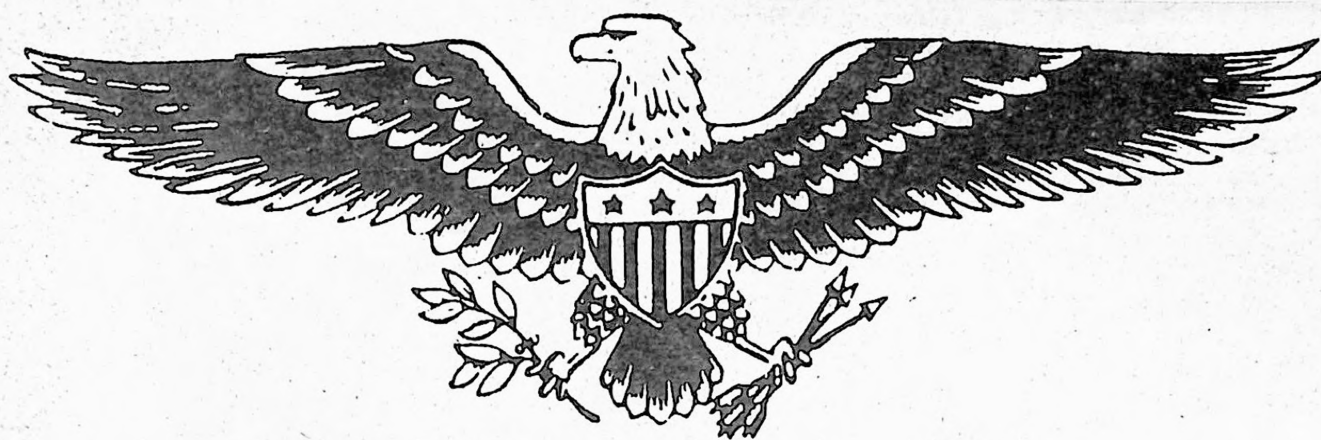




Color Micro Journal

The Color Computer Monthly Magazine

\$1.95 per issue Vol. 1, Issue 6 February, 1984

THIS 'N THAT

LEDs, and some thoughts on Computers
Speaking of Software
Assembly Language Programming??

We have a new section in this months issue called "LEDs" (Letters to the Editor). While there is no way we can print ALL of the letters we receive (because many often say about the same thing, some are close to unreadable, etc.), we WILL try to publish enough of them to "get the message across" - or to show the general feelings of those that we DO receive. These letters provide invaluable information to Hardware and Software Producers as too the feelings, wants, and frustrations of the CoCo Users, as well as provide you, and US, with thought provoking information and questions. **Keep them coming!**

The letter from Delbert Franz is one of those that seems to express the feelings of MANY CoCo Users; that is a feeling of "Frustration". While we know that the TRS-80C Color Computer is one of the most POWERFUL and FLEXIBLE "Home" Computers on the Market, it could have been made SO MUCH more capable with the addition of a couple more items which would not have increased the price by \$10.00. Going to a more standard 44 Pin Cartridge Slot and providing the other two interrupts on the buss would have been a big help, as would the addition of an ACIA or so. The use of an ACIA for the RS-232 Port would have left room in the ROMs for an "ON ERROR GOTO" statement; and the use of a decoded Keyboard would have added maybe \$20.00 to the price and left room for Integer Variables, besides

Continued on page 19, Col. 1

MYDIR An OS-9 Asmb. Lang. "Pipe" Filter

Arnold H. Kahn

OS-9's Dir command with the E option gives the most complete information available for each file, including date of creation, ownership, attributes, etc. All of this information cannot fit on one line of Color Computer screen output. In its adaptation of OS-9, Radio Shack has folded the lines so that each original line of OS-9 output now takes up two lines on the screen. The column headings are also folded, and alternate rows have the columns staggered. This makes for convenient viewing on the small screen of the Color Computer. However, many OS-9 users will want to keep printed listings of their disk directories. Unfortunately, the printed output is only 32 characters wide, and hence it can be a very long and narrow list. (Hackers' notebooks come in many forms and sizes, but I have yet to see one that could keep scrolls in order.)

The purpose of this article is to provide the means for unfolding and spacing the directory listings to a width of 64 characters so that the information is arranged in logically consistent vertical columns. Typical directory listings will now fit on one 8 1/2 x 11 page. In keeping with the aims of **Color Micro Journal**, I'll explain how the information was obtained so that readers can not only use the program but can improve it or modify it to process other OS-9 output.

Continued on page 21, Col. 2

COPY M/L TAPES with this short BASIC Prog

Al Martinez

I have a program which I would like to share with other TRS-80 Color Computer Users. The program is a tape utility which aids the user in making copies of Machine-Language Programs. I find it a very simple and handy program. The instructions are below.

The Program was written for a 16K Extended Basic CoCo. Line 30 PEEKs into the Machine-Language Program and finds the starting address, and assigns it the variable of 'S'. Line

Continued on page 21, Col. 1

This Month

Editorial

This 'N That	1
LEDs - the Readers	2

Article

OS-9 SIG on Compuserve - Bellomo	9
Converting CoCo BASIC to OS-9 Basic09, Part II - Pass . . .	25
Linking Loader for RS & CoCo FLEX (Conclusion)-Waggoner	27

Programs

MYDIR, an OS-9 Asmb Lang 'Pipe' Prog. - Kahn	1
Copy M/L Tapes - BASIC - Martinez	1
4DRIVES/BAS - Use Double-Sided w/ RS Dos V1.1 - Yates . . .	12

Reviews

FACE - Garrett	12
--------------------------	----



Price \$16.50 per year, \$1.95 per copy
Color Micro Journal is published
monthly by Computer Publishing Inc.,
5900 Cassandra Smith Rd., Hixson, TN
37343. POSTMASTER: Send address
changes to Color Micro Journal, 5900
Cassandra Smith Rd., Hixson, TN
37343. For change of address: Six
weeks notice to Subscription Dept.,
5900 Cassandra Smith Rd., Hixson, TN
37343. Give old and new address and
zip code. If possible enclose address
label from cover of previous issue.

LEDS

How Precise is Precision?

Bob Nay;

I had a call from ... of Witchita, KS. He took violent exception to my statement in the **COCO BASIC to Basic** article about COCO BASIC having 7 digits of precision. He based his argument (in a very loud voice) on the fact that you can print 9 digits of accuracy with "PRINT 99999999". However, the number of digits of precision carried by a language is **NOT** determined (at least in the case of floating point) entirely by the number of bits in the mantissa of a floating point number (in this case, 31). It is **ALSO** governed by the internal precision of long calculations in which the necessary number of bits to maintain true precision may become very long (remember that multiplications of two 31 bit numbers requires 62 bits to hold it exactly, even in floating point). Your statement of "7 to 9 digit precision" in the **This 'N That** Column is perhaps a fairer statement of the accuracy of OS/9 and COCO BASIC.

Bud Pass

Editors Note:

Other "gremlins" can also appear; for example, run this Program and see what happens.

```
10 FOR N=0 TO 10
20 PRINT"5^";N;"=";"5^N
30 NEXT
40 END
```

This is due mostly to a "bug" in ALL Microsoft BASIC's; if you enter:

```
PRINT 5*5*5*5*5 <cr>.
```

it comes out OK. Message? **KNOW** the systems **PROBLEMS AND LIMITATIONS!**

We have asked Bud to do a Article explaining Floating Point procedures and Precision; watch for it in the future.

3261 Circle Oak Dr. NW
Atlanta, GA 30339

Dear Sirs:

I've been receiving Color Micro Journal for a couple of issues now and thought maybe I should start paying for it! My check for \$16.50 is enclosed. I am not going to renew my sub to 68 Micro Journal as I don't expect to use any system other than my TRS-80c for at least the next year or two.

I don't like your tabloid format, and neither does a co-worker who is also receiving it. I hope you'll go over to a more compact and durable format in the future. However, your editorial content is more professional and competent than at least one other periodical serving Color Computer users to which I will not be renewing my subscription. I rarely use my CoCo to play games -- it works for its living!

In an effort to get the most out of my unit (purchased used in a 4k version for only \$125), I did my own upgrade to 64K, added two Tandon TM100-2 drives, a Zenith video monitor and an Okidata Microline 92 printer. I originally had Flex in mind, but with OS-9 coming on I will go to that instead.

Continued on page 4

Dear COLOR MICRO JOURNAL,

I just received my first issue of COLOR MICRO JOURNAL today, and I am impressed and looking forward to future issues. I appreciate the fact that you have programs listed in the magazine to be entered "as-is". My biggest complaint about Radio Shack's own TRS-80 Magazine is that it has lot of advertisements and information for accessories and programs one can BUY for one's computer, but little that one can DO with one's computer "as-is". I do, however, have ONE REQUEST. All the programs you listed in your magazine are for the EXTENDED version of Color Basic and I have the NON-extended version (I am feeling like the only one in the world with non-extended). I bought my computer at Christmas and paid what the extended is now selling for. I have been frustrated with the lack of support for it. Would you please print some programs for the non-extended version in basic, and also some machine language programs (I have the EDITASSEMB)?

Again, thank you for your fine magazine.

Fritz A. Lang
3380 S Shaver
Pasadena, TX 77504

Y'all hear???

CoCo GOES TO WORK

THE CoCo HAS GROWN UP. TODAY YOU'LL FIND IT IN OFFICES AND BUSINESSES ACROSS THE COUNTRY. IT'S NOT JUST FOR GAMES ANYMORE. WITH SEVERAL POWERFUL OPERATING SYSTEMS TO CHOOSE FROM, INCLUDING FLEX, OS-9, AND CP/M, THE APPLICATIONS ARE NUMEROUS—WITH OUR PERIPHERALS, THE POTENTIAL IS UNLIMITED.

WORD-PAK

The WORD-PAK is a video board in a cartridge form which plugs into the ROM/expansion port and produces a high quality, video display comparable to that found on high priced terminals. The board is fully compatible with any size system and can be implemented on cassette or disk based systems (disk systems require the use of a Y-connector or expansion bus). Included with the cartridge is a "Video Driver" software package which integrates the WORD-PAK into the system and adds a set of powerful screen commands including: Home Cursor, Erase to End of Line, Erase to End of Screen, Destructive Cursor (on/off), X-Y Cursor Positioning, Double Size Characters (on/off), plus others. The Video Driver also provides two new keyboard features, one is 'Auto Key Repeat' and a programmable 'Clear/Control Key'. The following software patches are available for the WORD-PAK:

FLEX PATCH (specify version)	\$19.95
OS-9 PATCH	\$19.95
TEXPROIII (powerful text editor/processor)	\$49.95

P-C PAK

The P-C PAK is a parallel printer interface and real time clock/calendar cartridge for use with the Radio Shack Color Computer. The board features a fully buffered Centronics compatible parallel port and a four year clock/calendar that keeps track of time from 1:10,000 of a second to months.

PRICES

	ASSEMBLED & TESTED	BARE BOARD W/DOC
WORD-PAK	\$139.95	\$19.95
C-C BUS	\$149.95	\$22.95
P-C PAK (printer port)	\$69.95	\$17.95
P-C PAK (real time clock)	\$62.75	
Battery back-up	\$12.45	

MEM-PAK (with 16K RAM)	\$110	\$17.95
PROTO CoCo	\$10.95 (3/\$20)	

BMC #BM-12EUN	
18MHz Monitor (green)	\$139 (list \$189)
(amber)	\$149 (list \$199)
BMC # BM-AU9191U	
Color Monitor	\$249 (list \$299)
with audio input	
BMC #BX-80 Dot matrix	
printer	\$289 (list \$379)
parallel interface	

C-C BUS

The C-C BUS is an expansion bus which connects to the ROM/expansion port of the Radio Shack Color Computer. The bus provides six software selectable slots which can be populated with any combination of accessory boards/cartridges. A typical system might contain a disk controller, parallel printer interface card, WORK-PAK video board, and a real time clock board, all installed and accessible by the CPU. The C-C BUS accommodates two different types of boards: slot dependent (those which are addressed at C000-FEFF, i.e. ROM packs) and slot independent cartridges (those which are addressed at FF60-FFBF).

C-C BUS features:

- *All address and data lines fully buffered.
- *Gold plated cartridges connectors.
- *Low profile, compact design.
- *Power supply built-in.
- *Compatible with existing hardware and any size system.
- *Supported with a full line of accessories (more to come).

The C-C BUS is supplied complete with an attractive molded cover, power supply, and connection cable.

MEM-PAK

The MEM-PAK is a memory expansion board that can be populated with 24 pin compatible memory devices (ROM, EPROM, RAM, etc.)

PROTO CoCo

Prototyping board designed to fit in a disk controller case.

COMING IN '84

BUB-PAK 1 Megabit bubble memory cartridge.
2SP-PAK Dual RS-232 cartridge.
VOX-PAK Voice recognition/synthesis cartridge.

MAIL ORDERS

Send check, money order, MASTERCARD/VISA (include card number, expiration date, and signature) for total purchase price, plus \$2.50 for shipping and handling (Canadian orders please add \$5.00). New Jersey residents add applicable sales tax. Prices subject to change without notice.

PJ inc.
P.O. BOX 813
N. Bergen, N.J. 07047
(201) 330-1898

Build performance into your system

with OS-9[™] software tools

Unix[®]-based, multitasking, modular, and versatile: these key features are some of the reasons why more 6809 computer manufacturers have selected OS-9 as their standard operating system than any other. And OS-9 has been put to work by thousands of users in almost every conceivable computer application in business, science, industry, education, and government.

Your operating system should not be a barrier between you and your computer. OS-9 is very friendly and easy to use. Its modular structure makes it easy to customize, plus its comprehensive documentation shows you exactly how to interface it to just about any I/O device.

OS-9's advanced features unleash the performance potential of almost any 6809 computer — large or small. In many respects the OS-9/6809 combination is more powerful than many minicomputers!

There are two basic versions of OS-9. Both have the same basic features and capabilities. OS-9 Level One runs on small to medium sized systems having up to 64K memory. The Level Two version runs on medium to large size systems having memory management hardware and up to 1 megabyte of memory, and includes record and file locking for multiuser database applications.

Here are just a few reasons why you should insist on OS-9 for your microcomputer system.

Over 40 utility commands

Friendly "Shell" command interpreter

Tree-structured multilevel file directories

Full timesharing support with log-in and file security
Fast, secure random and sequential access files
Comprehensive English language error messages
Compact real-time multitasking executive

Hardware or software memory management

Device independent interrupt-driven I/O

Fully ROMable for small control systems

Standard versions available from manufacturers of most popular 6809 computers

OS-9 PASCAL Language Compiler

most complete and versatile PASCAL available for the 6809
capable of generating P-code for interpretive execution while debugging OR
highly optimized 6809 assembly language source code output for maximum speed
"virtual memory" P-code interpreter lets you run large PASCAL programs

CIS COBOL^{***} Compiler

ideal for most demanding business applications
features ISAM, Debug, ACCEPT/DISPLAY and Interprogram Communications modules
retains full compatibility with CP/M software
meets ANSI 1974 Level One COBOL standard and is GSA certified
Also available-FORMS 2 automatic program generator for easy interactive design of screen-oriented applications.

BASIC09[™] Structured Basic Interactive Compiler

fastest and most comprehensive full Basic language available for the 6809

combines standard Basic with the best features of PASCAL
features compiler speed, interpreter friendliness and superlative debugging facilities

option available: Run B...a

ROMable run-time system for compiled Basic 09

C Language Compiler

complete implementation of the UNIX version 7 C language
includes INT, CHAR, SIGNED, UNSIGNED, FLOAT AND LONG data types, structures, unions, standard C library and a full preprocessor with macro definitions
generates fully reentrant 6809 assembly language source code output

For more information contact your computer supplier or



MICROWARE

Microware Systems Corporation
5835 Grand Avenue, Des Moines, Iowa 50312 515-279-8844 • Telex 910-520-2535

*Unix is a trademark of Bell Laboratories. ***CIS Cobol is a trademark of Micro Focus, Inc. OS-9[™] and Basic09 are trademarks of Microware and Motorola, Inc.

My present use of my computer is primarily as a word processor (using Telewriter 64), and I expect to begin studying programming in both assembly and C language since the latter is gradually taking over from BASIC at my employer. I'm going to get OS-9 as soon as it arrives at the Shack.

I'd like to see more hardware coverage in your pages, including construction projects. I'm more inclined to that aspect of computing than programming, and am considering the design of my own 6809-based single-board computer to replace the shortcomings of my Color Computer. This project might never get off paper, depending on the variable amount of time and money I will be able to give it, but I'd expect to learn something from the study.

