUR HEAD OFF WITH IT!":GOTO1930
1730 PRINT"YOU DODGED IT!":PRINT"THE DWARF RUNS OUT OF THE ROOM TO THE WEST.":FD=1:L(17)=14:RETURN
1740 INPUT"WHAT NOW";A$:A$=LEFT$(A$,4):RETURN
1750 IFR=12THEN1800ELSEIFF=1ANDD(R,1)<>0THENR=D(R,1):GOTO450
1760 IFF=2ANDD(R,2)<>0THENR=D(R,2):GOTO450
1770 IFF=3ANDD(R,3)<>0THENR=D(R,3):GOTO450
1780 IFF=4ANDD(R,4)<>0THENR=D(R,4):GOTO450
1790 PRINT"YOU JUST RAN INTO A WALL.":GOTO520

```

```

1800 PRINT"THE VROCK WON'T LET M
E!":GOTO650
1810 IFF9<2THEN1890
1820 MT=RND(20):IFMH<=0 THEN2040

1830 MT=MT-B0:IFMT>6THEN1850
1840 PRINT"HE MISSED YOU.":GOTO1
880
1850 MD=RND(6):CH=CH-MD
1860 PRINT"HE HIT YOU FOR ";MD;"
POINTS."
1870 IFCH<=0THEN1930
1880 PRINT"HE HAS ";MH;"HIT POIN
TS.":PRINT"YOU HAVE ";CH;"HIT PO
INTS."
1890 RETURN
1900 CLS:IFF9>1THENPRINT"YOU ARE
TOO CLOSE.":GOTO650ELSEPJ=RND(1
00):IFPJ>50THEN1920
1910 PRINT"YOU MISSED HIM.":GOTO
630
1920 IFS=11THENDH=RND(6):PRINT"Y
OU HIT HIM FOR ";DJ;" POINTS.":M
H=MH-DH:L(11)=R:GOTO650 ELSEDJ=R
ND(10):PRINT"YOU HIT HIM FOR ";D
J;" POINTS.":MH=MH-DJ:L(2)=R:GOT
O650
1930 PLAY"t502v31l2fl4fl1b-l2fl4
b-03l2d02p12fl4b-03l2d02p12fl4b-
03l2d02p12fl4b-03l2d02p12l2b-l40
3dl1fl2dl402b-l2fp12fl4fl1b-"
1940 FORX=1TO750:NEXTX
1950 CLS:PRINT"000PPSSS!!!":PRI
NT"YOU SEEM TO HAVE GOTTEN YOURS
ELFKILLED!":PRINT"BETTER LUCK NE
XT TIME!":FORX=1TO2000:NEXTX
1960 PRINT@450,"WOULD YOU LIKE T
O TRY AGAIN?"
1970 Z$=INKEY$:IFZ$=""THEN1970
1980 IFZ$="Y"THENRUN
1990 IFZ$="N"THEN2010
2000 GOTO1970
2010 CLS:PRINT@162,"I HOPE YOU E
NJOYED YOURSELF!":PRINT@230,"PLE
ASE COME AGAIN TO":PRINT@294,"TH
E TUNNELS OF TERROR!"
2020 GOTO2020
2030 CLS:PRINT"YOU FIND YOU CANN
OT MOVE!":FORX=1TO1000:NEXTX:PRI
NT"YOU HEAR SOMETHING BREAKING!"
:FORX=1TO500:NEXTX:PRINT"IT'S YO
UR BONES!!!":FORX=1TO1500:NEXTX:
PLAY"01t255v31l255cdefgab":PRINT
"YOU NECK JUST SNAPPED!!!":FORX=
1TO1000:NEXT:GOTO1930
2040 FORX=1TO1000:NEXTX
2050 CLS:PLAY"03l4t5fb-04dl2fl4d
l1f":PRINT"WELL, IT LOOKS LIKE Y

```

Color Computer News

```

OU'VE DONE IT! YOU'VE DEFEATED T
HE VROCK AND ALL HIS EVILS SER
VANTS.":PRINT"YOU'VE MADE AN ABS
OLUTELY EXCELLENT PERFORMA
NCE!":GOTO1960
2060 CLS:PRINT"PLEASE POSITION T
APE,PRESS PLAY,AND HIT ANY KEY T
O BEGIN SAVING"
2070 A$=INKEY$:IFA$=""THEN2070
2080 OPEN"D",#-1,CH$
2090 FORX=0TO29:PRINT#-1,L(X):PR
INT#-1,L$(X):NEXTX
2100 PRINT#-1,FC:PRINT#-1,FS:PRI
NT#-1,F1:PRINT#-1,F9:PRINT#-1,TU
:PRINT#-1,RA:PRINT#-1,R:PRINT#-1
,W:PRINT#-1,B0:PRINT#-1,D(10,1):
PRINT#-1,D(4,2):PRINT#-1,CH:PRIN
T#-1,MH:PRINT#-1,FD
2110 CLOSE#-1:GOTO450
2120 CLS:PRINT"PLEASE POSITION T
APE,PRESS PLAY,AND HIT ANY KEY T
O BEGIN LOADING"
2130 A$=INKEY$:IFA$=""THEN2130
2140 OPEN "I",#-1,CH$
2150 FORX=0TO29:INPUT#-1,L(X):IN
PUT#-1,L$(X):NEXTX
2160 INPUT#-1,FC:INPUT#-1,FS:INP
UT#-1,F1:INPUT#-1,F9:INPUT#-1,TU
:INPUT#-1,RA:INPUT#-1,R:INPUT#-1
,W:INPUT#-1,B0:INPUT#-1,D(10,1):
INPUT#-1,D(4,2):INPUT#-1,CH:INPU
T#-1,MH:INPUT#-1,FD
2170 CLOSE#-1:GOTO450

```

### Color Computer News Tip

EXEC 44539 has the same effect as:  
 10 A\$ = INKEY\$: IF A\$ = "" THEN 10

### BOOKS & PROGRAMS

ASSEMBLY LANGUAGE GRAPHICS  
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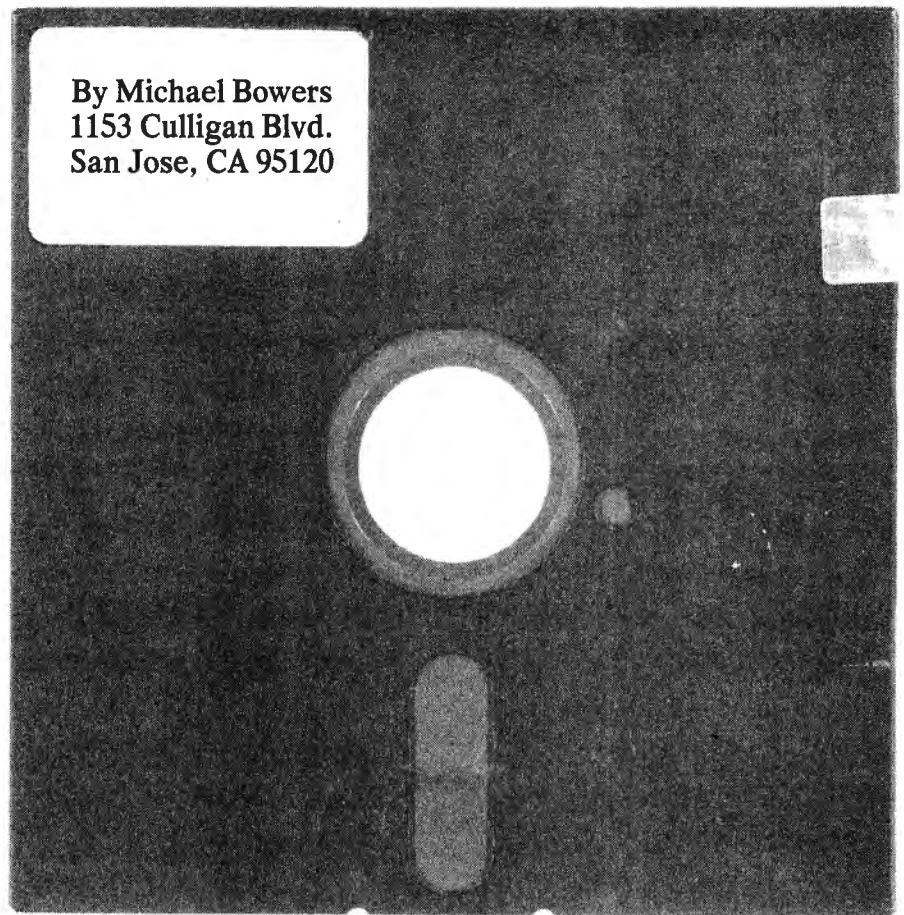


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# DISK UTILITY PROGRAM



I ordered my Color Computer so I could play games and then do serious work using FLEX. FLEX has several neat utilities for listing directories, copying, and deleting FLEX data sets. These functions were missing from the Radio Shack DOS so I decided to write my own. This task was simplified because Radio Shack DOS is written such that the commands COPY and KILL may be executed from a BASIC program. Thus the power of basic may be used to form the constructs that DOS needs.

One of the things I like about the FLEX utilities was the ability to enter a command followed by a text string. The command would then only operate on data sets whose name began with the text string. For example, COPY DI would copy all data sets whose name began with DI such as DISKUTIL and DIVIDE. The IBM system I use at work allows me to use a suffix for selecting data sets. This \* UTIL would select all data sets ending with UTIL such as DISKUTIL and TAPEUTIL. I also decided it would be nice to select all data sets with the same extension. Thus /DAT will give all data sets with an extension of DAT.

64 May 1983

The functions that I wanted to do were: selectively list the directory, selectively copy data sets, and selectively kill (delete) data sets. I wanted the KILL option to ask (prompt) before deleting the data set. I also wanted a prompt option for copy so that all items meeting the selection did not have to be copied.

## INSTRUCTIONS FOR USE

The commands that DISKUTIL allows follow.

L opts	List directory
C opts	Copy data sets
PC opts	Prompt Copy of data sets
PK opts	Prompt Kill of data sets
DRIVE nbr	change default Drive
FREE nbr	Display number of free granules
H	Help (lists valid commands)
End	Ends the program

opts = Optional Text String  
nbr = optional drive number

The first four commands accept the optional text string that is used to select data sets. The text string selector can take any one of the following forms:

*Color Computer News*



# Telewriter-64™

## the Color Computer Word Processor

- 3 display formats: 51/64/85 columns × 24 lines
- True lower case characters
- User-friendly full-screen editor
- Right justification
- Easy hyphenation
- Drives any printer
- Embedded format and control codes
- Runs in 16K, 32K, or 64K
- Menu-driven disk and cassette I/O
- No hardware modifications required

### THE ORIGINAL

Simply stated, Telewriter is the most powerful word processor you can buy for the TRS-80 Color Computer. The original Telewriter has received rave reviews in every major Color Computer and TRS-80 magazine, as well as enthusiastic praise from thousands of satisfied owners. And rightly so.

The standard Color Computer display of 32 characters by 16 lines without lower case is simply inadequate for serious word processing. The checkerboard letters and tiny lines give you no feel for how your writing looks or reads. Telewriter gives the Color Computer a 51 column by 24 line screen display with *true lower case characters*. So a Telewriter screen looks like a printed page, with a good chunk of text on screen at one time. In fact, more on screen text than you'd get with Apple II, Atari, TI, Vic or TRS-80 Model III.

On top of that, the sophisticated Telewriter full-screen editor is so simple to use, it makes writing fun. With single-letter mnemonic commands, and menu-driven I/O and formatting, Telewriter surpasses all others for user friendliness and pure power.

Telewriter's chain printing feature means that the size of your text is never limited by the amount of memory you have, and Telewriter's advanced cassette handler gives you a powerful word processor without the major additional cost of a disk.

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

— Color Computer News, Jan. 1982

### TELEWRITER-64

But now we've added more power to Telewriter. Not just bells and whistles, but major features that give you total control over your writing. We call this new supercharged version Telewriter-64. For two reasons.

### 64K COMPATIBLE

Telewriter-64 runs fully in any Color Computer — 16K, 32K, or 64K, with or without Extended Basic, with disk or cassette or both. It automatically configures itself to take optimum advantage of all available memory. That means that when you upgrade your memory, the Telewriter-64 text buffer grows accordingly. In a 64K cassette based system, for example, you get about 40K of memory to store text. So you don't need disk or FLEX to put all your 64K to work immediately.

### 64 COLUMNS (AND 85!)

Besides the original 51 column screen, Telewriter-64 now gives you 2 additional high-density displays: 64 × 24 and 85 × 24!! Both high density modes provide all the standard Telewriter editing capabilities, and you can switch instantly to any of the 3 formats with a single control key command.

The 51 × 24 display is clear and crisp on the screen. The two high density modes are more crowded and less easily readable, but they are perfect for showing you the exact layout of your printed page, *all on the screen at one time*. Compare this with cumbersome "windows" that show you only fragments at a time and don't even allow editing.

### RIGHT JUSTIFICATION & HYPHENATION

One outstanding advantage of the full-width screen display is that you can now set the screen width to match the width of your printed page, so that "what you see is what you get." This makes exact alignment of columns possible and it makes hyphenation simple.

Since short lines are the reason for the large spaces often found in standard right justified text, and since hyphenation is the most effective way to eliminate short lines, Telewriter-64 can now promise you some of the best looking right justification you can get on the Color Computer.

### FEATURES & SPECIFICATIONS:

**Printing and formatting:** Drives any printer (LPVII/VIII, DMP-100/200, Epson, Okidata, Centronics, NEC, C. Itoh, Smith-Corona, Terminet, etc).

Embedded control codes give full dynamic access to intelligent printer features like: underlining, subscript, superscript, variable font and type size, dot-graphics, etc.

Dynamic (embedded) format controls for: top, bottom, and left margins; line length, lines per page, line spacing, new page, change page numbering, conditional new page, enable/disable justification.

Menu-driven control of these parameters, as well as: pause at page bottom, page numbering, baud rate (so you can run your printer at top speed), and Epson font. "Typewriter" feature sends typed lines directly to your printer, and Direct mode sends control codes right from the keyboard. Special Epson driver simplifies use with MX-80.

Supports single and multi-line headers and automatic centering. Print or save all or any section of the text buffer. Chain print any number of files from cassette or disk.

**File and I/O Features:** ASCII format files — create and edit BASIC, Assembly, Pascal, and C programs, Smart Terminal files (for uploading or downloading), even text files from other word processors. Compatible with spelling checkers (like Spell 'n Fix).

Cassette verify command for sure saves. Cassette auto-retry means you type a load command only once no matter where you are in the tape.

Read in, save, partial save, and append files with disk and/or cassette. For disk: print directory with free space to screen or printer, kill and rename files, set default drive. Easily customized to the number of drives in the system.

**Editing features:** Fast, full-screen editor with wordwrap, block copy, block move, block delete, line delete, global search and replace (or delete), wild card search, fast auto-repeat cursor, fast scrolling, cursor up, down, right, left, begin line, end line, top of text, bottom of text; page forward, page backward, align text, tabs, choice of buff or green background, complete error protection, line counter, word counter, space left, current file name, default drive in effect, set line length on screen.

Insert or delete text anywhere on the screen without changing "modes." This fast "free-form" editor provides maximum ease of use. Everything you do appears immediately on the screen in front of you. Commands require only a single key or a single key plus CLEAR.

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

— The RAINBOW, Jan. 1982

### PROFESSIONAL WORD PROCESSING

You can no longer afford to be without the power and efficiency word processing brings to everything you write. The TRS-80 Color Computer is the lowest priced micro with the capability for serious word processing. And only Telewriter-64 fully unleashes that capability.

Telewriter-64 costs \$49.95 on cassette, \$59.95 on disk, and comes complete with over 70 pages of well-written documentation. (The step-by-step tutorial will have your writing with Telewriter-64 in a matter of minutes.)

To order, send check or money order to:

**Cognitec**  
704 Nob Street  
Del Mar, CA 92014

Or check your local software store. If you have questions, or would like to order by Visa or Mastercard, call us at (619) 755-1258 (weekdays, 8AM-4PM PST). Dealer inquiries invited.

(Add \$2 for shipping. Californians add 6% state tax. Allow 2 weeks for personal checks. Send self-addressed stamped envelope for Telewriter reviews from CCN, RAINBOW, 80-Micro, 80-U.S. Telewriter owners: send SASE or call for information on upgrading to Telewriter-64. Telewriter-compatible spelling checker (Spell 'n Fix) and Smart Terminal program (Colorcom/E) also available. Call or write for more information.)

Apple II is a trademark of Apple Computer, Inc.; Atari is a trademark of Atari, Inc.; TRS-80 is a trademark of Tandy Corp; MX-80 is a trademark of Epson America, Inc.

### This is the prefix form. All data sets beginning with the text string are selected.

\* ### This is the suffix form. All data sets ending with the text string are selected.

/### This is the extension form. All data sets with the ### extension are selected.

Note that the selector string ### may be any length from 0 to 8 characters for the prefix or suffix. The string ### can be 1 to three characters for the extension selector. However only zero or one of the three forms can be used. They can not be mixed in the same command.

With the drive command, the drive address can be entered with the command. If the address is not entered the program will prompt for it after enter is pressed. When the program is loaded the drive defaults to drive 0. The List command will list the selected directory on the current drive. The PK command prompts for killing data sets on the current drive. The C and PC commands are designed primarily to copy from one drive to a second drive. When the copy commands (PC C) are invoked, the program asks for the target disk. It then gives the source and target disk addresses and asks if they are OK. If they are OK the copy starts. If the answer is no, the program returns to the command mode. Since the copy command is executed within a basic program, any file error will abort the program. To prevent AE? (file already exists) errors from occurring, the program checks the target disk to see if the data set already exists. If it does, it is deleted (killed) on the target disk, then the source is copied to the target disk. The copy command (C PC) are primarily set up for plutocrats with two or more drives. For the poor relations who only have one drive, copy still works, but in a degraded mode. When DISKUTIL asks for the target drive answering with the same drive as the source will invoke the DOS single disk copy command. DOS (not the program) will have you inserting source and target disks until the copy is complete. The single disk copy is not smart enough to check to see if the data set already exists on the target disk. If it does the program will terminate with an AE? error.

The FREE command displays how many free granules are left on the disk. If a drive address is not specified, the number of

free granules on the default drive is displayed. If a drive address is entered then the number of free granules on the addressed drive is displayed.

### EXAMPLES

RUN "DISKUTIL"

L DISK List all items in directory beginning with DISK on drive 0.

L \* S List all items in directory ending with S on drive 0.

L List entire directory on drive 0.

FREE List number of free granules on drive 0.

L /DA List all items in directory with extension starting with DA on drive 0.

DRIVE 1 Set default drive to 1.

PK \* GAME for each data set on drive 1 that ends with "GAME", the program will ask if it is OK to delete. If yes they will be deleted.

FREE 0 List number of free granules on drive 0. Note that even though the default drive is drive 1, the free granules are listed for drive 0. The default drive remains drive 1.

C /BIN The program will ask for the target drive, then copy all files with an extension of /BIN from drive 1 to the target drive, listing the file names as they are copied.

DRIVE 0 Set default drive to 0.

PC The program will ask for the target drive, then attempt to copy all (since no optional text string was specified) files from drive 0 to the target drive. For each file, the program will ask if it is OK to copy. If no, the program goes to the next file. If yes, and the target drive is not the source drive, the program checks the target drive to see if the data set exists. If it does not, the data set is copied. If it does exist, the program asks if it is OK, to delete the data set on the target drive. If it is OK, the target data set is deleted. Then the data set is copied from source to target. If it is not OK to delete the target drive data set the program goes to the next data set.

A suggestion for those who type in this program. To make sure a typing mistake does not delete a valuable disk, save the program on a disk that has several other files on it. Then use the DOS BACKUP command to copy the entire disk to a new disk. Put the original disk in a safe place. Execute the program from the copied disk. Try all the functions, and check the

directories to make sure the program works as expected. If you find any typing mistakes, make sure the copy on the master disk is corrected.

## PROGRAM OUTLINE AND VARIABLE FUNCTION

### VARIABLE MAIN USE

DD default drive number  
 D2 target drive for copy  
 C\$ command and other text string input  
 C length of C\$ and also as a switch  
 PC lines until full screen counter  
 GT\$ optional text field  
 LG length of optional text field  
 SL type of command:  
 SL=1 list  
 SL=2 copy  
 SL=3 prompt copy  
 SL=4 prompt kill  
 FD drive number for free command  
 S do loop counter for directory list  
 A\$,B\$ string to input data from disk  
 N do loop counter for directory list  
 NA\$ name from directory  
 EX\$ extension from directory  
 M switch to show name match  
 1=no match  
 2=match  
 SS used for secondary directory do loop and  
 to show if embedded /  
 F\$ source (from) name for copy and delete  
 T\$ to name for copy  
 AA\$,BB\$ secondary disk input string  
 NN secondary do loop counter  
 NM\$ secondary name  
 ET\$ secondary extension  
 R\$ input for next page question

### PROGRAM OUTLINE

10-50 init variables, reserve string space, display help  
 60-490 main loop  
 60-90 get command  
 100-190 drop trailing and leading blanks  
 200-230 move optional text field into LG\$  
 240-280 first level command decode based on length of command  
 300-340 command decode for one letter commands  
 350-380 command decode for two letter commands  
 390-430 command decode for 3,4,5 letter commands  
 440-460 get default drive number  
 470-490 print free granules  
 500-630 read directory, process each entry for list, copy or kill as directed by SL

Color Computer News

640-870 determine if directory entry matches optional text string  
 880-1010 copy if match subroutine  
 1020-1090 get target drive address for copy  
 1100-1160 prompt copy ok  
 1170-1270 prompt kill  
 1280-1460 check target disk directory to see if data set already exists  
 1470-1490 restore source disk after single disk copy  
 1500-1590 display commands (help menu)  
 1600-1620 pause when screen full

### HAPPY COPYING

```

10 'LIST COPY AND DELETE UTILITY
20 'BY MIKE BOWERS SEPT 1982
30 VERIFY ON
40 CLEAR1500:CLS:DD=0
50 GOSUB 1500
60 LINE INPUT "ENTER COMMAND (H)
   ":C$
70 PC=0
80 C=LEN(C$)
90 IF C=0 GOTO 60
100 FOR I=C TO 1 STEP-1
110 IF MID$(C$,I,1)<>" " GOTO 14
   0
120 NEXT I
130 GOTO 60:' IF ALL BLANK GET C
MD AGAIN
140 IF C <> I THEN C$=LEFT$(C$,I
):'DROP TRAILING BLANKS
150 C=LEN(C$)
160 FOR I = 1 TO C
170 IF MID$(C$,I,1) <> " " THEN
190
180 NEXT I
190 IF I <> 1 THEN C$ = RIGHT$(C
$,1+C-I):'DROP LEADING BALNKS
200 C=LEN(C$)
210 'SEE IF GENERIC TEXT FIELD E
NTERED (GT$)
220 LG=INSTR(1,C$," ")
230 IF LG>0 THEN GT$=RIGHT$(C$,C
-LG):C$=LEFT$(C$,LG-1):C=LEN(C$)
:LG=LEN(GT$)
240 IF C=1 THEN 300
250 IF C=2 THEN 350
260 IF C=3 THEN 390
270 IF C=4 THEN 410
280 IF C=5 THEN 420
290 PRINT"INVALID COMMAND--TRY A
GAIN":GOTO 60
300 IF C$ = "L" THEN SL=1:GOTO 5

```

## Disk Utility

```

00
310 IF C$ = "C" THEN SL=2:GOSUB
1020:ON M GOTO 60,500
320 IF C$ = "E" THEN END
330 IF C$ = "H" THEN GOSUB 1500:
GOTO 60
340 GOTO 290
350 IF C$ = "PC" THEN SL=3:GOSUB
1020:ON M GOTO 60,500
360 IF C$ = "PK" THEN SL=4:GOTO
500
370 IF C$ = "EN" THEN END
380 GOTO 290
390 IF C$ = "END" THEN END
400 GOTO 290
410 IF C$ = "FREE" THEN 470
420 IF C$ = "DRIVE" THEN GOTO 44
0
430 GOTO 290
440 IF LG=0 THEN INPUT "INPUT DR
IVE # ";GT$
450 DD=VAL(GT$)
460 GOTO 60
470 IF LG = 0 THEN FD=DD ELSE F
D = VAL(GT$)
480 PRINT "GRANULES REMAINING ON
DISK = ";FREE(FD)
490 GOTO 60
500 FOR S=3 TO 11
510 DSKI$ DD,17,S,A$,B$
520 A$=A$+LEFT$(B$,127)
530 FOR N=0TO7
540 NA$=MID$(A$,N*32+1,8)
550 EX$=MID$(A$,N*32+9,3)
560 IF ASC(NA$)=0 THEN 590 ELSE
IF ASC(NA$)=255 THEN 610
570 B$=NA$+ "/" +EX$
580 ON SL GOSUB 640,880,880,1170

590 NEXT N
600 NEXT S
610 ' END OF DIR LOOP
620 GOTO 60
630 END
640 ' PRINT AND MATCH SUBROUTINE

650 M=1:'INIT TO NO MATCH
660 IF LG = 0 GOTO 750
670 SS=INSTR(2,GT$,"/")
680 IF SS = 0 OR SS = 7 THEN 710

690 GT$ = LEFT$(GT$,SS-1) + STRI
NG$(9-SS," ") + RIGHT$(GT$,1+LG-
SS)
700 LG=LEN(GT$)
710 IF GT$ = LEFT$(B$,LG) THEN 7
70
720 IF LEFT$(GT$,1)="*" THEN GOS
UB 800:ON C GOTO 780,750
730 IF LEFT$(GT$,1)="/" THEN 790

740 GOTO 780
750 IF SL=1 THEN PC=PC+1
760 IF PC>=16 THEN GOSUB 1600
770 PRINT B$+" ":"+STR$(DD):M=2
780 RETURN
790 IF RIGHT$(GT$,LG-1)=MID$(B$,
10,LG-1) THEN 770 ELSE 780
800 'SET C TO 1 IF LAST OF B$ <
> GT$ ELSE C=2 IF =
810 C=1:'INIT TO NO MATCH
820 FOR J=8 TO 1 STEP-1
830 IF MID$(B$,J,1) <> " " THEN
850
840 NEXT J
850 C$ = LEFT$(B$,J)
860 IF RIGHT$(C$,LG-1)= RIGHT$(G
T$,LG-1) THEN C=2
870 RETURN
880 'COPY IF MATCH
890 GOSUB 640 : 'PRINT IF MATCH
900 IF M=1 THEN 1010
910 IF SL=3 THEN GOSUB 1100:'PRO
MPT MODE
920 IF M=1 THEN 1010
930 F$=B$+" ":"+RIGHT$(STR$(DD),1)

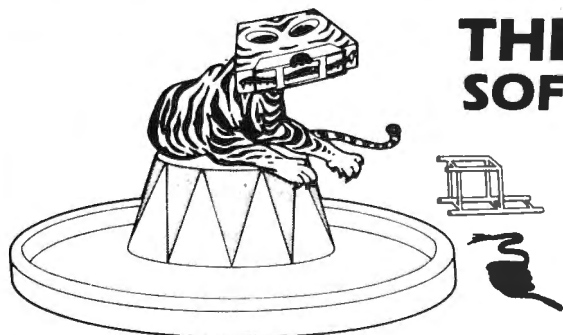
940 T$= B$+" ":"+RIGHT$(STR$(D2),1
)
950 IF D2 <>99 THEN GOSUB 1280:'
SEE IF ALREADY EXISTS
960 IF M = 1 THEN 1010:'SKIP IF
NOT DELETED
970 IF D2 = 99 THEN CLS: COPY F$
: GOTO 990
980 COPY F$ TO T$
990 PRINT B$ + " COPIED"
1000 IF D2 = 99 THEN GOSUB 1470
1010 RETURN
1020 'GET SECOND DRIVE ADDRESS
1030 INPUT "TARGET DRIVE# ";C$
1040 D2=VAL(C$)
1050 PRINT"COPY FROM DRIVE" STR$(
DD) + " TO DRIVE" +STR$(D2)
1060 INPUT "C IF CORRECT, N IF W
RONG";C$
1070 IF LEFT$(C$,1)="C" THEN M=2
ELSE M=1
1080 IF D2 = DD THEN D2=99
1090 RETURN
1100 'PROMPT COPY
1110 PRINT "Y IF OK TO COPY "
1120 SOUND 128,1
1130 C$=INKEY$
1140 IF C$ = "" THEN 1130
1150 IF C$ = "Y" THEN M=2 ELSE M

```