Looking at the ads, I see that several single-board computers are available. None really suit my needs, although the Digital Research design comes closer than the others in design and price. As I plan to do a lot of writing and on-screen formatting, I would want a programmable video display such as the 6845 CRT controller chip offers. I'm thinking in terms of a full-page display, or as close as I can get--I even have the guts of a video monitor capable of a 30kHz horizontal scan with a CRT that is rotated 90 degrees.

Over the long term, I'm very, very interested in the 68000 family and in CAE and graphics/animation applications. Not quite a Cray 1, but it's getting there...

Sincerely,
Damon Hill

Again, Y'all hear that? How about some of you "Hardware Types" coming to the rescue - we are hearing a LOT of requests for Hardware Info.

Also, if you paid \$16.50 for a subscription, drop us a line, or give us a call. If we can verify it, we owe you a few extra months. We are also evaluating the "format" suggestion. Obviously, the Magazine format is a lot more expensive (about 10 times as much to print). Is that format worth double the subscription price? Let us know what YOU want; that's what we are here for.

P.S. You might want to hang on to the '68' Micro Journal subscription; we are looking for 68000 info for it at this time.

James Spanger
25 West Forest Drive
Slidell, LA 70458

Dear Sir,

Enclosed is \$12.50 for a one year subscription of your Magazine. I have received the first 4 issues and have enjoyed them very much. Your other Magazine 68 Micro Journal is the BEST in the business.

I lost the first issue of Color Micro Journal; please send me another copy of the first issue and make up the balance of the subscription beginning with issue #5. This Magazine is so good I do not want to miss any issues.

Sincerely
James B Spangler

Editor;

I would like to tell your readers about a CoCo Users Group in the Spokane area. Anyone interested in more information about the Northwest Computer Club can call Tim Watson at (509) 928-5883 or Terry Thompson at (509) 489-5133, or write to Judy Gehman, E. 14012 Cataldo, Spokane, WA. 99216.

Sincerely,

Judith L. Gehman
E. 14012 Cataldo
Spokane, WA 99216
Nov. 17, 1983

Continued on page 7

COLOR MICRO JOURNAL

SEND ALL CORRESPONDENCE TO:

Computer Publishing Center
COLOR MICRO JOURNAL
5900 Cassandra Smith Rd.
P.O. Box 344
Hixson, TN 37343
(615) 842-4600

Entire contents Copyrighted by
Computer Publishing Inc. (CPI) 1983

Editorial Staff

Don Williams Sr.	Publisher
Robert L. (Bob) Nay	Editor
Thomas E. Williams	Production Editor
Larry E. Williams	Advertising Editor

Administrative Staff

Mary Robertson	Office Manager
Joyce Williams	Accounting
Carolyn Williams	Accounting
Penny Williams	Subscriptions
Deborah K. Pike	File Management

Items Submitted for Publication

COLOR MICRO JOURNAL is actively soliciting contributions for publication. We are looking for ANY type of material that will be useful to a Color Computer Owner; from hints to full Programs and Construction Articles. We will pay for submissions based on a number of criteria. If you wish payment for a contribution, be sure to state these requirements with your submission. ALL submissions must contain a statement that the material is not currently under consideration by another publication. For more detailed information, send a SASE to the Editor, COLOR MICRO JOURNAL, P.O. Box 344, Hixson, TN 37343.

Articles submitted for publication should be accompanied by the authors Full Name, Address, Date, and Telephone Number. It is preferred that articles be submitted as a .TXT File on a FLEX Formatted 5 or 8 Inch Disk, or as an ASCII File on a Radio Shack Disk or Tape (a /DAT File). BASIC Programs should be submitted on Disk or Tape in the normal Binary Format.

If articles are submitted on paper, they should be either Typed or Printed Single Spaced with a MAXIMUM Line Length of 4" on normal 8 1/2" x 11" bond or better paper. A good BLACK Ribbon must be used because all paper submitted articles will be photo reproduced. NO hand written articles will be accepted (except required art work which goes with an article). Again, PLEASE use a DARK Ribbon.

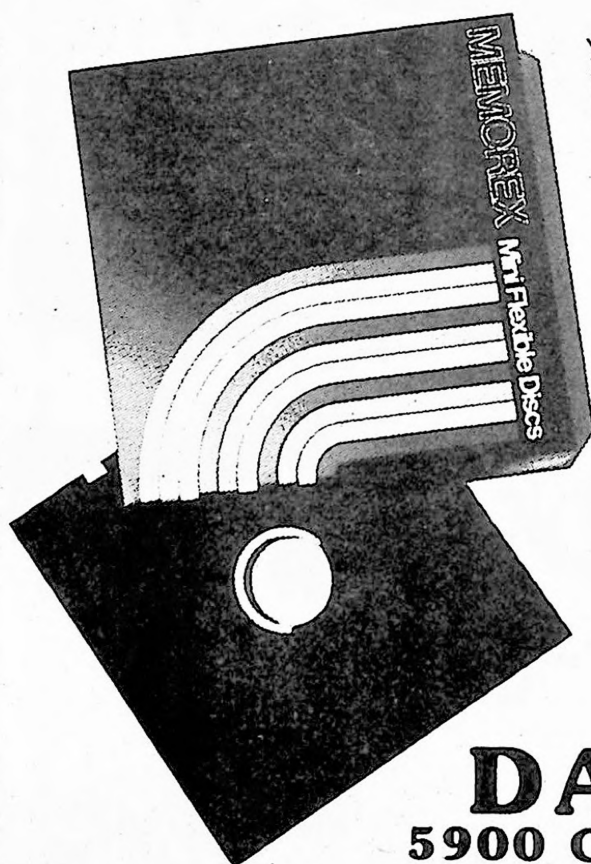
All letters to the editor should also comply with the above and MUST bear a signature. Letters of 'gripes' as well as 'praise' are solicited. We attempt to publish all letters to the editor verbatim; however, we reserve the right to reject any submission for lack of 'good taste'. We also reserve the right to define what constitutes 'good taste'.

Advertising: Commercial advertisers please contact the COLOR MICRO JOURNAL advertising department for current Rate Sheet and Requirements.

TRS-80C, Color Basic, Extended Color Basic, and Disk Color Basic are trademarks of the Tandy Corp. FLEX and UNIFLEX are trademarks of Technical Systems Consultants, Inc. OS-9 and BASIC09 are trademarks of Microware Systems Corp. UNIX is a trademark of Bell Laboratories.

Color Micro Journal

Memorex Flexible Discs are 100% Error Free.



Memorex mini flexible discs come to you perfect, individually tested and certified 100% error free. You get accuracy in data input and retrieval everytime you use them.

Protected by a tough glue-sealed jacket, Memorex mini discs withstand the rigors of daily business use.

Memorex mini flexible discs work on your IBM, Apple, TRS/80, Atari, Commodore, Hewlett-Packard, and most other computers. You can count on them. Give us a call and we'll ship your Memorex mini discs to you today.

WE PAY SHIPPING

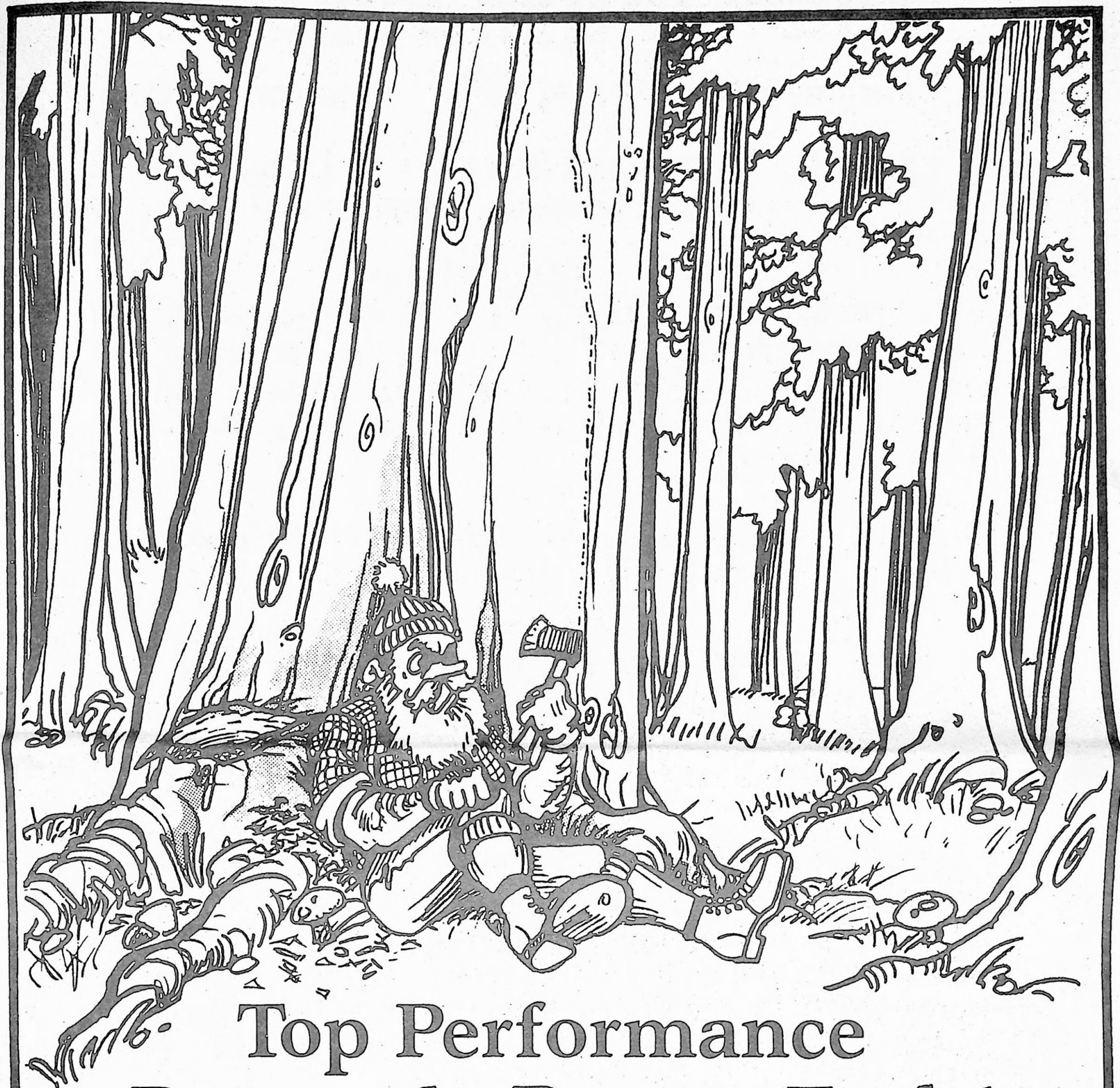
\$24.00 BOX OF 10

TOLL FREE
1-800-338-6800
For Ordering

DATA-COMP
5900 CASSANDRA SMITH RD.
HIXSON TN. 37343

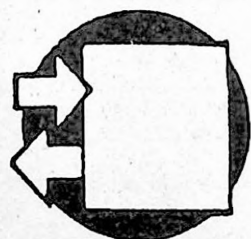
Memorex is a registered trademark of Memorex Corporation.





Top Performance Demands Proper Tools!

JBM's MIDWARE line of quality software, is available on either five and one-quarter or eight inch diskettes. All of JBM's software packages come complete with comprehensive user's manuals.



JBM'S MIDWARE
for OS9

OS9 is a registered trademark of Microware Corporation.

For more information, contact:

The JBM Group, Inc.
332 West Church Road
King of Prussia, PA USA 19406
TEL: 215-337-3138
TWX: 510-660-3999

the **JBM**
group

VISA and MASTERCARD accepted.

Color Micro Journal™

5900 Cassandra Smith Rd. ★

Hixson, TN. 37343

COLOR MICRO JOURNAL™ Is A Monthly
Tabloid Publication for Color Computer USERS!



COLOR MICRO JOURNAL™ is a Magazine FOR
Color Computer Users BY Color Computer Users. Col-
umns on various compatible Operating Systems, Lan-
guages, Uses (Bulletin Boards, Clubs, using the RS
BASIC, and so on), etc.



Programs - Games - Reviews - Education - Hardware -
Software - New Product Announcements - Books



Get the MOST from your COLOR COMPUTER
without being an Engineer.

DON'T MISS A SINGLE ISSUE

Subscription Rate of only \$12.50 a Year!!!



COLOR MICRO JOURNAL™ published by the
ONLY pure 68xx, INTERNATIONAL Computer Maga-
zine. '68 Micro Journal has provided coverage for over
FIVE Years. We KNOW the Color Computer, the Soft-
ware (both FUN and WORK) that IS and CAN BE run on
it. We KNOW the products that ARE, CAN BE, or
WILL BE used on the Color Computer.

For Ordering Subscriptions By Phone
Call 1-800-338-6800



Color Micro Journal

Limited Time Charter Rates

USA - \$12.50 per year. Canada & Mexico - \$19.50 per year

Surface Foreign - \$24.50 per year. Airmail Foreign - \$48.50 per year

Color Micro Journal is a trademark of Computer Publishing Inc.

.....
• Yes! Start my copy of Color Micro Journal coming as soon as possible!
•
• Name _____
• Address _____
• City _____ State _____ Zip _____
• ☐ Visa ☐ Master Card ☐ Check or Money Order Enclosed
• Card # _____
• Exp/Date _____

correction program for the Radio Shack Color Computer.

Building on the popular SPELL 'N FIX program which Star-Kits has been marketing for several years, the new SPELL 'N FIX Level II incorporates features which let it equal or exceed spelling programs costing up to five times as much on other computers.

The new Level II SPELL 'N FIX splits the CoCo screen into two windows. The top window shows the text in upper and lower case as it is being read; the bottom window displays program status, misspelled words, and possible alternative spellings.

SPELL 'N FIX Level II is supplied with a 20,000 word dictionary; the user may add up to 20,000 additional words or use alternative dictionaries, so SPELL 'N FIX Level II can be customized to include technical or even foreign words.

Each time SPELL 'N FIX Level II encounters an unknown word in the text being proofread, it lets the user add it to the dictionary or correct it. When correcting a word, SPELL 'N FIX Level II lets the user browse through the computerized dictionary to find the appropriate spelling or a replacement word. Once a word is corrected, SPELL 'N FIX Level II remembers the old and new words, and will suggest the correct spelling if the bad word is encountered again.

SPELL 'N FIX Level II has been specially written for the inexperienced user. It is fully self-prompting and has extensive error recovery routines, so that most users need not refer to the extensive manual after the first use. It is truly 'user friendly'.

SPELL 'N FIX Level II requires a 32K or larger Color Computer with at least one Disk Drive. It includes a detailed operating manual and costs \$69.29. Order through your favorite dealer, or direct from Star-Kits Software Systems Corp., P.O. Box 209 Mt. Kisco, NY 10549, or telephone (914) 241-0287. (The original SPELL 'N FIX is still available on tape or disk, and costs \$49.39. Owners of this original version may upgrade to the Level II version for a modest upgrade charge.)

Analog Micro Systems
5660 Valmont Road
Boulder, Colorado 80301
(303) 444-6809

News Release
January 1984
V1.5

Robot-1

With the advent of large scale integrated circuitry (LSI), the availability of powerful home personal computers has become a reality. This same technology has also shown up in industry to further automate dangerous or tedious and precision assembly procedures in mass production lines around the world.

Now, for the first time in history, the availability of this technology has made possible the introduction of low cost home personal robotics and low cost industrial robotic systems. A vast interest in artificial intelligence and robotics has arisen due to the availability of the small powerful computer systems that make intelligent robot systems possible.

As an entrance into the field of robotics Analog Micro Systems is offering a complete line of computer controlled robotics for entertainment, education, and small industry. The first product to be released for national sale is the "Robot-1" computer servo controlled robot arm. Two versions of this robot arm are now being offered on the general market. One version is a plug in compatible output device for the Radio Shack Color Computer. The "Robot-1" is controlled by either keyboard or joystick inputs to the color computer. The operator can put the computer in a learn mode and operate the robot arm to perform a given task. After the operator has guided the Robot-1 through the various movements and functions, the operator may then instruct the computer to remember and repeat the sequence of movements and functions any number of times. The movement sequences may also be saved on tape or disk for later use. The Robot-1C comes complete with all software and includes a power supply, a six channel servo controller, all cables and a Robot-1. The Robot-1C is priced at \$395.00 complete.

The next version of Robot-1 comes with different interface electronics in order to function on a larger computer system which, like the Color Computer,

uses the 6809 microprocessor. This will allow Color Computer users to upgrade their applications to multi robot systems while using the same software that they developed for the color computer. This minicomputer like system is commonly known as the SS-50 buss. The Robot-1S uses one sixteen address thirty pin input-output connector on the SS-50 buss to control a six axis servo controller and power supply interface card. The Robot-1S takes advantage of the larger computer buss by allowing up to eight robot arms to run interactively and simultaneously using the AMS multi robot arm software. All movement sequences may be saved in memory or on disk to be retrieved later repeating the multi interactive robot arm movement sequences. Source code is provided with all robot software to enhance the ease of research and experimentation in the field of robotics.