```

=1
1160 RETURN
1170 'PROMPT DELETE
1180 GOSUB 640:' PRINT IF MATCH
1190 IF M=1 THEN 1270
1200 PRINT "Y IF OK TO KILL (DEL
ETE)"
1210 C$=INKEY$
1220 IF C$="" THEN 1210
1230 IF C$<>"Y" THEN 1270
1240 T$=B$+"": "+RIGHT$(STR$(DD),1)
1250 KILL T$
1260 PRINTT$ + " DELETED"
1270 RETURN
1280 FOR SS=3 TO 11
1290 DSKI$ D2,17,SS,AA$,BB$
1300 AA$=AA$+LEFT$(BB$,127)
1310 FOR NN=0TO7
1320 NM$=MID$(AA$,NN*32+1,8)
1330 ET$=MID$(AA$,NN*32+9,3)
1340 IF ASC(NM$)=0 THEN 1360 ELS
E IF ASC(NM$)=255 THEN 1380
1350 IF B$=NM$+ "/" +ET$ THEN 1390
1360 NEXT NN
1370 NEXT SS
1380 RETURN
1390 IF SL = 2 THEN 1440
1400 PRINT T$ + "ALREADY EXISTS,
OK TO DELETE?"
1410 C$ = INKEY$
1420 IF C$ = "" THEN 1410
1430 IF C$<>"Y" THEN M=1:GOTO 14
60
1440 KILL T$
1450 M=2
1460 RETURN
1470 PRINT"INSERT SOURCE DISKETT
E AND PRESS ENTER"
1480 GOSUB 1130
1490 RETURN
1500 CLS:PRINT"L ###---LIST DIRE
CTORY"
1510 PRINT"C ###---COPY"
1520 PRINT"PC ###---PROMPT COPY"
1530 PRINT"PK ###---PROMPT KILL"
1540 PRINT"DRIVE #-SET ACTIVE DR
IVE"
1550 PRINT"FREE #--GRANULES LEFT
ON DRIVE"
1560 PRINT"H -----DISPLAY THIS
TEXT"
1570 PRINT"E END PROGRAM"
1580 PRINT"### TEXT SELECTION"
1590 RETURN
1600 INPUT "HIT ENTER TO CONTINU
E";R$
1610 PC=0
1620 RETURN

```



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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.



**Chromasette** MAGAZINE

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# THE POOR MAN'S FLOPPY

By James G. Kriz  
5517 Williston Drive  
Parma, OH 44129



I recently received from JPC Products a new product called TC-8C Cassette Interface. It is advertised as the "Poor Man's Floppy". Some of you may recognize the ancestor of this product as originally offered for the Mod I. The TC-8C is a plug-in ROM pack that contains a cassette operating system for the Color Computer called CCCOS. Before you say "cassette, why bother?", read on! The TC-8C has two jacks for connecting two cassette recorders. The CCCOS supports the concurrent operation of both recorders. It is possible to read a file on one recorder, add, delete, or change a record and write that file out on the other recorder just like the big tape-oriented mainframes. No longer is it necessary to limit the length of tape files to that which will fit into available memory. Actually, although JPC makes no mention of it in their ads, it is possible to operate three recorders concurrently since the operation of the standard Color Computer cassette port is in no way affected by the CCCOS.

Beginning to sound good? There is more. The TC-8C operates at a little more than twice the speed of the standard Color

Computer cassette port - approximately 3600 baud. This rate is changeable by the user, if so desired, by a "POKE". A program that normally takes about 45 seconds to load takes only 20 seconds with the TC-8C! This does point to one of the apparent restrictions on the use of the TC-8C. I experimented with three different cassette recorders: a \$50 Radio Shack model, a \$35 Panasonic, and the recommended CTR-80A. The Panasonic would not load at all. The Radio Shack worked sporadically with too many I/O errors to be considered acceptable. The CTR-80A has been working fine with no problems.

Because of the higher baud rate, standard Color Computer tapes are not compatible with the TC-8C; however, this is not really a serious problem. Conversion is easy. Since the standard port is unaffected, simply load a program in the usual way and save it using the TC-8C.

The CCCOS provides 13 commands and 5 BASIC statements. It resides in ROM and is activated by EXECuting 53248 (HD000). When active, it uses 594 bytes at the top of memory for IO buffers, etc.

## SCEPTER OF KZIRGLA

From Rainbow Connection Software  
Real-time graphics adventure game with arcade sound for the color computer. 13 floors of dungeon with monsters, treasure chests, hidden trap doors... even a flying magic carpet! All in your quest to find the Scepter of Kzirglia. Whatever you do, don't get caught in the poisonous gas cloud! Extended BASIC required.

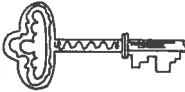
16K Tape, \$16.95,  
16K Disk, \$21.95



## CONQUEST OF KZIRGLA

The adventure continues, seek out and destroy the enemy wizard before his scepter recharges. While a continuation of Sceptor of Kzirglia, you don't have to have the earlier program to play Conquest.

16K Tape \$21.95 or  
32K Disk \$26.95



## KEYS OF THE WIZARD

by John Gabbard  
From Spectral Associates

Unlock all the doors! Smart creatures follow you throughout hundreds of rooms filled with glittering treasures, magic spells, traps, tricks and puzzles. This exciting machine language text adventure has great sound. Three skill levels allow you to learn easily and work up to expert. Cassette save with random features so you never play the same game twice!

16K Tape \$19.95



## DONKEY KING

From Tom Mix

How high can you climb? Use the practice game to test your skills. Become an expert at this arcade-style game filled with exciting sound and realistic action. For 1 or 2 players. There are 4 screens: barrels, pins, jacks and conveyors. Reach the hammer if you're fast and strong.

32K Tape \$26.95

## MOON SHUTTLE

From DataSoft

Pilot your moon shuttle to meet your destiny—The Prince of Darkness. Out maneuver spinning rockets, dodge life threatening man-o-wars, meteors, bomb launchers and expandos. Suddenly your flight becomes more perilous as enemy forces multiply. Test the outer limits of your instinct for survival!

16K Tape \$34.95



## ZAXXON

From DataSoft

The official Zaxxon, now for home use, combines 3 dimensional effects, unique color graphics and realistic sound effects. Arcade action while you maneuver your ship through a battlefield of enemy missiles, tanks and planes to meet your match in the deadly Zaxxon Robot armed with a lethal homing device.

16K Tape \$39.95



## PLANET INVASION

From Spectral Associates

Be a defender! Your ships are fortified with smart bombs to protect the planet from aliens. Machine-language arcade style game with fast action and superior Hi-Res graphics. What will be the fate of civilization when you are in control? Joystick required.

16K Tape \$21.95



## Bookshelf

### ASSEMBLY LANGUAGE GRAPHICS

by Don Inman and Kurt Inman  
From Reston Books

Improve your skills! Create graphical data displays after reading these revealing applications using sound and graphics to show you what can be done with an assembler. A complete guidebook to assembly language programming on the Color Computer.

\$14.95

## Programmer's Corner

### BASIC AID

From Eigen

Help for the BASIC programmer! Merge command, move command and automatic numbering plus 45 common BASIC commands — or change keys to your specifications. Comes with convenient easy to use plastic keyboard overlay. Power up and you instantly have all the development tools you need.

ROM \$34.95

### TELEWRITER 64

From Cognitec

Now word processing at its best! This machine language program uses Hi-Res graphics to draw text. It includes advanced features to create, edit store, format and print any kind of text with justification, hyphenation and page numbering. Creates a new character set (no hardware modifications required) that has true lower case letters in 3 display formats 51/64/85 columns x 24 lines. The full screen editor is simple to use with single key commands, menu driven I/O and formatting. Comes with well written documentation and runs on 16K, 32K, or 64K with or without extended basic. Telewriter surpasses other word processors for user friendliness and power.

Tape \$49.95 or  
Disk \$59.95

### TYPING TEACHER

by Bob Sleath

From Spectral Associates

Do you hunt and peck? For beginners or rusty typists, become proficient in touch typing at your own pace. Instructional program has 15 lessons stressing eye-finger coordination, accuracy and speed. The last lesson points out errors so you know which characters you miss. Smooth, free-flowing typing is simple with this tutorial.

16K Tape \$19.95



### BREAKTHRU

From Avalon Hill

Futuristic racquetball! Knock out five walls at the opposite end of the court using joystick to strike or deflect the lively ball. Fast action, 3 dimensional, high resolution machine language, arcade game. Exciting simulation of motion and perspective.

16K Tape \$19.95



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The commands are:

@SAVE - same as CSAVE except that it does not support the A (ASCII) option.

@LOAD - same as CLOAD

@VERIFY - a command most welcome on the Color Computer; compares a @SAVED program with the original in memory to verify a good save.

@SAVEM - similar to CSAVEM except that addresses must be in Hex.

@LOADM - same as CLOADM

@VERIFYM - verifies the save of machine language programs.

@DIR - similar to SKIPF. Lists all file names on a cassette on screen. If a file name is specified, @DIR stops after that name.

@GO - similar to EXEC. Causes execution of a machine language program.

@ON - same as MOTOR ON.

@OFF - same as MOTOR OFF.

@RUN - load and runs the named BASIC program. It's almost like having auto-run.

@RUNM - loads and executes machine language programs.

@KILL - deactivates CCCOS to free up those 594 bytes at the top of memory.

The format of the above commands includes a drive number so that they may be used for either tape 1 or 2.

The available BASIC statements are @OPEN, @CLOSE, @INPUT, @PRINT, and @EOF. These all generally parallel the corresponding BASIC IO statements with a few differences. Device number may be specified so that, for example, Tape 1 may be opened as input while Tape 2 is opened as output. One minor problem with the system is that in the @OPEN a file name must be specified; you cannot use a variable and set the file name to some value during program execution. The biggest fault of this otherwise outstanding system is the absence of the @LINEINPUT instruction. This makes it useless for data tapes created by text editors or word processors since commas and colons are treated as delimiters by the @INPUT instruction and any lines containing them will be truncated.

I teach Programming and Systems Analysis at a local college so I know what good documentation should look like. The documentation supplied with the TC-8C is an outstanding example of what good documentation should be. It consists of 45 pages in a loose leaf binder. Each command and statement gets one full page to itself. Error messages are clearly

defined and information regarding key variables and addresses is provided.

The ROM pack itself is well made. It contains a spare ROM socket for insertion of a ROM of your choice. JPC recommends that you use their J-BUG monitor ROM. The manual includes instructions for installation of a second ROM and the setting of DIP switches for different PROM types. JPC also thoughtfully includes a nut driver for opening the ROM PACK.

Overall, with the exception of the lack of a @LINEINPUT statement, I feel that the TC-8C is an exceptional product for the Color Computer and, even with the additional cost of a second CTR-80A or CTR-81, is a reasonable alternative to a disk system.

If you decide to delay your purchase of the TC-8C until it has had more time in the field or until it is revised to include @LINEINPUT or the ability to specify a variable in the file name entry, fear not. I discussed this problem with Gerry Williams, president of JPC, and he explained that registered owners of JPC products are sent announcements of major revisions and are given the opportunity to upgrade at the cost of the change only. This is usually in the \$10 to \$12 range. He also said that some of the suggestions made here may be implemented within 4 to 5 months.

The TC-8C is available from:

JPC Products Co.  
12021 Paisano Ct. N.E.  
Albuquerque, NM 87112  
Price \$129.95

#### COLOR COMPUTER NEWS TIP

To disable ROM pack POKE 65315,54 then insert ROM pack. To execute POKE 65315,55 or EXEC&HC000.

POKE65313,4 turns the cassette motor on and leaves it on. POKE65313,52 to turn it off.

To keep the screen on text or Graphics POKE359,57 and SCREEN 1,1 will show the graphics, you will still be able to type, but it will not be shown. SCREEN 0,1 inverses the screen.



# COLOR COMPUTER NEW!

## MACRO-80C

The Micro Works is pleased to announce the release of its **disk-based editor, macro assembler and monitor**, written for Color Computer by Andy Phelps. THIS IS IT — The ultimate programming tool!

The powerful 2-pass macro assembler features conditional assembly, local labels, include files and cross referenced symbol tables. MACRO-80C supports the complete Motorola 6809 instruction set in standard source format. There are no changes, constraints or shortcuts in the source language definition. Incorporating all of the features of our Rompack-based assembler (SDS80C), MACRO-80C contains many more useful instructions and pseudo-ops which aid the programmer and add power and flexibility.

The screen-oriented text editor is designed for efficient and easy editing of assembly language programs. The "Help Key" feature makes it simple and fun to learn to use the editor. As the editor requires no line numbers, you can use the arrow keys to position the cursor anywhere in the file. MACRO-80C allows global changes and moving/copying blocks of text. You can edit lines of assembly source which are longer than 32 characters.

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

The editor, assembler and monitor — as well as sample programs — come on one Radio Shack compatible disk. Extensive documentation included. MACRO-80C **Price: \$99.95**

## SOFTWARE DEVELOPMENT SYSTEM

The Micro Works Software Development System (SDS80C) is a complete 6809 editor, assembler and monitor package contained in one Color Computer program pack! Vastly superior to RAM-based assemblers/editors, the SDS80C is non-volatile, meaning that if your application program bombs, it can't destroy your editor/assembler. Plus it leaves almost all of 16K or 32K RAM free for your program. Since all three programs, editor, assembler and monitor are co-resident, we eliminate tedious program loading when going back and forth from editing to assembly and debugging!

The powerful screen-oriented Editor features finds, changes, moves, copies and much more. All keys have convenient auto repeat (typamatic), and since no line numbers are required, the full width of the screen may be used to generate well commented code.

The Assembler features all of the following: complete 6809 instruction set; conditional assembly; local labels; assembly to cassette tape or to memory; listing to screen or printer; and mnemonic error codes instead of numbers.

The versatile monitor is tailored for debugging programs generated by the Assembler and Editor. It features examine/change of memory or registers, cassette load and save, breakpoints and more. **SDS80C Price: \$89.95**

## YOU NEED COLOR FORTH!!

Why?

- Forth is faster to program in than Basic
- Forth is easier to learn than Assembly Language
- Forth executes in less time than Basic

Forth is a highly interactive language like Basic, with structure like Pascal and execution speed close to that of Assembly Language. The Micro Works Color Forth is a Rompack containing everything you need to run Forth on your Color Computer.

Color Forth consists of the standard FORTH Interest Group (FIG) implementation of the language plus most of FORTH-79. It has a super screen editor with split screen display. Mass storage is on cassette. Color Forth also contains a decompiler and other aids for learning the inner workings of this fascinating language. It will run on 4K, 16K, and 32K computers. Color Forth contains 10K of ROM, leaving *your* RAM for *your* programs! There are simple words to effectively use the Hi-Res Color Computer graphics, joysticks, and sound. The 112-page manual includes a glossary of the system-specific words, a full standard FIG glossary and complete source listing. **COLOR FORTH ... THE BEST!** From the leader in Forth, Talbot Microsystems. **Price: \$109.95**

## MICROTEXT: COMMUNICATIONS VIA YOUR MODEM!

Now you can use your printer with your modem! Your computer can be an intelligent printing terminal. Talk to timeshare services or to other personal computers; print simultaneously through a second printer port; and re-display text stored in memory. Dump to a cassette tape, or printer, or both. Microtext can be used with any printer or no printer at all. It features user-configurable duplex/parity for special applications, and can send any ASCII character. You'll find many uses for this general purpose module! Microtext is available in ROMPACK, ready-to-use, for **\$59.95**.

**PARALLEL PRINTER INTERFACE** — Serial to parallel converter allows use of all standard parallel printers. P180C plugs into the serial output port, leaving your Rompack slot free. You supply the printer cable. **P180C Price: \$69.95**

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**Star Blaster** — Blast your way through an asteroid field in this action-packed Hi-Res graphics game. Available in ROMPACK; requires 16K. **Price: \$39.95**

**Pac Attack** — Try your hand at this challenging game by Computerware, with fantastic graphics, sound and action! Cassette requires 16K. **Price: \$24.95**

**Berserk** — Have fun zapping robots with this Hi-Res game by Mark Data Products. Cassette requires 16K. **Price: \$24.95**

**Adventure** — *Black Sanctum* and *Calixto Island* by Mark Data Products. Each cassette requires 16K. **Price: \$19.95** each.

**Cave Hunter** — Experience vivid colors, bizarre sounds and eerie creatures in hot pursuit as you wind your way through a cave maze in search of gold treasures. This exciting Hi-Res game by Mark Data Products requires 16K for cassette version. **Price: \$24.95**

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THE **MICRO  
WORKS**



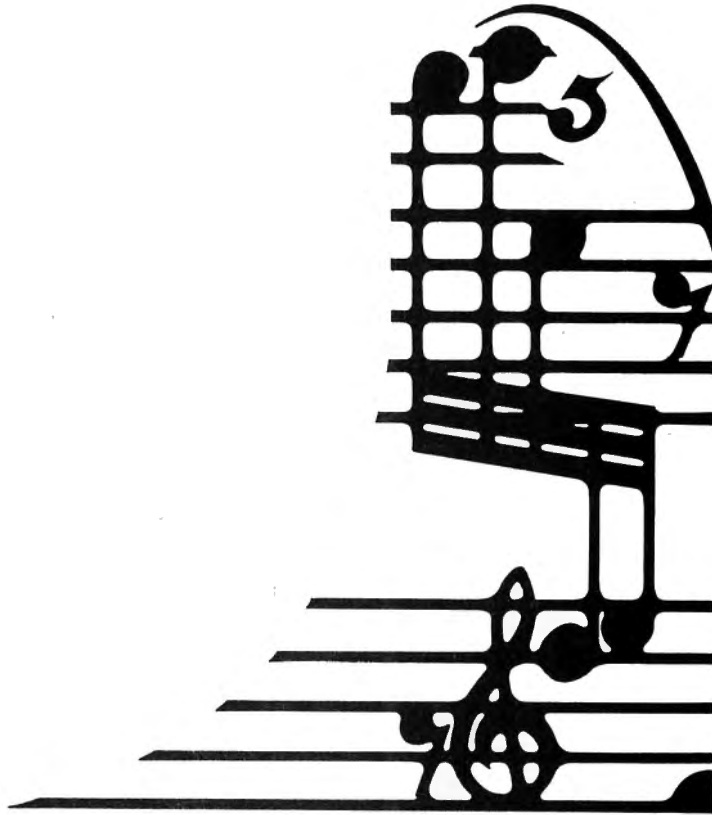
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# REVIEW-THE COMPOSER

From Speech Systems  
by Gabe Weaver  
1309 W. Ave. J-2 Apt. 1  
Lancaster, CA 93534



Extended Basic's PLAY command is a powerful musical tool. The PLAY statement allows you to easily compose and play a melody on the Color Computer. The VIC 20 and Commodore 64 require two POKES for each note entered. One drawback of the PLAY command is the inability to play multiple voice songs. Only one note, at a time, can be played using the PLAY command. I was told by Radio Shack that multiple voice music could be composed and played on the Color Computer using machine code. Unhappily, Radio Shack could give me no guidance on how to write machine code for multiple voice music.

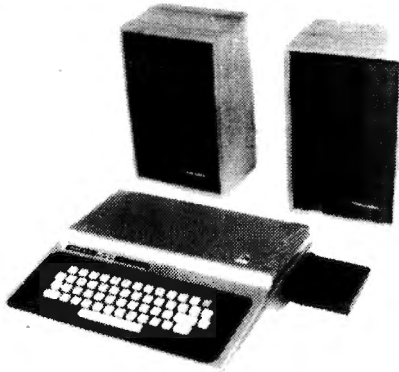
In November 1982 I noticed several advertisements for a music utility called the "COMPOSER", by Speech Systems. According to the advertisements the "COMPOSER" will play music in four voices, has a seven octave range, variable tempo and octave capability, single and double dotted notes, quarter and eighth note triplets, and a detailed manual. I called Speech Systems and talked to Richard Perry the author of the "COMPOSER". Richard reconfirmed that the "COMPOSER" has all the capabilities

described in the advertisements. I ordered the disk version of the program from Richard. The "COMPOSER" arrived within a couple of days.

The package contained a large manual and the disk version of the "COMPOSER". Without hesitation, I began to read the manual. From the very beginning I knew that I had struck pay-dirt. The manual begins with discussions on how to handle possible cassette version loading problems, using the cassette recorder to record music, and how to play music through a hi-fi system. A quick listen section describes how to sample the power of the "COMPOSER". The disk version has a "JUKEBOX" program which plays "Raindrops Keep Falling On Your Head", "Exodus", and several sound effects. Boy-oh-boy, I could hardly believe my ears or eyes. The TV screen was alive with a kaliedescope of semigraphic colors and music, that would rival many organs or music synthesizers, was filling the air. "COMPOSER" is the main Basic program on the disk and cassette versions. If you follow the quick listen instructions you will be able to compile the source program and play "Raindrops Keep Falling On Your

# THE STEREO COMPOSER

**NEW PRODUCT!**



The **STEREO COMPOSER** music synthesizer was developed for the true music lover. All the features available for the **COMPOSER** described below are also available for the **STEREO COMPOSER**. However, instead of using the single 6 bit digital to analog converter built into the computer and the speaker built into your TV, the **STEREO COMPOSER** uses two 8 bit digital to analog converters which drive two audio power amplifiers. These amplifiers supply enough audio power to easily drive your own external speakers. If you like, the output may be connected to your home stereo system to further increase fidelity. Connection is provided by two phono connectors. If the music is too loud, two built-in volume controls are provided to allow you to control the volume of each of the channels separately. The advantage of being able to use external high quality speakers is obvious. The use of higher quality digital to analog converters serves to further increase music fidelity.

The **STEREO COMPOSER** produces music in stereo. Of the 4 voices produced, 2 are directed to each channel. This ability alone increases the realism of the music. You can even move the voices between speakers as the music plays.

The **STEREO COMPOSER** comes assembled, tested, burned in, with all the software and hardware to allow you to immediately start enjoying your music. A complete manual and examples are provided to give you everything you need to know.

The **STEREO COMPOSER** is completely memory decoded so it does not conflict with the Radio Shack disk controller. In this way, disk owners with an expansion interface such as the BT-1000 by Basic Technology can produce music from disk with the **STEREO COMPOSER** in one slot and the disk controller in another. In fact, you can even have **THE VOICE** in another slot without any fears that there will be memory conflicts.

Requires Extended BASIC and Minimum of 16K  
Specify Cassette or Disk

STEREO COMPOSER (Hardware and Software) .....\$119.95



## THE COMPOSER



The **COMPOSER** is a 4 voice music compiler which easily allows one to develop high quality music. Each voice is programmed separately. In addition, each voice uses its own waveshape table which means a unique sound for each of the 4 voices.

The **COMPOSER** features a 7 octave range. It supports dotted and double dotted notes as well as eighth, quarter, and standard triplet notes. Sixteenth and thirty second notes are also supported.

The **COMPOSER** allows the music to be played at any tempo and in any key. And believe it or not, the tempo and key can be modified as the music plays. This gives the user tremendous versatility in developing music. Key modification also allows the user to move the music up or down one or more octaves.

The **COMPOSER** displays a constantly changing random kaleidoscope pattern as the music plays. In addition, the number of the note being played is displayed which aids one in finding sour notes during music development. Both of these displays can be disabled to allow any screen to be displayed while the music is playing. In this way, one can show the words to a song or display a picture as the music plays.

The **COMPOSER** develops a machine language position independent subroutine that can be Saved, Loaded, and Executed independent of all other software. This means that you can share your music with friends. In fact, you can write your own BASIC programs that call and play the music. Software vendors may include the music in their own product.

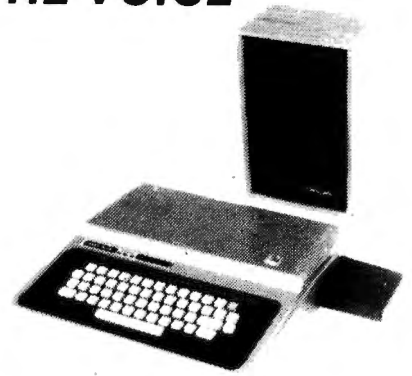
The **COMPOSER** is menu driven making it extremely easy and friendly to use and operate. A thick operating manual is also provided. Many examples are given to aid the user in getting started. All you need is provided, no additional hardware is necessary. Don't let the price fool you, the **COMPOSER** has got to be heard to be appreciated.

Requires Extended BASIC and Minimum of 16K

CASSETTE VERSION .....\$24.95  
DISK VERSION (32K) .....\$29.95

# THE VOICE

**NEW PRODUCT!**



SPEECH SYSTEMS got its start providing high quality speech synthesizers for SS-50 bus computers. We are now proud to announce the same high quality product for the Color Computer and TDP-100.

**THE VOICE** should not be mistaken with software speech synthesizers which require the computer to do all the work in producing speech.

**THE VOICE** uses a special large scale integrated circuit, the SC-01 by VOTRAX, to reproduce any one of 64 phonemes at 4 inflections. Phonemes are basic units of speech which allow one to reproduce any word in English as well as many other languages.

**THE VOICE** has two outputs. Speech may be heard through the user's TV speaker, or the built-in audio power amplifier may be connected to your own external speaker. A phono connector is provided for this purpose and if the volume is too high, a built-in volume control may be used to adjust it to the proper level.

**THE VOICE** comes assembled, tested, burned in, with all the necessary hardware and software. A complete manual with many examples are provided to get you started in developing your own BASIC or machine language programs to use speech.

**THE VOICE** is completely memory decoded so it does not conflict with the Radio Shack disk controller. In this way, disk owners with an expansion interface such as the BT-1000 by Basic Technology can produce speech from disk with **THE VOICE** in one slot and the disk controller in another. In fact, you can even have the **STEREO COMPOSER** in another slot without any fears that there will be memory conflicts.

We are trying to develop a library of software for **THE VOICE**. Toward this end, we will be offering substantial royalties to software authors for their work.

Requires Extended BASIC and Minimum of 16K  
Specify Cassette or Disk

THE VOICE (Hardware and Software) .....\$179.95

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COD charge (requires cash, certified check, or money order) .....\$2.00

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FOR THE COLOR COMPUTER AND TDP-100.

# Speech Systems

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Head”.

The next section of the manual deals with how to use the “COMPOSER”. A display menu is presented: 1. Load Source (BASIC), 2. Compile Source, 3. Play Music, 4. Modify Tempo, 5. Modify Key/Octave, 6. Save Compiled Music (ML), 7. Save Source (BASIC), 8. Graphics On (Y/N), 9. End or Edit. The Load Source (BASIC) option allows you to load in a Basic source program you have developed. This will normally be the first option the user will select. Option 2 Compile Source translates the Basic source program into machine code. An error detecting routine will display source program errors. After correcting all source program errors and compiling the source program you are ready to select option 3 Play Music. If Graphics On is selected in option 8 a colorful semigraphic presentation will be displayed on the TV screen. In addition, a note counter will be displayed in the lower right corner of the screen to aid in debugging music. Modify Tempo, option 4, allows you to modify the tempo of the music. The tempo can also be modified by placing tempo data statements in the source program. Option 5 Modify Key/Octave allows you to modify the key or octave of your entire musical score. The key can be dynamically changed by placing key data statements in the source program. When you are satisfied with the music select option 6 Save Compiled Music (ML). The saved machine code program can be run as a stand alone program or used with a Basic program. The machine code program is position independent. Option 7 Save Source (BASIC) saves the Basic “COMPOSER” program and the source data statements. Option 8 Graphics On (Y/N) enables or disables the semigraphic display in the machine code program. The End or Edit option allows you to modify the source data statements.

A “Preparing Music” section describes how to write the Basic source code data statements. This section is exceptionally written. E!5G4C #4B!4E is a typical source data statement. This statement translates to four notes: E flat octave 5, G octave 4, C sharp octave 4, B flat octave 4 played for an eighth note duration. Best of all, the four notes are played simultaneously. There are several diagrams in this section that make translation of sheet music to

source data statements very easy.

Source data statements for “King Of The Road”, “Adeste Fideles”, “Battle Hymn Of The Republic”, “Blowin In The Wind”, “Mexican Hat Dance”, and “Jimmy Crack Corn” are included in the manual. These data listings are excellent examples of Basic source programs. Just type the desired song’s data listing into the source program and compile. The song is then ready to play and save.

The “COMPOSER” manual includes a short discussion on sound effects and a detailed Reference List. Anyone wishing to research voice or music synthesis will find the Reference List very useful.

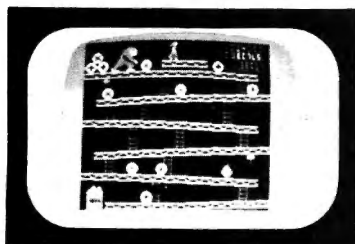
After reading the manual I decided to write some music. Being a science fiction fan, I decided to translate the theme from “STAR WARS”. I bought the sheet music for “STAR WARS” from the local music store and began the easy task of translating the sheet music notes to source data statements. My first attempt at writing music using the “COMPOSER” was a success. I experimented with the Key and Tempo options until the music was to my liking. I might add, these options are very easy to use. Using option 6 Save Compiled Music (ML) and option 7 Save Source (BASIC) I saved my music. In addition, I also recorded the music on my cassette recorder so I could play the music on my stereo. Playing the music on a good stereo system is a real musical treat. The Color Computer can really hit those high and low notes. This program is an excellent example of the outstanding software available for the Color Computer.

The “COMPOSER” is available from Speech Systems, 38 W. 255 Deerpath Rd., Batavia, IL 60510, 16K Extended Basic Cassette \$24.95 or Disk \$29.95.



# TOM MIX SOFTWARE

• FOR THE COLOR COMPUTER & TDP 100 • 3424 College N.E., Grand Rapids, MI 49505 (616) 364-4791 •



## THE KING

1982  
32K Machine Language  
\$26.95 tape  
\$29.95 disk

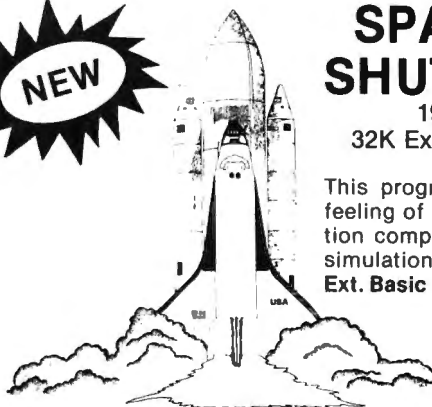


## SPACE SHUTTLE

1983  
32K Ext. Basic

\$28.95  
TAPE  
ONLY

This program gives you the real feeling of flight. Full instrumentation complete to the max. Actual simulation of space flight. 32K Ext. Basic



## TRAP FALL

by Ken Kalish  
The "Pitfalls" in this game are many. Hidden treasures, jump over the pits, swing on the vine, watch out for alligators, beware of the scorpion. Another game for the Color Computer with the same high resolution graphics as "The King". Requires 16K Tape

27.95

## PROTECTORS

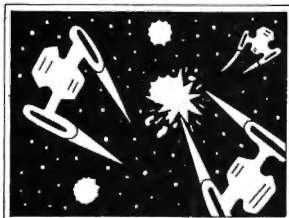
Exciting fast paced arcade game that looks and plays like the popular arcade game "DEFENDER".

Wave after wave of enemy fighters drop bombs on your city. Destroy them before they destroy your city. Soon the mother ships appear firing laser blasts at you. Watch for the heat seeking mines.

Your defense includes your laser cannon plus four smart bombs on each of your four ships. A new ship with each 5,000 points.

High resolution graphics with four colors make this new 32K arcade game the one for others to follow.

\$24.95 TAPE \$27.95 DISK



## KATERPILLAR ATTACK

Outstanding graphics and sound will end all of those trips to the arcade. So much like the arcade you have to see it to believe it. Requires Ext. Basic.

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## UTILITIES

**COLOR MONITOR**—Written in position independent code. (May be located in any free memory). Very compact. Only occupies 1174 bytes of memory. Full Featured. Includes Break-Pointing of machine language programs, register display and modify, memory display and modify, and block memory move commands. Displays memory in hex and ascii format on one line 8 bytes long. **MACHINE LANGUAGE \$24.95**

**ROM**—This program is a utility that will move "most" 8K Rom-Packs to disk and allow you to run them from disk. Easy to use. Requires 64K. **\$17.95**

**SCREEN PRINT ROUTINE**—Using your Epson or Microline Printer. Print the screen contents on a full size 8 1/2 x 11 sheet. 16K Ext. Basic **\$17.95**

**TAPE DUPE**—Brand new machine language program that copies any tape effortlessly. Completely automatic. **\$16.95**

**DISK TO TAPE**—Dump the contents of any disk to tape automatically. Machine Language. **\$17.95**

**TAPE TO DISK**—Load the contents of any tape to disk automatically. Machine Language. **\$17.95**

**MAIL LIST**—Maintain a complete mailing list with phone numbers etc. Ext. Basic. **\$17.95**

**THE FIXER**—Having trouble moving those 600 Hex programs to disk? The fixer will help. Completely automatic. **\$17.95**

**TAPE CAT**—All new machine language program lists contents of tapes to printer. Make a catalog of your tapes. **\$17.95**

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SEE YOU AT RAINBOW FEST

# NUMERIC DATA ENTRY PAD

By Don Brettle  
4709 Kellogg Drive  
Woodbridge, VA 22193



Radio Shack must have intended the Color Computer to be a game machine because they forgot to give us the proper keypad to enter our numerical data easily.

We all know the Color Computer is much more than a game machine. The Color Computer is a friend that can do everything any other micro can.

Let me first explain the real reason I made this modification to my Color Computer. I have a number of loves in life. My wife (Grace), my two sons, and my Color Computer. Either Grace or I were spending too much time entering data into the Color Computer and not enough time with each other (we are both in retailing with different firms). Many nights it was one or two in the morning before we finished updating the daily figures.

One answer to the late nights would be faster data entry. Grace says a keypad is what we need. I could not find any advertised so I decided to make my own. First I had to decide how to connect it to the Color Computer. I thought about the cartridge slot, the I/O port, cassette and joystick ports but ruled them all out because I didn't fully understand how they worked even after reading a number of articles about them. I don't understand all the timing and logic signals etc. Besides it would probably require software to drive it

and I know very little machine code. This left me with the keyboard I/O, the software is already there to read the keyboard so all I had to do was make my Color Computer think it was reading its own keyboard. Next step was to find the spot to tap into the keyboard. This was easy as the keyboard merely plugs into the circuit board. The theory I was using was to hook up external keys in parallel to the same keys in the keyboard.

This article shows how I converted an old calculator to a keypad for my Color Computer. The procedure involved opening the color computer and tapping into the connections between the keyboard and main printed circuit board. (Caution this voids your Radio Shack warranty).

The parts I used were;

One old calculator. (Logic circuits and power supply were dead. I didn't need them any way. But the key pad was still good).

5" of 16 conductor ribbon cable.

1 male 25 pin connector. (I only needed 16 of the pins but it was what I had at hand).

1 female 25 pin connector.

Solder and the service manual for the Color Computer.

The procedure I used was;

1. Open up old calculator and cut all traces that come from the keys. This eliminates

any chance of shorts or overloading the input to the color computer.

2. Rewire the keypad to duplicate the color computer's matrix. This information is found in the service manual. Each key in the calculator has 2 connections. These must be connected to the ribbon cable. I cut off about 18" of the cable and saved it to be used for the connections inside the color computer. The rest of the cable is connected to the calculator. I will number the wires in the ribbon from 1 through 16. I only use wires 5 through 16 (wires 1 through 4 are used for letters but I decided to bring them outside the color computer for possible later use). The following are the connections to the calculator pad. They may vary depending on the number of keys you have available.

Wire #5 to clear entry key

Wire #6 to 0, 1, 2, 3, 4, 5, 6 and 7 keys

Wire #7 to 8, 9, X, +, -, . and divide keys

Wire #8 to total key and one other spare key (to be used as shift key)

Wires 9 to 16 go to the other connection on the following keys.

Wire #9 to 0, 8 and total keys

Wire #10 to 1 and 9 keys

Wire #11 to 2 and X keys

Wire #12 to 3 and + keys

Wire #13 to 4 key

Wire #14 to 5, - and clear entry keys

Wire #15 to 6 and . keys

Wire #16 to 7, divide and the spare key to be used for shift arrow and comma. These keys I plan to use as control keys. They are connected the same way as the others. Check the service manual to find the correct wire #'s.

A good idea is to use a cable clamp of some sort inside the calculator to prevent the wires being pulled loose. Then run the cable out through the air circulation slots or any other opening in the case.

The next step is to connect the other end of the cable to the cable connector. I used a solderless connector so I only had to place the ribbon in its proper position and press hard.

Now check out the calculator end of the project. This can be done using an ohm meter. If no keys are pressed there should be no continuity between any two pins on the connector. If you find no resistance between the pins then recheck your work for shorts or improper connections. If you press a key you should find continuity between two pins and only two pins.