The techniques that are learned from using Robot-1 may be directly transferred to the use of Robot-2 and Robot-3 industrial work robot arms as the software techniques, the control techniques, and the interface hardware are identical. Robot-1 is aimed at robotic entertainment, research, and education, and Robot-2 is useful for small industrial assembly such as electronic circuit boards. Robot-3 is

A Dictionary Program is Useless
Unless It's Perfect.
That's Why We Are Introducing

SPELL 'N FIX II

A Spelling Dictionary Program is supposed to help you catch and fix mistakes in word processing text. It should be simple and convenient to use. It should be fast. And above all, it must be accurate.

SPELL 'N FIX is all of these. But now SPELL 'N FIX II is even better! Look at the comparison chart to see why.

SPELL 'N FIX II finds and fixes spelling and typing errors in a single pass. As SPELL 'N FIX II proofreads your text, you see it all (in full upper and lower case) right on the screen. When a suspect word is found, you see it in context as part of the text. You can immediately search the SPELL 'N FIX II dictionary for the correct spelling, and put the right word into your text in a flash.

Most important of all, we take great pains to make sure that SPELL 'N FIX is accurate and complete. SPELL 'N FIX II comes with a 20,000+ word standard dictionary which contains many more words than the average person uses. By allowing you to add your own words, SPELL 'N FIX II gives you the advantage of a short, fast dictionary that can contain all the words you use (including your name and address, special words from your business, and even foreign or coined words.) We don't stuff our dictionary with useless words (some with foreign spellings or downright wrong like absorbancy, accidentally, accts, agcy, aix, or analyse as you find in other programs' 60,000 word dictionaries.)

Regardless of which you choose — the original SPELL 'N FIX (available on tape or disk, for 16K or larger computers, now at a new low price with generous upgrade terms), or the new SPELL 'N FIX II — you will understand why we say

COMPARISON CHART

	Radio Shack Color Dictionary 26-3265	Original SPELL 'N FIX	New SPELL 'N FIX II
Checks SCRIPSIT (R) files	YES	YES	YES
Checks other text processor files	NO	YES	YES
Checks Basic data files	NO	YES	YES
Checks files larger than memory	NO	YES	YES
Full upper and lower case display	NO	NO	YES
Add words to dictionary	NO	YES	YES
Delete words from dictionary	NO	YES	YES
Custom dictionaries possible	NO	YES	YES
Comes with error-free dictionary	NO	YES	YES
Usable for foreign languages	NO	YES	YES
Checks and fixes in one pass	NO	NO	YES
Shows suspect words in context	YES	YES	YES
Usable with just one diskette	NO	YES	YES
Looks up words in dictionary	YES	NO	YES
Looks up words while correcting	NO	NO	YES
DIR command allowed during run	NO	YES	YES
Uses standard Basic file format	NO	YES	YES
Price	\$59.95	\$49.39	\$69.29

(Note: SCRIPSIT is a trademark of Tandy Corporation)

A Dictionary Program is Useless Unless It's perfect.
SPELL 'N FIX Perfect!

STAR — KITS

P.O. BOX 209 — J
MT. KISCO, N.Y. 10549
(914) 241-0287

Color Micro Journal

a larger version used for medium duty operations such as chassis assembly, painting operations, or the handling of dangerous materials. All three robot arms plug into the same interface electronics allowing low cost upgrades to industrial applications. Additional software will be supplied with each robot arm.

A number of accessories shall be available for Robot-1 and its successors. Software packages shall be available to move Robot-1 from the input of AMS biofeedback equipment, allowing certain brainwave patterns, muscle movements, and body functions to control the robot arm movements. These are available for the Analog Micro Systems Model 8266 Electroencephalograph Brainwave Analyzer, the Model 8264 Biofeedback Precision Temperature Monitor, the Model 8262 Electromyograph, and the Model 8260 Dermograph. A low cost digital video TV camera shall be available for robotic sight and pattern recognition. An ultrasonic range finder shall be available for distance measuring. A mobile cart to sit the robot arm base into will give the robot arm mobility. Should cables to the robot arm be undesirable, a radio link shall be available for remote control of the mobile based robot arm.

Computer generated voice output, along with sound recognition, is available directly to the computer as well as over the radio link to the mobile robot system.. A four joystick and switch interface is available for computers not having such inputs. The above accessories shall be available for SS-50 based computer systems.

The robotics systems outlined above are modular in nature and may be assembled in any number of possible configurations. For example, a remote radio controlled mobile robot with speech, sound recognition, ultra sonic ranging and detection, and robot vision may be assembled with the above modular components. The resulting system can be programed in a high level computer language, resulting in a superior artificial intelligence system with a minimum of human effort. The performance to cost ratio of the above system far exceeds anything that is available on today's market.

SUPPORT YOUR ADVERTISERS

STAR — KIBBITS

It seems like just yesterday that I wrote the first Star — Kibbits column (though it wasn't called that then — I called it "A Word From the Sponsor"). But here it is — a whole year later. Time does fly!

PIO ERROR

Familiar message on your disk system? Perhaps the problem is noise. Let me explain.

A few weeks ago, I was asked by a local businessman to check out one of his four CoCos. I went to his office, and found that one of his Radio Shack drives was making a lot of errors.

We disconnected the drive and went to a local Radio Shack service center. Imagine my surprise (and embarrassment) when the drive worked perfectly on their test bench. Back to the office and more IO errors.

After some headscratching (not much hair to get in the way), I decided that Radio Shack drives must be very sensitive to external magnetic fields, and that this drive was picking up noise from the motor of a blower he had installed to keep his CoCo cool. We placed the drive to the right of the computer, on a small dish rack from the local 5-and-10, and his problems went away.

When you think about it, the read-write head in a disk drive works on very low level magnetic fields, and can easily pick up noise from nearby electric motors or transformers. The MPI drives I am using on my own system have a small copper shield near the head; the drives don't work very well at all if you accidentally leave it out. Some drive manufacturers even tell you not to mount two drives next to each other, since they will pick up noise from each other's motors.

Though this particular drive seemed more sensitive than most, still it's not surprising that where you put the drive can make a big difference. If you are having problems with IO errors, try moving the drive far away from everything else. It might help.

DOUBLE — SIDED DISKS

We are selling a complete disk system with a disk controller, a double-sided 40-track drive, cabinet, power supply and all cables, all for \$400. The advantage, of course, is that the double-sided drive gives you the capacity of two regular drives for just slightly more than only one.

If you currently have a double-sided drive, send us a large self-addressed stamped envelope and we will send you free details on how to use it with your CoCo.

That's it for this month — see you next time.

SPELL 'N FIX II

Regardless of whose text processor you use, "let SPELL 'N FIX II" 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; \$178.58 in the Flex version. Older SPELL 'N FIX I is now priced at just \$49.95. Both include a 20,000 word dictionary.

HUMBUG — THE SUPER MONITOR

A complete monitor and debugging system which lets you input programs and data into memory, list memory contents, insert multiple breakpoints, single-step, test, checksum, and compare memory contents, find data in memory, start and stop programs, upload and download, save to tape, connect the Color Computer to a terminal, printer, or remote computer, and more. HUMBUG on disk or cassette costs just \$39.95, special 64K version for FLEX or STAR-DOS 64 costs \$59.95, MC-10 version \$29.95.

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.

ALL IN ONE — Editor Etc.

Three programs in one — a full function Editor, a Text Processor and a Mailing List/Label program. All this for just \$50. Requires STAR-DOS or FLEX, specify which.

DBLS for Data Bases

DBLS stands for Data Base Lookup System. A super-fast system for searching for a selected record in a sequential disk file. Supplied with SPELL 'N FIX's 20,000 word dictionary as a sample data file — lets you look up the spelling of any word in under FOUR seconds. Priced at \$29.95. Requires STAR-DOS.

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, disk or cassette.

NEWTALK

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

SHRINK

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

EDUCATIONAL SOFTWARE

Introduction to Numerical Methods — college level course on computer math, \$75.00, disk or cassette.

We accept cash, check, COD, Visa, or Master Card. NY State residents please add appropriate sales tax. Add \$3 to above price for AMDEK 3" disk versions.

(FLEX is a trademark of Technical Systems Consultants, Inc. Everything else in this ad is a trademark of Star-Kits.)

OS-9 SIG on COMPUERVE

An OS9 Special Interest Group is available on CompuServe; a nation wide network.

A Special Interest Group (SIG) is a unique utility on CompuServe that enables users with similar interest to share ideas. There are three (3) major areas to the SIG.

1. Mail or message switching.
2. Conferencing.
3. Data Bases.

Message Switching is the exchange of information from one user to all other users. Messages are normally read, written, and stored in serial fashion with the oldest at the "bottom of the stack". Various methods of reading these messages are available. Some of the options are:

1. Read marked messages.
Messages sent to you, or marked by you.
2. Read selective message by subject.

Conferencing:

Conferencing permits members of the SIG to have live interaction conversations with one another to discuss various topics.

Data Bases:

Data Bases are divided into sections. This permits easy maintenance and accessibility. To start, there are four data bases. These can be added to or modified as needed. The four data bases are:

1. Data Base 0: General information. (System information, ect.)
2. Data Base 1: Basic09.
3. Data Base 2: "C" section.
4. Data Base 3: Pascal.

The operation of a "SIG" is explained in greater detail in the publication "Special Interest Group Instructions" which is available from CompuServe. One can join CompuServe through their local computer store, or by contacting CompuServe at:

CompuServe
Information Service Division
5000 Arlington Centre Blvd.
Columbus Ohio 43220

Any comments or suggestions will be welcomed.

Jim Bellomo
76703,467
System Operator

STAR-KITS

P.O. BOX 209 — J
MT. KISCO, N.Y. 10549
(914) 241-0287

CALL
800 338-6800
for
SUBSCRIPTIONS
and
BACK ISSUES

DYNAMIC ELECTRONICS INC

* 96K EXPANDER (96KX) *

The **96KX** is a plug in cartridge that extends the capability of Color Computers. An output Connector is included for Disk Drives or Cartridges. A Programmable Interrupt Switch is included that allows the computer to be reset when the normal reset fails or run any ML Program. Extended Basic is not required & the cartridge works with all Color Computers. The software is always available as a HELP program and is called by a simple keyboard Command Features include HEX to DECIMAL & DECIMAL to HEX Conversions, Storing and Retrieving data in HEX, DECIMAL, ASCII, or VECTOR formats, Displaying STATEMENT Numbers & Memory allows changing Statement Numbers one at a time, quickly moves blocks of data, displays the Beginning, Ending, & Execution Addresses of ML Programs, Conditions for Stacking programs, & much more. The **96KX** is Menu oriented & User Friendly. For 64 Computers the **96KX** allows Basic to be run in either of the two 32K Pages, or easily transfer information from one page to the other or within either page. One Year Warranty. **96KX CARTRIDGE \$89.95**

* VIDEO REVERSER (new) *

The **Video Reverser** relieves eye strain from operating Color Computers. Its 3 modes of operation are (1) Reversed Bright Characters against a Dark Background, (2) All Capitals reversed for spotting spelling errors in text, & (3) the Normal power up display. The **Video Reverser** is a WIRED assembly that mounts onto the MC6847 (VDG) Chip. No soldering or experience is required. The different modes are selected by a 3 position toggle switch that mounts in a 1/4" hole. **\$19.95**

* DYNAMIC COLOR NEWS *

(Monthly Newsletter - First Issue Feb. 1984)

An Engineering Newsletter that explains in nontechnical terms how the Color Computer works. We will inform you of the latest accessories and developments in the Computer Field plus explain what You can do to improve Your Computer. We will also give operating hints to help you develop competence in writing Basic & Machine Language Programs. Included is a Q & A Section where we give replies to your questions. In our first issue we talk about memory expansions, the Immediate Mode for BASIC, and Start a study on the Microprocessor. Also included is a Multiprogram Master Program where you can stack several programs in memory in a 32K Computer and select the one you want to run from a Menu plus much more. Receive discounts on our products. **Cost \$15 a year.**

* MEMORY EXPANDERS *

(16K TO 128 K)

Increase your Computer's Memory with the following Memory Expansion Assemblies. Soldering is not required and the modifications are reversible. Each assembly is warranted for a year. Items followed by a "K" are unsoldered kits. Each Memory Chip in these kits is tested but we can't warranty your soldering. No soldering to the Computer. Instructions are included with each Kit & Assembly.

ME-1 8-16K CHIPS	\$14.95	ME-5 8-64K CHIPS	\$59.95
16K TO 32 K	ME-3 \$39.95	ME-3K	\$29.95
F OR 285 TO 64K	ME-4F \$89.95	ME-4FK	\$71.95
D & E TO 64K	ME-4 \$99.95	ME-4K	\$79.95

Note: ME-4 & ME-4F require a 1.1 ROM. EXEC 41175 for display of your Basic ROM version.

We will install our kits in your Computer
\$10 plus shipping

* SAM BUFFER *

SAM BUFFER - Amplifier that mounts on SAM Chip and protects it from shorts due to upgrading memory or other modifications. **SAM BUFFER \$8.95**

* 128K MEMORY EXPANDERS (new) *

(wired assemblies only)

These assemblies consist of 2 banks of 64K RAMS with a logic circuit board plus a toggle switch for bank selection. The unselected bank is operated in the standby mode where it draws about 1/10 of its normal power. This gives the equivalent of two 64K Computers. When used with our 96KX the usable memory is equivalent to 4 times that of a 32K Computer. No soldering or trace cutting is required and the modifications are reversible. A 1.1 BASIC ROM is required. One year warranty.

D & E Computers to 128K ME-128D \$269

F or 285 to 128K ME-128F \$259

6809E \$24.95, 6883 \$27.95, 6821 \$5.95, 6847 \$24.95,

2764 \$9.95, EPROM Cartridge with circuit bd \$ 8.95

Your Basic Program in a Cartridge up to 8K. **\$34.95**

DISK COMPATIBLE SOFTWARE on TAPE or in a CARTRIDGE.
EXTENDED BASIC is NOT REQUIRED.

* UNIVERSAL PROGRAM 1(UP-1) *

A powerful utility that allows programs to be stacked in memory until the memory is filled. Jump from one program to another or compose new ones while retaining the old ones. Also included are tools for patching defective programs plus many other useful functions. **Tape \$14.95, Cart. \$24.95**

* DISASSEMBLER-ASSEMBLER (DISASM) *

Designed for CC Compatibility **DISASM** uses English Mnemonics & Decimal Locations rather than HEX and special symbols. Write Machine Language Programs or Subroutines with the Assembler. Disassemble the CC ROMS or any other ML Program with the Disassembler. **Tape \$19.95, Cart. \$29.95**

* TERMINAL PROGRAM (DYTERM) *

DYTERM converts a CC into a terminal. Receive and send data between 2 computers, another terminal or a MODEM. BASIC Program with ML subroutines. Baud rates of 300-2400, Even, Odd, & no parity, 7 or 8 bit characters, 1 or 2 stop bits, & user definable buffer area. Modify the Basic Program for your particular needs. **Tape \$14.95, Cart \$24.95**

* WE REPAIR COMPUTERS *

Send Computers for repair or updating by UPS to our street address -
2118 Westwood Rd.

* CALL OR WRITE FOR LATEST CATALOG *

Checks, VISA & MC Cards. Add \$2 ship.

24 HR phone. Call at nights & on weekends & save

DYNAMIC ELECTRONICS INC

BOX 896

HARTSELLE, AL 35640

(205) 773-2758



DSL COMPUTER PRODUCTS INC.

NEW

INATAK

Fast arcade action
Multiple aliens attack.

Disk or Tape
\$24.95

NEW

KING TUT

Graphic arcade adventure,
multiple screens,
find treasures, outwit
monsters, discover the
secrets of Tut.

Minimum 32K Disk Only

\$29.95

NEW

ULTRA CONTESTER

Disk and Tape I/O, Auto
Sort, works in 16, 32, or
64K computers.

Over 30,000 calls possible.

Written by WPX record
holder AH2E.