*Color Computer News*

Example pushing the #1 key will give you continuity between pins 6 and 10 only, no others.

If your tests check out you may now reassemble the calculator.

Now for the scary part.

Remove the cover from the color computer (follow instructions in the service manual of the directions given in the many other articles on how to void your warranty). After removing the cover you will see that the keyboard is connected to the circuit board by a short 16 wire cable with plugs on each end. Unplug the keyboard end of the cable from the keyboard. Turn the keyboard over and you can see 15 pins. Pin #3 is not there. I could not find a socket in my spare parts that would fit over these pins so I got out the soldering iron.

I next took about 18" of ribbon cable and soldered each wire to the corresponding pin. These connections must be made near the base of the pin to allow the keyboard to be plugged back in. Wire 1 to pin 1 wire 2 to pin 2 wire 3 to (oops no pin 3) tape it to insure no short. Wire 4 goes to pin 4 etc.

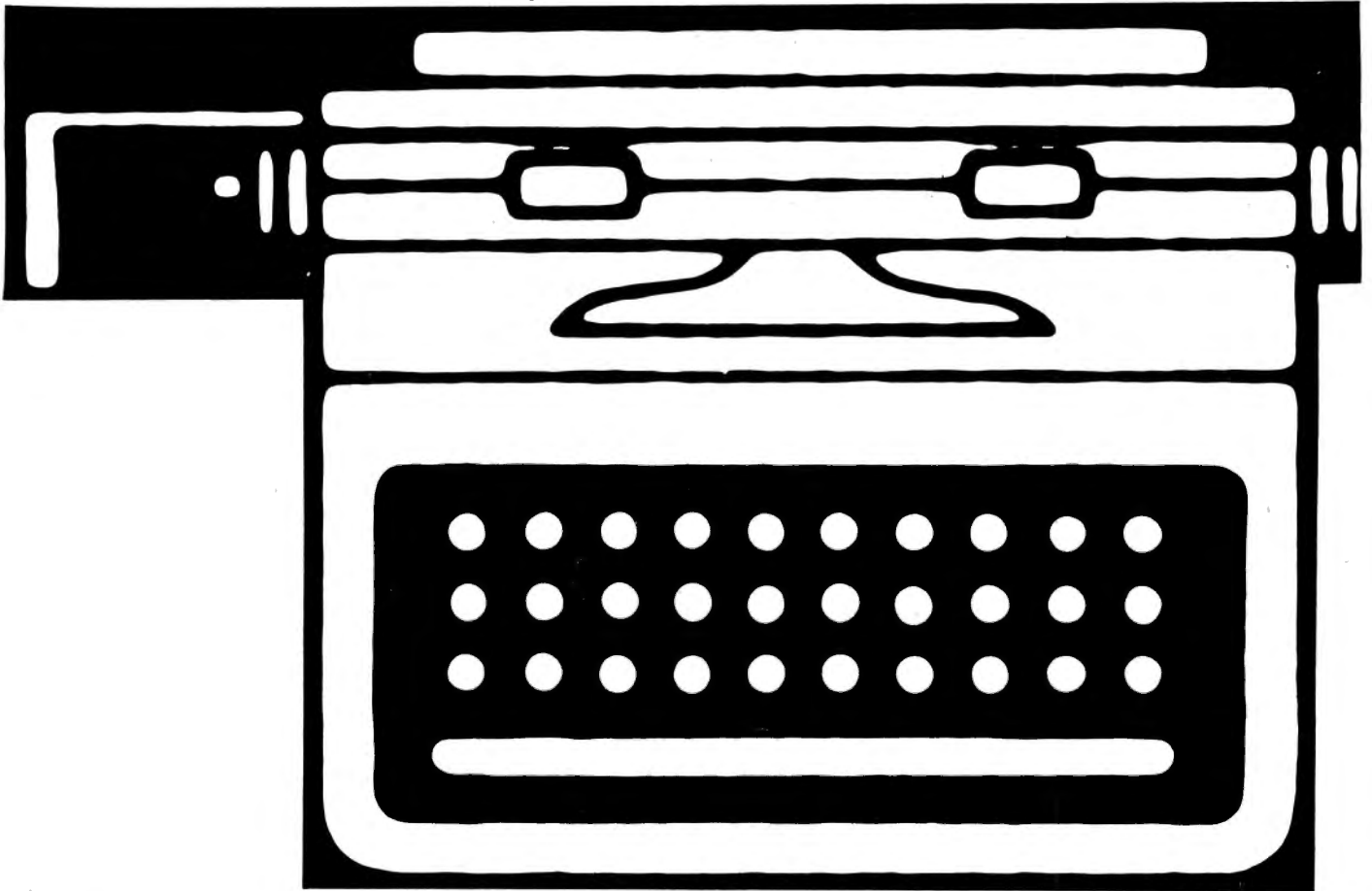
I then ran the cable out one of the ventilation slots in the bottom of the color computer and connected the other connector to it. Next I checked for shorts as before. All checked O.K. so I reinstalled the keyboard and put the color computer back together again.

Now for the tests. Test 1, plug in the color computer and see if it still works properly. It does! Test 2, let boy meet girl. Plug the calculator cable into the cable coming from the color computer. Does the color computer still work? Yes! Try to key in the number from the calculator. Does the keypad work? It does. It even allows you to use the pad in the command mode by using (SHIFT ?) to print your answer on the screen. I had enough keys to have the (,) also so I can print to the printer from the pad. I changed the program we were using to ask 1 or 2 rather than Y or N and now the menu driven programs are completely operated from the pad.

Now Grace can enter her numerical data in less than half the time it took her before. This leaves me more time with the color computer to write programs and play games with the boys and more time in bed with Grace.

# FULLTIME LOWERCASE HAS COME

a Hardware Review  
by Old Father William +



One of my least favorite lines in software ads is the offer of "real lowercase". That line strikes home with me, because just about the only thing I haven't liked about the Color Computer is its reverse-video substitute for lowercase letters. Maybe it is just my old eyes, but I find it almost impossible to proofread text accurately while looking at a screenful of positive and negative video blocks.

The problem I have with "real lowercase" is that I have this prejudice that the word "real" is to be reserved for use with things that either are or aren't, not for things that are sometimes or to a certain degree. If a program will give me lowercase only when it is running, or worse, only when it is running and I can spare 7200 bytes of memory for the lowercase graphics routine, I have a hard time justifying the use of the phrase "real lowercase".

With that introduction in mind, let me tell you that my own Color Computer is now running with fulltime, REAL LOWERCASE. So can yours, for less than

\$85.00. What's more, we are talking hardware, not software, so it uses none of your precious memory. NONE!

The magic that accomplishes this condition is the WORD PROCESSING LOWERKIT, from Hometronics International, 7701 Fifth Avenue, Brooklyn, NY 11209. The magician is Dennis Kitsz, of Roxbury, VT, the designer of this simple-looking hardware additive. The design is, to me, obviously the "right" one. Radio Shack/Motorola designed the Color Computer to be capable of incorporating an external character generator for the video display, but they didn't make use of that capability. Dennis Kitsz's hardware kit puts an external character generator right where the Color Computer's design left room for one.

If you have sent Hometronics International \$79.97 (+\$2.50 Shipping and Handling) for the fully-assembled version (\$45.00 +S&H gets you the kit form), opening the package reveals a 30+ page instruction manual and a plastic bubble pack protecting a 2-1/4" x 4-1/2" printed



# 1/3 OFF! SALE



Yes, you can save a full 33% off any issue of the CCN Magna-Zine cassette program loader tapes!! In celebration of Color Computer News' second anniversary, during the month of May we are reducing the cost of single tapes from their regular low price of \$6.00 each to just \$4.00 each! There is no limit on the number of tapes you may order, and you can select from any of the 20 issues published thus far. Act now, because this sale is only good for the cover date of this anniversary issue and after the sale is over, the single tape price will be raised to \$6.50 each. (U.S. and Canada customers please add \$1.00 postage per tape, other foreign please add \$2.00 for airmail. All payments must be in U.S. funds only. Florida residents must add \$.20 sales tax per tape.)

## *SamplerSeries*

The popular CCN Magna-Zine SamplerSeries volumes are also available now for immediate delivery. The six SamplerSeries tapes are compilations of programs grouped together by general subject matter. This allows you to select only those tapes which most interest you, saving you both time and money. The five of the tapes are priced at only \$14.95 each (plus \$1.00 domestic and \$2.00 airmail postage). The tape titles are: 1) Fun and Games, 2) Hobbies and Hams, 3) Words and Numbers, 4) Get Smart, and 5) For Disks Only. The sixth tape is the "Programmer's Toolbox." Since it has several more programs and a 16 page booklet of technical documentation to go with it, it is priced at \$19.95 (plus \$1.50 domestic and \$3.00 airmail postage. Florida residents must render 5% sales tax unto Gov. Graham for each of the above tapes ordered.)

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The CCN Magna-zine produces the software loader tapes of the programs appearing each month in Color Computer News magazine. The concept is simple: instead of hours of typing and debugging your favorite programs in CCN, our tape will let you just "load" your troubles away!! Until June 1st, a 12 month subscription for the U.S. and Canada is \$42.00 (plus \$6.00 postage for a total of \$48.00). For other foreign countries, the airmail postage is \$18.00 (for a total of \$60.00) HOWEVER, the base subscription rate will be increased to \$48.00 for all subscriptions received after May 31st. (i.e. the U.S. & Canadian totals will be \$54.00 and other foreign, \$66.00 per year, and of course, all foreign payment is in U.S. funds) So act now, and save \$\$\$\$\$!!

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a complete listing  
of all programs*

circuit board, bristling with IC chips. Don't let the "30 + pages" scare you. I said that to convey how impressed I am at the thoroughness of the documentation, not how difficult the installation might be. In fact, my copy of LOWERKIT was installed and operating within 10 minutes of my picking up a screwdriver! I can't imagine anything being easier.

OK, let's be fully honest. I did spend 15 minutes before I picked up the screwdriver, reading through what I needed in the instructions. This was happening in the office of REMarkable Software, while Bill Sias was busy doing three other things. Not too busy, though, that he couldn't holler at me that no self-respecting Color Computer hobbyist would ever stoop to reading the instructions before tackling the task. I'm sorry if this loses me readership, but, after all, I am in the "confession is good for the soul" business.

The first item of importance in the manual is: Don't even unwrap the PC board to look at it until you make two decisions about whether or not you want to do this installation. 1.) Are you ready to void your Radio Shack warranty by opening the case? 2.) If you have an early Color Computer, is your Video Display Generator (marked MC6847) soldered directly, pin by pin, to the PC board? If it is soldered in, do you have the equipment and skill to unsolder it without damage? If you decide to wrap it up and send it back unopened, you have a full refund coming. If it has been opened, Home-tronics International will deduct \$15.00 from your refund for checkout and re-stocking.

From there on, you open the case of your Color Computer; lift the RF shield; pull out the MC6847 Video Display Generator IC chip; insert the original VDG into the open socket on the LOWERKIT; press the LOWERKIT board in place, so the legs of the IC socket adapter on its bottom side fit into the VDG's old socket; replace the RF shield and screw the Color Computer's case back together. I told you, 10 minutes.

Excuse me for a minute, dear readers, while I fuss at Hometronics International

for just a minute. Mr. Kitsz and Friends: Everything about the LOWERKIT is so amazingly well planned and executed, I can't imagine where this one unprofessional element got in. Twelve lines of text in the manual, describing how to get the VDG out, using a nailfile. Really! Surely there is someone out there who would sell you, in quantity, an "el cheapo" bent sheet metal IC chip puller. You could throw it in the box as a freebie, or even sell it for your \$.40 cost!

OK, readers, I'm back. You have to realize that I got as much satisfaction out of that as Bill Sias did out of hollering at me about reading the manual.

Now, your LOWERKIT is installed, and you have hooked up the Color Computer again and turned it on. The powerup copyright message fairly jumps off the screen at you. The letters are all larger than the ones you have been accustomed to. You hit (SHIFT) (0) and begin to type lowercase letters. You try (FOR I=1 TO 255:CHR\$(I);:NEXT I) (ENTER), and there they are; large, readable, clear characters.

A little close examining gives some information about what you are seeing. Every character block you have ever seen on the Color Computer was drawn by either setting (on) or resetting (off) a matrix of pixels 8 wide by 12 high. The standard Color Computer characters are drawn on a 5 wide by 7 high block of pixels within the 8x12 block. Dennis Kitsz uses an area 7 wide by 12 high, so the letters look quite a bit larger, but still occupy the same screen space as the standard characters.

Mr. Kitsz always turns on the entire left column of 12 pixels in each block, as a space between letters. The top 9 pixels of the next 7 columns form the area in which capital letters are drawn. Every once in awhile, that seems crowded to my eye, but I'll take it, in order to get the rest.

The middle 6 pixels of columns 2 to 8 in the block serve for drawing most of the lowercase letters, with taller letters able to extend up toward or to the height of the capitals. That leaves, wonder of wonders, the bottom area, 3 pixels high by 7 columns wide, for honest-to-goodness

descenders for the g, j, p, q, and y. Yes, the neatest collection of tails you can imagine.

If you are counting closely, you have figured out that the system does not leave any separation at all between the tail of a "y" in one line and a "T" in the row immediately below it on the screen. Is that a problem? I don't find it to be. The tail is curved, so only two black pixels from the "y" are contiguous with the top of the "T", and I find it very readable. In practice, this touching doesn't happen very often.

I spoke earlier about the documentation. Excellent is the only word I can think of to describe the booklet. In addition to a detailed description of what LOWERKIT is and how to install and troubleshoot it (with pictures and diagrams), there are several other well-written and informative sections:

1. Replacement Parts List - including a list of ten other stock character generators which may be ordered instead of or in addition to the standard one normally supplied (Greek, European, Arabic, Kata Kana, math symbols, etc).
2. Hometronics International can supply a LOWERKIT with any design of characters possible with an 8x12 matrix. There is a thorough description of how to prepare a data tape to send with your order. The parts list shows a \$20.00 program to use to create this tape. The custom character generators cost \$25.00.
3. The input/output list for the 24 pins of the character generator.
4. Kit version parts inventory and assembly-step list. The directions seem clear and concise.
5. The wiring diagram, PC etching guides, and a diagram of component locations.
6. Final descriptions, specification, and order information.

One phrase early in the booklet scared me. The statement is that LOWERKIT is designed for an "otherwise unmodified" Color Computer. Mine is modified. I have 64K. LOWERKIT works just fine in my Color Computer. Hey now! No guarantees! I'm not going to say it will work in your Color Computer, nor is Hometronics International, unless it is the only modi-

*Color Computer News*

fication in there, but all I had to do was to push a couple of wires down out of the way.

LOWERKIT may be purchased with the option of a SPST switch, to be installed anywhere the user may wish. The screen display may then be toggled between the normal Color Computer characters and the LOWERKIT shapes. I put the switch on mine, so that I could review software by looking at it the way most Color Computer owners see it.

Some interesting things happened when I tried some word processors with LOWERKIT. Radio Shack's new Color Disk Scripsit has its own 7200-byte lowercase graphic system, which may be turned on or off. LOWERKIT is bypassed completely by Scripsit. There is no difference in the display, whether I have LOWERKIT running or not. My favorite word processor with the normal Color Computer display was Super "Color" Writer II, because it turns everything on the screen to black, except for capital letters. That was very comfortable to my eyes. With LOWERKIT, however, both uppercase and lowercase letters are black-on-white, but Writer is still turning numerals, punctuation, and the screen perimeter black. Back to confusion.

So far, my favorite word processor with LOWERKIT is Cer-Comp's Textpro II, because Bill Vergona chose to use the straight Radio Shack display. I didn't like it that way originally, but with LOWERKIT, I love it. Everything just comes out with the LOWERKIT character set, all in black-on-white, very clear and readable.

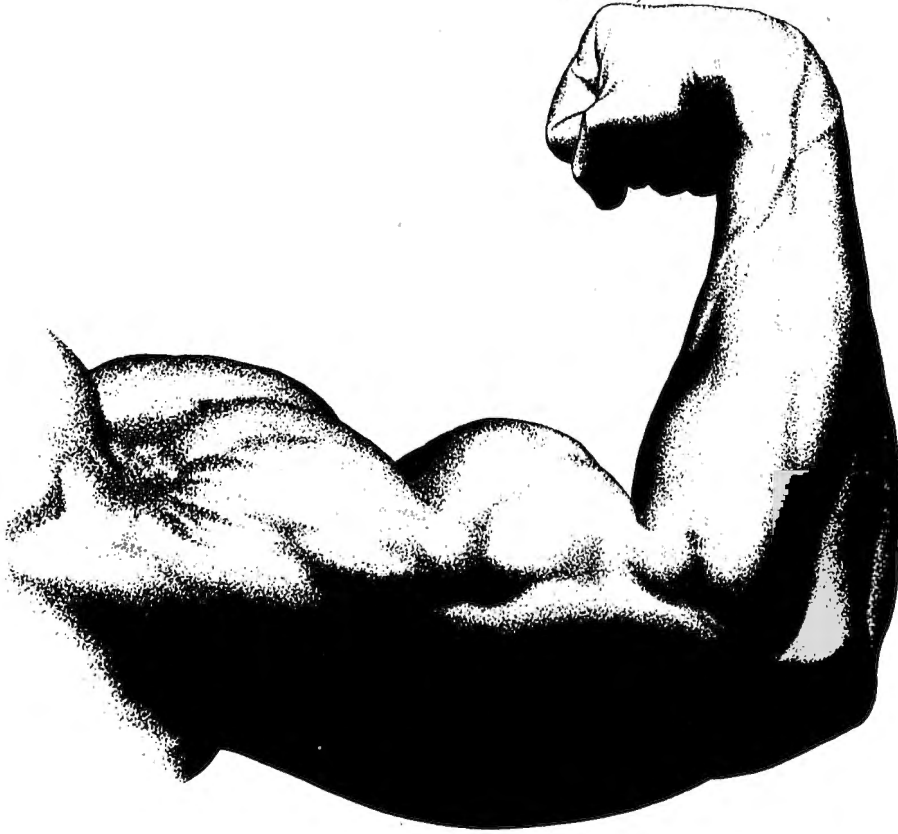
Well done, Hometronics International and Dennis Kitsz.

#### COLOR COMPUTER NEWS TIP

To convert Hex numbers to decimal try the following "PRINT &Hnumber". The result will be the hex number printed in base 10.

# FLEX CORNER

By Roger L. Degler  
Micro Technical Products  
123 N. Surrine, Suite 106  
Mesa, AZ 85201



## MORE DOS COMMANDS

Last month we talked a little about the coming of OS-9, and as you probably gathered, I'm quite excited about it. Please don't think, however, that I don't like FLEX - I do! I wouldn't be writing this column if I didn't. FLEX is very friendly and easy to use, and certainly more versatile than ROM BASIC.

I do want to point out again that FLEX (or OS-9 or what have you) is not for everybody. The types of people that would find such a DOS to be useful are:

- 1) machine language programmers
- 2) High level language programmers (other than BASIC)
- 3) people looking for serious business software
- 4) tinkerers (serious hobbyists)

I've undoubtedly missed someone, but it was unintentional. None the less, one **thing** to remember, is that buying a new DOS is going to cost you a pretty penny. The question you must answer is, "Is it going to be worth it?". I hope that this column, over the months, will help you decide.

84 May 1983

## 64K RAM

Something I would like to take a little time out to discuss is what it means to have 64K of RAM in your system. As I talk with people about their Color Computers, the one thing that seems to be most misunderstood is the 64K of RAM, and what can be done with it. Figure 1 shows several memory maps which we are going to discuss.

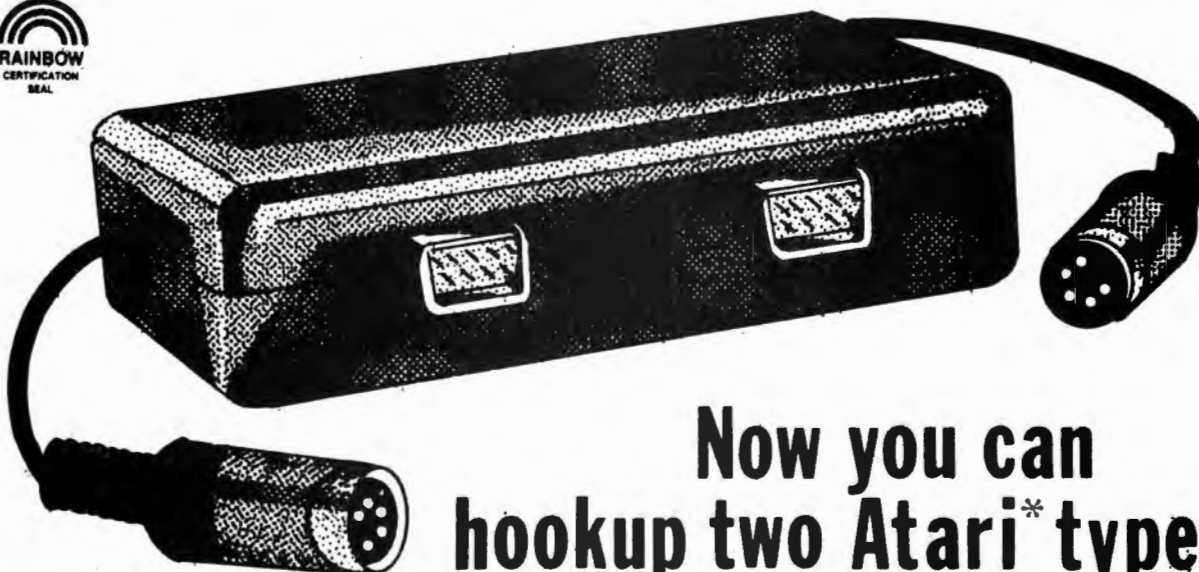
The Color Computer was first introduced with only 4K of RAM. Optionally it could be purchased with 16K, or you could upgrade to this later. Figures 1(A) and 1(B) show the memory maps for these systems.

Note how much void space there is in these maps.

Now, wait a minute - just what do I mean by 'void space?'. Everything in a 6809 microprocessor system which the microprocessor is to read or write data to or from, must have associated with it a unique memory address. When the MPU (MicroProcessor Unit) wants to read or write data to or from a particular device, it will place its unique address on the

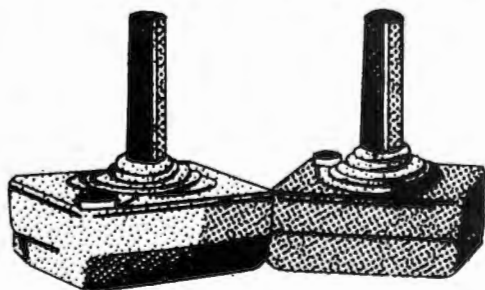
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address bus, so that this device can recognize (decode) its own address, and respond by placing its data on the data bus to return to the MPU, or by accepting the data being sent to it on the data bus from the MPU. It should be simple enough to see that each address, therefore, should have only one device assigned to it. Otherwise, two (or more) devices will be answering at the same time, and this gets very confusing indeed.

Likewise, to each device, there is, hopefully, only one assigned address. However, this is not always the case. Some address decoding schemes allow a device to answer to a range of addresses. This is alright as long as the programmer is aware of the fact, and makes sure he always accesses the proper addresses. This is typically referred to as 'partial' address decoding.

But, just what are these 'devices' that answer to the requests of the MPU? Again, they are anything that the MPU would like to read or write data to or from. Memory, such as RAM, ROM, EPROM, etc., qualifies as this type of device since the MPU frequently reads or writes data to or from it. Also, I/O (Input/Output) ports through which the MPU gains access to other electrical circuits. These ports act as interfaces between external circuitry and the MPU by providing unique addresses through which this data may flow.

Computer systems which use this type of addressing scheme are called 'memory mapped' because everything the MPU can access, from actual memory devices (such as RAM), to I/O devices, MUST appear to the MPU as unique memory addresses. Another type of addressing scheme which is commonly used is called 'I/O' mapping, but we don't have time to discuss that here. All Motorola microprocessor chips, such as the 6800, 6809, and 68000, are 'memory mapped'.

Well, now back to the question regarding the void spaces shown on the memory maps. The 6809 MPU generates a 16-bit address bus. This allows the MPU to access 65,536 ( $2$  to the 16th power) unique addresses. In most Color Computer configurations however, there are far less than 65,536 unique devices (memory locations and I/O ports). This simply means that many of the addresses are unassigned. If the MPU requests data

from any of these unassigned addresses, no device in the system will answer the request, and the MPU will read whatever happens to be 'floating' on the data bus at that particular time - obviously nothing of any value. It is these unassigned addresses we are referring to as void space. You can see, in a 4K system and a 16K system, there is a lot of it.

The next generation of memory expansion came when people started piggy-backing the 16K chips to achieve 32K. This gives a memory map as shown in figure 1(C). There are no differences here except that there is much less void space. Generally, it seems that people have no problems understanding maps A thru C. The only confusion apparently comes from the void space above the BASIC ROMS.

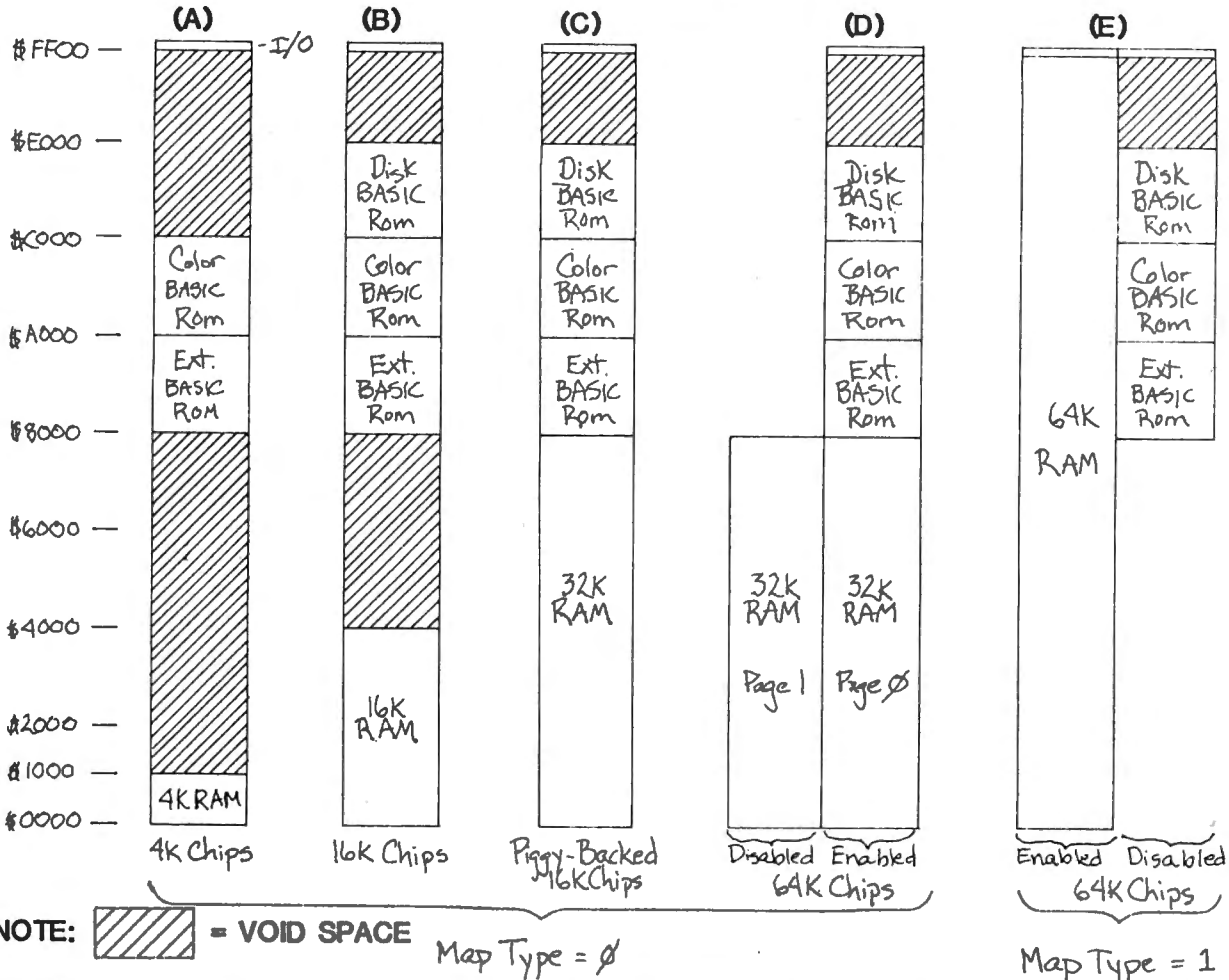
The size of the void above the ROMS depends upon which ROMs are installed in your system. Anytime a particular ROM is not installed, a void exists in its place. These voids are typically never used by anything other than the ROMs themselves, or RAM when we go into the 64K mode, as shown in memory map 1(E).

The next step in the evolution occurred when Radio Shack started selling the 32K versions of the computer. This was accomplished by using 64K RAM chips instead of the 16K chips. Of course, only the first half of these chips was to ever be used. This required that they produce a new version of the PC board to accommodate these new RAM chips. This new version was called 'REV. E'.

However, it was immediately obvious to several people that there was a second, hidden, 32K of RAM in these systems. And, of course, they wanted to figure out a way to put it to use.

One approach was to divide the 64K RAM into two 32K pages at the bottom of memory and swap the two pages back and forth, as shown in Figure 1(D), always leaving the system ROMs resident in the upper half of the memory map. Only one page of RAM could ever be accessed at a time by the MPU via this approach. The real trick to making use of both pages was in the fact that the program that switched the pages had to reside somewhere in the upper 32K of the memory map (the ROM section), as this was the only section which remained present no matter which RAM page was selected. And, of course, the problem here was how to load a program

FIGURE 1



**FILMASTR**

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into the ROM area.

Imagine what would happen if a program running in page zero attempted to switch pages. Remember, when your system is first turned on, the RAM contain only garbage. Large portions of page zero are initialized. So, if a program in page zero switches pages, then this program in page zero is going to disappear from the MPU's memory map, and garbage is going to appear in its place. I probably don't need to tell you this, but, generally when this happens, your computer will come to a grinding halt, or at least, trot off on its own, doing who-knows-what. Needless to say, this approach has not achieved very wide use.

The second approach to utilizing the second 32K of RAM is one which allows the computer to enter the memory map shown in figure 1(E). This memory map is referred to as 'map type 1'. Whereas all the other maps are referred to as 'map type 0'.

With the new 'rev. E' PC boards there was still an obstacle to overcome. As you can see, when map type 1 is selected, the upper 32K of RAM is supposed to substitute for the ROMs in this area. In other words, the ROMs are supposed to disappear.

But, the design of the Color Computer would not quite let this happen. When this map is selected and the MPU wants to read data from an address in the upper 32K area, everything works ok, and the RAM chips send the contents of the proper location down the data bus back to the MPU. While this happens, the ROMs are effectively disabled.

However, whenever this map type is selected and the MPU wants to write data into an address in the upper 32K area, the address decode logic in the computer tells the ROM chips that they are to be read from. So, at the same time the MPU is trying to send data to the RAM chips via the data bus, the ROMs are trying to send their contents to the MPU on the same data bus. This contention causes the trivial problem that the MPU cannot write the proper data into the upper 32K of RAM. And, this makes the RAM useless!

But, don't despair, there is an easy fix. Frank Hogg designed the simple modification, now strangely enough referred to as the 'Frank Hogg mod.', to make the ROM chips mind their own business

whenever 'map type 1' is selected. This allows the upper 32K of RAM to be used successfully, thus allowing your computer to become a full 64K system. This modification has been documented in several magazines, and is also readily available from Frank Hogg Labs, as well as many other companies, including Micro Technical Products.

With this modification in place, it is indeed a simple matter for a program to be loaded from tape or disk into the lower 32K of RAM which will switch to 'map type 1' and make use of the upper 32K of RAM for whatever it wishes.

I should point out that one of the most common applications for the upper 32K of RAM is to copy into it an exact duplicate of the BASIC ROMs. This allows your system to remain in BASIC, but places the BASIC system into RAM where it can be modified. It also fills the void which used to exist above the ROMs with RAM. This extra RAM may then be used to hold assembly language programs. It may not (at least not easily) be use for storing programs written in BASIC, as the BASIC system has no idea this area of memory even exists. It is also in this map type that FLEX and OS-9 execute.

Now, to finish up this discussion, this modification is so acceptable to Radio Shack that they have incorporated it into the newest Color Computers and the TDP System 100's as well. This new generation of Color Computers is fondly being referred to as 'revision F', although technically that is incorrect. The PC board in these new systems (both the Color Compute and the TDP-100) is a whole new version, and hence has no revision letter assigned to it. Whenever this new PC board undergoes a revision, will we start all over again with revision 'A'?

All of these new systems that are purchased as 32K systems are in actuality full-blown 64K systems. All of the TDP system 100's are of this new generation. To tell if a Color Computer is one of these new models, look at the model number on the bottom of the computer. If it ends with an 'A' then it is, otherwise it is not.

I hope you found this discussion helpful. I undertook this discussion because I believe you can get a lot more out of your computer if you understand more about how it works. Anyway, we'd better get on with our continuing discussion of FLEX's



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# Move up to **C** language compiler

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commands.

### More Commands

#### Command: NEWDISK

The NEWDISK command is used to format diskettes to be compatible with FLEX. As you may recall from some of our earlier discussions, FLEX's disk format is not the same as ROM BASIC's. Hence, the NEWDISK command must be used rather than ROM BASIC's DSKINI command. The general syntax of the NEWDISK command is:

+++NEWDISK (drive #)

where (drive #) is the disk drive number in which you wish to format the new diskette. A note of caution here - you may re-format a diskette at any time. However, doing so to a diskette which already contains files will totally obliterate the files. So, be careful to make sure the correct diskette is installed before allowing the formatting process to commence.

When the NEWDISK command is invoked the following seven questions will be asked, although different adaptations of FLEX may present them in a different order:

- 1) ARE YOU SURE?
- 2) SCRATCH DISK IN DRIVE X?
- 3) DOUBLE SIDED DISK?
- 4) DOUBLE DENSITY DISK?
- 5) NUMBER OF TRACKS?
- 6) VOLUME NAME?
- 7) VOLUME NUMBER?

The first two questions are simply to allow you to confirm your request. Any response to either question other than 'Y' will cause NEWDISK to abort and return to FLEX. Note in the second question, the 'X' will be replaced by the drive number you specified on the command line.

The third question brings up a subject we haven't yet discussed - FLEX's ability to handle various disk drive and controller capabilities such as single/double sided, single/double density, and 35/40/80 tracks. You are probably going to think that since the 3rd, 4th, and 5th questions are asked, FLEX can handle all of these variations - and you are right! Therefore, whenever FLEX formats a new diskette, it must ascertain from you the proper information so it may initialize the disk according to your desires or your system's capabilities.

Remember, once a diskette is format-

ted, it will retain all of these attributes until it is re-formatted. That is to say, if you format a diskette to have 40 tracks, you will be unable to read all the data from this diskette on a 35 track drive. The same applies to double density, double sides, etc. You might like to bear in mind that the standard Radio Shack disk drives are only single sided and can handle no more than 35 tracks. They can, however, handle single or double density operation.

Question six asks for the name you would like assigned to the diskette. It may be as long as eight characters. Question seven asks for a volume number, which may be from 1 to 65,535. Typically I use this number to indicate backup copies of my various disks - the backup copies bearing the same names as the primary copies.

When all of the questions are answered, the formatting procedure begins. Therefore, if you are going to format in drive zero, make sure to remove your system diskette and insert the new diskette before answering the last question. On a single sided 35-track drive, formatting takes about two minutes to complete. When the formatting is done, you will be shown how many free sectors are available on the diskette.

#### Command: ASN

The ASN command allows you to assign the functions of 'system' disk and 'working' disk to the various disk drives you may have connected to your computer. OS-9 allows this same distinction, but of course, the commands are different. FLEX, however, goes one step farther than OS-9 by adding the 'all' concept as we will see shortly. This concept of 'system' and 'working' disks is a feature worthy of some discussion, as not even CP/M (the most popular 8-bit DOS in the world), or even MS-DOS on the IBM-PC, supports this dual concept. And, of course, neither does ROM BASIC.

The 'system' disk will be the default drive from which all command utility programs are loaded. Remember, when you enter a command to FLEX, the first name on the command line is the name of the command you wish invoked. You may append a disk drive number to the command name as you are entering the command to override the default 'system' disk. An example should help to explain:

+++COPY FILE1.BAS,FILE2.BAS

In this example, a file called "COPY. CMD" will be loaded from the currently assigned system drive. This is typically assigned only to drive zero. If this were the case, then:

+++1.COPY FILE.BAS,FILE2.BAS  
will override the default the load "COPY. CMD" from drive one.

The 'working' drive will be the default drive from (or to) which all other file names specified on the command line will be read (or written). As with the 'system' disk, the default may be overridden. The following examples will explain:

+++COPY FILE1.BAS,FILE2.BAS  
To carry on with this same example, the file which will be copied is going to be read from the default 'working' drive. Likewise, the file being written will also be on the default 'system' drive was zero and the default 'working' drive was one. Then, the following example will do exactly the same as the previous one.

+++0.COPY.CMD 1.FILE1.BAS,1. FILE2.BAS  
However, the earlier example required less typing. That's why defaults are nice - because, if you set them up correctly, you won't have to be forever specifying drive numbers.

For the next example, pretend the default values we just mentioned are still in affect.

+++2.COPY 0.FILE1.BAS,FILE2. BAS

In this case the command "COPY.CMD" will be loaded from drive two and put into execution. Then a file named "FILE1.BAS" will be copied from drive zero to a file names "FILE2.BAS" on drive one.

Now, for the 'all' concept. The default drives, as we have already seen, may be assigned to individual drives. They may also be assigned to 'all'. When this is done, FLEX will start looking on drive zero for the file name it is trying to locate. If it is not found there, FLEX automatically searches drive one, and so on, until, either the file is located, or all drives have been searched.

The general syntax for the ASN command is:

+++ASN [,W=(drive #)][,S=(drive #)]

where (drive #) is to be replaced by the drive number of interest (0 thru 3) or 'A' to indicate 'all'. Here are some examples:

*Color Computer News*

+++ASN W=1  
+++ASN S=2  
+++ASN S=1,W=2  
+++ASN S=A,W=3  
+++ASN S=0,W=A

Command: BUILD

The BUILD command is a very primitive text editor. It allows you to create small text files for whatever reason. The general syntax for the BUILD command is:

+++BUILD (file-spec)

where (file-spec) is the name of the file you wish to create. If you do not specify an extension, ".TXT" will be used. If the specified file already exists, then you will be asked "MAY THE EXISTING FILE BE DELETED?" A response of 'Y' will delete the existing file, while any other response will terminate the BUILD command.

When the BUILD command executes, it will prompt you with an equals sign ("="). When this appears you may enter any text you wish. Press the Enter Key at the end of each line. You will receive another prompt. When you have entered all your text, enter a pound sign ("#") as the only character on a line and press Enter. The text will be saved to the disk file and BUILD will return to FLEX.

Next Month

You guessed it, we are going to look at more FLEX commands. 'Til next month...

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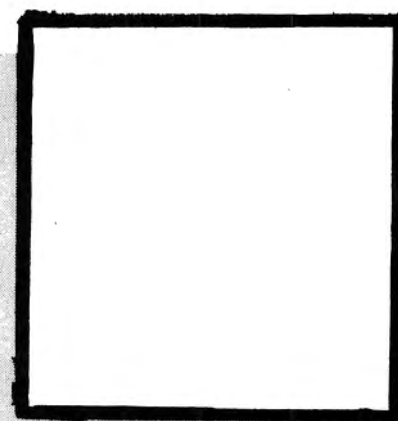
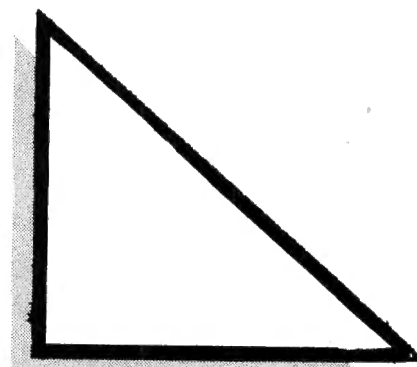
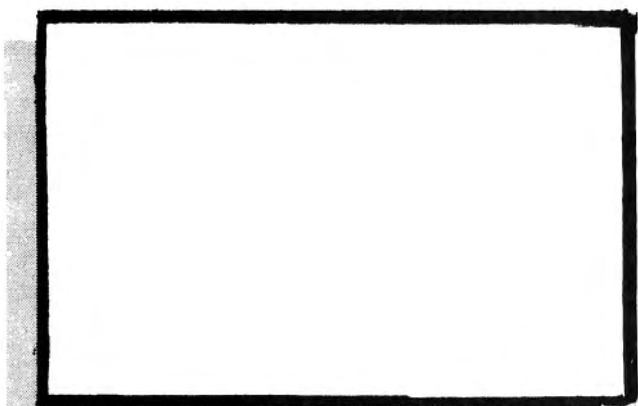
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# MASTER SHAPES

(16K EXTENDED)

By Randall Smith  
124 Norris Avenue  
North Vernon, IN 47265



I've always enjoyed the game of Master Mind. I find it a stimulating, entertaining game, but it has three drawbacks. 1.) It takes two people to play, 2.) Often times the player who sets up the combination will mis-score your guess and really mess things up, and 3.) Those little scoring pegs are hard to get hold of and poke in the holes.

With this in mind I determined the old Color Computer might be able to alleviate these drawbacks. But...there was a problem. (Isn't there always?) Only four colors are available at any one time and one of those had to be the background color. Master Mind uses six colors. Darn! Back to the drawing board.

After some thinking I came up with a program that used the initials of each color. It worked all right, but this is a Color Computer. Why settle for a game that didn't use all those great colors and the CC's outstanding graphics capabilities. Rats. Time to think some more!

A few days went by while I tried to get my brain in gear. It finally came to me...By way of a suggestion by my computer widow (bless her heart). Why

not use different shapes instead of specific colors? Sounded good to me. I finally settled on three shapes in two different colors. The shapes are a square, triangle, and a sort of misbegotten circle (the best I could get in PMODE 3 in a size small enough to be useful).

In my version of the game, you have seven options. The six shapes plus a blank. The player has ten chances to guess the combination that the CC's random generator has come up with. There are three levels of play:

1. All the symbols used are different.
2. The possibility of a blank being included.
3. Any of the symbols or blank may be used more than once.

The player has the ability to change his mind before giving the CC his guess by use of the left arrow key. Pressing it will erase the entry one symbol at a time. The screen will prompt the player to hit ENTER when the guess is ready to give to the CC.

The program itself is pretty straight forward. There is an option to read the instructions before playing. The player

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.LITE	.PROT	.REST	.TXON	.TXOF	.RDLY	.PDLY	.DELR	.DELS	.SNLF	.DBLF	.DUMP
.MEM	.BYE	.BLOC	.ECON	.ECOF	.MADD	.FNIN	.HELP	.GBL	.(next)		

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## Master Shapes

can also review the instructions as many times as desired before beginning play.

Before play begins there is a menu to select the level of play or to exit the game. After the screen is drawn and displayed the player is prompted both by the screen and by sound. If the player is unable to guess the correct combination in ten tries, it is displayed on the screen.

The program uses INKEY\$ and 'IF statements' to keep the wrong type of keypresses from bombing it out. It's pretty well 'kid-proofed' except for the break key. If your kids are like mine they learned early to leave that 'red key' alone.

The color set used is determined in line 360 and can be changed by changing the screen statement to SCREEN1,0. The program uses just over 15K and of course requires Extended BASIC. The font set used is a subset of the complete ASCII set I use for my graphics text display in my programs that require it. The scale parameter in the draw statements is used to change its size as needed. I'm sorry the 'circle' doesn't look much like the real thing, but it is distinctive from the others and serves its desired purpose quite well in this application.

If you don't have time to key this program in, and you haven't subscribed to Magna-zine (by the way..they're real nice people with a good product), I'll be glad to send a copy of the program on tape to you first class mail (U.S. and Canada) for \$5.00. My address is: Randall Smith, 124 Norris Avenue, North Vernon, IN 47265. I'd appreciate any comments or suggestions from any one interested in the Color Computer.

Let me close by exhorting any of you who have written programs either useful, entertaining, or both; to submit them to Color Computer News for publication. If they're accepted you'll get a nice feeling from seeing something you created in print and old Bill ain't cheap either! With the continued support of magazines like Color Computer News and its enthusiastic user's creativity and desire to learn more about it, this so called 'Game Machine' is going to make it big..maybe I should say bigger, cause it's already big!

```
10 '*****MASTER SHAPE*****
20 '
30 '*****BY RANDALL SMITH*****
40 '
```

94 May 1983

```
50 CLSRND(8):PRINT@106,"master"C
HR$(128)"shape";
60 PRINT@200,"by"CHR$(128)"randa
11"CHR$(128)"smith";
70 PRINT@292,"do"CHR$(128)"you"C
HR$(128)"want"CHR$(128)"instruct
ions";
80 IN$=INKEY$:IF IN$=""THEN 80 E
LSE IF IN$="Y"THEN GOSUB910
90 '***INITIALIZATION***
100 T=RND(TIMER):CLEAR500:PMD3
,1:PCLS5
110 DIM A1(4),A2(4),A3(4),A4(4),
A5(4),A6(4),A7(4),CH$(20),W(3),R
(3),G(4),S(4)
120 '****MENU****
130 CLS:PRINT@32,"WHAT SKILL LEV
EL?":PRINT:PRINT"1. ALL SYMBOLS
DIFFERENT":PRINT:PRINT"2. A BLAN
K ADDED TO THE SYMBOLS"
140 PRINT:PRINT"3. ANY OF THE SY
MBOLS OR THE BLANK APPEARI
NG ANY NUMBER OF TIMES":PRI
NT:PRINT"HIT NUMBER OF CHOICE":P
RINT
150 IN$=INKEY$:IF IN$=""THEN 150
ELSE M=VAL(IN$)
160 IF M<1 OR M>3 THEN SOUND200,
2:GOTO150:ELSE PRINT" JUST A SE
COND OR TWO WHILE I GET T
HINGS GOING..."
170 '****READ FONT SET****
****DRAW SCREEN*****
180 FORX=1 TO 20:READ CH$(X):NEXT
190 COLOR7:DRAW"BM6,15;R12;M-6,-
12;M-6,+12":PAINT(12,10),7
200 CIRCLE(30,9),6:PAINT(32,9),7
210 LINE(42,3)-(54,15),PSET,BF
220 COLOR8:DRAW"BM60,15;R12;M-6,
-12;M-6,+12":PAINT(66,10),8
230 CIRCLE(12,28),6:PAINT(12,28),8
240 LINE(24,22)-(36,34),PSET,BF
250 GET(6,15)-(18,3),A1,G:GET(24
,15)-(36,3),A2,G:GET(42,15)-(54,
3),A3,G:GET(60,15)-(72,3),A4,G
260 GET(6,22)-(18,34),A5,G:GET(2
4,22)-(36,34),A6,G:GET(42,22)-(5
4,34),A7,G
270 COLOR5,6:PCLS:CIRCLE(128,96)
,5,5:PAINT(128,96):GET(125,91)-
(135,101),W,G:CIRCLE(128,96),5,8:
PAINT(128,96),8:GET(125,91)-(135
,101),R,G
280 PCLS5:LINE(0,0)-(78,191),PSE
T,BF:LINE(0,0)-(78,191),PRESET,B
:FOR Y=0 TO 171 STEP19:LINE(0,Y)
-(78,Y),PRESET:NEXT:LINE(0,191)-
(78,191),PRESET:LINE-(128,0),PRE
```

Color Computer News

```

SET, BF
290 COLOR6: DRAW"BM154, 11; S8; C6"+
CH$(14)+CH$(8)+CH$(19)+CH$(20)+C
H$(11)+CH$(18)
300 DRAW"BM162, 27"+CH$(19)+CH$(1
2)+CH$(8)+CH$(17)+CH$(11)
310 LINE(170, 31)-(217, 147), PSET, B
320 X=174: Y=35: GOSUB500: Y=51: GOS
UB510: Y=67: GOSUB520: Y=83: GOSUB53
0: Y=99: GOSUB540: Y=115: GOSUB550: Y
=131: GOSUB560
330 FORY=48 TO 144 STEP16: CH=CH+
1: DRAW"BM198, "+STR$(Y)+"C6; S8"+C
H$(CH): NEXT
340 SCREEN1, 1: GOSUB 830
350 Y=3: FOR GUESS=1 TO 10
360 COLOR6, 5: G$="": GOSUB760: X=6:
FOR SY=1 TO 4: GOTO390
370 FOR SY=YS TO 4: GOTO390
380 SY=SY-1: IF SY<1 THEN SY=1
390 IN$=INKEY$: IF IN$="" THEN 390
ELSE IF IN$=CHR$(8) THEN GOSUB88
0: GOTO380
400 IF VAL(IN$)<1 OR VAL(IN$)>7
THEN 390 ELSE G$=G$+IN$
410 SOUND200, 1: ON VAL(IN$) GOSUB
500, 510, 520, 530, 540, 550, 560 'PU
T CHOSEN SYMBOL ON SCREEN
420 X=X+18: NEXT SY: GOSUB740
430 IN$=INKEY$: IF IN$="" THEN 430
440 IF IN$=CHR$(13) THEN GOSUB58
0: Y=Y+19: NEXT GUESS: ELSE YS=SY-1
: GOSUB880: GOSUB760: GOTO370
450 SOUND40, 8: SOUND1, 15: GOSUB810
: Y=167: X=138: LINE(153, 162)-(236,
184), PSET, B: FOR C=1 TO 4: X=X+20:
ON VAL(MID$(S$, C, 1)) GOSUB500, 51
0, 520, 530, 540, 550, 560: NEXT C
460 FOR X=1 TO 8000: NEXT: GOSUB740
470 IN$=INKEY$: IF IN$="" THEN 470
ELSE IF IN$=CHR$(13) THEN RUN 1
00: ELSE CLSRND(8)
480 PRINT@229, "DO YOU WANT PLAY
AGAIN?": IN$=INKEY$: IF IN$="" TH
EN 480
490 IF IN$="Y" THEN RUN 100 ELSE
CLS: END
500 PUT(X, Y)-(X+12, Y+12), A1, PSET
: RETURN
510 PUT(X, Y)-(X+12, Y+12), A2, PSET
: RETURN
520 PUT(X, Y)-(X+12, Y+12), A3, PSET
: RETURN
530 PUT(X, Y)-(X+12, Y+12), A4, PSET
: RETURN
540 PUT(X, Y)-(X+12, Y+12), A5, PSET
: RETURN
550 PUT(X, Y)-(X+12, Y+12), A6, PSET

```

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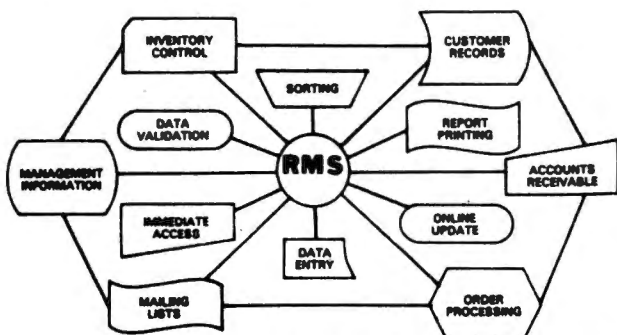
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```

:RETURN
560 PUT(X,Y)-(X+12,Y+12),A7,PSET
:RETURN
570 '***CALCULATE ACCURACY
580 FOR C=1 TO 4:G(C)=VAL(MID$(G
$,C,1)):S(C)=VAL(MID$(S$,C,1)):N
EXT:W=0:FOR C=1 TO 4:IF G(C)<>S(
C) THEN 590 ELSE W=W+1
590 NEXT C:IF W=4 THEN 630
600 B=0:FOR C=1 TO 4:FOR CC=1 TO
4:IF G(C)<>S(CC) THEN 610 ELSE
B=B+1:S(CC)=0:GOTO620
610 NEXT CC
620 NEXT C:B=B-W
630 XX=69:YY=Y+2:IF W>0 THEN FOR
C=1 TO 4:XX=XX+12:GOSUB680:NEXT
C:IF W=4 THEN 710
640 IF B>0 THEN FOR C=1 TO B:XX=
XX+12:GOSUB690:NEXT C
650 IF W=4 THEN GOTO710
660 RETURN
670 '***SCORING WHITE DOTS
680 PUT(XX,YY)-(XX+10,YY+10),W,P
SET:RETURN
690 PUT(XX,YY)-(XX+10,YY+10),R,P
SET:RETURN
700 '***CORRECT ANSWER***
710 GOSUB780:GOSUB740
720 GOTO470
730 '***HIT ENTER PROMPT***
740 GOSUB810:SOUND225,1:DRAW"BM1
76,166;C8;S8"+CH$(12)+CH$(13)+CH
$(20):DRAW"BM163,186"+CH$(11)+CH
$(15)+CH$(20)+CH$(11)+CH$(18):RE
TURN
750 '***ENTER CODE PROMPT***
760 GOSUB810:SOUND225,1:SOUND200
,1:DRAW"BM163,166;C7;S8"+CH$(11)
+CH$(15)+CH$(20)+CH$(11)+CH$(18)
:DRAW"BM170,186"+CH$(9)+CH$(16)+
CH$(10)+CH$(11):RETURN
770 '***DRAW CORRECT PROMPT***
780 GOSUB810:FORX=1TO10:IF X/2=I
NT(X/2)THEN C=7 ELSE C=8
790 DRAW"BM149,177;S8;C"+STR$(C)
+CH$(9)+CH$(16)+CH$(18)+CH$(18)+
CH$(11)+CH$(9)+CH$(20):PLAY"V31;
T150;L1;O3;1;5;1;5":NEXT:RETURN
800 '***CLEAR SCREEN PROMPT AREA*
810 LINE(146,150)-(255,191),PRES
ET,BF:RETURN
820 '***SELECTING SYMBOLS***
830 IF M=1 THEN K=6 ELSE IF M=2
THEN K=7 ELSE GOTO 860
840 S$="":FOR S=1 TO4:SS$=RIGHT$
(STR$(RND(K)),1):S$=SS$+S$:NEXT S
850 FOR S=1 TO 4:FOR SS=1 TO 4:
IF MID$(S$,S,1)=MID$(S$,SS,1) AN

```

```

D S<>SS THEN 840 ELSE NEXT SS,S:
RETURN
860 S$="":FOR S=1 TO 4:SS$=RIGHT
$(STR$(RND(7)),1):S$=SS$+S$:NEXT
S:RETURN
870 'ERASING SYMBOL
880 IF X>6 THEN X=X-18:G$=LEFT$(
G$,LEN(G$)-1):GOSUB560:RETURN:EL
SE SOUND50,1:RETURN
890 GOSUB560:GOTO390
900 '****INSTRUCTIONS***
910 CLS:PRINT:PRINT" IN THE GAME
OF MASTER SHAPE THECOMPUTER WIL
L SELECT SIX RANDOM SHAPES. YOU
WILL THEN ATTEMPT "
920 PRINT"TO MATCH THE SHAPES IN
THE SAME SEQUENCE IN WHICH THE
COMPUTER HAS SELECTED THEM. THE
COMPUTER WILL GIVE YOU CLUES IN
THE FORM OF RED AND WHITE DOTS
NEXT TO"
930 PRINT"EACH ATTEMPT AT MATCHI
NG. EACH WHITE DOT SIGNIFIES TH
E PROPER SHAPE IN THE CORRECT P
OSITION. EACH RED DOT SIGNIFIES
THE RIGHTSHAPE IN THE WRONG POS
ITION."
940 PRINT:PRINT" HIT ANY KEY
TO CONTINUE";
950 IF INKEY$=""THEN 950 ELSE CL
S:PRINT
960 PRINT" YOU WILL HAVE TEN AT
TEMPTS IN WHICH TO ENTER THE COR
RECT RE- SPONSE. IF YOU WANT TO
CHANGE A SYMBOL AFTER HAVING EN
TERED ITS CODE, YOU CAN PRESS TH
E _ KEY."
970 PRINT"AFTER ENTERING FOUR SY
MBOLS, THECOMPUTER WILL PROMPT Y
OU TO 'HITENTER'. IF YOU WANT TO
CHANGE ANY OF THE SYMBOLS, HI
T ANY OTH-ER KEY AND YOUR LAST S
YMBOL WILLBE ERASED, AND YOU WI
LL BE ABLETO ERASE AND RE-ENTER
ANY SYMBOLYOU WISH."
980 PRINT:PRINT" HIT ANY KEY
TO CONTINUE";
990 IF INKEY$=""THEN 990 ELSE CL
S:PRINT
1000 PRINT" THE GAME IS PLAYABL
E IN THREE DIFFERENT LEVELS:":PR
INT:PRINT"1) ALL OF THE SYMBOLS
DIFFERENT FROM EACH OTHER":PRINT
"2) ONE OF SPACES MAY BE OCCUPIE
DBY A BLANK INSTEAD OF A SYMBOL"
:PRINT"3) EACH SYMBOL OR THE BLA
NK CAN APPEAR ANY NUMBER
1010 PRINT:PRINT"GOOD LUCK!! PRE

```



# PRO-COLOR-FILE<sup>®</sup>

*If you're through playing games and are ready to get serious about software, then PRO-COLOR-FILE is for you. Turn your TRS-80 32k Color Computer Disk System into a powerful data base manager.*

## 60 DATA FIELDS

These fields are defined by you along with how many spaces to allow for data entry and are broken into 4 segments of 15 fields each. Define from 1 to 15 fields per segment and indicate separate disk drives for segments if you have them.

## 4 DATA ENTRY SCREENS

Don't bother with PRINT @ statements anymore. PRO-COLOR-FILE lets you custom design your screens that will be used for entering your data with full color. Type headings, notes and titles to suit your needs and specify your fields as being alphanumeric, whole number, or decimal entry. Switch through screens while entering data or reviewing records. You can even define a password for any screen for limited access.

## 14 MATH EQUATIONS

Set up math equations to apply the operations of add, subtract, multiply, or divide to the data you enter on each record. In a Job Quote program you could set up the equations to multiply the hourly rate by the number of hours, add all the expenses together and then apply sales tax.

## ALPHABETIZED INDEX

An index will allow you to scan through your file or obtain a hard copy report in an alphabetical order by any of your fields. An index will also allow access to any record within a 1000 record file in less than 10 seconds. Tag up to 2 additional fields to create an index within an index within an index. This means that you could alphabetize a mailing list first by STATE then within each STATE by CITY and then within each CITY by LAST NAME.

Select records for indexing by using AND/OR options and relationship indicators such as =, <, >, <=, >=, <>.

Re-Index a file at any time when new records are added or when a different index is desired.

## 5 REPORT FORMATS

PRO-COLOR-FILE gives you the freedom to design report formats that will produce hard copy reports of your data formatted to your needs. The versatile report formatter will let you design report formats with column width selectable from 32 to 255 spaces. Indicate up to 5 ASCII codes to be sent to the printer to take advantage of different font sizes on printers with that capability. Define report title and column headings, create vertical lines, obtain totals on numeric fields and even design label formats.

Select records for reporting from the index list by using the same AND/OR options and relationship indicators as mentioned.

A custom menu lets you name each report format to indicate the type of report it will generate. Password protect any format to allow limited access.

## NEW VERSION - 2.0

PRO-COLOR-FILE 2.0 has added features that offer even more flexibility and added Data management capabilities.

## SCREEN REPORT FORMATS

If you need to review records and/or obtain totals for numeric fields without wanting to produce a hard copy, you will be able to do so with the screen report feature.

## ASCENDING / DESCENDING

Have your hard copy or soft copy reports printed out in ascending or descending order.

## SELECT A RANGE

PRO-COLOR-FILE 2.0 gives you the ability to select a range of records for indexing or reporting by two fields at the same time. In a mailing list program you could select only those records that fall within a certain zip code range and that have last names within a certain range of the alphabet.

Design as many programs as you can think of: Mailing List, Inventory, Job Quotes, Expenses, Student Records. Any application that requires information to be stored, updated and reported can be created with PRO-COLOR-FILE. Fully documented with examples of data base programs created using PRO-COLOR-FILE.

VERSION 1.0 - \$59.95 (limited copies available)

VERSION 2.0 - \$79.95

Upgrade copies and new manuals available for owners of the 1.0 version for \$20.00. Send serial number when ordering!

(Check, money order, Visa or Master Charge - allow 2 to 3 weeks for delivery. Add \$2.00 for Shipping and Handling.)

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MC \_\_\_\_\_  
EXPIRATION DATE \_\_\_\_\_  
SIGNATURE \_\_\_\_\_

Derringer Software, Post Office Box 5300, Florence, S.C. 29502.  
Phone: 803 665 5676 after 6:00 p.m., Monday - Friday.  
Before 10:00 p.m. on weekends.

PRO-COLOR-FILE ©1982 Dennis Derringer  
(TRS-80 is a trademark of TANDY Corp.)

# ™ 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 information on the TRS-80 color computer™. Devoted to SS-50 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!

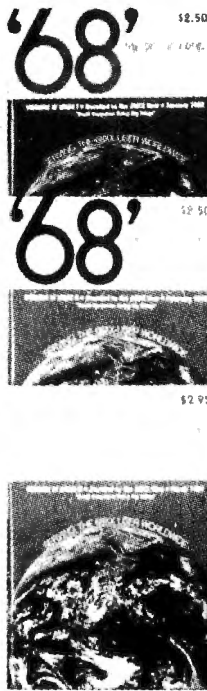
## 68 MICRO JOURNAL

5900 Cassandra Smith Road  
Hixson, Tennessee 37343  
615 842-4600

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\*\* Sample issue - \$3.50



68 Micro Journal™ was established with one objective in mind; to provide a Magazine FOR 68xx Users BY 68xx Users. Because of a strict advertiser policy, 68 Micro Journal™ has gained a strong following WORLDWIDE because the reader KNOWS what he is getting when purchasing from a 68 Micro Journal™ Advertiser. It has gained a strong User following because most of the material published is contributed BY USERS, and, therefore, is relevant to the Users needs.

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.

We still, and will continue to, lead in the type information you need to FULLY UTILIZE the POWER of the 6809 in the Radio Shack TRS-80 Color Computer™.

*Bob Nay*  
Bob Nay  
Color Computer Editor

# The Original FLEX for Color Computers

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If you are tired of playing games on your TRS-80C™ Color Computer, or find that you are handicapped by the limitations of the RS BASIC in trying to write a Program that will allow you to actually USE the Color Computer as a COMPUTER, YOU ARE READY TO MOVE UP TO THE FLEX9™ Operating System. If you want to have REAL PROGRAMMING POWER, using an Extremely Powerful Business BASIC, PASCALS, C Compilers, a full-blown Macro Assembler with a Library capability so you are not continuously "reinventing the wheel", YOU ARE READY TO MOVE UP TO THE FLEX9™ Operating System. If you would like to see if YOU REALLY COULD USE A COMPUTER IN YOUR BUSINESS, or begin to make your Computer start PAYING IT'S OWN WAY by doing some Computer Work for the millions of small businesses around you, such as Wordprocessing, Payroll, Accounting, Inventory, etc., then YOU ARE READY TO MOVE UP TO THE FLEX9™ Operating System. How?? DATA-COMP has the way!