Disk or Tape **\$39.95**

GAMES

DEATH TRAP	19.95 (D)
CATERPILLAR	19.95 (C)
HAPPY HURDLER	12.95 (C)
POLARIS	29.95 (R)
SPACE ASSAULT	29.95 (R)
SHARK TREASURE	24.95 (C)
KEYS OF THE WIZARD	19.95 (C)
MUDPIES	29.95 (C)
TRAPFALL	27.95 (C)
AIR TRAFFIC CONTROLLER	28.95 (C)
GRABBER	27.95 (C)
SPACE SHUTTLE	28.95 (C)
DEVIL ASSAULT	27.95 (C)
BUZZARD BAIT	27.95 (C)
THE KING	26.95 (C)
BLACK SANCTUM	19.95 (C)
CALIXTO ISLAND	19.95 (C)
EL BANDITO	24.95 (C)
GLAXXONS	24.95 (C)
ASTRO BLAST	24.95 (C)
SHENANIGANS	29.95 (D) 24.95 (C)
SPACE RAIDERS	24.95 (C)
CAVE HUNTER	24.95 (C)
STARSHIP CHAMELON	24.95 (C)
DOODLEBUG	24.95 (C)
STAR BLASTER	39.95 (R)
EL DIABLERO	24.95 (C)
STORM	24.95 (C)
ROBOTTACK	24.95 (C)
THE FROG	30.95 (D) 27.95 (C)
GALAX ATTAXX	21.95 (C)
DEFENSE	21.95 (C)
COLORPEDE	29.95 (C)
MAZE RACE	14.95 (C)
BIRD ATTACK	21.95 (C)
ANDROID ATTACK	21.95 (C)
COLOR HAYRIDE	24.95 (C)
BALLOON ATTACK	29.95 (D) 24.95 (C)
COLOR DFT	25.95 (C/D)
COLOR FURY	27.95 (C)
CASHMAN	27.95 (C)
OUTHOUSE	27.95 (C)
AREX	34.95 (C)
ZAXXON	39.95 (C)
MOON SHUTTLE	29.95 (C/D) 27.95 (C)
CHOPPER STRIKE	27.95 (C)
DEMON SEED	27.95 (C)
TIME BANDIT	27.95 (C)
ELECOTRON	24.95 (C)
SR071	28.95 (C)
BLOC HEAD	26.95 (C)
HYPER ZONE	26.95 (C)
JUNIOR'S REVENGE	28.95 (C)

ACCESSORIES

NANOS CARD	4.95
EPSON RIBBONS	7.49
BLACK, BLUE, RED, BROWN, GREEN	
C-10 DATASETTE	1.25
C-20 DATASETTE	1.50
GEMINI RIBBONS	2.95
LP VII, DMP 100, TPI RIBBONS	4.95
DISK MAILERS	0.95
10 PACK	0.95
DISK SAVERS	.59
12 PACK	5.95
DISKS	
SENTENIAL 99/SD	19.95
SENTENIAL 99/DD	22.95
VERBATIM	34.95
DISK DOUBLER	11.95
GRAND SLAM 64K KIT	75.00
16-32K RAM SLAM	49.95
2 WAY RS 232 SWITCHER	29.95
3 WAY RS 232 SWITCHER	39.95
4 TO 4 PIN CABLE	4.95
CASSETTE CABLE	5.95
MASTER CONTROL II OVERLAY	2.50
64 K RAM BUTTON	2.95
BOTEK INTERFACE	59.95
FOR EPSON	69.95
MD KEYBOARD	69.95
MULTI PACKS	
DSL GREATEST HITS	
TAPE	39.95
DISK	49.95
COLOR LOAD 80	
VOLUME II	9.95
VOLUME III	9.95
RAINBOW ON TAPE	
JAN '84	6.50
FEB '84	6.50
MAR '84	6.50
DSL DISKES IN	
PLASTIC CARRY CASE	19.95

HARDWARE

32/64K TDP 100	219.00
32/64K EXT TDP	309.00
32/64K CC2	209.00
32/64K EXT CC2	299.00
TDP LINE PRINTER I	225.00
GEMINI STX 80	199.00
GEMINI 10X	299.00
GEMINI 15	349.00
DELUXE JOYSTICKS	39.95
STD. JOYSTICKS	10.00
ATARI JOYSTICKS	14.95
DISK DRIVE 0	349.00
DISK DRIVE 1,2, OR 3	249.00
DUAL HALF HEIGHT	499.00
MODEM I	99.00

APPLICATION

THE GENERAL	TAPE	39.95
	DISK	49.95
COLOR PASCAL	TAPE	49.95
	DISK	69.95
RANDOM BASIC		75.00(D)
DISK MAILER		24.95
TELEWRITER	TAPE 49.95	DISK 59.95
SUPER COLOR WRITER		
TAPE OR DISK		59.95
ELECTRONIC CALLIGRAPHER		18.95 (D)
SUPER CONTESTER I		14.95 (C)
SUPER CONTESTER II		24.95 (C)
COUNTRY LOCATOR		14.95 (C)

UTILITIES

JDB DOS	49.95
COLOR GRAPHIC EDITOR	19.95 (C)
SUPER SCREEN	29.95 (C)
GRAPHIC SCREEN PRINT	
EPSON	9.95 (C)
OKIDATA	9.95 (C)
GEMINI	9.95 (C)
PROWRITER	9.95 (C)
LP VII/RS	7.95 (C)
LOGICAL DISK COPY	14.95
EDTASM	49.95 (R)
TAPE DIRECTORY	14.95 (C)
TAPE TO DISK	17.95 (C)
DISK TO TAPE	19.95 (C)

DSL COMPUTER PRODUCTS INC.

313-582-8930

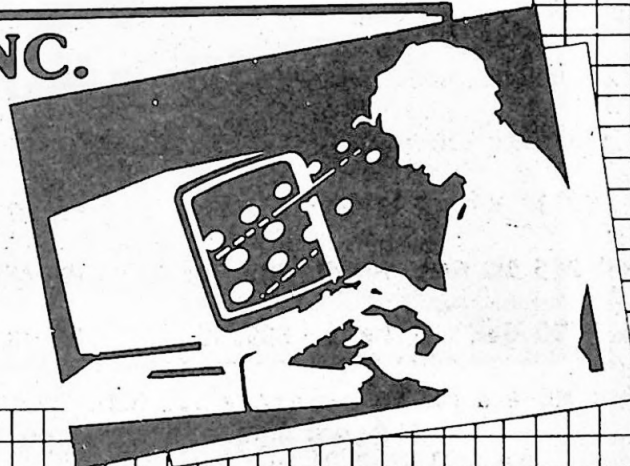
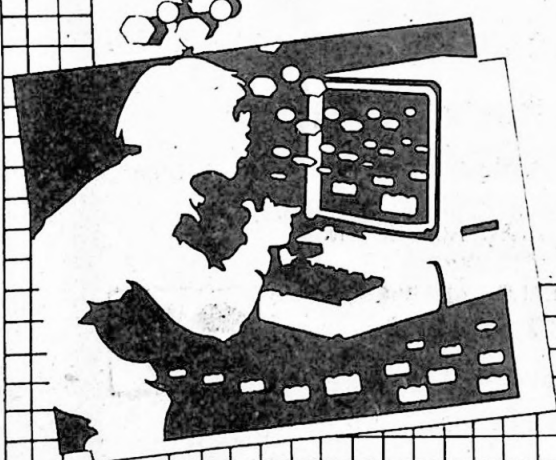
313-582-3406 (Data)

P.O. BOX 1176

DEARBORN, MI 48121

Michigan Residents Add 4% Sales Tax to Order.

Please include \$2.00 for S. & H.



4DRIVES/BAS

V1.1 Disk BASIC Version

The BASIC Program which allows the use a two Double-Sided Disk Drives as four individual Disk Drives when using the Radio Shack Disk Operating System has been around a while. The Program requires that the user have 64K RAM, as it "transfers" the ROMs to RAM, and "patches" the Disk ROM so it thinks that the back side of Drive 0 is Drive 2, and the back side of Drive 1 is Drive 3.

BUT, as is the case with a LOT of the Software available for the Color Computer, it will NOT work with the new V1.1 Disk ROM (a lot of the normal CoCo Software will not run on the Color Computer 2's, because of the new BASIC and Extended BASIC ROMs). Albert Yates submitted this Version, which he developed from one of the earlier "Four Drives" Programs, so that **THIS** Version will work with the **V1.1 Disk BASIC** ROMs.

```
10 D$="1A508E8000A684B7FFDFA780B
7FFDE8CFF0026F1B7FFDF1CAF39"
20 FOR X=1 TO LEN(D$)STEP2
30 A$="&H"+MID$(D$,X,2):A=VAL(A$)
40 POKE&H7E00+Y,A:Y=Y+1:NEXTX
50 POKE&HFF40,0:EXEC&H7E00
60 FOR X=1 TO 3:POKE&H13F+X,ASC(MID$(D$,X,1)):NEXTX
105 CLS:POKE &HD89F,&H41:POKE&HD8A0,&H42
110 PRINT @234,"64K SYSTEM"
120 PRINT"    DRIVE 2 ON BACK OF DRIVE 0
130 PRINT"    DRIVE 3 ON BACK OF DRIVE 1
140 NEW
```

REVIEW FACE

Childish Software

P.O. Box 985, Norcross, GA 30071

16K Cassette \$21.95

Reviewed by Norman Garrett

FACE is a program which allows the player to combine facial parts together to draw a face with a seemingly endless number of combinations. Although designed for 4 to 8 year old children, I was so fascinated with it that my children could not get me off the Color Computer long enough to try it out. Eventually, though, they succeeded and my children (ages 10, 8, 7, 4 and 2) have since derived hours of pleasure from it.

The idea is simple, and yet the program is well conceived and well put together. Essentially, you see a face (drawn with graphics) and have the opportunity to change its appearance by changing the eyes, ears, hair, mouth, or nose. Those parts are listed to the right of the face, and a cursor moves from item to item, pausing momentarily at each. All you do to make a selection is press any key while the cursor resides at a category. Doing that gets you a second screen with the options for that particular part displayed. A voice generator also speaks the name of the facial part. For example, if I pressed a key while the cursor was indicating "EARS", the program would speak the word "ears"

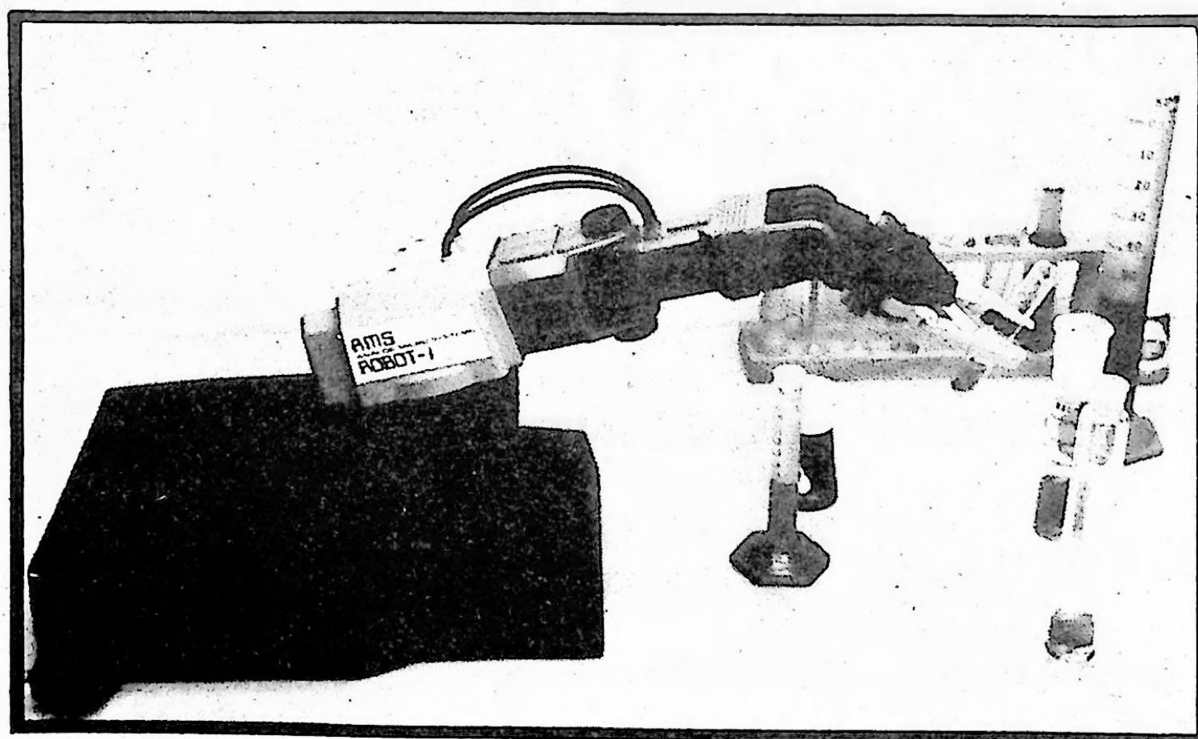
(with remarkable clarity) and you would see all of the "ears" options. The options are selected in the same way, i.e. the cursor moves through the options, pausing at each. When you make a selection (again by pressing any key) the face screen is again displayed, now with the part you have selected. As you can well imagine, the possible combinations of faces is very large (over 10,000!). Children can play with **FACE** for hours without repeating the same combination.

From an educational standpoint, this program helps hand-eye coordination in small children, and also lets them be creative in combining parts of faces together. Beyond that, however, its educational value is limited, although its entertainment value remains high. My small children had a tendency to become impatient and hit the keys quickly, rather than wait for a specific selection to be indicated. Additionally, pre-readers have a difficult time initially figuring out the game, since the options are written, rather than pictured. After some experience, however, they were not actually reading the words, they had memorized the cursor position representing each facial part.

FACE could certainly be enhanced. Other versions of this program (most notably Spinnaker's **FACEMAKER** for Apple computers) have animation (wiggle ears, nose, blink eyes, etc.) and teach rudimentary programming skills. That type of capability would significantly enhance the educational benefits of **FACE**, and is something that should be considered in later releases.

In general, I found **FACE** to be highly entertaining, moderately creative and marginally educational.

Analog Micro Systems



ANALOG MICRO SYSTEMS

5660 Valmont Road
Boulder, Colorado 80301
(303) 444-6809

ROBOT-1

Computer Servo
Controlled Robot Arm

Keyboard or Joystick
Control;
Plugs Into Your Co Co;
Remembers Everything
It Did -

Does It Again!

Includes All Software:
Includes Power Supply,
6 Channel Servo
Controller,
Robot-1 and Cables

Order Robot-1C
\$395.00

Also SS-50 Version
Available

Order Robot-1S
\$395.00

Robot MicronEye
\$295.00

Free Catalog

TEN MOST-ASKED QUESTIONS about **DYNACALC**TM

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. You can build worksheets as large as 256 columns or 256 rows. There's even a built-in sort command, so you can 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 VisiCalcTM, or a similar program, just how useful an electronic spread-sheet program can be for all types of household, business, engineering, and scientific applications. Typical uses include financial planning and budgeting, sales records, bills of material, depreciation schedules, student grade records, job costing, income tax preparation, checkbook balancing, parts inventories, and payroll. But there is no limit to what YOU can do with DYNACALC.

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. Even experienced programmers can get jobs done many times faster with DYNACALC, compared to conventional programming. 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, STYLOGRAPHTM word processor, RMSTM 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 FLEXTM, UniFLEXTM, or OS-9TM operating system. 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 and OS-9 versions of DYNACALC allow 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 (Frank Hogg or Data-Comp versions).

9. How much does DYNACALC cost?

The FLEX versions are just \$200 per copy; UniFLEX version \$395; OS-9 version (works with LEVEL ONE or LEVEL TWO) \$250. Orders outside North America add \$7 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.

10. Where do I order DYNACALC?

See your local DYNACALC dealer, or order directly from CSC at the address below. We accept telephone orders from 10 am to 6 pm, Monday through Friday. Call us at 314-576-5020. Your VISA or MasterCard is welcome. Please specify diskette size for FLEX or OS-9 versions. Software serial number is required for the UniFLEX version.

Order your **DYNACALC** today!

Foreign Dealers:

Australia & Southeast Asia: order from Paris Radio Electronics, 161 Bunnerong Road (PO Box 380) Kingsford, 2032 NSW Australia. Telephone: 02-344-9111.

United Kingdom: order from Compusense, Ltd., PO Box 169, London N13 4HT. Telephone: 01-882-0681.

Scandinavia: order from Swedish Electronics hk AB, Murargatan 23-25, Uppsala S-754 37 Sweden. Telephone: 18-25-30-00.

Computer Systems Center
13461 Olive Blvd.
Chesterfield, MO 63017
(314) 576-5020



UniFLEX software prices include maintenance for the first year.

**DYNACALC is a trademark of
Computer Systems Center**

VisiCalc is a trademark of VisiCorp.
STYLOGRAPH is a trademark of Great Plains Computer Co.
RMS is a trademark of Washington Computer Services.
FLEX and UniFLEX are trademarks of TSC.
OS-9 is a trademark of Microware and Motorola.

The Original FLEX™ for Color Computers

- Upgrade to 64K
- RS to FLEX, FLEX to RS file transfer ability
- Create your own character set
- Automatic recognition of single or double density and single or doubled sided
- All features available for either single or multiple drive systems
- Settable Disk Drive Seek Rates
- Faster High Resolution Video Display with 5 different formats
- Save RS Basic from RAM to Disk
- Move RS Basic to RAM
- Load and save function on FLEX disk
- 24 Support Commands 12 with Source Text
- External Terminal Program

DISK DRIVE PACKAGES, etc.

These Packages include the Radio Shack Disk Controller, Disk Drives with Power Supply and Cabinet, and Disk Drive Cable:

PAK #1 - 1 Single Sided, Double Density Sys.	\$389.95
PAK #2 - 2 Single Sided, Double Density Sys.	\$675.95
PAK #3 - 1 Double Sided, Double Density Sys.	\$569.95
PAK #4 - 2 Double Sided, Double Density Sys.	\$889.95
PAK #5 - 2 Qume Thinline Double Sided, Double Density Sys	\$699.95
PAK #6 - 2 Tandon Thinline Single Sided, Double Density Sys	\$599.95

LAST OF PRODUCTION!!!

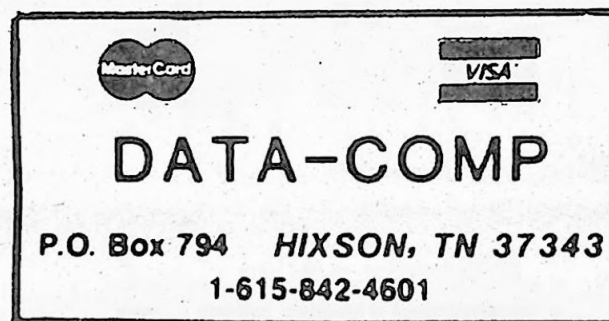
!! LIMITED QUANTITY !!

**SWTPC 8212
Intelligent Terminals
New & Demo Models
At Discount Prices**

**Remaining Supply of
SWTPC 8212 CRT Terminals**

EM-82 Video Terminal

Emulates the 8200 Series from SWTPC



*FLEX is a trademark of Technical Systems Consultants
*OS9 is a trademark of Microware

Data-Comp—South East Media & 68 Micro Journal Are Divisions of CPI

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 + Editor & Assembler (which normally sell for \$50.00 ea.)	\$250.00
F-MATE(RS) FLEX9 Conversion Rout. for the RS Disk Controller when purchased with Special General FLEX9 Sys.	\$ 49.95
when purchased without the General FLEX9 Sys.	\$ 59.95

Color Computer with 64K RAM and EXT.BASIC	\$399.95
---	----------

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.

\$1099.95

64K Radio Shack COLOR COMPUTER, Radio Shack COLOR DISK CONTROLLER, a Disk Drive System, and a Box of 10 Double Density Diskettes, a COMPLETE ready to run SYSTEM on your Color TV Set.

\$799.95

PARTS AND PIECES

Radio Shack Disk Controller	\$169.95
1 Single Sided, Double Density Disk Drive Tandon	\$229.95
1 Double Sided, Double Density Disk Drive Qume	\$319.95
1 Qume Thinline Double Sided, Double Density	\$249.95
1 Tandon 40 Track SSDD with Cabinet and Power Supply	\$259.95
Single Drive Cabinet with Power Supply	\$ 79.95
Double Drive Cabinet with Power Supply	\$109.95
J & M Disk Controller	\$144.95

Single Drive Disk Cable for RS Controller	\$ 19.95
Double Drive Disk Cable for RS Controller	\$ 24.95
Micro Tech. Prods. Inc. LOWER CASE ROM Adapter	\$ 74.95
Radio Shack BASIC Version 1.1 ROM or 1.2 ROM	\$ 34.95
Radio Shack Extended Basic ROM	\$ 39.95
Radio Shack Disk Basic ROM 1.1	\$ 29.95
Screen Clean-Clears Up Video Distortion On Your Color Computer	\$ 39.95
Set of Eight 64K RAM Chips w Mod Instructions	\$ 49.95

PRINTERS

EPSON RX-80	\$375.00
EPSON MX-100	\$725.00
EPSON FX-100	\$850.00
EPSON FX-80	\$599.00

SERIAL BOARDS

MX-Series	\$119.95
RX-FX-Series	\$ 99.95
Spectrum MX-Series	\$ 54.95

H J L Keyboards	\$ 74.95
-----------------	----------

FLOPPY DISKETTES

MEMOREX VERBATIM

5" Soft Sector Disks		
Single Sided Single Density	\$2.40ea.	\$2.75ea
Single Sided Double Density	\$2.40ea	\$2.75ea
Double Sided Double Density		\$4.92ea
Plastic Storage Box		\$2.00ea
8" Soft Sector Disks		
Single Sided Single Density		\$3.75ea
Single Sided Double Density		\$4.10ea
Double Sided Double Density		\$4.75ea
Plastic Library Box		\$5.00ea

For Ordering Call TOLL FREE 1-800-338-6800

COLOR COMPUTER Software

FLEX™ OS9™

ASSEMBLERS

Macro Assembler
the FLEX STANDARD Assembler

F,CCF \$50.00

Relocating Assembler w/Linking Loader
Use with many of the C and Pascal Compilers.

F,CCF \$150.00

Great Plains Comp. Co.

RPMAC

Relocating, Recursive-Macro Assembler
and Linking Loader for the 6809

Supports Recursive Macros, Conditional Assembly, etc.
Optional X-Ref Listing. Includes a Small Line-oriented Editor as part of the Assembler.

F,CCF \$150.00

F,CCF w/Source \$200.00

OmegaSoft

#RALLI

Relocating Assembler and Linking Loader

2-pass Relocating Assembler; 2-pass Linking Loader.
Supports 6 Char. Labels, System Calls (SWI[x] FCB x),
Expressions with Arith., Logic, and Shifts, etc.

F,CCF \$125.00

One Year Maint. \$50.00

Windrush Micro Systems

MACE

By Graham Trott. A combined Editor and Assembler
designed to allow the Programmer to Enter, Edit, and
Assemble Programs with a minimum of effort, w/o
leaving the Program. Designed primarily for small to
medium sized Program Development. Includes XFACE, a
Cross Assembler for the MC6800/1/3 and Hitachi HD6301
(CMOS 6801).

F,CCF - \$98.00

DISASSEMBLERS

Computer Systems Consultants

SUPER SLEUTH

Computer Systems Consultants Super Sleuth is a "Time
Tested", reliable, PROVEN Disassembler that has
gained acceptance through out the SS-50 Bus
Community as an extremely POWERFUL, INTERACTIVE,
Software Tool. The Super Sleuth Software Package
consists of 3 Programs; SLEUTH (the Disassembler),
CHGNAM (used to globally Change Labels to a
meaningful Name), and XREF (a Cross Reference
Generator for Source Code Files). SLEUTH will
Disassemble Memory Resident 6809 Code and 6800, 6801,
6802, 6803 (the "Baby CoCo"), 6805, 6808, 6809, and
6502 (Apple, Atari, Commodore, etc.) Binary Disk
Files. (See Aug. '83 '68' Micro Journal "Color Users
Notes" Column for a full Review.)

Color Computer SS-50 Bus (all w/ Source)

CCD (32K Req'd)

Obj. Only \$49.00

CCF, Obj. Only \$50.00

CCF, w/Source \$99.00

CCO, Obj. Only \$50.00

F, \$99.00

U, \$100.00

O, \$101.00

ALL Computer Systems Consultants Software
runs on the Color FLEX Systems

ALL in stock

call 800-338-6800

for IMMEDIATE DELIVERY

Computer Systems Center

DYNAMITE +

An "easy to use", powerful Disassembler for Disk
Resident 6809 and 6800 Binary Files. Allows the
development of a "Control File" of various Program
"Boundaries" during successive disassemblies; can use
a Label File which automatically replaces a Hex
location with a Label Name; includes an XREF Utility;
etc. Label Files provided for Mini-FLEX, FLEX2,
FLEX9, Color Computer (for use with Color FLEX
Systems), etc. OS-9 Version includes special OS-9
options.

CCF, Obj. Only \$100.00

CCO, " " \$150.00

F, " " \$100.00

O, " " \$150.00

U, " " \$300.00

COMPILERS AND DECOMPILERS

6809 "Structured" Assembly Lang. Compilers

Windrush Micro Systems

PL/9

By Graham Trott. A "Structured" Assembly Language
Editor/Compiler/Debugger, all in ONE PACKAGE; provides
a totally INTERACTIVE Program Development Cycle. The
Compiler supports large Symbol Names, Variable Types,
Pointers, Control Structures, Stack, A-, B-, and D-
Register manipulation, etc. The Source-Oriented
Trace/Debugger provides Single Stepping, Break-
pointing, etc. An excellent Software Development
Tool for utilizing the power of the 6809 in developing
small to medium sized packages.

F, CCF - \$198.00

Whimsical Developments

WHIMSICAL

Need the Ease of Design and Maintainability of
"Structured Programming" AND the Speed and Control of
Assembly Language? Then WHIMSICAL was designed for
you! This Single Pass, Recursive Descent Compiler
provides the tool for developing simple Utilities to
MAJOR Systems in Assembly Language. Supports 3 "Lex"
Levels which allow one level of Procedure nesting, or
more within "Modules". It is easy to develop programs
written for other machines since you are working at
the Assembly Language level. Features unified, user-
defined I/O; produces ROMable, relocatable, recursive,
re-entrant Code; Structured style and statements
with Procedures and Modules; supports Byte and
Double-Byte primitives with 3 types of Integers (up to
32 bit), Char and Boolean, and unlimited sized Arrays
(vectors only); Interrupt handling; unlimited length
Variable Names; Variable Initialization (defaults to
\$00); Include "Source File" directive; Conditional
compiling; direct Code insertion; control of the Stack
Pointer; etc. To quote Ron Anderson in his review of
WHIMSICAL in the Sept. '83 Issue of '68' Micro Journal
that, except for the lack of floats, "... I have to
give this one VERY high rating, ...". It is a FAST
Compiler which produces FAST Code (his "Primes"
Benchmark ran at 9 secs. on a 2 Mhz System).

F and CCF - \$195.00

Introl

C Compiler

A full-featured C, streamlined for the 6809.
Generates very efficient object code. Output
"benchmarks" close to 10MHz 68000 in 8 Bit
Operations; 1.5 times faster than a 4 Mhz Z80 when
using a 2MHz 6809 System (Re. p 43, "68" Micro
Journal, May '83). Floats, etc.

F, CCF, and O - \$375.00

U - \$425.00

One Year Maint. - \$100.00

TOLL FREE
1-800-338-6800
For Ordering

PASCAL Compilers

TSC

PASCAL Compiler

Native Code Compiler (UCSD Oriented).

F and CCF - \$200.00

Lucidata

PASCAL Compiler

P-Code Compiler (ISO Standard). Designed especially
for Microcomputer Systems; Run-time System checks
available resources for each task, allowing operation
on even minimal computer systems. Allows linkage to
Assembler Code for maximum flexibility.

F and CCF 5" - \$190.00

F 8" - \$205.00

OmegaSoft

PASCAL Compiler

For the PROFESSIONAL; ISO Based, Native Code
Compiler. Primarily for Real-Time and Process Control
applications. Use custom I/O devices in place of the
Pascal INPUT and OUTPUT; Long Int. (32 Bit); Dynamic
length strings; Interrupt processing, ROM-able, PIC,
Re-Entrant Code, etc. POWERFUL Includes Source for
the Symbolic Debugger, Runtime, and several Utilities.
Requires a "Motorola Compatible" Relocating Assembler
and Linking Loader.

F and CCF - \$425.00

One Year Maint. - \$100.00

DECOMPILERS

Southeast Media

DUB (A UniFLEX "basic" De-Compiler)

Re-Create a Source Listing from UniFLEX Compiled
basic Programs. Easy to Use; works w/ ALL Versions
of UniFLEX basic; Output to Disk or Terminal. Time
TESTED and PROVEN; SOLID!

U - \$219.95

UTILITIES

Southeast Media

Basic09 XRef

This Basic09 Cross Reference Utility is a Basic09
Program which will produce a "pretty printed" listing
with each line numbered, followed by a complete cross
referenced listing of all variables, external
procedures, and line numbers called. Also included
is a Program List Utility which outputs the listing
without the overhead of building the cross reference
table, which allows it to run considerably faster when
only a "pretty printed" listing with line numbers is
desired. Requires Basic09 or RunB for operation.

```
72 EXITIF EOF(InPath) THEN found:=FALSE \ ENDEXIT
73 GET InPath.Mhead
74 GET InPath.Msize \ GET InPath.Mofs
75 SEEK InPath.Index.Mofs
76 Mname:=
77 REPEAT
78   GET InPath.char
79   Mname:=Mname+CHR(LAND(char,67))
80 UNTIL char=127
81 UNTIL Mname=Mname
82 RETURN
```

Msize	3	26	60	70	74
Mhead	3	19	20	81	
OutPath	4	31	34	36	
char	4	28	29	30	32 48 41 42 44 45 46
found	70	79	80	72	
10	4	22	60		
20	9	11			
	11	13			

O and CCO - Obj. Only - \$39.95

O and CCO - w/ Source - \$79.95

Southeast Media

O-F

OS/9 to FLEX - FLEX to OS/9

Finally; the barrier has been removed between OS/9
and FLEX formatted disks! Now you can READ from, and
WRITE to, a Single Sided 5" or 8" FLEX diskette from
OS-9 with O-F. O-F is a new and unique program,
written in BASIC09 (with Source), that performs the
following functions;

REFORMAT: A BASIC09 Program that reformats a chosen
amount of an OS-9 disk to FLEX Format so it can be
used normally by FLEX.

FLEX: A BASIC09 Program that does the actual read
or write function to the special O-F Transfer Disk,
all selected from a user-friendly menu. Functions
provided include reading the FLEX Directory,
Deleting FLEX Files, Copying both directions, etc.
All selections are interactive and complete,
including all necessary prompts to the operator.

FLEX users can read, write and use the special disk
as any other FLEX disk, provided the FLEX directory
is not allowed to continue beyond track zero (too
many files).

F and CCF - \$79.95

Southeast Media

COPYMULT

Copy LARGE Disks to several smaller disks

The following FLEX utilities allow the backup of ANY
size disk to any SMALLER size diskettes (Winchester
to 8's or 5's, 8" to 5's, etc.). By simply inserting
diskettes as requested by COPYMULT, a large disk
system may be downloaded to your present floppy disk
system, any size. No need to fiddle with directory
deletions or any of the other tedious operations that
must be done using the normal copy routines.

COPYMULT.CMD understands normal "copy" syntax and
always keeps up with files already copied by
maintaining directories for both host and receiving
disk system, eliminating hours of tedious keyboard
entries and other time consuming cleanup chores.

BACKUP.CMD is a special program that downloads
"random" type files, any size.

RESTORE.CMD a special program to restructure copied
"random" files for copying, or recopying back to the
host system.

FREELINK.CMD a "bonus" utility that "relinks" the free
chain of floppy or hard disk thereby eliminating
fragmentation.

Completely documented source files included.

ALL 4 Programs (8" or 5") \$99.50

Southeast Media

CHESS 6809

Requires FLEX and DISPLAYS On Any Type Terminal

Features:

*Four levels of play.

*Swap side. *Point scoring system.

*Two display boards. *Change skill level.

*Solve Checkmate problems in 1-2-3-4 moves.

*Make move and swap sides. *Play white or black.

This is one of the strongest CHESS programs running
on any microcomputer, estimated USCF Rating 1600+
(better than most 'club' players at higher levels).

F and CCF - \$79.95



*FLEX is a trademark of Technical Systems Consultants
*OS9 is a trademark of Microware

FREE DISKETTE With Each \$50 Purchase

SOUTH EAST MEDIA

5900 Cassandra Smith Rd., Hixson, TN 37343
(615) 842-4601

Availability Legends

F = FLEX, CCF = Color Computer FLEX

O = OS-9, CCO = Color Computer OS-9

U = UniFLEX

CCD = Color Computer Disk

CTT = Color Computer Tape

COLOR COMPUTER FLEX™ OS9™ Software

UTILITIES

Southeast Media

DIET-TRAC Forecaster

DIET-TRAC Forecaster is an XBASIC program that plans a diet in terms of either calories and percentage of carbohydrates, proteins and fats (C P G%) or grams of Carbohydrate. Protein and Fat food exchanges of each of the six basic food groups (vegetable, bread, meat, skim milk, fruit and fat) for a specific individual.