DATA-COMP's FLEX9™ Conversion for the TRS-80C™ Color Computer was designed for the SERIOUS COMPUTER USER; with features like greatly increased Display Screens, WITH Lower Case Letters, so you can put a FULL Menu on ONE Screen, or see SEVERAL Paragraphs at the same time; with features like providing a FULL Keyboard so you have FULL Control of your Computer AND it's Programs NATURALLY, without needing a chart to see what Key Combination will give you what function; with USER ORIENTED functions to make using the Operating System natural, like having the Computer AUTOMATICALLY determine what type of Disk is being used in what type of Disk Drive and working accordingly, rather than you have to specify each and every thing for it, or like having the Computer work with the Printer you have been using all along without you having to tell the new Operating System what is there, etc., etc., etc.

DATA-COMP has everything you need to make your TRS-80C™ Color Computer WORK FOR YOU; from Parts and Pieces to Full, Ready To Use SYSTEMS. DATA-COMP designs, sells, services, and SUPPORTS Computer SYSTEMS, not just Software. CALL DATA-COMP TODAY to make your Computer WORK FOR YOU!

### System Requirements

FLEX9 Special General Version x/Editor & Assembler (which normally sell for \$50.00 ea.)	\$150.00
F-MATE(RS) FLEX9 Conversion Rout. for the RS Disk Controller when purchased with Special General FLEX9 Sys.	\$69.95
when purchased without the General FLEX9 Sys.	\$79.95
Set of Eight 64K RAM Chips w/Mod. Instructions	\$69.96
Color Computer with 64K RAM and EXT. BASIC	\$499.95
Color Computer with 16K RAM	\$289.95
Color Computer with 16K RAM and EXT. BASIC	\$389.95

### SPECIAL SYSTEM PACKAGES

64K Radio Shack COLOR COMPUTER, Radio Shack COLOR DISK CONTROLLER, a Disk Drive System, Special General Version of FLEX9™, F-MATE(RS)™ and a Box of 10 Double Density Diskettes; a COMPLETE, ready to run SYSTEM on your Color TV Set. \$1249.95

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PAK #1 — 1 Single Sided, Double Density Sys.	\$499.95
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DATA-COMP

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SS ENTER TO BE- GIN OR ANY OTHE  
R KEY TO REVIEW THE INSTRUCTION  
S."

1020 IN\$=INKEY\$: IF IN\$="" THEN 10  
20 ELSE IF IN\$(>CHR\$(13)) THEN GO  
TO 910 ELSE RETURN

1030 '\*\*\*\*FONT SET\*\*\*\*

1040 DATA "BU5;BR1;E1;D6;NL1;R1;  
BM+4,+0"

1050 DATA "NR4;U1;BU3;U1;E1;R2;F  
1;D1;G1;L1;G2;BM+7,+1"

1060 DATA "BU5;E1;R2;F1;D1;G1;NL  
2;F1;D1;G1;L2;NH1;BM+7,+0"

1070 DATA "BU3;NR4;M+3,-3;D6;BM+  
4,+0"

1080 DATA "BU4;NR3;U2;R4;BD2;BL1  
;F1;D2;G1;L2;H1;BM+7,+1"

1090 DATA "BU6;BR3;NF1;L2;G1;D2;  
NR3;D2;F1;R2;E1;U1;H1;BM+4,+3"

1100 DATA "U1;BU5;R4;D1;M-4,+4;B  
M+7,+1"

1110 DATA "U5;E1;R2;F1;D3;NL4;D2  
;BR3"

1120 DATA "BU1;U4;E1;R2;F1;BD4;G  
1;L2;H1;BR7;BD1"

1130 DATA "R1;U6;NL1;R2;F1;D4;G1  
;L2;BR6"

1140 DATA "U3;NR3;U3;R4;BD6;L4;B  
R7"

1150 DATA "U3;NR4;U3;BR4;D6;BR3"

1160 DATA "BU6;BR1;R1;ND6;R1;BR1  
;BD6;BL1;L2;BR6"

1170 DATA "U6;M+2,+3;M+2,-3;D6;B  
R3"

1180 DATA "U6;M+4,+6;U6;BD6;BR3"

1190 DATA "U6;R4;D6;L4;BR7"

1200 DATA "U6;R3;F1;D1;G1;L3;D3;  
BR7"

1210 DATA "U6;R3;F1;D1;G1;L3;R1;  
M+3,+3;BR3"

1220 DATA "BU1;F1;R2;E1;U1;BU3;H  
1;L2;G1;D1;M+4,+2;BR3;BD2"

1230 DATA "BU6;R2;ND6;R2;BD6;BR3  
"

1240 DATA "BU6;R2;ND6;L2;BD6;BR3"

1250 DATA "BU1;U5;BR4;D5;G1;L2;H  
1;BD1;BR7"

1260 DATA "BU6;M+2,+6;M+2,-6;BD6  
;BR3"

1270 DATA "U6;BR4;D6;M-2,-2;NU1;  
M-2,+2;BR7"

1280 DATA "U1;M+4,-4;U1;BL4;D1;M  
+4,+4;D1;BR3"

1290 DATA "BR2;U3;M-2,-2;U1;BR4;  
D1;M-2,+2;BD3;BR5"

1300 DATA "BU6;R4;M-4,+6;R4;BR3"

Color Computer News

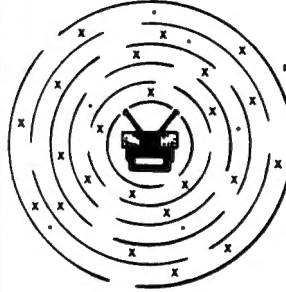
# COLOR COMPUTER SOFTWARE

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Can YOU raid the hive without being stung? Watch out! Everything moves in this game. Even the different levels of the hive rotate.

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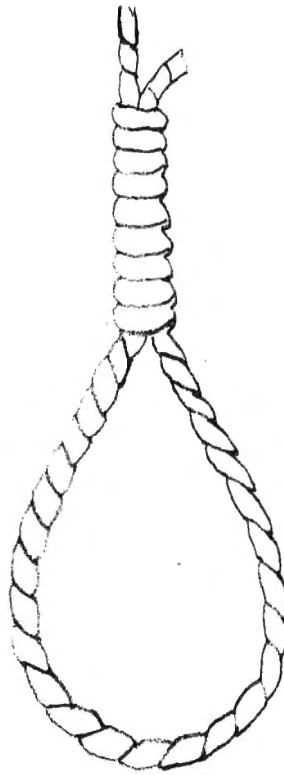
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# HANGMAN

By Chris Phillips  
8123 Farnam Drive  
Omaha, NE 68114



Whenever I force party guests to enjoy a computer game, this is the one they are most likely to request. It's a universally-known game that is given a new twist, thanks to CoCo's 600-word vocabulary.

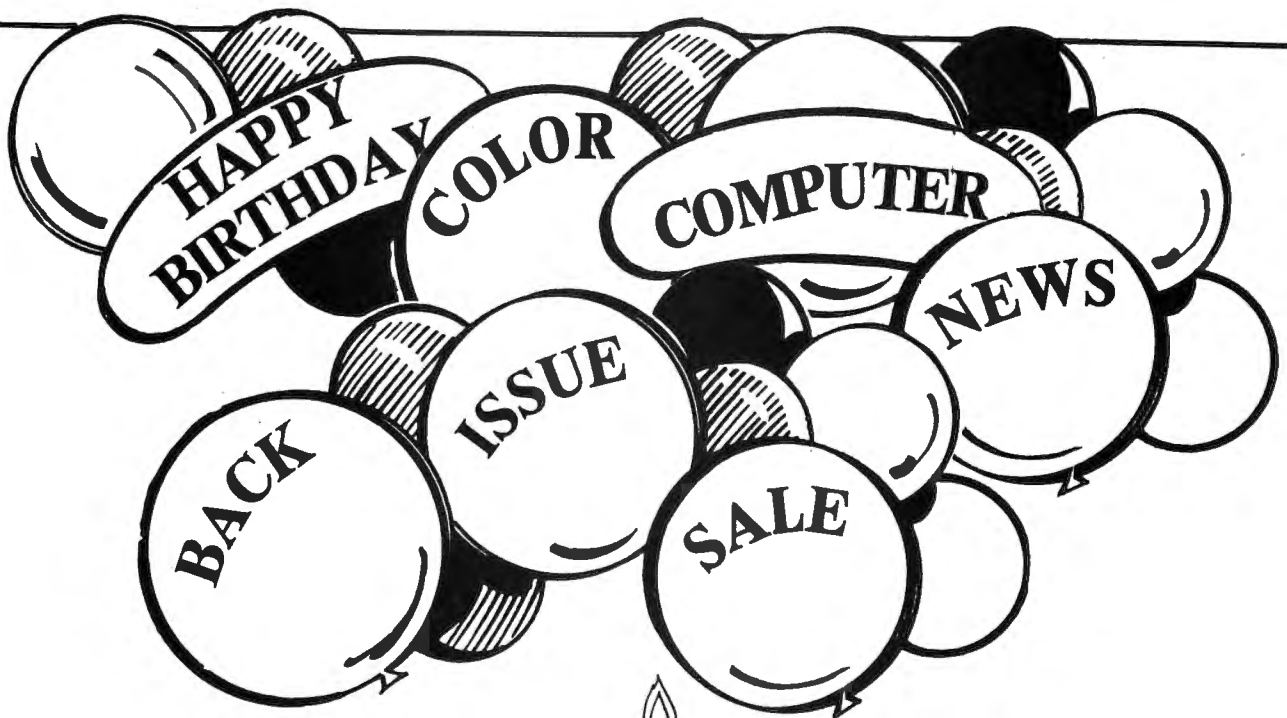
The value of this kind of program is largely dependent upon the words chosen as data. I like to think that the collection given here makes the program both educational and fun to play. There are common words for fun and obscure words that help the player develop his or her vocabulary. There are long easy words and treacherous words of three and four letters. And I gave special attention to words that contain many of the less-common letters. Guessing off a letter-frequency chart won't always work here.

I wrote this program on a 32K color computer; you will have to delete the comments and probably some of the words to use it on a 16K machine. If you change the number of words in data, be sure to alter line 400; the random number should be the number of words.

When you guess a letter, just hit the letter key; the guesses are entered by an INKEY\$ and not an INPUT function.

The subroutine that produces lettering on the high-resolution screen uses Extended Color Basic's "DRAW" command. At the standard scale of four (SK\$="4"), it produces 32 characters per line. The capital letters use a 5 x 7 matrix within the 8 x 12 matrix provided by the spacing in line 2840; this leaves room for lower-case descenders.

The subroutine, which occupies lines 920 through 2870, will produce all upper and lower case letters and many symbols as well. It is ready for use with any high-resolution program you desire (although it is necessary to use scale eight in the lower numbered modes). If you wish to graft it onto an existing program, there are several methods to merge programs on the Color Computer. The easiest makes use of the fact that basic stores the location of the beginning of the current program in the 16 bit memory location beginning at \$0019 and the end of the program in the 16 bit location starting at \$001B. Just peek out the values in 25, 26, 27 and 28 after you have loaded the lower-numbered program. Then poke the value of 27 into 25 and two less than the



In celebration of the 2nd birthday of Color Computer News, we are offering available back issues at a special low rate. This rate includes postage and handling. The supply of some issues is limited. This offer expires June 30, 1983.

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ALSO AVAILABLE is Color Computer News - The Best of 1981. This small soft bound book contains the first four issues of Color Computer News. This book is available for \$9.95 (price includes postage).

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value in 28 into 26. Next load the subroutine and replace the original values in 25 and 26.

If you'd like to play "HANGMAN" but want to save yourself the trouble of typing it, send me \$4.95 to cover my costs and I'll mail you the program on cassette tape. Please specify whether you want the 32K or 16K version.

LETTERS

This subroutine will produce lettering on the high-resolution screens in Extended Color Basic. It is capable of producing attractive and easily readable upper and lower case letters and a number of characters as well, including the digits 0-9 and most punctuation marks. Used with a scale of four (SK\$="4"), it produces 32 characters per line. The capital letters use a 5 x 7 matrix within the 8 x 12 matrix provided by the spacing in line 2840 ; this leaves room for lower-case descenders.

"LETTERS" can be used with any high-resolution BASIC program, although it is necessary to use scale eight in the lower-numbered modes. If you wish to graft it onto an existing program, there are several methods to merge programs on the Color Computer. The easiest makes use of the fact that BASIC stores the location of the beginning of the current program in the 16 bit memory location beginning at \$0019 and the end of the program in the 16 bit location starting at \$001b. Just load the lower numbered program and peek out the values in 25, 26, 27 and 28. Then poke the value in 27 into 25 and two less than the value in 28 into 26. Next load the subroutine and replace the original values in 25 and 26.

If you'd like this subroutine without the trouble of typing it, send me \$4.95 to cover my costs and I'll mail it to you on cassette tape.

```

10 'HANGMAN
20 'BY CHRIS PHILLIPS
    8123 FARNAM DRIVE
    OMAHA, NE 68114
30 'VARIABLE LIST
40 'A#,L,SK,SK#,SP,W#,X AND Y
    ARE EXPLAINED AT LINES 930
    AND 940
50 'CT=# OF WRONG LETTERS
    GUESSED
60 'DG CHECKS WRONG LETTERS TO
    AVOID REPETITION
70 'DM# RECORDS CORRECT GUESSES
80 'G*(DM) CREATES A GUESSED

```

```

WORD
90 'H=LETTER COUNTER
    K=# OF GAMES PLAYED
    LL=# OF LOST GAMES
    PC=PERCENTAGE
    R NOTES A CORRECT GUESS
    W=# OF THE WORD IN DATA
    WD#=THE WORD TO GUESS
100 'WX=HORIZONTAL LOCATION OF
    INCORRECT LETTERS PRINTED ON
    SCREEN
    W1 IS USED TO RANDOMIZE THE
    WORDS
110 PMODE4,1:COLOR0,1:PCLS:SCREE
    N1,1
120 'USE OF THIS SUBROUTINE IS
    EXPLAINED AT LINE 930
130 X=71:Y=50:SK$="8":W$="HANGMA
    N":GOSUB920
140 X=111:Y=80:W$="BY":GOSUB920
150 X=15:Y=110:W$="CHRIS PHILLIP
    S":GOSUB920
160 SK$="4"
170 'THE HANGING TREE
180 PLAY"T503GAFGEFDEGAFGEFDECCG
    L2BL4"
190 'ENSURES A DIFFERENT
    STARTING POINT EACH TIME
200 FORW=1TOTIMER-INT(TIMER/500)
    *500:W1=RND(600):NEXT
210 PCLS
220 'DRAWS THE GALLOWS
230 LINE(100,50)-(250,60),PSET,B
240 LINE(230,60)-(245,180),PSET,
    B
250 LINE(220,180)-(255,190),PSET
    ,B
260 LINE(160,49)-(164,61),PSET,B
    F
270 LINE (161,60)-(163,80),PSET,
    BF
280 'DRAWS THE PERCENTAGE BOX
290 LINE(0,160)-(40,180),PSET,B
300 'DRAWS THE GAME NUMBER
310 W#=STR$(K+1):X=216:Y=188:GOS
    UB920
320 IF K=0THENGOTO360
330 'DRAWS THE PERCENTAGE SCORE
340 PC=INT(100-(LL/K)*100+.5)
350 W#=STR$(PC)+"%":X=0:Y=176:GO
    SUB920
360 'WD# IS THE WORD TO GUESS
370 'THIS ENSURES A DIFFERENT
    GAME EVERY TIME
380 FORW=1TOTIMER-INT(TIMER/50)*
    50:W1=RND(600):NEXT
390 '550 IS THE TOTAL NUMBER OF

```



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```

      WORDS IN DATA
400 FORW=1TORND(600):READWD$:NEXT:RESTORE
410 'MAKES A DUMMY WORD TO CHECK
      AGAINST THE REAL WORD
420 DM$=STRING$(LEN(WD$),0)
430 'MAKES THE LINES BELOW THE
      LETTERS
440 FORH=1TOLEN(WD$)
450 LINE(8*(H-1)+1,40)-(8*(H-1)+
6,40),PSET
460 NEXT
470 K=K+1
480 W$=INKEY$:IFW$=""THEN480
490 'R DENOTES A CORRECT GUESS
500 R=0
510 'TESTS THE GUESSED LETTER
520 FORW=1TOLEN(WD$)
530 IF W$=MID$(WD$,W,1)THENR=1:M
ID$(DM$,W,1)=W$:PLAY"T2405CEG":X
=2+(W-1)*8:Y=36:GOSUB920
540 'CHECKS THAT WRONG LETTER
      HASN'T ALREADY BEEN GUESSED
550 G$(CT+1)=W$
560 IFCT=0THENGOTO600
570 FOR DG=1 TO CT
580 IF W$=G$(DG)THEN480
590 NEXT
600 NEXT
610 IFR=0THENPLAY"T2401GEC":X=WX
:WX=WX+12:Y=10:GOSUB920
620 IFWD$=DM$THENX=0:Y=96:W$="Th
at's right!":GOSUB920
630 IFWD$=DM$THENPLAY"T503GAFGEF
DEGAFGEFDECCGL2GL4":GOTO730
640 'DRAWS THE HANGED MAN
650 IFR=0THENCT=CT+1:ON CT GOSUB
750,780,800,820,840,860,880,900
660 GOTO480
670 LL=LL+1
680 X=0:Y=72:W$="Too bad...":GOS
UB920
690 X=0:Y=84:W$="you lose...":GO
SUB920
700 X=0:Y=96:W$="the word was":G
OSUB920
710 X=0:Y=108:W$=WD$:GOSUB920
720 PLAY "T501GAFGEFDEGAFGEFDECC
GL2GL4"
730 CT=0:WX=0
740 GOTO210
750 CIRCLE(162,86),6
760 PSET(161,86):PSET(164,86):LI
NE(161,89)-(163,89),PSET
770 RETURN
780 DRAW"BM164,90;D3F2NG4R6D5G4D
4L1NL10D6L10U6L1U4H4U5R6NF4E2U3"
790 RETURN
800 DRAW"BM152,95;L2G2D22R1NU2R1
NU2R1NU2R1U2R2U1L2U16"
810 RETURN
820 DRAW"BM172,95;R2F2D22L1NU2L1
NU2L1NU2L1U2L2U1R2U16"
830 RETURN
840 DRAW"BM157,114;D22R5U22"
850 RETURN
860 DRAW"BM162,114;D22R5U22"
870 RETURN
880 DRAW"BM161,136;D4G4L2U2E3U3"
890 RETURN
900 DRAW"BM163,136;D4F4R2U2H3U3"
910 GOTO670
920 'HIGH-RESOLUTION LETTERS
930 'YOUR STRING IS W$. THE
      HORIZONTAL AND VERTICAL
      COMPONENTS OF THE BOTTOM
      LEFT-HAND CORNER OF YOUR
      STARTING POINT ARE X AND
      Y. SCALE IS SK$; '4' GIVES
      32 CHARACTERS PER LINE AND
      '8' 16 CHARACTERS.
940 'OTHER VARIABLES:
      L=STRING CHARACTER
      COUNTER
      L$ DRAWS THE LETTER
      A$=LETTER BEING DRAWN
      SP DENOTES A SPACE
      SK PROPORTIONS SPACING
      TO SCALE
950 SK=VAL(SK$)
960 FORL=1TOLEN(W$)
970 A$=MID$(W$,L,1)
980 IFA$="" THEN SP=1:GOTO2840
990 IFASC(A$)>96THEN1100
1000 IFASC(A$)<65THENGOTO1060
1010 'UPPER-CASE LETTERS
1020 ON ASC(A$)-64GOSUB1670,1690
,1710,1730,1750,1770,1790,1810,1
830,1850,1870,1890,1910,1930,195
0,1970,1990,2010,2030,2050,2070,
2090,2110,2130,2150,2170
1030 NEXT
1040 RETURN
1050 'CHARACTERS AND NUMBERS
1060 ON ASC(A$)-32 GOSUB2200,284
0,2220,2240,2260,2280,2300,2320,
2340,2360,2380,2400,2420,2440,24
60,2480,2500,2520,2540,2560,2580
,2600,2620,2640,2660,2680,2700,2
840,2720,2740,2760
1070 NEXT
1080 RETURN
1090 'LOWER-CASE CHARACTERS
1100 ON ASC(A$)-96 GOSUB1140,116

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# Hangman

```
0, 1180, 1200, 1220, 1240, 1260, 1280,
1300, 1320, 1340, 1360, 1380, 1400, 14
20, 1440, 1460, 1480, 1500, 1520, 1540
, 1560, 1580, 1600, 1620, 1640
1110 NEXT
1120 RETURN
1130 'LOWER-CASE CHARACTERS
START HERE
1140 L$="U2R3U2L3R3D3NF1G1L1"
1150 GOTO2790
1160 L$="R3E1U2H1L2U2NL1D6"
1170 GOTO2790
1180 L$="BU1U2E1R2F1BD2G1L2H1"
1190 GOTO2790
1200 L$="BU1U2E1R2U2NR1D6NR1L2H1
"
1210 GOTO2790
1220 L$="BU1U2E1R2F1D1L3BG1F1R3"

1230 GOTO2790
1240 L$="R2L1U3NL1NR1U2E1R1F1"
1250 GOTO2790
1260 L$="BD1D1R3E1U1H1L2H1U1E1R1
FINE1D1G1"
1270 GOTO2790
1280 L$="R1U6NL1D2R2F1D3L1"
1290 GOTO2790
1300 L$="BR1R2L1U3BU2U1"
1310 GOTO2790
1320 L$="D1F1R1E1U4BU2U1"
1330 GOTO2790
1340 L$="R1U6NL1D4R1NE2F2"
1350 GOTO2790
1360 L$="BR1R1U6L1BR1BD6R1"
1370 GOTO 2790
1380 L$="U4F2E2D4"
1390 GOTO2790
1400 L$="U4D1R1E1R1F1D3"
1410 GOTO2790
1420 L$="BR1R2E1U2H1L2G1D2F1"
1430 GOTO2790
1440 L$="BU4R3F1D2G1L2NU4D2"
1450 GOTO2790
1460 L$="BU1U2E1F2G2NH1BE2NU2D4R
1"
1470 GOTO2790
1480 L$="NR1U4BD2E2R1F1"
1490 GOTO2790
1500 L$="R3E1H1L2H1E1R3"
1510 GOTO2790
1520 L$="BU4R3BH2D5F1R1E1U1"
1530 GOTO2790
1540 L$="NU4R2E1R1ND1U3"
1550 GOTO2790
1560 L$="BU4D1F1D1F1E1U1E1U1"
1570 GOTO2790
1580 L$="NU4E2F2U4"
1590 GOTO2790

1600 L$="E4BL4F4"
1610 GOTO2790
1620 L$="BU2NU2F2R2NU4D1G1L3"
1630 GOTO2790
1640 L$="NR4E4L4"
1650 GOTO2790
1660 'UPPER-CASE CHARACTERS
START HERE
1670 L$="U4E2F2D2NL4D2"
1680 GOTO2790
1690 L$="R3E1U1H1E1U1H1L3R1D3NR2
D3"
1700 GOTO2790
1710 L$="BE4BU1H1L2G1D4F1R2E1"
1720 GOTO2790
1730 L$="R3E1U4H1L2NL1D6"
1740 GOTO2790
1750 L$="R4U1BU4U1L3NL1D3NR2D3"
1760 GOTO2790
1770 L$="R1NR1U3NR2U3NL1R3D1"
1780 GOTO2790
1790 L$="BE2R1NR1D1ND1G1L1H1U4E1
R2D1"
1800 GOTO2790
1810 L$="U3NU3R4NU3D3"
1820 GOTO2790
1830 L$="BR1R1NR1U6NL1R1"
1840 GOTO2790
1850 L$="BU1NU1F1R1E1U5NL1R1"
1860 GOTO2790
1870 L$="R1U6NL1BD3R1E2U1BD5ND1H
2"
1880 GOTO2790
1890 L$="R4U1BG1BL2U6NL1R1"
1900 GOTO2790
1910 L$="U6F2E2D6"
1920 GOTO2790
1930 L$="U6F4NU4D2"
1940 GOTO2790
1950 L$="BU1U4E1R2F1D4G1L2H1"
1960 GOTO2790
1970 L$="R1NR1U6NL1R2F1D1G1L2"
1980 GOTO2790
1990 L$="BU1U4E1R2F1D4G1D1R1BH1L
2H1"
2000 GOTO2790
2010 L$="U6R3F1D1G1L1NL2F2D1"
2020 GOTO 2790
2030 L$="BU1F1R2E1U1H1L2H1U1E1R2
F1"
2040 GOTO2790
2050 L$="BR2U6NL2R2"
2060 GOTO2790
2070 L$="BU1NU5F1R1E1R1ND1U5"
2080 GOTO2790
2090 L$="BU3NU3F1D1F1E1U1E1U3"
2100 GOTO2790
2110 L$="NU6E2F2U6"
```

2120 GOTO2790  
 2130 L\$="U1E4U1BL4D1F4D1"  
 2140 GOTO2790  
 2150 L\$="BR1R1NR1U3H2U1BR4D1G2"  
 2160 GOTO2790  
 2170 L\$="BU5U1R4D1G4D1R4U1"  
 2180 GOTO2790  
 2190 'CHARACTERS AND NUMBERS  
 START HERE  
 2200 L\$="BR2ND1BU2U4"  
 2210 GOTO2790  
 2220 L\$="BR1U2L1BU2R1U2BR2D2R1BD  
 2L1D2"  
 2230 GOTO2790  
 2240 L\$="BU1R2ND1R1E1H1L2H1E1R1N  
 U1R2"  
 2250 GOTO2790  
 2260 L\$="U1E4U1BL4D1BF4D1"  
 2270 GOTO2790  
 2280 L\$="BR4H1U1H3E1F1G2D2F1R1E2  
 U1"  
 2290 GOTO2790  
 2300 L\$="BR2BU4U2"  
 2310 GOTO2790  
 2320 L\$="BR2H1U4E1"  
 2330 GOTO2790  
 2340 L\$="BR2E1U4H1"  
 2350 GOTO2790  
 2360 L\$="BU2E2NH2NU2NE2NF2D2"

2370 GOTO2790  
 2380 L\$="BR2BU1U2NL2NU2R2"  
 2390 GOTO2790  
 2400 L\$="BR2NU1G1"  
 2410 GOTO2790  
 2420 L\$="BU3R4"  
 2430 GOTO2790  
 2440 L\$="BR2U1"  
 2450 GOTO2790  
 2460 L\$="U1E4U1"  
 2470 GOTO2790  
 2480 L\$="BU1NE4U4E1R2F1D4G1L2H1"  
 2490 GOTO2790  
 2500 L\$="R2NR2U6L1G1"  
 2510 GOTO2790  
 2520 L\$="NR4E4U1H1L2G1"  
 2530 GOTO2790  
 2540 L\$="BU1F1R2E1U1H1NL2E1U1H1L  
 2G1"  
 2550 GOTO2790  
 2560 L\$="BR3U6G3R4"  
 2570 GOTO2790  
 2580 L\$="BU1F1R2E1U2H1L2G1U3R4"  
 2590 GOTO2790  
 2600 L\$="BU3E1R2F1D2G1L2H1U4E1R3  
 "  
 2610 GOTO2790  
 2620 L\$="E4U2L4D1"

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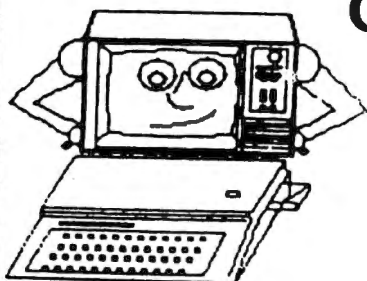
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2630 GOTO2790  
2640 L\$="BU1U1E1NR2H1U1E1R2F1D1G  
1F1D1G1L2H1"  
2650 GOTO2790  
2660 L\$="BR1R2E1U4H1L2G1D2F1R2E1"  
2670 GOTO2790  
2680 L\$="BR2U1BU2U1"  
2690 GOTO2790  
2700 L\$="BR1BD1E1U1BU2U1"  
2710 GOTO2790  
2720 L\$="BU1R4BU2L4"  
2730 GOTO2790  
2740 L\$="BR1U5NL1R3D5"  
2750 GOTO2790  
2760 L\$="BU5E1R2F1D1G1L1D1BD2D1"  
2770 GOTO2790  
2780 'POSITIONS THE BOTTOM-LEFT  
HAND CORNER OF THE CHAR-  
ACTER'S 5 X 7 MATRIX  
2790 DRAW"BM"+STR\$(X)+", "+STR\$(Y  
)+";"  
2800 'DETERMINES SCALE  
2810 DRAW"S"+SK\$  
2820 DRAWL\$  
2830 'MOVES REFERENCE POINT TO  
NEXT LETTER LOCATION  
2840 X=X+2\*SK:IF X>256-2\*SK THEN  
X=0:Y=Y+3\*SK  
2850 'RETURNS SPACE-SIGNAL TO 0  
2860 IFSP=1THENSP=0:NEXT  
2870 RETURN  
2880 DATA FEATHER,BOOKKEEPER,SWI  
LL,CARROT,BARD,INVISIBLE,FIXED,G  
LOBE,CRUST,DIVERSITY  
2890 DATA YELLOW,CYAN,MAGENTA,BU  
FF,VECTOR,GAME,PHENOMENA,TAUGHT,  
DICE,NUCLEI  
2900 DATA BULKHEAD,HOMOGENEITY,E  
POCH,DILEMMA,ENIGMA,EPIC,LEXICON  
,LICHEN,MACHISMO,MACRAME  
2910 DATA MAGIC,MAGAZINE,MAGNIFY  
,MAHARAJAH,MALARKEY,MAMMALIAN,MA  
PLE,MICROWAVE,MILQUETOAST,MILLIP  
EDE  
2920 DATA MUCILAGE,MUCKRAKER,OWL  
,NICKELODEON,OBLIQUE,OCEANOGRAPH  
Y,ODYSSEY,OPHTHALMOLOGIST,OPPROB  
RIOUS,ORCHESTRA  
2930 DATA OSTRICH,OXYMORON,OVOVI  
VIPAROUS,PALFREY,PANACEA,PAPRIKA  
,PARAMECIUM,PARKWAY,PHENDLPHTHAL  
EIN,PTERODACTYL,PINWHEEL,PLUPERF  
ECT,PLUNGE,PLUMB  
2940 DATA POLYUNSATURATED,PRIZED  
,PRIVACY,PROMPT,PROLIFIC,PROSELY  
TIZE,PSYCHE,PYROTECHNICS,RENEGE,  
QUIZZICAL,RIDICULOUS,ROCCO,SHIL  
LELAGH,SHEPHERD  
2950 DATA SKUNK,SOYBEANS,SYBARIT  
IC,TETRAGRAMMATON,TIKI,TYMPANY,T  
YPIFY,UNHOOK,UNHAPPY,UNFAVORABLE  
,UVULAR,UTOPIA  
2960 DATA VAPOR,VARICOSE,VANQUIS  
H,VEHICLE,VAUDEVILLE,VENGEFUL,VE  
RMOUTH,VERONICA,VESTIBULE,VESPER  
S  
2970 DATA VEXATION,VICINITY,VIBR  
ANT,VIGNETTE,VINEGAR,VIZIER,WAIN  
SCOTING,WHATSOEVER,WHARF,WHIMPER  
2980 DATA ORIGIN,CLIMATIC,CONSTI  
TUENT,PRIMEVAL,HAMLET,KERNEL,DRI  
FT,EXTREME,TAILOR,ABAMPERE  
2990 DATA HANGMAN,EXECUTION,COMP  
UTER,FILES,SEAL,FACETIOUS,GIRAFF  
E,RHINOCEROS,ALBATROSS,UNIVERSE  
3000 DATA WHIMSY,WHIRLIGIG,WOMBA  
T,XEBEC,XYSTER,YTTERBIUM,ZITHER,  
ZIGZAG,ZINC,ZODIAC,ZOYSIA,ZWIEBA  
CK,AWFUL,AZIMUTH,AXOLOTL  
3010 DATA BABOON,BACHELOR,BACCAL  
AUREATE,BACKGROUND,BALALAIKA,BAM  
BOO,BALLYHOO,BANYAN,BARBER,BARNA  
CLE,ACOLYTE,ADUMBRATE,APOPEMPTIC  
,APOSIOPESIS,ASHRAM  
3020 DATA BARRACUDA,BEANSTALK,BA  
ZAAR,BECKONING,BEGUILE,BEHOOVE,B  
ESMIRCH,BEZIQUE,PINOCHLE,BIPARTI  
SAN,BLABBERMOUTH,BOMBARDIER,BOOM  
ERANG,BOUQUET,BRAWN  
3030 DATA BRAKE,BRAZILWOOD,BRAVA  
DO,BUCCANEER,BUCKWHEAT,BULLHEAD  
D,BUOYANT,BUREAUCRACY,BUMPY,BUTT  
ERFLY,BEDIGHT,BIBULOUS,BLOVIATE,  
CACHINATION,CENOBSITE  
3040 DATA BUZZARD,CAJOLE,CALUMNY  
,CALLIOPE,CAMARADERIE,CALYPSO,CA  
MPFIRE,CAMPHOR,CANDY,CANNIBAL  
3050 DATA CLERHEW,COCKAMAMIE,CO  
MITY,CONGERIES,COSSET,CANYON,CAN  
VAS,ZUCCHINI,CARAFE,CARBUNCLE,CA  
RIBOU,CASSOWARY,CATECHISM,CATEGO  
RICALLY,CAVALCADE,CRAPULOUS,CREP  
USCULAR,DEMIURGE,DIVAGATION,DRAG  
OMAN  
3060 DATA CAULIFLOWER,CAVEFISH,C  
ELEBRATION,CEREBRUM,CERAMIC,CERT  
IFY,CHALKBOARD,CHAMPION,CHILBLAI  
N,CHEVALIER  
3070 DATA CHIMPANZEE,ORANGUTAN,G  
IBBON,MONKEY,CHIROMANCY,CHLOROPH  
YLL,CHOREOGRAPHY,CIRCUMSCRIBE,CI  
RCUMFERENCE,CLAIRVOYANCE  
3080 DATA CLEVER,CLOBBER,CLOCKWO  
RK,CLUMSY,COOON,COLESLAW,COLOGN  
E,COLLOQUIAL,COMBINATION,COMPLEX  
3090 DATA SIZE,ATOM,FOLKLORE,TRI

# INTERNATIONAL COLOR COMPUTER CLUB



Main Office

2101 E. Main St., Henderson, Texas 75652

Canadian Branch

96 Carleton Dr. Saskatoon, Saskatchewan S7H-3N6

**WORLD'S LARGEST COLOR COMPUTER CLUB**

## HERE ARE SOME GOOD REASONS FOR JOINING

- 1). **FREE PROGRAMS.** Good programs written by our members are contained in the library, in the newsletter, and on the new member tape.
- 2). **NEWSLETTER.** A "magazine" sized newsletter (last issue 56 pages), with programs, tips data, reviews, articles and much more.
- 3). **NEWSLETTER Tape** A tape of all the programs appearing in the newsletter is available from the library for \$2.00 (to members)
- 4). **CLUB LIBRARY.** The club maintains a library of programs, books and Radio Shack ROM-packs. The programs are member written and are yours to keep, there is a small fee to cover postage and tape (\$2.). The books and ROMpacks may be checked out for 3 weeks at a time. (extensions possible)
- 5). **DISCOUNTS.** get large discounts on many software and hardware items for CoCo from some of the MAJOR companies. Also discounts on subscriptions to the RAINBOW, CCN and Chromasette magazines.
- 6). **ADVERTISE FREE** Members may place ads of up to ¼ page per issue in the newsletter FREE. (The ad must be computer related)
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- 8). **SURPRISE.** You receive a "New member" package containing many useful items.
- 9). **GET HELP.** This is the worlds largest Color Computer Club. With members in almost every field of expertise. So if you have a problem with the Color Computer, we can almost always get you the answer. Put your problem on the Clubs Bulletin Board, write, or call.
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Write to the club for an application, there are no conditions for membership other than agreeing to obey the rules, being interested and paying the dues. The membership dues are \$30.00 per year and we believe you get more than your moneys worth. You can save more than the \$30.00 in discounts the club offers you. Example: Subscription to the RAINBOW, 25% off of regular subscription rates. Some members have told me that the new member tape alone is worth the \$ 30. it contains 10, very good programs. Some of the programs contained in the library are, Accounts Receivable, General ledger, Inventory, Sales file and ticket program with automatic Inventory update (for 32 K with 2 disc.)