Sex, Age, Height, Present Weight, Frame Size, Activity Level and Basal Metabolic Rate for normal individual are taken into account. Ideal weight and sustaining calories for any weight of the above individual are calculated. When a weight goal is given (either gain or loss), and a calorie plan is agreed upon between the computer and the individual, the number of days to reach the weight goal is projected. The starting and ending rate of weight loss is calculated, and a daily calendar with each day's weight for a 30-day period is printed.

F - \$59.95
U - \$89.95

Southeast Media

XDATA

A COMMUNICATION Package

for the UniFLEX Operating System

Allows UniFLEX Based Systems to Transmit and Receive files to and from other Computer Systems via Modem. Use with CP/M, Main Frames, other UniFLEX Systems, etc.

- Verifies Transmission integrity using checksum or CRC
- Automatically Re-Transmits bad blocks
- Transmits data in 128 byte blocks

U - \$299.99

Southeast Media

JUST

Text Formatter

JUST, a Text Formatter developed by Ron Anderson, provides numerous features which make it a valuable addition to any FLEX Users Software Library. JUST is designed for formatting Text Output for Dot Matrix Printers and provides many unique features:

- Output the "Formatted" Text to the Display for format analysis and change.
- Output the "Formatted" Text to a Text File for use with the supplied FPRINT.COM for producing multiple copies of the Text on the Printer INCLUDING IMBEDDED PRINTER COMMANDS (this Utility is very useful at other times also, and worth the price of the program by itself).
- "User Configurable" for adapting to other Printers (comes set up for Epson MX-80 with Grafrax); provides for up to ten (10) imbedded "Printer Control Commands", such as Italics on and off, boldface on and off, etc.
- Automatic compensation for a "Double Width" printed line.
- Includes the normal line width, margin, indent, paragraph, space, vertical skip lines, page length, page numbering, centering, fill, justification, etc.
- Use with ANY Editor.
- Supplied with "Structured Source" (Windrush PL/9); easy to see the flow of the program.

F and CCF - \$49.95

Lucidata

PASCAL UTILITIES

Requires LUCIDATA Pascal ver 3.

XREF -- produce a Cross Reference Listing of any text; oriented to Pascal Source.

F and CCF - \$25.00

INCLUDE -- allows the inclusion of other Files in a Source Text; has unlimited nesting capabilities. Also allows Binary File inclusions.

F and CCF - \$25.00

PROFILER -- produces an Indented, Numbered, "Structogram" of a Pascal Source Text File. Allows viewing the overall structure of large programs, and provides clues as to the integrity of the program. Supplied as Source Code; requires compilation.

F and CCF - \$25.00

Lucidata

COPYCAT

Pascal NOT required

Allows reading TSC Mini-FLEX, SSB DOS68, and Digital Research CP/M Disks while operating under FLEX 1.0, FLEX 2.0, or FLEX 9.0 with 6800 or 6809 Systems. COPYCAT will not perform Miracles, but, between the program and the manual, you stand a good chance of accomplishing a transfer. Includes Utilities to List Directories, Copy Files, and convert Text Files when required. Also includes a Utility for investigating Physical Compatibility problems. Programs supplied in Modular Source Code (Assembly Language) to make it easier to solve unusual problems.

F and CCF 5" - \$50.00
F 8" - \$65.00

Computer Systems Consultants

FLEX DISK UTILITIES

Eighteen (18) different FLEX Utilities that should be a part of every FLEX Users Toolbox. Ten BASIC Programs to:

Compare, Merge, or Generate Updates between two BASIC Programs, check BASIC Sequence Numbers, compare two unsequenced files, and 5 Programs for establishing a Master Directory of several Disks, and sorting, selecting, updating, and printing paginated listings of these files.

The other 8 Programs provide .CMD Files which allow:

Copy a File with CRC Errors, so it can possibly be salvaged; Test Disk for errors; Compare two Disks; a fast Disk Backup Program; Edit Disk Sectors; Linearize Free-Chain on the Disk; print Disk Identification; and Sort and Replace the Disk Directory (in sorted order).

ALL Utilities include Source (either BASIC or Source Code). An EXCELLENT Value!

F and CCF - \$50.00

Southeast Media

SPELLB "Computer Dictionary"

OVER 120,000 words!

No more "Let your fingers do the walking through the Dictionary" while you are entering Text with your favorite Editor or Word Processor. SPELLB is more than just "another Spelling Checker"; it allows you to look up a word from within your Editor or Word Processor so that you KNOW it is right WHEN YOU TYPE IT IN with the SPH.COM Utility (which operates in the FLEX Utility Space). Yes, it ALSO allows you to check and update the Text after you are finished; along with allowing you to ADD WORDS to the Dictionary, "Flag" questionable words in the Text for evaluation later, "View a word in context" before changing or ignoring, etc. SPELLB first checks a "Common Word Dictionary", then the normal Dictionary, then a "Personal Word List", and finally, any "Special Word List" you may have specified. SPELLB also allows the use of Small Disk Storage systems.

F and CCF - \$129.95

Great Plains Computer Co.

SPELL

Fast Computer Dictionary -- allows directly changing the Text File, adding words to the dictionary, etc. 75,000 words in less than 400 sectors.

F, CCF, OS/9 - \$125.00
U - \$175.00

TOLL FREE

1-800-338-6800

For Ordering

WORD PROCESSORS

Alford and Associates

SCREDDOR III

EXTREMELY Powerful Screen-Oriented Editor/Word Processor. Almost 50 different commands; EXCELLENT Documentation (over 300 pages), including a full Tutorial Section to help you learn how to use the system. Features Cursor-based editing, dynamic Screen Formatting (what you see is what you get), Multi-Column display and editing, "decimal align" columns (AND add them up automatically, if wanted), define multiple keystroke macros, even and odd page number headers and footers, imbed printer control codes in text, full justification series of commands, full "help" support, store common command series on disk for future use, etc. Easy "Set-Up" (for example, you just hit the key you want to use for a specific function, such as "cursor up", and the System reads an stores that key - no digging into tech manuals for codes, etc.); use supplied "set-ups", or remap the keyboard to what you are used too. Except for proportional printing, this package will DO IT ALL!

6800 or 6809 FLEX or SSB DOS, OS-9 - \$175.00

Great Plains Computer Co.

STYLOGRAPH

A full-screen oriented WORD PROCESSOR -- (now runs on the Data-Comp and FHL Color FLEX Systems; uses the 51 x 24 Display Screens). Full screen display and editing (i.e., what you see is what you get); supports the Daisy Wheel proportional printers.

SPECIAL CCF - \$195.00
F and O - \$295.00
U - \$395.00

Great Plains Computer Co.

MAIL MERGE

Greatly extends the power and flexibility of STYLOGRAPH. Allows Multiple Text files to be printed out as one large document. Provides for merging information into the Text File during printing (such as different names and addresses), etc.

F, CCF, O - \$145.00
U - \$195.00

DATA BASE MANAGEMENT SYSTEMS

Westchester Applied Business Systems

XIMS

Possibly one of the most powerful Database Management Systems' available, this machine language program is small enough to operate on a single sided 5" disk, yet provides the speed of M.L. and power limited only by the user's imagination. This Relational DMS supports Sequential, Hierarchical, and Random Access File Structures, and has Virtual Memory capabilities for those Giant Data Bases. Easy-to-use English Language Command Structure.

XIMS - F and CCF - \$179.95

XIMS+ (w/ utils) - F and CCF - \$249.95
Manual only - \$19.95

Westchester Applied Business Systems

XIMS Utilities

These are part of XIMS+, includes SET which provides TTYSET Type of controls within the DMS, PLOT produces horizontal graphs of data, COPYDEF defines new files with existing formats, REVISE allows modification of field definitions, OUTPUT provides an ASCII output of a DMS File, INPUT loads a File from user generated text, PURGE erases all Data from a File, FORM displays the print format, SIZE provides no. of records and sectors info, and FILES outputs a file name matrix of a given file extent.

XIMS Utils. (requires XIMS V1.1) \$79.95

Great Plains Computer Co.

INFOMAG DBMS

An XBASIC, Menu Driven, DBMS with "Built-In" Audit Tracking, Extremely Powerful Report & Format Capabilities, etc. This Time Proven DBMS will become the "Work Horse" of your Software Stable.

F and CCF \$295.00
U \$395.00

ACCOUNTING PACKAGES

Great Plains Computer Co.

Accounting Packages

Accts Rec., Accts Payable & Gen Ledger -- A FULL Accounting Package that can be used together, or as separate packages; provides the IRS required Audit Tracking. (XBASIC, based on the "Osborne Business Programs.")

F and CCF - ea. Program \$295.00
U - ea. Program \$395.00

Universal Data Research, Inc.

Accounting and Database Manag. Sys.

Note: ALL UDRI Accounting and DBM Progs. Require FLEX and XBASIC. These are Time Tested programs from an old, established, software house.

Color Computer FLEX Systems

DEM Part 1 - \$49.95 DEM Part 2 - \$49.95
Church Contributions - \$49.95
Single Entry Gen Ledger - \$49.95
Balanced Billing System - \$49.95
A/R \$99.95 A/P \$99.95 Gen Ledger \$189.00
Inventory 2 \$69.00 Payroll \$99.95

FLEX and UniFLEX -- Note: Requires XBASIC or basic

A/P F - \$295, U - \$395
A/R F - \$295, U - \$395
Gen Ledger F - \$295, U - \$395
Inventory 2 F - \$295, U - \$395
Payroll F - \$295, U - \$395
DBM F - \$350, U - \$450

Computer Systems Consultants

FULL SCREEN INVENTORY/MRP

The Full Screen Inventory System provides a means of maintaining small inventories. Using a linked, keyed random file structure based upon the item field, it keeps the file in alphabetical order for easier inquiry. With the FIND command, the user may locate and/or print all records matching on partial or complete item, description, vendor, or attributes. Items in backorder or below minimum stock levels may be located and/or printed thru the same process. Printed output may be produced in item or vendor order. A materials requirement planning (MRP) capability for manufacturing environments is included to allow the maintenance and analysis of Hierarchical assemblies of items in the inventory file. It requires TSC's Extended BASIC.

F and CCF - \$100.00, U - \$150.00



*FLEX is a trademark of Technical Systems Consultants
*OS9 is a trademark of Microware

FREE DISKETTE With Each \$50 Purchase

SOUTH EAST MEDIA

5900 Cassandra Smith Rd., Hixson, TN 37343
(615) 842-4601

Availability Legends --

F = FLEX, CCF = Color Computer FLEX
O = OS-9, CCO = Color Computer OS-9
U = UniFLEX
CCD = Color Computer Disk
CCT = Color Computer Tape

COLOR COMPUTER Software

FLEX™ OS9™

BUSINESS FORECASTING

The Virginia Company **Bizpack**

Bizpack is a DESKTOP/PLAN type of Program which is oriented towards **Time Series Analysis** of Business Situations in providing information on which to base common business decisions. This program is used for storing accounting, numeric, and financial data, which can then be used for analyzing, planning, budgeting, forecasting, etc. While "Electronic Spreadsheets" are extremely useful in many situations, **Bizpack** excels in businesses when there are numerous expense columns, revenue sources, significant business indicators, large numbers, erratic week-to-week and month-to-month fluctuations, etc. **Bizpack** helps determine statistical relationships, establish trend lines, "smooth" data via moving averages, analyze seasonal data, adjust for inflation, lag data one or more periods in Statistics or Column functions, plot data, etc. The Program displays information on the screen as Columns of Information with each Row conforming to a defined Period of Time (weeks, months, years, etc.), and is very easy to use (data is easy to enter, change, and modify; commands can be renamed to suit the users requirements; unlimited ability to create specialized commands using common BASIC Statements; etc.). Requires **TSC's Extended BASIC**.

F and CCF - \$135.00
with Source - \$250.00

*** SPECIAL ***

Purchase **XBASIC** and **Bizpack** together for \$221.50
-- a Savings of \$13.50 --

Computer Systems Consultants

TABULA RASA SPREADSHEET

TABULA RASA is similar to DESKTOP/PLAN and provides for the generation and maintenance of tabular computation schemes often used for analysis of business, sales, and economic scenarios. Its menu-driven user interface provides these capabilities even to those users with no programming experience. Its extensive report-generation capabilities allow the user to generate professional results with minimum effort. It requires **TSC's Extended BASIC**.

F and CCF - \$100.00, U - \$200.00

Computer Systems Center

DYNACALC

THE Electronic Spread Sheet for 6809 Computer Systems. An extremely **POWERFUL** Business Tool, this Program will find an unlimited number of "non-business" applications, also (for example, a Full Junior College Electronics Curriculum was set up using **DYNACALC**). Advanced features like "Table Lookup" make Income Tax work easy; Column or Row Sorting for numerous applications; etc. Completely "Memory Resident", Machine Language, this Program is **FAST**. Provides **STANDARD FLEX** Text File output for use with **BASIC**, Word Processors, Pascal, "C", etc. Also available for Data-Comp and FHL **FLEX** systems using the 50 x 24 Displays.

F and SPECIAL CCF - \$200.00
U - \$395.00

ODDS AND ENDS

Computer Systems Consultants

FULL SCREEN FORMS DISPLAY

This package supports any Serial Terminal with cursor control of Memory-Mapped Video Displays. The package substantially extends the screen Input/Output capabilities of **TSC's Extended BASIC** programs by providing a simple, table-driven method of describing and using full screen displays. These table entries are easy to set up and maintain, and are normally stored on disk and read as required. A simple, interactive means of generating the forms and the data field definitions is provided.

F and CCF - \$50.00, U - \$75.00

Computer Systems Consultants

FULL SCREEN MAILING LIST

The Full Screen Mailing List System provides a means of maintaining simple mailing lists: Using a random fill structure based on the first character of the name field, it maintains the file in alphabetical order for easier inquiry. With the **FIND** command, the user may locate all records matching on partial or complete name, city, state, zip, or attributes. Printed listings and output to labels may also be produced on the same selective basis. It requires **TSC's Extended BASIC**.

F and CCF - \$100.00, U - \$110.00

COLOR COMPUTER SOFTWARE

Stearns Electronics

FORTH

Intrigued by **Forth**??? Here is a **FORTH** package tailored to the **Color Computer**! This package is supplied on Tape, with instructions for transferring it to disk if you wish. Written primarily in machine language, it's speed is unparalleled. A full Semigraphic-8 Editor is provided, along with "goodies" like Graphics and Sound Commands, Printer Commands, Auto-Repeat and Control Keys, etc. If you are interested in Learning **FORTH**, a **Trace Feature** is provided which is invaluable. If you are a **FORTH Pro**, this package provides CPU carry Flag accessibility, Fast Task Multiplexing, Clean Interrupt Handling, etc. (Or; you won't "out grow" the Basic capabilities of this Implementation). Combine this package with **Leo Brodie's EXCELLENT** Book "Starting **FORTH**", and you will be a **FORTH Expert** before you know it (and have a lot of fun doing it!).

Color Computer TAPE - \$58.95

Custom Software Engineering, Inc.

Color Computer GRAPHIC SCREEN PRINT Programs

Dumps any "PMode" Screen to the Printer with the **BASIC** **USR** Function. Shift the Printout Left or Right or Reverse Print (Dark for Light Screen and Vice Versa). All Programs on Tape.

GSPR for R.S. LP-VII/VIII & DMP 100/200/400	\$7.95
GSPRE for Epson w/ Graftrax and Graftrax +	\$9.95
GSPRG for Gemini 10 and 15	\$9.95
GSPRP for the Prowriter Printers	\$9.95

Custom Software Engineering, Inc.

DATE-O-BASE CALENDAR Program

A Menu Driven **EXTENDED BASIC** Program which allows the entry of up to 12 Memos per Day, each of which may contain up to 28 Characters, for any day of the Month between the years 1700 and 2099. A **Graphic Calendar** shows which days contain Memos, and a "Key Word" Search is provided which can be output to the Screen or Printer.

TAPE DATE-O-BASE CALENDAR	
(Each Tape File will hold up to 400 Memos)	\$16.95
DISK DATE-O-BASE CALENDAR	
(4,000 Memos at 300/Month per Disk)	\$19.95

TOLL FREE
1-800-338-6800
For Ordering

Custom Software Engineering, Inc.

That's INTEREST-ing

Interested in **INTEREST** (the Money Kind)? An **EXTENDED BASIC** Program that will help you deal with numerous problems requiring interest calculations. Present Value, Rate of Return, Current Bond Yield and Rate of Return to maturity, Loan Repayment Amortization Schedules, etc.

TAPE - \$29.95

Custom Software Engineering, Inc.

DISK DATA HANDLER 64K

Custom Software Engineering, Inc.