AGE, METHANE, PATHETIC, FROZEN, METEOR, GEYSER, GROUNDSWELL  
 3100 DATA COMPOUND, COMPUNCTION, CONGLOMERATION, CONVINCED, CONVULSIVE, COPYBOOK, COUNTERCLOCKWISE, COUNTERWEIGHT, COVENANT, COWARD  
 3110 DATA COWPUNCHER, CRACKPOT, CRAZY, CRICKET, CRUCIBLE, CRUCIFIX, CRYPTOGRAM, CURDLE, CUPCAKE, CUNEIFORM  
 3120 DATA CURFEW, CURVATURE, CYPRESS, CZARINA, DAMASK, DECIMAL, DECIBEL, DEFAULT, DECREPIT, DEHUMANIZE  
 3130 DATA DEPUTY, DEVELOP, DIAPHANOUS, DIORAMA, DIRNDL, DIPHTHONG, DISCOMFITURE, DISGRACE, DISEMBARK, DOGBEREL  
 3140 DATA DOUBLET, DOWAGER, DOWNFALL, DRIFTWOOD, DYNAMIC, ECONOMY, ECZEMA, ELBOWROOM, EMPATHY, ENDOWMENT, ENTROPY, EPIC, EPILOGUE, ETAGERE, ETUDE  
 3150 DATA ELEEMOSYNARY, ENCHILADA, ENJAMBMENT, ERISTIC, FICTIVE, EVOCATIVE, EXHALE, EXPEDIENCY, EXPUNGE, FACTORIAL, FABLE, FACADE, FANCIFUL, FANCY, FAVORABLE, FERVENT, FESTIVITY, FEUDAL, FLAVOR, FLUGELHORN, FLAGITIOUS, FRISSON, FULGURANT, FUSTIAN, GESTALT  
 3160 DATA FLUNKY, FUDGE, FULMINATE, GARMENT, GAWKY, GAZEBO, GIBBERISH, GLOCKENSPIEL, GRAFFITI, HAGGARD  
 3170 DATA HANDYMAN, HAYMOW, HEADACHE, HOCKEY, HUBRIS, HAMMOCK, HUMBUG, HYPOCHONDRIAC, IAMBIC, INVOKE  
 3180 DATA JAGUAR, JAVELIN, KITCHEN, LABYRINTH, LACQUER, LIQUIFY, LONGEVITY, LOZENGE, LYNX, MACADAM  
 3190 DATA WATCH, GUARDIAN, POLLUTE, ENHANCE, INSECT, FIREFLY, HAMPER, VILIFY, OCTOPUS, INTELLIGENCE  
 3200 DATA MAHOGANY, REPLICAS, FIEND, MOUSTACHE, MAGISTRATE, KANGAROO, SEQUENCE, PICKAX, QUIESCENT, TRIANGLE  
 3210 DATA DIGITS, UGLY, WORK, PLAY, BOOK, SPEAK, HICCUP, KETCHUP, FAZE, FACE  
 3220 DATA LECTERN, SAVAGE, STROBOSCOPE, UNDERWORLD, UNDERSTATEMENT, VOLCANO, VODOO, VOCABULARY, VISITOR, VOID  
 3230 DATA PACKAGE, PALACE, PEDDLE, PECULIAR, BOURGEOISIE, PIG, PIT, WIG, PERFECT, RAGTIME  
 3240 DATA EAGLE, DRAY, DREADED, COINCIDENCE, CIPHER, COIFFURE, CHAFF, B

OOTLESS, BOSKY, BARNSTORM  
 3250 DATA PINBALL, NIX, OXEN, AXLE, ZOOM, ADZE, QUINTESSENTIAL, APPLAUD, WISHFUL, CHOPPER  
 3260 DATA HARUSPEX, CARPET, HEBDOMADAL, CODES, VERTICAL, INCUNABALA, IRENIC, KABUKI, IMAGINATION, ACCESSORY, LABILE, LACUNA, MANICHEAN, USEFUL, GRAMMAR, MARCESCENCE, MNEMONIC, PHRASE, MITHRIDATE, BROILED  
 3270 DATA AUSTERE, KOALA, BENIGNLY, EVAPORATE, CHIPMUNK, KIWI, PUZZLE, XYLOPHONE, SAXOPHONE, LAUGHTER  
 3280 DATA SURLY, ARROW, YACHT, CONNOISSEUR, ANTIDISESTABLISHMENTARIANISM, BACKGAMMON, GOLF, WEIGHTLIFTER, SQUAT, BARBELL  
 3290 DATA BRAIN, ASTEROID, BARGAIN, PARSEC, COLLISION, MIMIC, SECRET, LANGUAGE, CHECKERS, QUART, DHOTI  
 3300 DATA OENOLOGY, PAEAN, PLANGENT, PSYCHOSOMATIC, PHILOSOPHER, QUIDDITY, REBARBATIVE, SAMIZDAT, HYPOTHESIS, SYZYGY, AILMENT, VATICINATE, ZEUGMA, DUTY, SERGEANT, LIEUTENANT, COLONEL, SPONTANEOUS, MUSICIAN  
 3310 DATA WARPED, PLANET, CHEMICAL, HALLUCINATION, THERAPEUTIC, SOLEMN, COLUMN, RHYTHM, PICNIC, TEMPERAMENT  
 3320 DATA SUBLIME, ZERO, VOLUMINOUS, CAKE, BUG, GAG, BOX, BAG, ACT, AXE  
 3330 DATA MYSTIC, AGRICULTURE, VEHEMENT, HEGEMONY, FANTASY, ISLAND, COERCE, TWELVE, TRIUMPH, VIEWPOINT  
 3340 DATA EXPAND, ANALOGY, BELIEF, LOCOMOTIVE, JET, AIRPLANE, HAMMER, FELINE, CANINE, SYLLABLE  
 3350 DATA ACADEMY, ONYX, CHROME, FRANCHISE, AGGRANDIZE, AMUCK, APPOGGIATURA, AQUEDUCT, ARCHAEOPTERYX, ARCHIPELAGO  
 3360 DATA ARMADA, ARROYO, AUTOGRAPH, AUSTRALOPITHECINE, AVOCADO, AWAKEN, AZIMUTH, BACKBREAKING, BACKWOODS, BANJO  
 3370 DATA BARBECUE, BAZOOKA, BETOKEN, BLACKBERRY, CHALCEDONY, HALFWIT, HAPHAZARD, HARMONICA, HIERARCHY, HEXAPOD, JUXTAPOSE, JUMPY  
 3380 DATA HYPERCHOLESTEROLEMIA, PARASYMPATHOMIMETIC, RHAPSODY, SEMI PROFESSIONAL, SESQUICENTENNIAL, UNDERESTIMATED  
 3390 DATA MATCHSTICK, LUXURY, DWARF, SURVIVOR, TOMAHAWK, SQUABBLE, THUMB, JOKER, VIBRATE, CHROMOSOME, PAPA YA, HIJINKS

# COLOR COMPUTER ENHANCEMENTS

(16K or 32K EXTENDED BASIC REQUIRED)

## **SORT 1** **\$14.95**

- Alphabetizes Basic string arrays. (Single Dimension Arrays).
- Strings may be divided into fixed-length-fields and sorted by data in a field.
- Multiple field sorting is possible. (i.e., ability to cause a list of alphabetized states, with peoples names in each state in alphabetical order.
- With this utility in memory with your basic program you can expect a single sort of 300 records to be done in less than 4 seconds.
- Basic subroutine to call this machine code utility and instructions for its use are included.

## **SORT 2** **\$14.95**

Same as above except sorts on fields separated by delimiter characters.

## **UPLOAD** **\$9.95**

- This is the upload side of DLOAD and DLOADM in Extended Color Basic. Use it to send a basic or machine code program to another ECB Color Computer.
- Programs can be passed directly, thru the RS-232 port, or by phone if both computers are hooked to modems.
- Uploaded program arrives at receiving end ready to save or run or execute, whichever is appropriate. No editing!
- Patch to correct flaw in DLOADM is supplied as public domain software.
- Will not work with protected tapes, programs saved in ascii, programs on disk.
- Instructions included with this machine code utility.

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## **What you should know:**

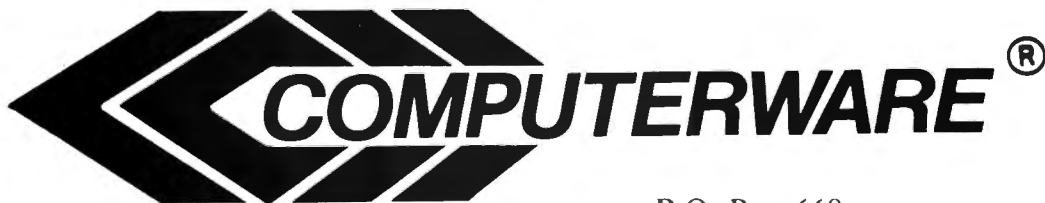
- ★ It has been in use for over 4 years on many 6809 systems. This means it is well tested.
- ★ Complete manuals accompany the systems.
- ★ User-friendly menus make them easy to use.
- ★ They are not accounting tutorials. They assume you know and use sound accounting principles.

## **System Requirements:**

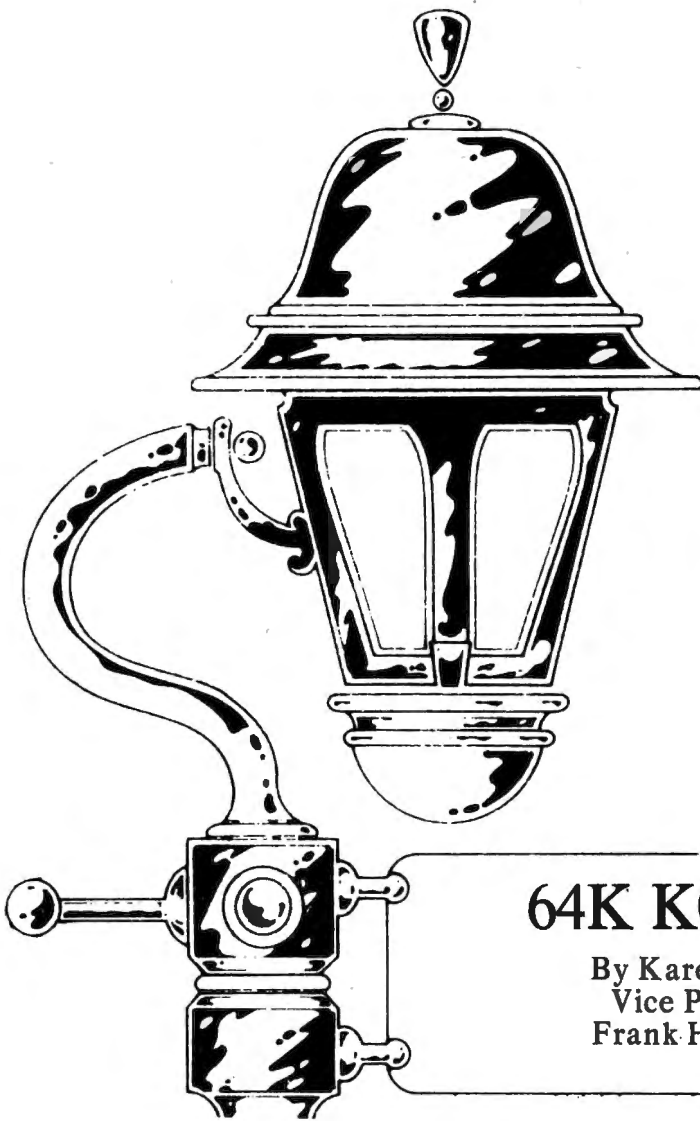
- ★ FLEX Operating System
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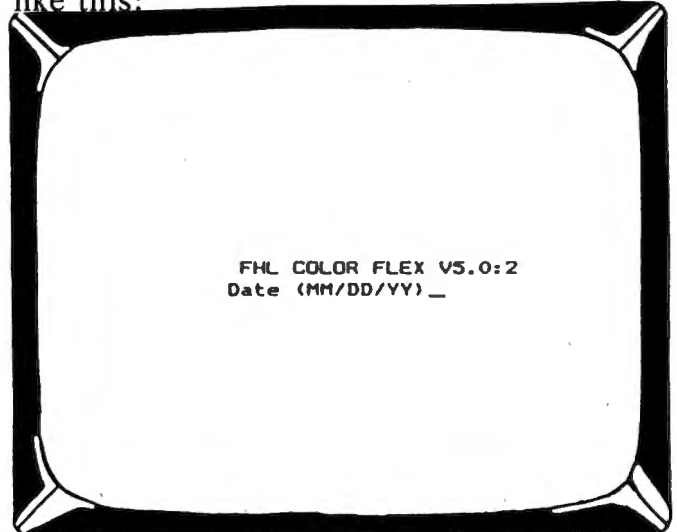
*Write or call for complete brochure from*



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that you are to hit the enter key on your computer. Also, for simplicities sake, all information which you are to actually type in will appear in **BOLDFACE** type). Your drive motor should start to hum, in about six seconds the screen will appear like this:



## 64K KORNER

By Karen Huston  
Vice President  
Frank Hogg Labs

First you "Got Started with Color BASIC"  
Then you "Went Ahead With Extended Color BASIC"  
Now, "Keep On Going With FLEX!"

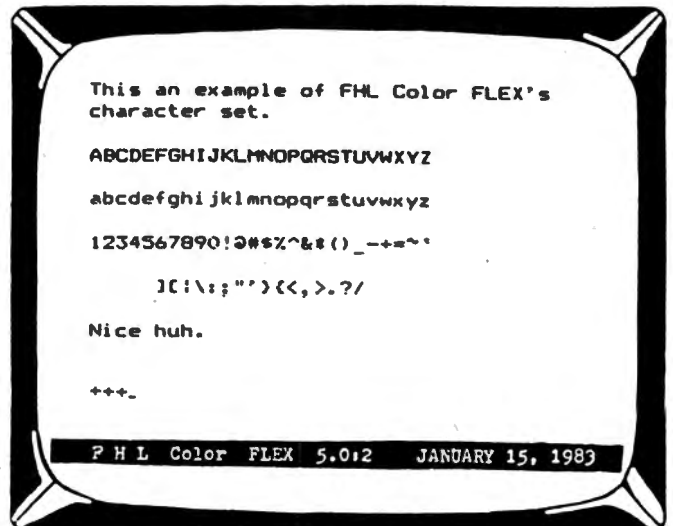
What exactly is "FLEX" and what will it let me do?

FLEX is a Disk Operating System (DOS) which allows your software to interact with your hardware. You may have a computer, and you may have a program written on a disk, but without a disk operating system you can put your disk in the drive and wait forever-the computer won't know the difference! FLEX is like a bridge between the two which lets your program be read from its disk and be loaded into the computer's memory. NOW you can use it. Now that I have my FLEX disk, what should I do with it?

How about trying to use it? Put it in the drive with the little white "write protect" sticker on top. Close the drive door and type:

**RUN "FLEX "ENTER"**  
(When you see this "ENTER" that means  
114 May 1983

This is asking you for the date. Type in the numbers of the date in the same form. (MM/DD/YY)-don't include the parentheses! For example:  
2/15/83 "ENTER"  
Not too tough right? Now FLEX will come back with:



+++ means it's ready and waiting for you to tell it what to do. Well, let's find out what is on the disk. Type in:

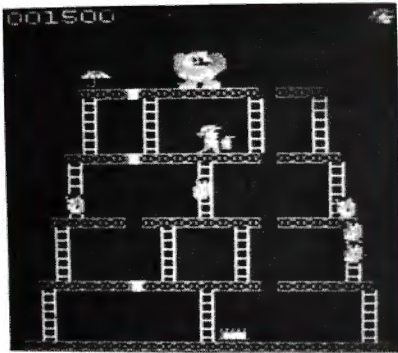
# “WANNA FIND OUT WHAT FUN REALLY IS?”

THE KIND OF EXCITEMENT YOU GET OUT OF YOUR SYSTEM DEPENDS ON  
WHAT GAMES YOU PUT INTO IT.

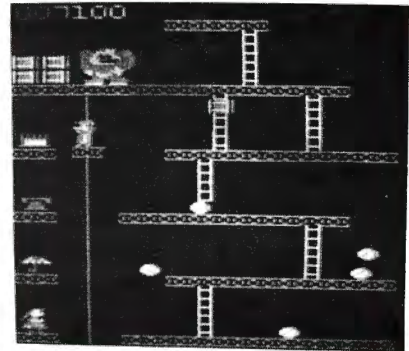
If You Want to Find Out What it's Like to Use your Computer to its Fullest...Then These are the Games  
You'll Need! FOR YOUR TRS-80 COLOR COMPUTER

## Dunkey Munkey

32K EXTENDED BASIC NOT REQUIRED



ON THIS SCREEN:  
Pop the Rivets and Fight Fires



ON THIS SCREEN:  
Jump Barrels and Ride the Elevator

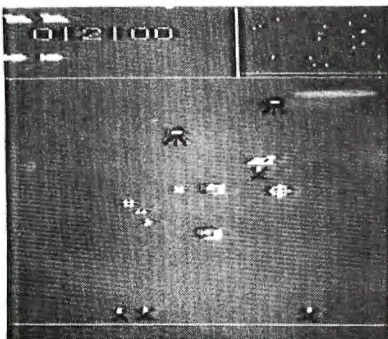
We're sure you already know the rules to this game! As game progresses so does the difficulty level.

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ULTRA-FAST MACHINE LANGUAGE ■ HIGH RESOLUTION GRAPHICS ■ SPECTACULAR SOUND EFFECTS

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## SCREEN - 64

64 Characters X 32 Lines,  
Upper & Lower Case

16K EXTENDED BASIC NOT REQUIRED

1. Load in SCREEN-64
2. Type EXEC
3. You're Back in BASIC with a 64 x 32 Screen plus...

### FEATURES:

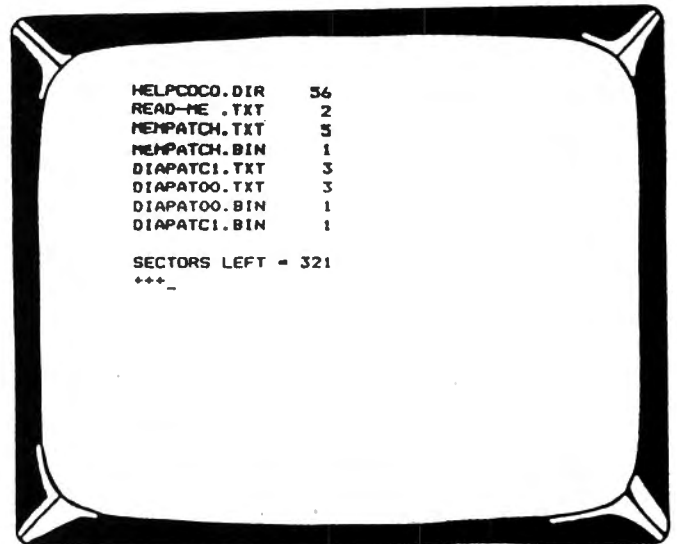
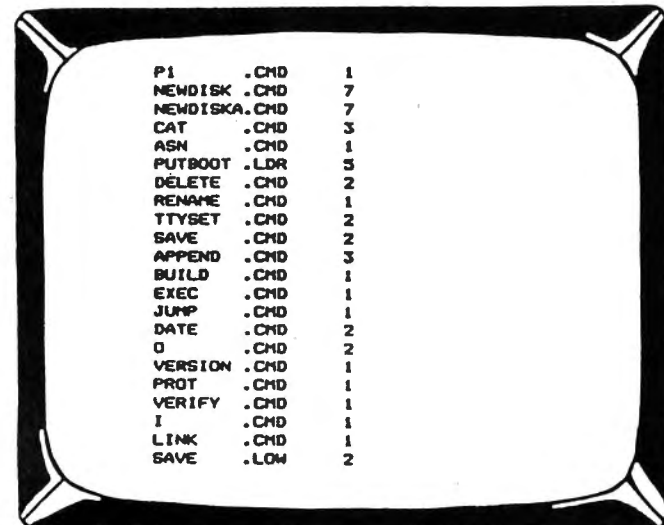
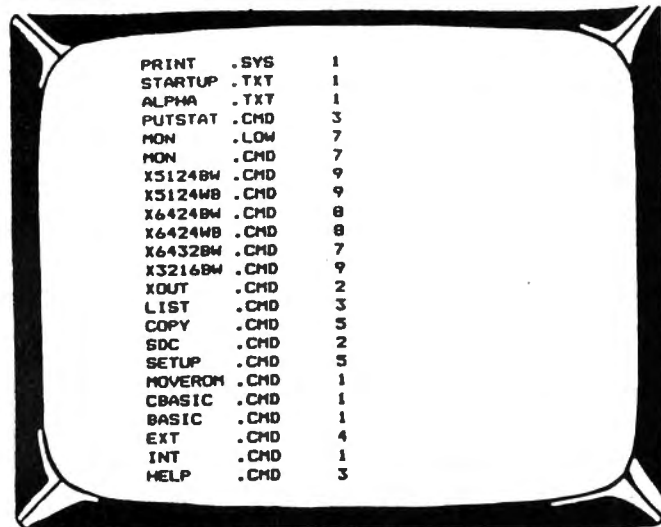
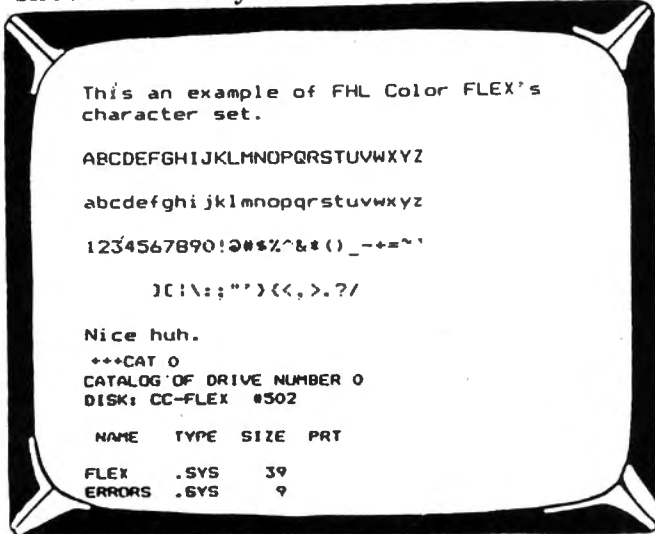
- Slow/Fast Scroll Selectable
- Window Capabilities
- Text & Graphic on same screen
- Superscript/Subscript
- Reverse Screen/Reverse Video
- No Hardware Modification Needed

Cassette ..... \$19.95  
Diskette ..... \$24.95

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U.S. funds only.

**CAT 0 "ENTER"**

(this is the number zero, not the letter O). You have just "commanded" FLEX to give you a catalog of all the files that reside on the disk in drive #0 (which is the FLEX disk of course!). So now, what you should see on your screen is this:



Very Good! You have now used FLEX.

At this point, there are three items that should be clarified. First of all, what is a "write protect" sticker you may be wondering. Well, the name is relatively self explanatory. It "protects" the disk from being "written" on. Therefore, if you want to change anything already written on the disk, or if you want to save some information (write on the disk) you must "unprotect" it-in other words, take the little sticker off! Secondly, anytime you see a 0 used in a command, or to designate a drive, it is the number zero, not the letter O. Last, but not least, What's a drive #0 (or 1, 2 or 3 for that matter?) Well, your drives are numbered, which makes a very convenient way to tell FLEX which drive you want it to look in. If you only have one drive, then that's your drive #0 and FLEX will automatically look there for any information. With more than one drive, you have to tell FLEX which drive contains the information you want to use. What's nice about two drives is that you can assign one to be your "system" drive, and the other to be your "working" drive. Your system drive contains your system disk-FLEX. Once you type RUN"FLEX" part of the information on your FLEX disk is loaded right into your computer's memory. This is the information that gets the whole system running. The rest of the information on your FLEX disk can be thought of as a "Dictionary" of sorts. When you tell FLEX to do something (i.e. type a command in) it will go to the system drive and "look up" on the disk what that particular command means it's supposed to do. The "work" drive contains the files

of information that FLEX is supposed to "do something" to.

With a one drive system, your system and work drive are one in the same-called drive #0. This can be a bit of a pain in the neck at times if you want to command FLEX to do something to a file on a different disk.

Okay, now that you're just about a Pro, the next thing you'll probably want to do is to make a back-up copy of your FLEX disk. There are five steps to this procedure. Again, there are FIVE steps to this procedure, so count them as you go. For simplicity's sake, we'll be assuming this is being done on a single drive system.

1. Prepare a new disk to have information put on it. This is called formatting, and is done using the NEWDISK command (if you have a double sided drive, you'll be using NEWDISKA instead). Here's an example of what the screen would like during a typical formatting procedure.

```

+++NEWDISK

ARE YOU SURE? Y
SCRATCH DISK IN DRIVE 0? Y
DOUBLE SIDED? N
DOUBLE DENSITY? Y
NUMBER OF TRACKS? 35
VOLUME NAME? WHATSIT
VOLUME NUMBER? 4

FORMATTING COMPLETE
TOTAL SECTORS = 578

+++_

```

And here's how to get your screen to look that way.

Put your FLEX disk in the drive and after "booting up FLEX" (in other words after typing RUN "FLEX" etc). type: **NEWDISK** "ENTER"

FLEX will then come back with:  
ARE YOU SURE?

Yes you are, so type: **Y**

Then FLEX will ask you if you want to:  
SCRATCH DISK IN DRIVE 0?

BEFORE typing **Y**, remove your FLEX system disk and put in a new disk with no write protect sticker on it.

Now type: **Y**

FLEX will then ask the following questions:

DOUBLE-SIDED? Do you have a double

sided drive? If not, type **N**. (If you do then you figure it out).

DOUBLE DENSITY? You have a double density drive or you wouldn't have gotten this far, so type **Y**.

NUMBER OF TRACKS? That depends on the number of tracks your drive will support-on one side. Therefore, if you have a double sided drive, **DO NOT** multiply the number of tracks your drive has by two. Also realize that even though a 35 track disk may be read in a 40 track drive, a 40 track disk cannot be read in a 35 track (for example a Radio Shack) drive. So if you are formatting a disk that may be used in assorted drives, keep this fact in mind. One last note, neither 35 or 40 track disks may be read in an 80 track drive. "ENTER"

VOLUME NAME? Be original, why not call it DISK? "ENTER"

VOLUME NUMBER? This ones up to you. Now hit return and wait. The drive motor will begin running. This is an indication to you that formatting is taking place.

NOTE: Prior to the "FORMATTING COMPLETE" statement, you may see the message:

TRIMMING TRACK SIZE DOUBLE D.

This is not a problem-for more information on this, refer to the NEWDISK section of the FLEX manual.