DISK DOUBLE ENTRY

DISK EXTENDED BASIC Accounting Program w/ Mach. Lang. Routines. A "Traditional" Accounting Package for Small Business, Clubs, Churches, Personal Use, etc. Up to four levels of subtotals with Trial Balance, Income Statement, and Balance Sheet Reports. DDE allows up to 300 accounts and a Trial Balance of \$9,999,999.99. Transactions may be up to 14 lines long, and comments and explanations may be freely used. Accounts are traceable to the journal transaction, which may include comments. Screen reports allow review of past transactions and current balances.

DISK - \$44.95

Computer Systems Center

DYNASHARE

-- Multi-User, Multi-Tasking with **FLEX** --

Southeast Media is now shipping **DYNASHARE FROM STOCK** - the multi-user, multi-tasking capability of **DYNASHARE** allows **FLEX** users the advantages of more sophisticated and time saving computer usage without having to buy or learn a new Language or Operating System syntax. **DYNASHARE**, as its name implies, allows true "time-sharing" operation under the popular **FLEX** operating system, and also allows each user to run two simultaneous jobs (multi-tasking); even on single-user systems. For example, while in **EDIT**, you can

list another file or examine a directory. Or, you might look up an item in a Data Base while a Sort is in progress! **DYNASHARE** also provides some fringe benefits that will be greatly appreciated by **FLEX** users, including type-ahead, command line editing, and instant response to "escape".

DYNASHARE is the painless method! Use your existing **Flex** computer by simply adding 64K of RAM for each user and/or task. Fact is, you still use **FLEX** just like you always have! **DYNASHARE** is not intended as competition to **UnifLEX**. It does not improve on the speed of **FLEX**, and does not offer password protection or other niceties of a full-blown multi-user system. What **DYNASHARE** does do is give **FLEX** users a low-cost way to use existing software in a multi-user, multi-tasking environment, so your existing **FLEX** versions of **BASIC**, **XBASIC**, editors, assemblers, disassemblers, sort/merge packages, word processors, compilers, **DYNACALC** spread-sheet package, and so on are still good.

NOTE -- The initial release of **DYNASHARE** is for **SWTPC S/09** Computers, but versions will also be available for other popular extended-memory (up to 1024K) systems, such as **HELIX** and **GIMIX**. A minimum of 128K of RAM will be required with ALL versions. **DYNASHARE** requires 64k of RAM for each active task; thus a 256k system could allow foreground-background operation on two terminals, or foreground-only operation on four terminals.

AVAILABLE NOW from Southeast Media - \$200.00

AUTHORS - PROGRAMMERS

QUALITY SOFTWARE NEEDED

FLEX - **UnifLEX** - **OS/9** - **Color Computer**

For the past several months, we at the **Southeast Media Division of Computer Publishing, Inc. (CPI)**, the parent company of '68' **MICRO JOURNAL** and **COLOR MICRO JOURNAL**, have debated expanding our software distribution business. Many other magazines have been doing so for years (in fact, MOST were in the Software Distribution Business BEFORE they began to publish a Magazine). Presently there are many fine examples of software that has been developed by YOU, our readers, that will never see the "light of day" due to the Cost of Advertising and TIME and Cost involved in the production, distribution, and Customer SUPPORT of that software unless SOMEONE, with enough exposure and the willingness to continually advertise, runs with the ball.

Software is the "backbone" for the **REAL** utilization of any Computer System, and ours are no exception! This has been no simple decision. While we realize that there could be some conflict with some of our advertisers, we ALSO hear a LOUD and CONTINUOUS cry for **HELP** from our Readers. From day one, the foremost concern of '68' **MICRO JOURNAL** has been it's READERS! Therefore, our **Southeast Media Division** will accept, for appraisal for possible Distribution, 6809 software; Games, Utilities, Software Development, Business Application Programs, etc.

In the past there has been too much software offered that was not quite ready. We will strive to eliminate that element. But, right up front, we tell you only that we will do our very best; nothing more. Also, we will strive to keep cost to a bare minimum, while securing for the author a fair return in royalty payments, promptly paid, and in customer support for his product.

Of course, we will expect, no -- **DEMAND**, that the author keep the product free of errors (bugs), and maintain it in a prompt and business like manner. Also we shall require that authors be willing to furnish 'source' for those programs that justify, by price and utility, inclusion of same. The lack of source code, properly commented, is a continual complaint we hear. Not all programs will be sold with source, but where necessary, we will insist that it be included.

In some instances the program may be small or short and not justify itself as a "single" sale product. In this event it will be combined with other like programs, and offered as a package. In that event, the royalties will be split between the various authors.

If you have software that you feel will qualify under this program, please contact one of the people below. Remember, if your software has any problems or "funnies" -- **GET IT STRAIGHT BEFORE YOU CONTACT US!** Also get your source code in proper shape and well commented; there is too much 99% code already drifting around.

If your software is **READY** contact:
Bob May, **Don Williams**, or **Tom Williams**

Southeast Media is a division
of **Computer Publishing, Inc. (CPI)**,
a family of 100% 68XX support facilities.

Availability Legends --

F = **FLEX**, **CCF** = **Color Computer FLEX**
O = **OS-9**, **CCO** = **Color Computer OS-9**
U = **UnifLEX**
CCD = **Color Computer Disk**
CCT = **Color Computer Tape**



"FLEX is a trademark of Technical Systems Consultants
"OS9 is a trademark of Microware

Color Micro Journal

FREE DISKETTE With Each \$50 Purchase
SOUTH EAST MEDIA
5900 Cassandra Smith Rd., Hixson, TN 37343
(615) 842-4601

MINER BY LARRY LANDWEHR

Like his father before him, Sid is a coal miner. Working hundreds of feet below ground it is Sid's job to blast the rock so that the coal seam is exposed. See if you can direct Sid to the most productive areas. How many lumps of coal can you collect before you run out of dynamite? Young and old alike will enjoy this hi-res all machine language game from the author of "IN ASSEMBLY LANGUAGE".

CAT# DM018 16k \$14.95 (CAN) \$12.95 (US)

EXECCART BY PETER KARWOWSKI

EXECCART is a M/L program that allows you to copy ROMPAC programs to tape. They can then be loaded back into a 64K CoCo and examined or modified. You can run most of your ROMPAC's from disk without ever having to remove the disk controller. This saves tremendous wear and tear on the contacts. EXECCART may also be used to add a loader to your own programs to turn on 64K and to copy your BASIC ROMs into RAM so that you can make modifications.

CAT# DM009 64K \$17.95 (CAN) \$14.95 (US)

THE SPOOLER BY PETER KARWOWSKI

Whenever you use your printer, your computer is totally dedicated to feeding it. This isn't such a problem when you just want to print out a couple of lines, but LLISting a long program can be very boring. If you have better things to do than sit around waiting for the printer, then "THE SPOOLER" is just what you need. THE SPOOLER will work on ANY TRS-80 Color Computer from a 16K right up to 64K with disks. Extended BASIC is NOT required.

CAT# DM010 16K \$12.95 (CAN) \$10.95 (US)

THE DATA MAN

NEWERROR BY PETER KARWOWSKI

NEWERROR will provide four extra functions and abilities for your Color Computer.

1. Give you an audible error warning.
 2. Provide full english error messages.
 3. Add the ON ERROR GOTO command to BASIC
 4. Allow simulated errors for debugging.
- As an added bonus we include a second M/L program that you can add to your own BASIC programs to provide them with the ON ERROR GOTO feature. You may use this program even in programs you sell.

CAT# DM008 16K \$19.95 (CAN) \$16.95 (US)

SCREEN BY JOHN MIRAK

Four much needed features are added to Basic with this new machine language utility program from Australia.

1. Automatic line numbering
 2. Line by line program listing
 3. Motor on/off from the keyboard.
 4. Your choice of light or dark, orange, green or black screen with light or dark orange or green characters.
- Works with Basic, Ext Basic & Disk Basic

CAT# DM015 16K \$12.95 (CAN) \$10.95 (US)

420 FERGUSON AVE. N.
HAMILTON, ONTARIO
CANADA L8L 4Y9
PHONE 416-529-1319

**DEALER
INQUIRES
WELCOME**

SWISS ARMY KNIFE BY RALPH BLOCH

One of our most prolific authors (PRETTY PRINTER-P.U.F.F.-LIBRARY) has come up with another winner. As the namesake of this program has many blades so SAK has many functions. The disk owner will find it indispensable for diagnosing and fixing the many gremlins that attack a disk system. It will work on any number of tracks and can even read FLEX disks. By copying one sector at a time you can often save an otherwise uncopyable disk.

CAT# DM553 32K \$29.95 (CAN) \$25.50 (US)

SUPER EDIT BY LARRY LANDWEHR

This powerful new utility program from the author of "IN ASSEMBLY LANGUAGE" adds many new editing commands to Basic. You can PRINT one screenful at a time, DELETE a line or lines, JOIN several lines together and hide your programs, or FIND strings and variables. Also included are commands to INSERT, COPY, MOVE & REPLACE one line or a block of lines. Super edit works with Extended Basic but Extended Basic is not required.

CAT# DM016 16k \$19.95 (CAN) \$16.95 (US)

**SEND \$3 FOR OUR NEW
80+PAGE CATALOGUE**

**ADD 3% SHIPPING & HANDLING
PER ORDER-MINIMUM \$2.50**

BONES BY MARK MORAN

This original dice game is fun for the whole family. Play by yourself, against the computer or with your friends. Although simple enough for the youngest player the adults will find it addictive.

CAT# DM011 16K \$12.95 (CAN) \$10.95 (US)

Now you can 'Roll Them Bones' on the MC10. We have transferred this popular game without losing any of its features.

CAT# DM101 4K \$12.95 (CAN) \$10.95 (US)

MUSIC EDITOR BY PATRICIA SHELTON

This program will take regular sheet music and convert it to "play by number" music. You enter the words, notes and chords from the keyboard and the program will output, to the screen or printer, an easy to read version for C or G type organs. Your files can be edited and saved to disk or tape. Easily produce a songbook of your own favorite tunes.

CAT# DM012-16K \$12.95 (CAN) \$10.95 (US)

HOME INVENTORY BY JEFF PYNE

Home Inventory was written for the average home owner to simplify the tedious task of weeding through his possessions. This small database will save an organised list of brand names, serial numbers, values, dates of purchase etc. This could prove to be your most valuable program if you ever have to deal with an insurance company so be sure you have a copy of the programs output in a safe place in case of fire or theft. Ext Basic required-Printer optional

CAT# DM013 16K \$12.95 (CAN) \$10.95 (US)

THIS 'N THAT

Cont. from p. 1

unloading an Operating System like OS-9. Finally, a "Buffered" Disk Controller, while adding some cost to the unit, would again provide so much more capability per dollar that it would have been well worth the investment.

On the other side of the coin, some of these things could be classed under the heading of "Monday Morning Quarterbacking"; ANY design project is a series of trade-offs.

I think the fundamental reasons for the feelings of "Frustration" stem from two sources; the CoCo is so **CLOSE** to being an "untouchable" Computer in Price versus Capability that it leads to the "if only" feelings, and there has been **NO** action taken by Tandy to add these capabilities to the newer Systems. What is NOW the CoCo II should have had these improvements, and would still have been a real **BARGAIN** at \$299.00 for a 64K Machine (the \$159.00 price for a 64K CoCo, as it now stands, is getting more in line with what the price SHOULD be).

The other **REAL** problem that the CoCo faces (as do ALL 6809 based machines) is the lack of Software: real, **WORKING** Software. This is a real "System Lock-Up". The 6809 is without parallel in power and ease of programming (in fact, it will run rings around the Z80 and 8088/8086 Series Chips in the vast majority of Small Business Requirements), but, with next to **NO SUPPORT** from Motorola (such as **ACTIVE** User Group activities, **FREE** and **ACTIVE** support to Educational Institutions - such as Intel did), and now, next to **NO** support from one of the producers of a major Disk Operating System, TSC (the FLEX DOS), the Software Writers have to struggle to generate any products (one **GOOD** sign is that **Microware**, who wrote **OS-9**, **IS ACTIVELY** supporting the OS-9 Users Group). The Hardware Manufacturers say they must have Software to justify the investment of designing a machine to use that Software, but the Software people must have a **MACHINE** in the Marketplace to justify their time and investment in producing the Software, and must have it in sufficient **QUANTITIES** to make that work **PAY**.

I think a Computer based on the 6809 could be produced for under \$500 "Base Price", and be expandable to a 1M Memory, Hard Disk System with 640 x 400 8 or 16 Color Display running OS-9 Level II, in easy-to-afford steps, providing a System that would run rings around the IBM PC-Type Computers. This would provide a "Beginners" Personal Computer that could grow into a Major Business System which would not require replacement of Hardware **AND** Software every couple of years.

What does this have to do with the Color Computer?? It is "The Beginning"; the "Stepping Stone". Those of you feeling the "frustrations" of using a CoCo are **AWARE** of what **IS** needed. **YOU** are the ones that can do something about it. **YOU** aren't locked into a dead-end Operating System like CPM, which **STILL** requires everything to be written in **8080** compatible code. **YOU** aren't learning how to work with a CPU that does not have even ONE 16 Bit Register, and has a Stack Pointer and Direct Page that is "nailed down" (like the 6502). The CoCo provides you an

inexpensive way to "break in", both in learning to write sophisticated and powerful Software, and in trying different things with the Hardware. **LEARN FROM** it, and **WITH** it; and go on from there.

Speaking of SOFTWARE

A few of you have used the excellent **DYNACALC** "Electronic Spread Sheet" Program from Computer Systems Center on your CoCo with FLEX (or on an SS-50 Bus Machine). **DYNACALC** will be available in Standard RS DOS around the first of Feb., and will include the "Logical Operations" along with **FULL GRAPHICS** capabilities. It will require a 64K CoCo with at least one Disk Drive, and should be priced in the \$150.00 range. CSC has also completed an agreement with Radio Shack to provide a "slightly Watered-Down" version for RS OS-9, which will be sold through Radio Shack for around (we think) \$70.00.

Great Plains Computer Co. has their **Stylograph II**, **Spelling Checker**, and **Mail Merge** Programs available for the **CoCo OS-9** Operating System. "Stylo" has been around for a few years, and is still the **ONLY** Word Processing Package available for FLEX or OS-9 that supports **TRUE Proportional** Printing with the Daisy Wheel Type Printers. This is the Word Processor that we use here in the Office to Print **BOTH Color Micro Journal** and **'68' Micro Journal**; almost **ALL** of the Text Material is Printed with Stylo and a Qume or Diablo

Daisy Wheel Printer, and pasted in the Magazines. The Printing Plant simply photographs the layouts and prints the Mags; so what you see is the way it comes out of **Stylo**.

"Stylo" was originally written by Bob Bundy a few years ago, and has undergone continuous "up-grading" since then. Keeping up with the Program got to be too time consuming for him, so he sold the Program Rights to Great Plains last year. I am happy to say that they are receptive to any suggestions and "bug reports", and are **CONSTANTLY** striving to get it squared away. While it seems to work OK in the TTY Mode ("Space Stuffing" with Dot Matrix type Printers), it still has some problems in the Proportional Print modes. A couple (which may now be fixed - I have't had a chance to see the latest version, yet) are that "Tabs" do not work right, and you have to do some "fancy footwork" when switching between Proportional and Non-Proportional Spacing.

One thing that we finally "discovered" that helped the overall performance a lot was that the width of the "space" character **MUST** be set properly; i.e., our Printers use 120th inch increments, so if we are using a 12 char/in Print Wheel, the "space" **MUST** be set for a width of 10 (10 x 12 = 120), the 15 cpi Wheel **MUST** have the "space" width set to 8 (15 x 8 = 120). If this info is in the Manual, I sure missed it a bunch of times. Overall, it is a fairly easy Word Processor to learn, and I especially like the way

XDMS

Data Management System

The XDMS Data Management System is available in three levels. Each level includes the XDMS nucleus, VMGEN utility and System Documentation for level III. XDMS is one of the most powerful systems available for 6809 computers and may be used for a wide variety of applications. XDMS users are registered in our database to permit distribution of product announcements and validation of user upgrades and maintenance requests.

XDMS Level I

XDMS Level I consists of DEFINE, UPDATE and REPORT facilities. This level is intended as an "entry level" system, and permits entry and reporting of data on a "tabular" basis. XDMS Level I \$129.95

XDMS Level II

Level II adds to Level I the powerful GENERATE facility. This facility can be thought of as a general file processor which can produce reports, forms and form letters as well as file output which may be re-input to the facility. XDMS Level II \$199.95

XDMS Level III

Level III includes all of level II plus a set of useful DMS Utilities. These utilities are designed to aid in the development and maintenance of user applications and permit modification of XDMS system parameters, input and output of XDMS files, etc. XDMS Level III \$269.95
XDMS System Documentation only (\$10. credit toward purchase). . . \$ 24.95

WESTCHESTER Applied Business Systems
Post Office Box 187, Briarcliff Manor, N.Y. 10510

All software is written in Macro/assembler and requires 6809 FLEX DOS. CoCo users will need F-MATE or FHL FLEX, 64K RAM and 1-2 disk drives. Terms: Check, Money Order, Mastercharge or Visa. Shipment First Class. Add P&H \$2.50 (\$7.50 Foreign). State Res add sales tax. Specify 5 or 8". Sales: South East Media 1-800-338-6800 Consultation: 914-941-3552 eves. FLEX is a trademark of Technical Systems Consultants, Inc.