2. The next step is to use PUTBOOT.LDR on your newly formatted disk. Here's what you'll see on your screen after performing this procedure:

```

+++PUTBOOT.LDR 0
PUT BOOT LOADER ON DRIVE 0? Y
+++_

```

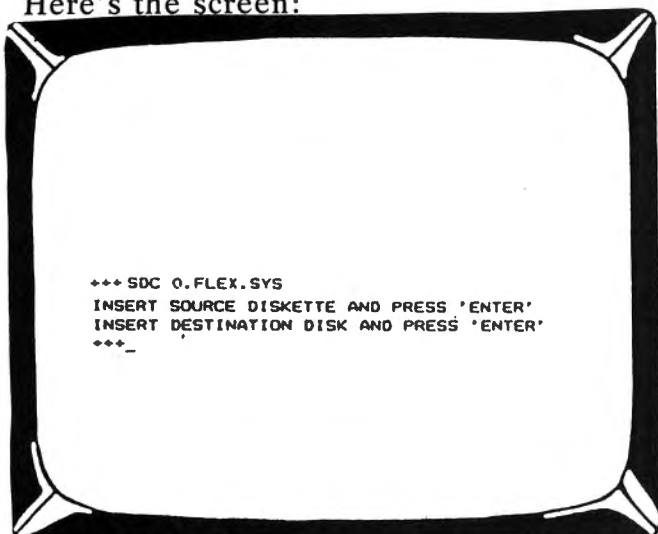
Now here's how you do it:

Put your FLEX disk back in the drive and type:

**PUTBOOT.LDR 0** (the 0 tells FLEX which drive to go to). "ENTER"

PUT BOOT LOADER ON DRIVE 0? Now, you want to put the boot loader on your new disk, so this is your chance to switch disks-then type: **Y**

3. When you previously did a catalog (CAT 0) of your system disk, FLEX should have come back with a list of all the files it contained. In this step you're going to copy one of those files; the FLEX.SYS file. Here's the screen:



And here's what you do:

Put your FLEX disk back in and type:

**SDC 0.FLEX.SYS "ENTER"**

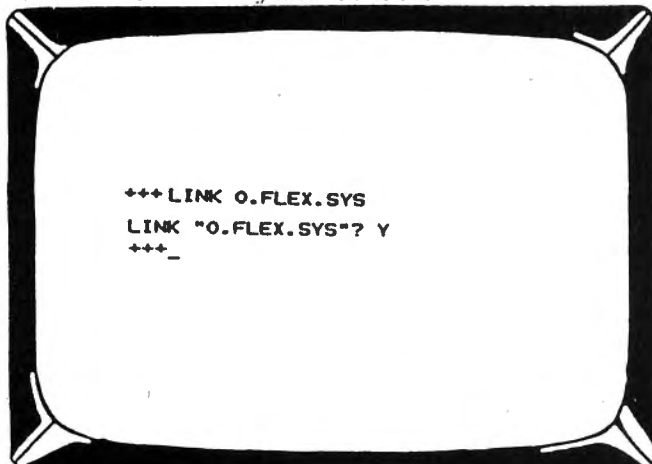
Then when FLEX asks you to:

**INSERT THE SOURCE DISKETTE AND PRESS 'ENTER'**

Just hit enter, since the disk which contains the file you want to copy on it (your system disk) is already there. The destination disk is where you want the file to be copied to, so when FLEX asks you to: **INSERT DESTINATION DISK AND PRESS 'ENTER'**

Put your new disk in and hit enter.

4. Three steps down, two to go. Now you've got to **LINK** the boot loader to the FLEX.SYS. Guess what command you're going to use? That's right none other than the **LINK** command. Here's what to look forward to from your screen:



And this is how it's done:

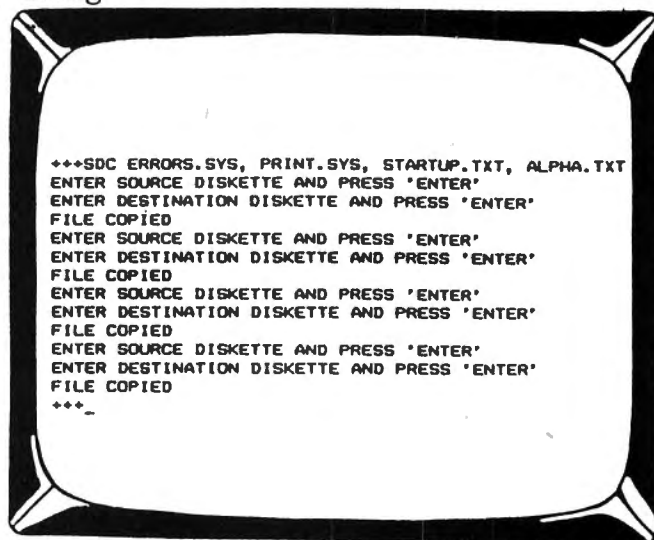
Put your FLEX disk in and type:

**LINK 0.FLEX.SYS "ENTER"**

When FLEX asks for confirmation, that's your cue to switch disks. Then type: **Y**

5. The only thing left for you to do at this point is to copy the individual files (remember all the ones that were listed out when you did a "CATalog" of your disk?) from your original FLEX disk to your new disk. This is done with the **SDC** command for a single drive system, and with the **COPY** command if you have more than one drive. With **SDC** you must write out each individual command file name that you are copying, although you may list more than one file in the same command line.

Here's an example of what you should see when you try to copy the first four files from your original FLEX system disk using **SDC**:



And here's the necessary steps:

While your original FLEX disk is in the drive, type:

**SDC ERROR.SYS, PRINT.SYS, STARTUP.TXT, ALPHA.TXT "ENTER"**

Now FLEX will come back with:

**ENTER SOURCE DISKETTE AND PRESS 'ENTER'**

Hit enter.

**ENTER DESTINATION DISKETTE AND PRESS 'ENTER'**

Switch disks and hit enter.

**FILE COPIED**

Then continue to switch the disks back and forth as FLEX repeats the above procedure for the next file, and the next file and finally the last file. Now look for that friendly little prompt;

+++\_

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NOTE: Do not attempt to copy PUT BOOT.LDR using the SDC command because the results will not be of any use. Yes, that's right-you can't make a copy from a copy.

ALSO NOTE: Even though you may enter more than one file at a time in your initial command line, FLEX will only copy the files one at a time. So in the example above, this means that you would have to switch back and forth between your FLEX system disk and your new disk a total of four times.

Okay all you "Two Drive Users", here's what you'll see on your screen:

```

+++COPY 0,1
O.FLEX .SYS TO DRIVE #1 FILE EXISTS
DELETE ORIGINAL? N
O.ERRORS .SYS TO DRIVE #1 COPIED
O.PRINT .SYS TO DRIVE #1 COPIED
O.STARTUP .TXT TO DRIVE #1 COPIED
O.ALPHA .TXT TO DRIVE #1 COPIED
O.PUTSTAT .CMD TO DRIVE #1 COPIED
O.MON .LOW TO DRIVE #1 COPIED
O.MON .CMD TO DRIVE #1 COPIED
O.X5124BW .CMD TO DRIVE #1 COPIED
O.X5124WB .CMD TO DRIVE #1 COPIED
O.X6424BW .CMD TO DRIVE #1 COPIED
O.X6424WB .CMD TO DRIVE #1 COPIED
O.X6432BW .CMD TO DRIVE #1 COPIED
O.X3216BW .CMD TO DRIVE #1 COPIED
O.XOUT .CMD TO DRIVE #1 COPIED
O.LIST .CMD TO DRIVE #1 COPIED
O.COPY .CMD TO DRIVE #1 COPIED
O.SDC .CMD TO DRIVE #1 COPIED

```

```

O.SETUP .CMD TO DRIVE #1 COPIED
O.MOVEROM .CMD TO DRIVE #1 COPIED
O.CBASIC .CMD TO DRIVE #1 COPIED
O.BASIC .CMD TO DRIVE #1 COPIED
O.EXT .CMD TO DRIVE #1 COPIED
O.INT .CMD TO DRIVE #1 COPIED
O.HELP .CMD TO DRIVE #1 COPIED
O.PI .CMD TO DRIVE #1 COPIED
O.NEWDISK .CMD TO DRIVE #1 COPIED
O.NEWDISKA .CMD TO DRIVE #1 COPIED
O.CAT .CMD TO DRIVE #1 COPIED
O.ASN .CMD TO DRIVE #1 COPIED
O.PUTBOOT .LDR TO DRIVE #1 COPIED
O.DELETE .CMD TO DRIVE #1 COPIED
O.RENAME .CMD TO DRIVE #1 COPIED
O.TTYSET .CMD TO DRIVE #1 COPIED
O.SAVE .CMD TO DRIVE #1 COPIED
O.APPEND .CMD TO DRIVE #1 COPIED
O.BUILD .CMD TO DRIVE #1 COPIED

```

```

O.EXEC .CMD TO DRIVE #1 COPIED
O.JUMP .CMD TO DRIVE #1 COPIED
O.DATE .CMD TO DRIVE #1 COPIED
O.O .CMD TO DRIVE #1 COPIED
O.VERSION .CMD TO DRIVE #1 COPIED
O.PROT .CMD TO DRIVE #1 COPIED
O.VERIFY .CMD TO DRIVE #1 COPIED
O.I .CMD TO DRIVE #1 COPIED
O.LINK .CMD TO DRIVE #1 COPIED
O.SAVE .LOW TO DRIVE #1 COPIED
O.HELPCOCO.DIR TO DRIVE #1 COPIED
O.READ-ME .TXT TO DRIVE #1 COPIED
O.MEMPATCH.TXT TO DRIVE #1 COPIED
O.MEMPATCH.BIN TO DRIVE #1 COPIED
O.DIAPATCHI.TXT TO DRIVE #1 COPIED
O.DIAPATCHO.TXT TO DRIVE #1 COPIED
O.DIAPATCHO.BIN TO DRIVE #1 COPIED
O.DIAPATCHI.BIN TO DRIVE #1 COPIED

```

This is all you have to do:  
Put your FLEX system disk in drive 0 and your new disk in drive 1 and type:  
**COPY 0,1 "ENTER"**

Voila! You're all done! Now, put your master disk away in a safe place, your new disk in the drive, your FLEX manual on your lap, and learn how to use the darn thing!

Let's say you just bought some new software to run under FLEX (in other words, is "FLEX compatible"). What should you do with it first?

Just to see what you actually got, do a CAT (catalog) of your new disk. Now, realize that CAT is a FLEX command and is only found on your FLEX disk (this is what is meant by "Disk Resident Commands"). So, if you have a single disk drive system and put your new disk in and type CAT, the system will look up on the disk to see what CAT means, and guess what? It won't be there, and your computer will come back with the message NOT FOUND. Therefore you must copy the CAT command onto your new disk. This is quite simple and is done by using the FLEX SDC command. Put your FLEX disk in, type SDC CAT.CMD then hit enter. When asked for the source diskette, hit enter. When asked for the destination diskette, take the write protect sticker off the new disk and insert it in the drive. Hit enter. Remove the disk after the copy is complete and put the write protect sticker back on and then just do a catalog of the disk (CAT 0). Now you at least know what it is you spent your money on, and you can then make a copy or find out what the various files do as explained in the documentation that accompanies your new software.



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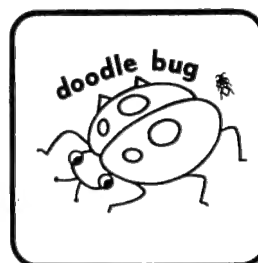
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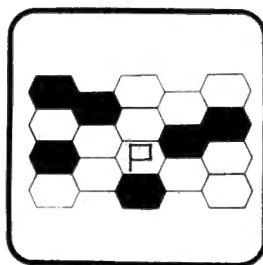
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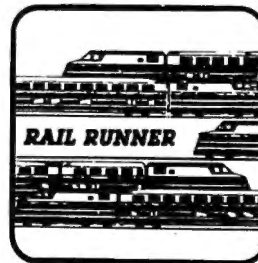
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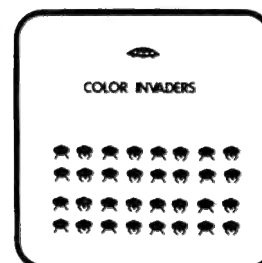
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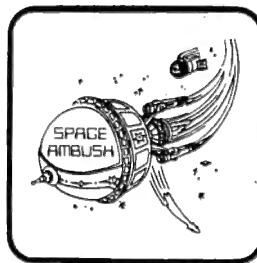
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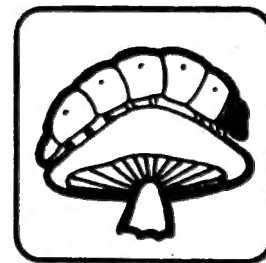
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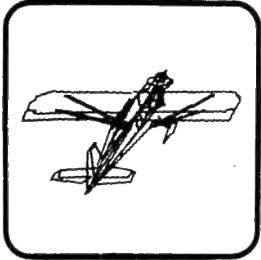
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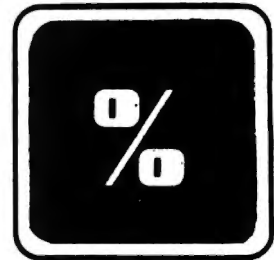
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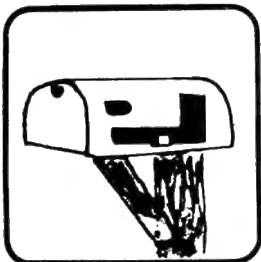
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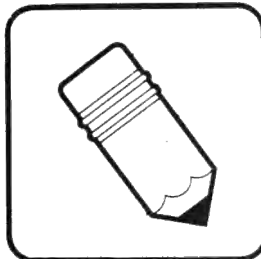
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# BLACKJACK ROYALE

By J. Michael Nowicki

Definitely NOT just "another blackjack program", Blackjack Royale is a vehicle for serious study of the casino game. Use it to play blackjack against the computer, and you will find it well-designed and enjoyable. Use it to study the principles of probability or to prepare for your next visit to Las Vegas, and the real power of the program becomes apparent.

By using the "Change Rules" option, play may be customized to the house rules of your favorite casino. Options include: number of decks (up to 8); dealer's hole card up or down; possibility of insurance bet when dealer's up card is an ace; and burn or deal top card after a fresh shuffle (if burned, you get a glimpse of it for your card counting).

A bibliography of four books offering "systems" for winning at blackjack is included in the documentation, and this is the area where Blackjack Royale really shines. If you just want to practice your card-counting skills (how many aces, 10-count, and low-count cards are left in the deck), there is a card-count screen available for you to check your running count against the computer's exact count before any hit me/stand choice. If you want to go further, the routines are

available for your use. The books recommend assigning point values (-1, 0, +1 for some systems, 5's and 10's for others) to each card as it is played. Blackjack Royale will accept any such card value system and display that running count along with the raw card counts whenever you want to check your own accuracy.

The full range of playing options is offered: hit; stand; double down; split a pair; and insurance betting. Some casinos permit "early surrender" of your first two cards for replacement, and this option is offered in Blackjack Royale, also.

Some casino players believe in tipping (toking) the dealer by often betting an odd number of chips, so that whenever the bet is split (by deciding to double down, split or insure), the odd chip goes into the dealer's pocket. Blackjack Royale's count of how much money you have left takes account of the tokes.

Hey, now no guarantees, of course! No program can control what is basically a game of chance. Understanding the game and knowing the odds on the next card by knowing what is left in the deck can, however, make you unpopular with the casino operators, and you can guess the only way to make them dislike you!

## COCOCOPY

This all M L Program will copy BASIC or M L programs including most Auto Start Programs. It will supply the beginning, ending and offset addresses and allow you to change the load address for M L programs. I/O errors are ignored so that bad tapes can be corrected. Programs can be renamed and the motor/audio functions are controlled from the keyboard.

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# BUGS

Here are some modifications necessary to complete the Program "JUMBLY" which appeared in the February issue of Color Computer News.

## ADD THESE LINES:

```
143 READ A$
144 IF A$="123" THEN PLAY "01; L44;
CG; 02; CG; 03; CG; 04; CG; 05; C":
FORT=1 TO 3000: NEXT:GOTO 144
335 JN=63: PA=448
990 PA=PA +: IF PA=463 THEN PLAY
"V3; 05; L60; D" GOSUB 2100: RETURN
2010 PRINT @PA, CHR$(JN);: RETURN
2100 IF JN=63 THEN JN=42: RETURN
2110 IF JN=42 THEN JN=45: RETURN
2120 IF JN=45 THEN JN=33: RETURN
2130 IF JN=33 THEN JN=94: RETURN
2140 IF JN=94 THEN JN=62: RETURN
2150 IF JN=62 THEN JN=60: RETURN
2160 IF JN=60 THEN JN=63: RETRUN
```

ADD AT THE END OF LINE 1450: ,123  
(I.E., '1450 DATA DISTRICT,...,S-NIP,123')

DELETE LINES 1290 AND 1330

CHANGE THE FOLLOWING LINES:

LINE 150: DELETE 'READ A\$'  
(I.E., LINE 150 SHOULD BE: 150  
=N +1: PRINT N; ...ETC  
LINE 620 SHOULD BE:  
620 IF T\$="" THEN GOSUB 1990:  
GOTO 530  
LINE 1090 SHOULD BE:  
1090 RW = RND(291)

This ends the modification for JUMBLY to include the 'walking characters' and the 'end of word-listing' sound-mode.



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### or Color Computer News

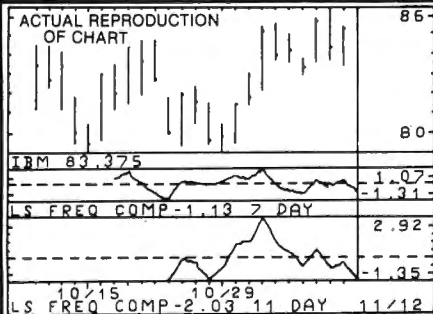
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If you get and I/O ERROR during a load. Print the PEEK(129), if a 1 is returned then it was the tapes fault, if a 2 is returned it was a memory error.

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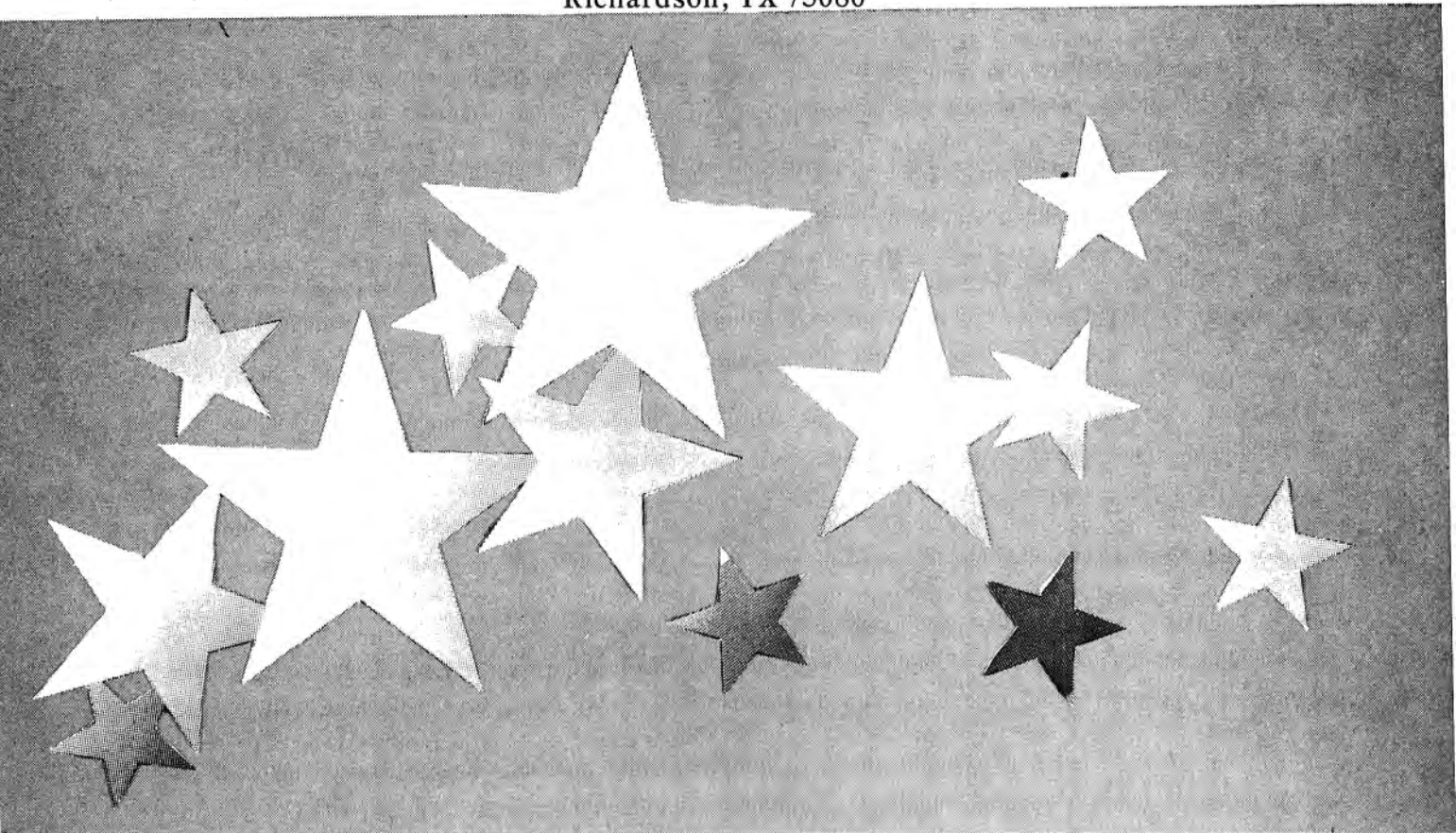
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# StarDOS

Review by Ralph Tenny  
PO Box 545  
Richardson, TX 75080



Owners of the Radio Shack disk system who have never worked another DOS (Disk Operating System) can now have a DOS which does more than link BASIC to a disk, even without expanding their Color Computer to 64K and getting one of the several FLEX mods. It should be noted right here that people who only work with BASIC have no need for *any* DOS; a DOS is a tool intended to aid the assembly language programmer.

Star-DOS is a high quality disk utility system for the Color Computer which is compatible with Radio Shack Disk Basic. (In other words, Star-DOS and Radio Shack Disk BASIC generate mutually compatible disk formats, so that each can read and modify files generated by the other.) It has six memory resident commands and three disk resident commands. This may seem like a slim menu, but the most important commands are available. Also, it is easy to expand Star-DOS to meet the needs of an experienced programmer. In contrast to Radio Shack DOS, which offers no support for assembly language, Star-DOS has 18 user accessible functions to handle all the

I/O needed in assembly language programs.

For example, the programmer can use any of the following routines as sub-routines in his own assembly-language program:

GETCH - Get a character from the keyboard.

PUTCH - Output a character to the screen or printer with wordwrap.

PUTCHN - Same as PUTCH except without wordwrap.

INLINE - Input from keyboard into a line buffer.

PSTRNG - Print CR/LF and a strings to the screen with wordwrap.

PSTRNN - Same as PSTRNG except without word wrap.

CLASFY - Identify the contents of the A accumulators as either letter or digit, or as a data byte.

PCRLF - Output CR and LF to output device.

GETNXT - Get next character from input buffer.

LOADML - Load open machine language file.

OUT5D - Output five decimal digits.

OUT2H - Output two hex digits.  
 OUT4H - Output four hex digits.  
 HEXIN - Input hexadecimal number.  
 DECIN - Input decimal number.  
 STATUS - Check keyboard for input character.

It might be noted that these routines do more than just the basic description reveals. For example, consider GETCH. First, this routine exists in memory whenever Star-DOS is loaded. To input a character, the programmer codes "JSR GETCH" as one line in his program. The GETCH routine tests the keyboard repeatedly until a character is entered, then returns with the character in the A accumulator, with two exceptions. If the character is a right arrow, the next key pressed will be converted to the equivalent control character, and that value is returned in the A accumulator. This mode allows generation of all 32 standard ASCII control characters. In the case of the SHIFT-@ combination, GETCH diverts to a special I/O control sequence which allows printer control (on/off), pause mode (scroll 15 lines at a time) and an abort sequence which restarts StarDOS. The HEXIN and DECIN routines return only valid characters plus status flags which can help the programmer identify what was actually found if the character returned was invalid.

From the above discussion you can begin to appreciate that the programmer need only develop the central core of his program. With a nucleus of proven I/O routines, he can realize a probable time saving of 50 % or more. In addition to the list of subroutines above, there are seven routines which support disk operations, making it easy to build a custom system that does exactly what the owner requires.

Star-DOS comes with a well-written instruction manual. Fifty-five pages are devoted to a thorough discussion of the entire software package. Not only are the instructions thorough and understandable, a liberal use of examples enhances the learning process. An appendix page is included to explain how to modify FLEX-based program to run under Star-DOS, when those programs can be made compatible with the stock Color Computer architecture. Each subroutine and command is documented in detail, telling exactly what happens and how they are used. For users just becoming familiar

*Color Computer News*

with disk operations, the File Control System (a second part of Star-DOS) is explained in detail, and nine pages are devoted to explanation of the file control block (FCB) and how to implement an unlimited number of FCBs as needed by programs of any complexity. For those with no experience in this area: the FCB is a 320 byte section of memory which is used to control every detail of disk operation, with no special knowledge required by the programmer to write programs which use the disk.

Star-DOS is inexpensive for a disk program, and is comfortable to use. The operation is reliable, and will be easy for less experienced users to learn. It is capable enough for more experienced programmers, and the easy expansion means that users can develop a custom system around this central core. For those users who also want to work with BASIC, the compatibility with R/S Basic will result in lower start-up cost. Also, it is not necessary to give up the refinements of R/S Basic which support the special Color Computer hardware and its graphics.

On the minus side, Star-DOS is new enough that there are many programs which will run with it, but this is being remedied. At present, the chief lack is an assembler; an editor/text processor/ mailing list/ mailing label package is available now.

In the final analysis, Star-DOS is ideal for the serious disk user who works mainly in assembly language. At the same time, the excellent documentation will help the diligent computer user learn disk system principles and techniques easily. One very big "plus" for Star-DOS is that it is the only DOS which will run on either the 16K or the 32K Color Computers. Availability of a DOS can greatly enhance a programmer's efficiency, and especially so if the DOS has been customized to the user's requirements. Star-DOS is available for \$49.90 from Star-Kits, P.O. Box 209, Mt. Kisko, NY 10549.

### *Color Computer News Tip*

To reset your system POKE 113,0:EXEC  
40999

# THE STRIPPER

Reviewed by Jeffrey Stipes  
1674 Lawnel Avenue  
Muskegon, MI 49441

Take it off - Take it all off, which is exactly what this fantastic \$7.95 machine language utility does to your basic programs.

This menu driven program enables you to: 1- delete remarks, 2- pack lines, 3- remove spaces and 4- exit to basic. This not only means some substantial memory savings (I recovered from 5 % to 32 % in a sampling of twenty programs with the average savings being 25 %) it also enables you to indulge in structured and well documented programs (save and label this as Master Copy) and then create and save a stripped working copy. Through out the entire process the stripper will display your programs current resident memory on the menu. Though no specific promise is made you may also notice a slight speed up of program execution. Six months later you'll realize

just how great it is to have that uncompromised Master Copy when you go to add another subroutine or make some modifications.

\* \* \* Hints and Warnings\* \* \*

-Delete remarks first, remove spaces second and pack lines last to get the most savings.

-Never attempt to edit the stripped version, use your Master Copy to make all changes then re-strip.

-Never save a stripped program in ASCII.

The Stripper comes on cassette with complete and well written instructions on use and loading for regular basic, extended basic and disk basic.

The Stripper is available from Eigen Systems, P.O. Box 10243, Austin, TX 78766 or Spectrum Projects, 93-15 86 Drive, Woodhaven, NY 11421

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# VEGAS GAMEPACK

Reviewed by Jeffrey Stipes  
1674 Lawnel Avenue  
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Vegas Gamepack from the Colorquest Experience runs in 16K, employs good graphics and sound.

Upon entering the Casino you will have the option of selecting 1 or 2 players. You may enter your name for a personal touch or be anonymously referred to as player 1 or player 2. From here you enter the BANK which initially possesses 50,000 chips. Each player may initially select from 1 to 10,000 chips for play. I found that a realistic chip selection (in my case 200) was most exciting, yet I must admit to having succumb to a couple high rolling visits.

Your game selection includes:

1- The inevitable One-Armed Bandit (slot machine). These were, I'm sure, typical machines as they always ate my last 25 chips.

2- Black Jack provides all options except doubling down. The Dealer must take a hit on 16 and stand pat on 17, 'Five Card Charlie' wins double.

3- Up and Down the River is a super five card game played against the Dealer.

4- Craps is played by standard Casino rules.

5- Keno is billed as the leisurely money maker. You select the ten numbers you want then hold your breath when play starts.

Your winnings (or losings) are constantly updated and available for your inspection, you can also change players and games any time.

The only enhancement I would suggest for this excellent gaming package is strictly personal in nature. For myself I pocketed my lucky chip from the Silver Bird, put on my recording of Paul Anka live at the Vegas Hilton and poured a tall cool one in my Circus Circus tumbler.

Vegas Gamepack is available from The Colorquest Experience, A Division of Softlaw Corp., 9072 Lyndale Avenue S., Mpls., Minn. 55420 \$24.95 16K cassette; or \$29.95 for 32K disk.

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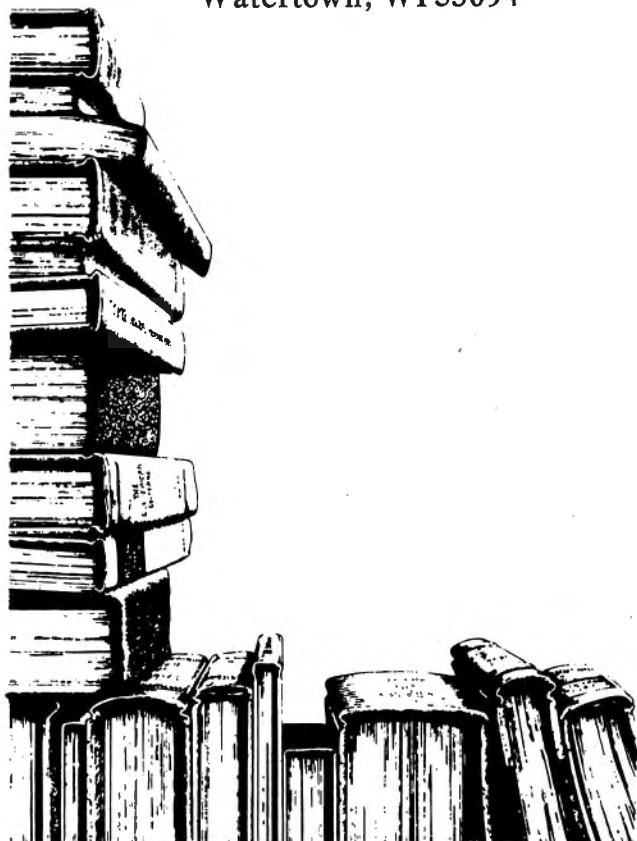
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# THE LATEST INFO

By Michael W. Shawaluk  
1117 Doris Street  
Watertown, WI 53094



I've had my Color Computer for over a year now, and one of the things I've been doing with it more than anything else is learning everything there is to know about it! From its humble beginnings as a 4K Color BASIC machine, to its present 32K Disk Extended BASIC state, there have been unending opportunities to explore its capabilities. As an engineer who's written his share of assembly language programs, I have been interested in what techniques are used to put together a program the size and complexity of (Disk (Extended) Color BASIC. As I disassembled portions of the ROM's which looked interesting my curiosity gave way to surprise, then comprehension, and my goals became more organized. They fall into the following general categories:

1. Find out whether (or how) commands and functions can be easily added to the BASIC language. I am not talking about the `USR`, `EXEC`, or `DEF FN` commands; rather, the addition of functions and commands in the same way as is accomplished by upgrading to Extended or Disk BASIC.
2. Find out ways to circumvent (or find solutions to) problems or difficulties with some of BASIC's commands or functions

(a la the old PCLEAR dilemma).

3. Discover new capabilities and variations of existing commands not documented in Radio Shack's well meaning but incomplete (and sometimes inaccurate) instruction manuals.

This article will cover examples of each of the above three categories, as they relate to things that I have discovered or done. In the typical manner of an engineer, I will talk about these items in the reverse order mentioned (last in first out, like the 6809's stacks).

## I. NEW COMMAND VARIATIONS

### A. DRAW Command

One of the graphic commands of Extended BASIC that's received a moderate amount of article space in Color Computer News lately is the DRAW command. While it is very versatile, one of the things that has been somewhat clumsy to do is the placement of a shape on the screen at co-ordinates specified by variables. For example, let's assume you wanted to draw a triangle at screen location X,Y. Since the DRAW command requires a string expression as its operand, you would type a command of the form:

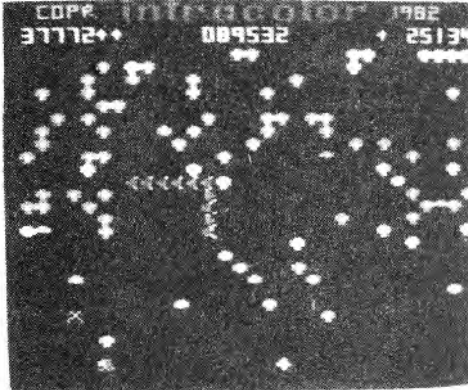
```
DRAW "BM" + STR$(X) + ",," +
```

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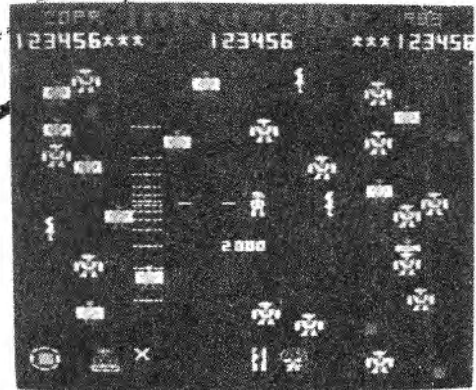
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STR\$(Y) + "E5F5L10"

Besides requiring two invocations of the STR\$ function and a lot of typing, a moderate amount of string space would be consumed by the necessity of concatenating 5 string segments to get the final string needed. Well, I wouldn't be harping about the limitations of doing it this way if there weren't a better one, so here it is:  
DRAW "BM=X; ,=Y; E5F5L10"

Those of you who have read an article or review for the IBM Personal Computer may recognize this construct (that computer's language looks awfully familiar, for some reason). By using an '=' followed by any simple or subscripted variable name, terminated by a mandatory ';', any numeric quantity may be specified, whether it be a move co-ordinate as shown, or the color, scale factor, angle, or even a draw distance. Besides the obvious advantage of less typing and shorter programs, this technique runs faster and uses less string space. In fact, the above example would use no string space at all; since no concatenation takes place, the string would reside only in the Basic program text!

#### B. EDIT Command

If you're like me, there are probably times when you are in the middle of a complicated line EDIT, and you suddenly hit the wrong key and completely obliterate the line you are editing! Looking through the Extended Basic manual and/or handy reference card gives no easy way to get back the original line as it was before any editing took place. Since these features were originally part of Level II Basic for the Model I (and are still in Model III Basic), it seemed strange that this capability would be left out of Extended Color Basic. Well, guess what? It wasn't! That's right, folks, it's been there all the while, just waiting to be discovered by an old Model I user (I'm sure someone else MUST have noticed by now, but since I haven't seen it in print, I'll put it here for all to see). Here are the commands I've discovered are reliably used to date:

Q - Quit the current edit session without making any changes, with return to OK prompt

A - Abort the current edit, but remain in Edit mode and re-display line as it originally was

E - End current edit session (same effect

as pressing ENTER)

The last command is given for completeness sake, although it really isn't a necessity; it was probably included for Model I compatibility's sake. Please note that the above commands only are effective when NOT in insert mode (i.e., press Shift up-arrow before performing them).

#### II. PROBLEM FIXES

The next subject on the agenda is the age old problem of trying to perform PCLEAR statements as part of a program. Although certain techniques have been developed which seemingly get around this problem (including jumping to the end of the program, doing the PCLEAR, and jumping back to the start + 1 statement, or doing the PCLEAR at the front followed by a backwards hop), they are really only band-aid<sup>®</sup> solutions at best. The cause for all the problems, for the records, is a result of what is actually done during a PCLEAR. Referring to the Extended Basic or Disk Basic memory maps, one can see that the graphics memory resides just below the start of the user's Basic program text.

Since the amount of reserved graphics memory can be from 1 to 8 pages, the entire Basic program needs to be moved up or down in memory if the number of reserved pages is to change. Although Basic can handle this easily enough when in the direct statement mode, things go wrong when the PCLEAR command occurs within the program that is being moved. Although Basic correctly restores the start of Basic and end of Basic pointers in low RAM, and clears all variables in the process, it neglects to update the pointer to the next Basic command to be executed. Depending upon whether the new PCLEAR is larger or smaller than the one in effect, and the size of the program to be moved, results ranging from no side-effects, ?SN ERROR, or even program lock-up could result. As before, there is a solution to all of this, besides the obvious "don't put PCLEAR statements in your programs" fix that Radio Shack's news letters tell us. In this case, the solution is based on my investigations of the Extended and Disk Basic ROMs, in regards to techniques used by the writers to correct problems in (or change the characteristics of) previous commands or functions. While the full story on what I've

discovered won't fit here, I will give the following program, which will fix the PCLEAR statement for once and for all. In fact, since the capability was there for free, I even added the ability to PCLEAR up to 16 pages (if you have enough RAM available). I'm sure that at least one person will say "What about PCLEAR 0?". Well, I thought about that one, and looked real hard, but I couldn't find a clean, consistent way to do it. (In general, with 32K, that extra 1.5K that's tied up hasn't limited my capabilities so far). This program is position independent, which is a fancy way of saying that it can be loaded anywhere your heart desires (where it won't get clobbered or moved dynamically). Although the program was originally written for addition to Disk Basic, the program can be made compatible to Extended Basic by changing the third instruction from `JMP $CE2E` to `JMP $813C`. The program needs to be (C)-LOADM'ed each time Basic is initialized and EXEC'd once. From that point on, PCLEAR wherever and whenever you want.

Although I would like to feel that this "fix" is the best thing to happen to the Color Computer since disk drives, there are several reasons why it will probably never see much use (not even by me!). These reasons are as follows:

1. Each time the computer is turned on, memory must be reserved, and the program must be loaded and executed. This is certainly more bother than simply typing the PCLEAR statement by hand, with the possible exception of automatic menu-type programs which must call a variety of program with different PCLEAR amounts.

2. Even though the program itself is position independent, and can be loaded virtually anywhere, trying to resolve the locations for multiple machine language drivers would become somewhat messy. This can be resolved by not using CLOADM or LOADM files, but by encoding the desired program into DATA statements and POKING it into memory. Thus, several programs can easily be set up to reside "back to back" in a given area.

### III. ADDING NEW FUNCTIONS

Last, but not least, is a sampler of several semi-meaningful new functions and commands which I have successfully

linked into Disk Basic. The technique used to perform this link is the same one used to add Extended and Disk Basics. As with the above PCLEAR fix program, several additional limitations exist to this type of add-on:

1. Since the Basic tokens are assigned in numeric order with no gaps, adding the same functions to Extended and Disk Basic would result in different token values. As a result, programs saved in the default binary format would not be upward compatible between Basics.

2. As the program uses a hook left by Microsoft for possible future expansion, these functions might be superceded by other commands at a future date.

Aside from these difficulties, addition of the functions was an interesting and rewarding task for me, and might prove to be useful to someone out there. So, here they are:

DPOKE address , value

Perform a 'double poke', that is, a 16 bit poke at the address specified, and the following address. This is the equivalent of:

POKE address , INT(value / 256)

: POKE address + 1 , value AND 255

DPEEK (address)

Return a 16 bit value from two sequential addresses. This has the same effect as:

PEEK(address) \* 256 + PEEK(address + 1)

except that the value returned is a signed 16 bit (-32768 to 32767) value.

WINKEY\$

Same as INKEY\$, except that control is not returned to the program until a key is pressed. This means that:

100 A\$ = WINKEY\$

may be typed instead of:

100 A\$ = INKEY\$ : IF A\$ = "" THEN  
100

Although these functions are relatively simple minded, the techniques used to link them in are the more important aspect. It should be mentioned that the linking-in process must take into account the following three actions by Basic:

1. Basic must know how to recognize (parse) the command or function, and convert it to the proper token code.

2. Basic must know how to list the text equivalent of that token correctly.

3. Basic must know where to go to perform the command or return a function value, as well as perform the proper syntax,

## The Latest Info

argument range, and argument type checks.

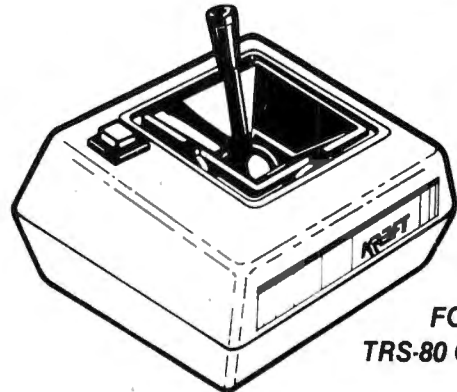
Again, the program whose listing is shown is position independent, and must be loaded and executed one at each power-up.

If there is interest in such things, it would be possible to compile an article on how to create more useful or extensive functions. Just let me or Color Computer News know if you thought this was worth reading or using. (Also, if you think an explanation of how these particular programs work, including called routines, conventions, etc., would be worthwhile, I would be more than happy to write it).

You will probably notice that both of the preceding programs have the same starting addresses. Should the rare condition arise of someone actually entering and using both of them at once, be sure to offset-load one of them by an appropriate amount.

Incidentally, although I'm not a software house (yet), I am willing to supply these program (both binary and source files) on cassette or Radio Shack format diskette, if you send me the blank cassette or diskette, along with \$5.00 for postage and handling. I'll send along some other stuff which I have come up with; if you send something of your own which is

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pirated software!)

```

*
*                               The Micro Works
* SOOPER DOOPER BASIC - REV 0.0
* (Requires Disk BASIC)
*
* (C) 1982 Snard Enterprises
*
* Last edited 14 July 1982
*
0001 0E00      CNAME  MACR
0002 0E00      FCC    "\0",'\1+$80
0003 0E00      ENDM
*
0004 0E00      ORG    $7F00
*
* Command Name Table
*
0005 7F00      SDBCTT CNAME DPOK,E
0006 7F05      SDBFTT CNAME DPEE,K
0007 7F0A      CNAME WINKEY,$
*
* Command & Token Address Table
*
0008 7F11      SDBCTA RMB    2           Execution Addresses for DPOKE,
0009 7F13      SDBFTA RMB    2           DPEEK, and WINKEY$
0010 7F15      SDBFT2 RMB    2           (filled in at run-time)
*
* Command Execution Routine
*
0011 7F17 308CF7 SDBCEX LEAX  SDBCTA,PCR Point to first command address
0012 7F1A 80E1   SUBA  #$E1   Subtract command token offset
0013 7F1C 7EADD4 JMP    $ADD4   and go to look-up and jump routine
*
* Function Execution Routine
*
0014 7F1F C050   SDBFEX SUBB  #$50   Subtract function token offset /2
0015 7F21 2607   BNE  A@       If function is WINKEY$, no arg.
0016 7F23 3404   PSHS B        No, save token table offset
0017 7F25 BDB262 JSR  $B262    Skip over "(" & ")" and eval. arg.
0018 7F28 3504   PULS B        Restore saved offset value
0019 7F2A 308CE6 A@   LEAX  SDBFTA,PCR Point to function address table
0020 7F2D 7EB2CE JMP    $B2CE   and go to look-up & jump routine
*
* DPOKE Command
*
0021 7F30 BDB73D DPOKE JSR    $B73D   Get 1st argument (0 to &HFFFF)
0022 7F33 9F2B   STX    $2B       & save temporarily
0023 7F35 BDB26D JSR    $B26D    parse over the required ","
0024 7F38 BDB73D JSR    $B73D    & get 2nd argument (same range)
0025 7F3B AF9F002B STX    [$2B]    Do the double POKE
0026 7F3F 39     RTS           & return to BASIC
*
* DPEEK() Function
*
0027 7F40 BDB740 DPEEK JSR    $B740   Integerize pre-parsed value
0028 7F43 EC84   LDD    0,X       Then do the double PEEK
0029 7F45 7EB4F4 JMP    $B4F4     and return integer value to BASIC

```

\*  
 \* WINKEY\$ Function  
 \*

```
0030 7F48 9687   WINKEY LDA   $87       Has a key been pressed?
0031 7F4A 2605           BNE   B@       Yes, return with that key's code
0032 7F4C BDA1C1   C@    JSR   $A1C1    No, call key scan routine
0033 7F4F 27FB           BEQ   C@       & keep looping until a key pressed
0034 7F51 7EA56B   B@    JMP   $A56B    Then return a 1-char. string
```

\*  
 \* Entry point for initialization  
 \*

```
0035 7F54 CE013E   ENTRY LDU   #$013E    Point to next hook entry in table
0036 7F57 8601           LDA   #1         Token count in command group = 1
0037 7F59 A7C0           STA   ,U+       Store as 1st byte in table
0038 7F5B 308CA2   LEAX  SDBCTT,PCR Then store start of ASCII text
0039 7F5E AFC1           STX   ,U++      for commands
0040 7F60 308CB4   LEAX  SDBCEX,PCR and execution address table
0041 7F63 AFC1           STX   ,U++      address
0042 7F65 4C           INCA                    Token count in function group = 2
0043 7F66 A7C0           STA   ,U+       Same as above, except for
0044 7F68 308C9A   LEAX  SDBFTT,PCR functions
0045 7F6B AFC1           STX   ,U++
0046 7F6D 308CAF   LEAX  SDBFEX,PCR
0047 7F70 AFC1           STX   ,U++
0048 7F72 8EB277   LDX   #$B277    Load address of ?SN ERROR
0049 7F75 AF43           STX   3,U       and store in next hook slot fwd.
0050 7F77 AF48           STX   8,U       for commands and functions
0051 7F79 6FC4           CLR   0,U       Also set token counts for next
0052 7F7B 6F45           CLR   5,U       group to 0 (for parser & lister)
0053 7F7D 308CB0   LEAX  DPOKE,PCR Initialize execution table addr.'s
0054 7F80 AF8C8E   STX   SDBCTA,PCR for DPOKE, DPEEK, & WINKEY$
0055 7F83 308CBA   LEAX  DPEEK,PCR (in a position-independent manner)
0056 7F86 AF8C8A   STX   SDBFTA,PCR
0057 7F89 308CBC   LEAX  WINKEY,PCR
0058 7F8C AF8C86   STX   SDBFT2,PCR
0059 7F8F 39           RTS              Initialization complete!
```

\*  
 0060 7F90 END ENTRY

NO ERRORS FOUND

```
DPEEK  7F40   DPOKE  7F30   ENTRY  7F54   SDBCEX 7F17
SDBCTA 7F11   SDBCTT 7F00   SDBFEX 7F1F   SDBFT2 7F15
SDBFTA 7F13   SDBFTT 7F05   WINKEY 7F48
```

Location 282 tells the computer if it is in lower case. If it contains 255 keyboard it is in upper case. If it contains a 0 it is in lower case.

Locations 52 and 53 contain the address in memory of the next DATA byte for a READ command.



## The Micro Works PCLEARFX

```

0001 0E00          NAM  PCLEARFX
*
* PCLEAR Fix for Disk BASIC - REV 0.0
*
* (C) 1982 Snard Enterprises
*
* Last revision 14 July 1982
*
0002 0E00          ORG  $7F00
*
* Command Intercept Hook Entry
*
0003 7F00 81C0     HOOK  CMPA  #$C0      Is this a PCLEAR command?
0004 7F02 2706     BEQ   PCLR1     Yes, go to new routine
0005 7F04 7ECE2E   JMP   $CE2E     No, exit to previous hook
0006 7F07 7EB44A   FCERR JMP   $B44A    Jump point for ?FC ERROR
0007 7F0A 9D9F     PCLR1 JSR   $9F      Parse over PCLEAR token
0008 7F0C BDB70B   JSR   $B70B     Get & evaluate 1st arg.
0009 7F0F 5D       TSTB                Is value = 0?
0010 7F10 27F5     BEQ   FCERR     Yes, error (PCLEAR 0 not allowed)
0011 7F12 C111     CMPB  #17       No; is it > 16?
0012 7F14 24F1     BHS  FCERR     Yes, error also
0013 7F16 8606     LDA  #6         No, multiply # by 1536
0014 7F18 3D       MUL                (256 x 6)
0015 7F19 DBBC     ADDB  $BC       and add to start address
0016 7F1B 1F98     TFR  B,A       of 1st graphics page
0017 7F1D C601     LDB  #1
0018 7F1F 1F02     TFR  D,Y       Copy this address + 1 to Y
0019 7F21 1093B7   CMPD  $B7       Is this page currently reserved?
0020 7F24 25E1     BLO  FCERR     Yes, error
0021 7F26 9319     SUBD  $19       No, subtract start addr. of BASIC
0022 7F28 1F03     TFR  D,U       and save move offset temporarily
0023 7F2A D31B     ADDD  $1B       Then add in end addr. of BASIC
0024 7F2C 1F01     TFR  D,X       & save new end of BASIC
0025 7F2E C300C8   ADDD  #200     (?Part of orig. PCLEAR routine)
0026 7F31 9321     SUBD  $21       If no room for BASIC program
0027 7F33 24D2     BHS  FCERR     with new PCLEAR in effect, error
0028 7F35 9668     LDA  $68       There is, get m.s. current line #
0029 7F37 4C       INCA                Is this direct mode or running?
0030 7F38 2706     BEQ  L1        Direct mode, skip next part
0031 7F3A 1F30     TFR  U,D       No, running, get saved offset
0032 7F3C D3A6     ADDD  $A6     Add to current BASIC execution
0033 7F3E DDA6     STD  $A6     pointer address & restore
0034 7F40 7E96B4   L1    JMP   $96B4  Go do rest of PCLEAR command
*
* Entry point for initialization
*
0035 7F43 308CBA   ENTRY LEAX  HOOK,PCR Point to above intercept routine
0036 7F46 BF012D   STX  $012D    & store in hook table
0037 7F49 39      RTS          Exit to caller
*
0038 7F4A          END  ENTRY

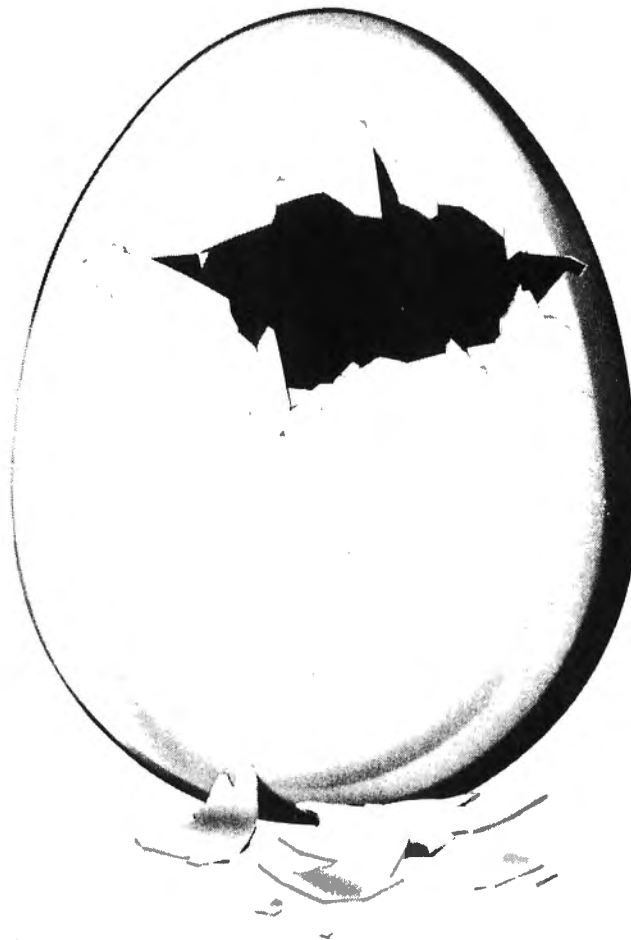
```

NO ERRORS FOUND

ENTRY 7F43 FCERR 7F07 HOOK 7F00 L1 7F40

PCLR1 7F0A

# NEW PRODUCTS



## THE VOICE Gives The Gift Of Speech To The Color Computer and TDP-100

THE VOICE should not be mistaken with software speech synthesizers which require the computer to do all the work in producing speech.

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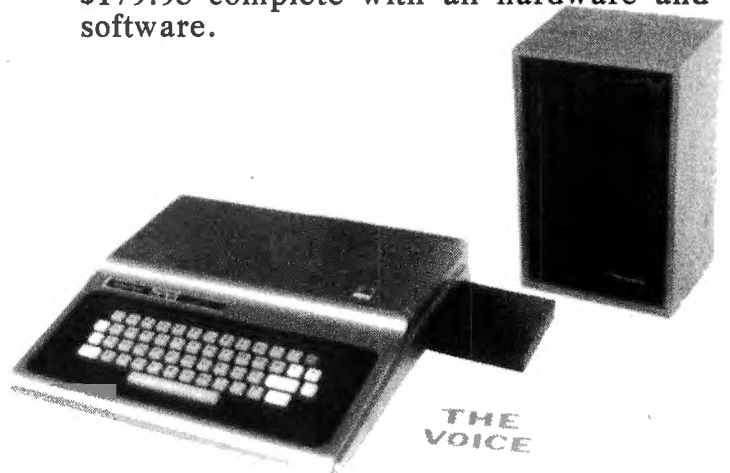
THE VOICE has two outputs. Speech may be heard through the user's TV speaker, or the built-in audio power amplifier may be connected to your own external speaker. A phono connector is provided for this purpose and if the volume is too high, a built-in volume control may be used to adjust it to the proper level.

THE VOICE comes assembled, tested, burned in, with all the necessary hardware and software. A complete manual with many examples are provided to get you started in developing your own BASIC or

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THE VOICE is available from SPEECH SYSTEMS, 38 W 255 Deerpath Road, Batavia, IL 60510, (312) 879-6880 for \$179.95 complete with all hardware and software.



**GIMIX TO INTRODUCE NEW GMX III  
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GIMIX' new GMX III 6809 system features the new GMX III CPU board, OS-9 GMX III multi-user, multi-tasking operating system, and intelligent I/O processor board. The CPU board features high-speed memory to memory DMA transfers and automatic task switching on interrupts and operating system calls for higher system throughput, and a Time-of-Day clock with battery backup. To prevent system crashes caused by errors in individual users programs, the system has fully protected user modes with illegal instruction and out of range memory reference trapping and write protection.

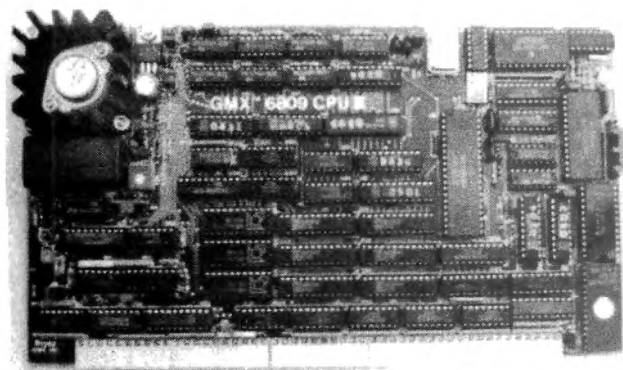
The system hardware also includes 256K bytes of static RAM, a 40M Bytes (unformatted) 5.25" Winchester hard disk, a 1M byte (unformatted) 5.25" floppy disk, and 3 RS-232C I/O ports. Power is provided by a constant-voltage, ferro-resonant supply with sufficient reserve capacity to support a fully expanded system. Hardware options include memory expansion to 1 megabyte, non-volatile battery-backup RAM, additional mass storage capacity, and I/O ports for additional terminals and peripherals.

The UNIX-like OS-9 operating system includes the debugger, editor and assembler. Available software includes BASIC09, PASCAL, COBOL and C.

The base price for a 3 user system is \$9,998.89. Delivery is from stock to 30 days A.R.O. Export models are available.

\* For further information contact: Richard Don at (312) 927-5510

\* GIMIX and GMX are trademarks of GIMIX, Inc. Chicago, IL. OS-9 and BASIC09 are trademarks of Microware Systems, Corp. Des Moines, IA.



Color Computer News

Electronic Imaginations Unlimited is pleased to announce the upcoming release of a unique line of educational software.

These programs were developed by educators in public institutions and transferred to the Color Computer/TDP 100 by professional programmers who work one-to-one with these instructors. Our staff also includes members who hold degrees in special education. Their names appear on every program to ensure the highest quality product we can deliver. Every program is field tested before release and test data is available to educational institutions upon request.

We feel this software will enhance the capabilities of the Color Computer in educational environments. In addition, these programs will not be available in the immediate future for any other computer system. In our opinion the Color Computer is the only inexpensive computer that has excellent maintenance support, tremendous reliability, and continuous company assistance.

The only drawback is an intelligent network system which decreases it's capabilities and use in education. Radio Shack's priorities do not seem to fall in this category. This is effecting their capabilities in bidding competitively in the educational hardware field. Their support of the Model III prohibits them from providing schools with the desire for color and mini-frame capabilities.

In closing, we would like to extend an open invitation to anyone who has a question or suggestion concerning computer assisted instruction or computer literacy. Please write or call us at:

Electronic Imaginations Unlimited  
3702 West Crocus Drive  
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**"DIAL-OUT<sup>®</sup> DEBUTS. FIRST PUBLICATION TO COVER MICROCOMPUTER TELECOMMUNICATIONS".**

DIAL-OUT is the first newsletter to exclusively cover the rapidly growing field of microcomputer telecommunications. Each issue features late breaking news about:

- ☆ National Newtworks (CompuServe, Delphi, The Source, etc);
- ☆ Local-Area Services (GameMaster, Star

-Text, etc); and,  
☆ Bulletin-Board Systems (over 300 nationwide).

While numerous articles have been written about such systems, there has never been a central source of information about the countless number of new systems that are opening for business every day; until DIAL-OUT.

"We know the companies and individuals at the forefront of telecomputing", states Mike Cane, publisher and editor of DIAL-OUT. "We can get the information; and get it to the computing public faster than any other publication".

Evidence of this claim is the premiere issue of DIAL-OUT, which features an exclusive in-depth report of a new national network for microcomputer users, called Delphi.

Aside from just being the first to break this news in such detail, DIAL-OUT #1 offers a biography of, and interview with, the network's President. In the issue's centerfold is what Mr. Cane calls a "Menu Map®". This features all of the Delphi system's menus, showing exactly what the network will offer, and giving the system's Control Commands. It is, in effect, a miniature "user's manual" and gives the reader, at a glance, a full view of the network.

"The number of people using computer networks and systems has doubled each year", Mr. Cane concludes. "Microcomputer telecommunications is an integral part of the lives of over 100,000 people. The time has come for a publication such as DIAL-OUT".

DIAL-OUT is published monthly and sent to subscribers via First Class Mail in an envelope. Subscriptions are \$25.00 a year for 12 issues.

For additional information, write: DIAL-OUT, 175 Fifth Avenue, Suite 3371, New York, New York, 10010.

"DIAL-OUT" is a trademark of Mike Cane.

### *DMP-2100 printer*

Radio Shack, a division of Tandy Corporation, now offers letter quality printing capabilities that rival Daisy Wheel printers in a new dot-matrix printer that also features a high-speed mode for data processing applications and a high

-resolution, dot-addressable graphics mode. The new TRS-80© *DMP-2100 printer* (26-1256) is available for \$1995.00 at Radio Shack Computer Centers and participating Radio Shack stores and dealers.

The key to the *DMP-2100's* versatile performance is a 24-wire print head that can print 32,400 dots per square inch, offering formed-letter quality in a single pass at 100 characters per second (774 words per minute). Print speed in the data processing mode is 160 characters per second, 60 lines per minute at 132 columns. Additional print speeds at 10 characters per inch are 215 lines per minute at 20 columns; 151 lines per minute at 40 columns and 93 lines per minute at 80 columns.

The *DMP-2100* character set includes 96 ASCII, 31 international and 31 graphics characters for printing versatility. The printer supports bold face and underline functions and offers a variety of print styles including standard, condensed, high-resolution monospaced and proportional-spaced correspondence characters. Matrix sizes include 18x24 for standard, 36x24 for high-resolution monospaced and nx24 for proportional-spaced characters.

Radio Shack also offers optional equipment for the *DMP-2100*. A *Bi-Directional Tractor* (26-1441) for use with fanfold paper, labels, and multipart forms, is available separately for \$169.95; and a *Sheet Feeder* (26-1440) for automatic paper insertion and stacking, is available separately for \$995.00 at Radio Shack Computer Centers and participating Radio Shack stores and dealers.

The *DMP-2100* measures 5-7/8 x 21-5/8 x 15 inches and is U.L. listed for 120VAC, 60Hz operation.



## Users Advocacy Movement Called For In Microelectronics Field; Charges Of Violence In Video Games & TV reviewed in AMERICAN FAMILY

The editorial in the January issue of AMERICAN FAMILY, the national newsletter on family policy and programs, calls for a forum for users to counterbalance the influence of national and international regulatory agencies interfering in the market place and preventing full development and availability of the new technologies. The ultimate consumer, and not powerful interest groups and governments, should determine what is available in the market place, the editorial emphasizes.

In the regular "Families and Telematics" column of AMERICAN FAMILY's February issue, just out, the controversy of the effect of violence in video games and TV on children is reviewed. The column cites the pioneering work of the Children's Computer Workshop in the U.S. and the Children's TV Foundation in Australia is developing construction approaches in video games and TV for children.

## THE STEREO COMPOSER Brings High Fidelity and Stereo Music To The Color Computer and TDP-100

The STEREO COMPOSER music synthesizer was developed for the true music lover. The software provided allows one to program 4 separate voices with a 7 octave range. Dotted and double dotted notes, as well as, eighth, quarter, and standard triplet notes are supported. The music may be played at any tempo in any key. In fact, the tempo and key may be changed as the music plays.

The hardware features two 8 bit digital to analog converters which drive two audio power amplifiers. These amplifiers supply enough audio power to easily drive your own external speakers. If you like, the output may be connected to your home stereo system to further increase fidelity. Connection is provided by two phono connectors. If the music is too loud, two built-in volume controls are provided to allow you to control the volume of each of the channels separately. The advantage of

*Color Computer News*

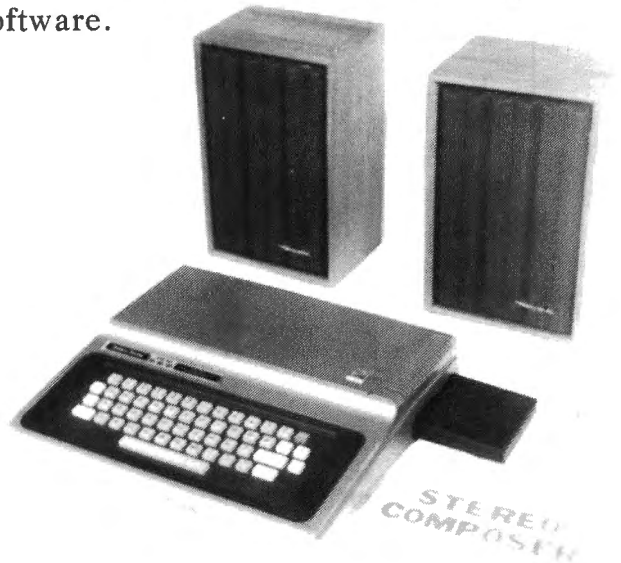
being able to use external high quality speakers is obvious. The use of higher quality digital to analog converters serves to further increase music fidelity.

The STEREO COMPOSER produces music in stereo. Of the 4 voices produced, 2 are directed to each channel. This ability along increases the realism of the music. You can even move the voices between speakers as the music plays.

The STEREO COMPOSER comes assembled, tested, burned in, with all the software and hardware to allow you to immediately start enjoying your music. A complete manual and examples are provided to give you everything you need to know.

The STEREO COMPOSER is completely memory decoded so it does not conflict with the Radio Shack disk controller. In this way, disk owners with an expansion interface can produce music from disk with the STEREO COMPOSER in one slot and the disk controller in another.

The STEREO COMPOSER is available from SPEECH SYSTEMS, 38 W 255 Deerpath Road, Batavia, IL 60510, (312) 879-688; for \$119.95 with all hardware and software.



A TRS-80 users group (with a heavy concentration of Color Computer owners) has been formed in the Newark area. We meet at noon on the first Thursday of every month at the Rutgers-Newark computer center. For information call Paul Gilroy (201) 648-5154 or Marc Mappen (201) 648-5952. All those who live or work in the Newark, New Jersey area are welcome.

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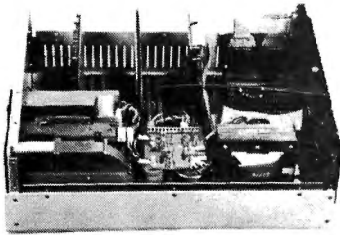
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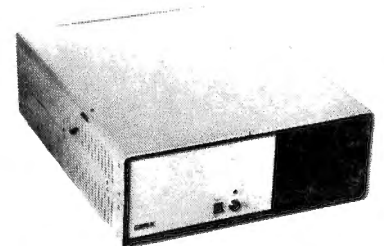
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