COMPILER EVALUATION SERVICES

The S.E. MEDIA Division of Computer Publishing Inc., is offering the following

'SUBSCRIBER SERVICE':

COMPILER COMPARISON
AND EVALUATION REPORT

Due to the constant and rapid updating and enhancement of numerous compilers, and the different utility, appeal, speed, level of communication, memory usage, etc., of different compilers, the following services are now being offered with periodic updates.

This service, with updates, will allow you who are wary or confused by the various claims of compiler vendors, an opportunity to review comparisons, comments, benchmarks, etc., concerning the many different compilers on the market, for the 6809 micro-computer. Thus the savings could far offset the small cost of this service.

Many have purchased compilers and then discovered that the particular compiler purchased either is not the most efficient for their purposes or does not contain features necessary for their application. Thus the added expense of purchasing additional compiler(s) or not being able to fully utilize the advantages of high level language compilers becomes too expensive.

The following COMPILERS are reviewed initially, more will be reviewed, compared and benchmarked as they become available to the author:

PASCAL "C" GSPL WHIMISCAL PL/9

Initial Subscription - \$39.95
(includes 1 year updates)
Updates for 1 year - \$14.50

S.E. MEDIA - CPI
5900 Cassandra Smith, POB 794
Hixson, TN 37343
615 842-4601

Stylo handles Cursor Control; you do not have to leave the "Home Keys" to move around and go back to normal text entry.

Stylograph for the CoCo OS-9 uses the FHL O-Pack 51x24 Display Screen, which is a BIG help in Word Processing. Some care will probably be required in the area of Memory Utilization, but this will be a big help in providing a GOOD Word Processor for the CoCo OS-9 System. The **Spelling Checker** is excellent, and the **Mail Merge** package allows the insertion of names and addresses in form letters, printing several short files at one time without losing the formatting commands, etc. Prices are as follows

Stylograph -- \$149.95
Spelling Ckr. -- 95.00
Mail Merge -- 75.00

Speaking of "Memory Management" with OS-9; we have received a lot of questions from **Basic09** Purchasers. While I have NOT seen the "official" Package yet, it appears that a lot of Users are having trouble getting started. The FIRST Problem appears when you attempt to put Basic09 on your OS-9 System Disk; **there is NOT enough ROOM on the Disk.** The four files on the Basic09 Master Disk must be copied to your `/d0/cmds` file to be used like any other Commands, but with a 35 Track, Single Sided Disk, you just don't have enough room. Use the `"deldir"` Command and delete the "DEFS" files and directories; this will free up over 100 Sectors on the Disk. The only time the "DEFS" Files are required is when you are using the Assembler, so you will not need them with Basic09. You will find as you begin to use OS-9 on the CoCo that you will end up with an "Assembly Language Development" System Disk, a "Basic09 Program Development" System Disk, etc.

The other problem, which is **NOT** UNIQUE to the CoCo OS-9 Users, is that OS-9 **Level I** is a little tight in Memory, so you will have to watch how much extra Memory you ask for when using Basic09 (it is a fairly large Program in itself). Also, do NOT call for extra Memory AND a Basic09 Program on the Command Line; first get Basic09 with some Memory, and THEN "load" the Program. For example (on an SS-50 Lvl I System), an entry of

Basic09 #40K OF
will not work, but by entering
Basic09 #40K
and after it is loaded,
load OF

works OK???? In fact, it works OK by requesting only 20K this way. OS-9 is a "different" Operating System, so it will take a while to learn to use it. When Y'all come up with a "hint", send it in!

Assembly Language

Many of you are beginning to look into learning how to program in Assembly Language, and are finding it hard to get started. There is a real gap in the available information between "Knowing NOTHING" and "Learning the Syntax of the 6809 Assembly Language". In an effort to help you become more familiar with this method of Programming, we often include **BOTH** the **Source Listing** and the **Assembly Listing** with some of the shorter Programs that we Publish. We have

done that with the **"MYDIR"** Program by Arnold Kahn in this issue. The "Source Listing" is exactly the way you enter the Program to be Assembled (you must have the FULL "DEFS" Directory on Drive 0 to assemble this program, and will probably need to request #10K extra Memory to get it to assemble). The "Assembly Listing" is the Listing output by the Assembler.

Study Chapter 8 of the "OS-9 Technical Information" Manual for the OS-9 Calls (OS9 I\$WRITLN, OS9 F\$EXIT, etc.), and Part II of the "OS-9 Program Development" Manual for information on the Assembler, the meaning of the "OPT" and "IFPL" statements, etc.

Notice that the "Source Listing" often begins a line with a "Space"; this is **EXTREMELY** important. The standard "Motorola" Source Format for the Assemblers require this space **IF** there is no "Label" or "Comment Line" (which begins with the "*" in the FIRST Column of a Line). See the discussion beginning on page 77 of the "Prog. Dev" Manual on "Source Statement Fields", and compare this material with the two Listings printed with the Program. Notice that the Assembler "Formats" the "Fields" automatically, saving you time and space when entering the Program.

The **BEST** way to learn to Program in Assembly Language is to study Assembly Language PROGRAMS written by other people (isn't that how you learned to Program in BASIC?). Another **EXCELLENT** way to learn the Assembly Language is in Disassembling and studying other Programs. A GOOD Disassembler, like Super Sleuth, Dynamite+, or the Micro Works 80C (for Tape Systems), and a GOOD book on the 6809 Assembly Language (like Leventhal's "6809 Assembly Language Programming" by Osborn/McGraw-Hill), and a **LOT** of HARD WORK, will help you learn "HOW" it is done. Another invaluable aid is the "6809 Microprocessor Instruction Set Summary" Card, available from Motorola (contact one of their Sales Offices, or a Parts Distributor); it has the information in an easy-to-use reference format.

Disassembly does **NOT** simply consist of running the Disassembler and reading the Code. You will find numerous places that you will have "garbage" out. You must study the output, and determine what sections of Code are ASCII Characters (FCC's), other sections may be Tables, etc. The process of figuring out where these areas are, defining them for the Disassembler, and running again, provide an **EXCELLENT** means of learning the Language, and how to use it. The "Super Test" is to develop a Complete Disassembly of the BASIC ROMs; when you accomplish THAT, you can consider yourself to be an "Expert" Disassembler. By the time you figure out what all is happening in the ROMs, you will be about two Versions **BEHIND**, but you will also learn a LOT about Assembly Language.

Meanwhile, we will help all we can with the Listings in **Color Micro Journal**, while, at the same time, providing some useful things that you can do with Assembly Language.

Robert L. Nay
Editor

COPY M/L TAPES

Cont. from p. 1

90 PEEKs into the Program and finds the beginning address, then assigns it the variable of 'B'. Line 90 finds the ending address, and assigns it the variable of 'E'. Line 140 assigns the CSAVE title, the variable of 'N\$'. Line 150 then takes all the variables and saves the Program as a Machine-Language Program on tape.

By the way, my wife didn't like the idea of a computer at first - but as you will notice, if you use 'M/L Copy', my wife has taken interest; in fact she was very helpful in writing this program.

INSTRUCTIONS

- 1) **FIRST**, load "M/L Copy":
CLOAD "M/L Copy" Press <enter>
Do Not Type RUN
- 2) Place the Machine-Language Tape, to be copied, in the tape player, and press <play> on recorder
- 3) Type:
CLOADM "Filename" <enter>
Do Not Type EXEC
- 4) Remove the M/L Tape and place a Blank Tape in the cassette player, then press 'Play' and 'Record'
- 5) **NOW** Type: RUN <enter>
- 6) At the prompt "Input Title", type in the 'Title' of the M/L Program to be saved on the blank cassette tape and press <enter>
- 7) The Program should now be recording. When recording is complete and you have the OK Prompt, the Machine-Language Tape Copy has been made and the Program is completed.
- 8) At this point, if more copies of the same M/L Program are desired, redo steps 5 to 8 only.
- 9) If copies of **another** M/L Program are to be made, do steps 2 to 9 only; there is no need to reload "M/L Copy".
- 10) If, by mistake, you run the "M/L Copy" program before step 3, you may have to clear the computer's memory. Either turn the Computer OFF and back ON, or enter: POKE 113,3:EXEC 40999 <enter>, reload "M/L Copy", and start all over at step 1.

```
10 CLS2:ZZ=99
20 'START ADDRESS
30 S=PEEK(487)*256+PEEK(488)
40 READDO$:IFDO$="110" THEN110
50 'BEGINNING ADDRESS
60 B=PEEK(126)*256+PEEK(127)-1
70 PRINT@ZZ,;:NN=(31-LEN(DO$))/2
:PRINTTAB(NN)DO$;:PRINTTAB(29);
80 'ENDING ADDRESS
90 E=PEEK(157)*256+PEEK(158)
100 ZZ=ZZ+32:GOTO40
110 DATA MACHINE-LANGUAGE COPY,C
ONNIE H. MARTINEZ, 19 DECEMBER 1
983, FORT BRAGG NC
120 PRINT@452,"";
130 DATA 110
140 INPUT"INPUT TITLE";N$
150 CSAVEN$S,B,E
```

MYDIR

Cont. from p. 1

Two possible approaches came to mind for unfolding the lines: 1) Write an Edit Macro to do the job, and 2) Write an assembly language PIPE FILTER to perform the task. Method 1) taught me that the OS-9 Editor is about as friendly as a rabid dog, and best ignored, except for the most elementary text input and correction. Enough said. Method 2) had to work or I would just have to live without decent directory printout.

For those not yet familiar with PIPES, I briefly mention that OS-9 (like UNIX) allows the output of one program to be directed as the input to another. This is PIPEing. What is wanted is a program, which I'll call MYDIR, that takes the output of DIR E, unfolds it, and sends it to the printer. This would be accomplished by the command line

```
DIR E /D0 ! /D1/CMDS/MYDIR >/P
```

which the user would type. The exclamation mark (!) indicates the PIPE'd redirection of the directory output through the filter (note analogies with plumbing and electronics), which processes the data before sending to the printer. MYDIR happens to be stored in directory /D1/CMDS; you could put it anywhere,

even LOAD it into memory for faster access. The directory of /D0 (or any other directory) will be printed, if all goes well.

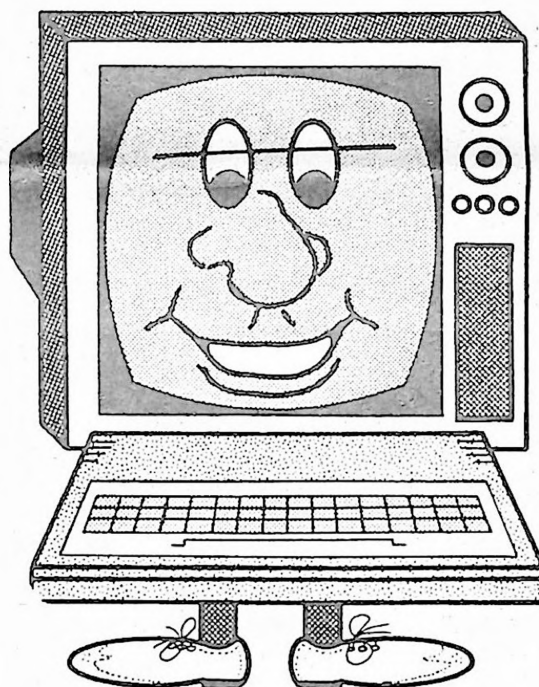
Editors Note:

One of the "known" bugs in OS-9 Lvl I, Ver 1.2 (not JUST Radio Shack) is that, under some as-of-yet undetermined circumstances, you can not call a Command from other than your specified 'Execution Directory'. In this situation, you must either "LOAD" the Command and then call it, or transfer it to your 'Execution Directory', to get it to run.

Since BASIC09 had not yet been distributed, the only remaining text manipulation method available to me was by assembly language programming. To see just what is needed, it is necessary to inspect a sample of the actual machine code in which the text is stored. This could be done with the DUMP command, if the file were on disk. So do it!

```
DIR E /D0 >/D1/DIRE.OUT
DUMP /D1/DIRE.OUT >/P
```

The first command stores the output on disk. The second gives hex and ASCII dumps of this output. The printer was



QUESTION

WHEN WAS THE
LAST TIME YOU
HAD A TALK
WITH YOUR
COCO



THE SPECTRUM VOICE PAK - a CoCo voice synthesizer - is a complete phoneme based voice system that uses the famous VOTRAX SC01 chip synthesizer in a cartridge style pak. It provides an unlimited vocabulary with automatic or user supplied inflection, plus four programmable levels of pitch. With a single line of code, THE VOICE PAK adds speech to any BASIC program in minutes. The system comes complete with user instructions, software cassette with 16K and 32K - DISK/TAPE versions, a text to speech scanner translator and a Word Manager that constructs and edits custom user dictionaries. The unit is fully assembled, tested and ready to plug in and talk, talk, talk. \$69.95

ALL ORDERS PLUS \$3.00 S/H - NY RESIDENTS. ADD SALES TAX

SPECTRUM PROJECTS / 93-15 86th DR / WOODHAVEN NY 1142 / 212-441-2807

used to enable careful study. The principal pattern we notice in the dump is that folded lines end with \$0D, the ASCII representation of the carriage return. Alas, Radio Shack 'DIR E' does NOT fill out the lines with spaces (\$20's) to let the screen routine do the folding; they inserted carriage returns into the text. Had they done it right, i.e., by inserting just the right number of spaces, we would have had unfolded printer output and folded screen output from the same routine (and I wouldn't be doing this piece). Our task is to reconfigure the column titles, the rulings (=s), and in the body of the table to remove alternate \$0D's and adjust the columns correctly with blanks. In the process we'll get some practice with elementary input-output in OS-9.

The program MYDIR is written in the standard OS-9 dialect of Motorola's 6809 assembly language. The data section at the beginning contains buffer space for the received text, and there is reserved memory for the hardware stack. The module header is as described in the manuals. Action begins at ENTRY. When execution begins, OS-9 sets the U Register to point to the absolute address of the bottom of the data area. Without this there would be no way for the program to "know" where OS-9 assigned the data area. In this program U never changes; it always points to the bottom of the buffer.

The first task is to set up the entry conditions for I\$READLN and to read a line that is PIPE'd in from the DIR E command. If an error other than EOF (end of file) occurs the program terminates with an error report; if EOF is detected the error report is cancelled and the program ends. If no

error occurs, the line of text is sent down the standard output path by I\$WRITLN. (These OS-9 calls with their entry and exit conditions are described clearly in the Technical Manual.) The next line of heading is read in, but since it is folded badly we wipe it out by invoking FILBUF, a subroutine which overwrites the buffer with spaces. The new heading lines are set up with FCC's and are printed with I\$WRITLN.

The real work of unfolding the directory data occurs at TABLE. I\$READLN reads up to and including the next carriage return. The number of characters read goes into the Y Register. We transfer Y to X, back up X by one, and overwrite the bad \$0D with a space (\$20). Then we advance X to U+32, to establish the position of the second half of the line of information which will be read in. After the next read, the complete line is put out by I\$WRITLN. This continues till EOF is encountered. I have never had a true error termination, except in the debugging stages.

A few details: FILBUF serves the important function of clearing the whole buffer before each new line is read. This wipes out all debris from previous lines. I was lavish with buffer space, but am too lazy to bother to correct it. One last point; note at line 51 the use of LEAX HEADIN,PCR. The program must be relocatable in OS-9. Without the PCR, X would be loaded with the absolute address of HEADIN, and that would depend on where in memory OS-9 loaded the module.... a no-no.

A possible extension would be to improve the formatting of the DUMP printout, so that the output would be more easily read and spread wider on the page. It would be best to patch

the original routines, but that will be rather difficult until an OS-9 disassembler becomes available.

NOTE: Both Computer Systems Consultants "SUPER SLEUTH" and Computer Systems Center "DYNAMITE" are now available in CoCo OS-9 Format; see their Advs, along with the South East Media Ad.

```
* PROGRAM MYDIR -- A PIPE FILTER TO EXPAND THE PRINTING OF
* THE DIR E COMMAND
NAM MYDIR
*
* OPT F,W80,D58
* USE /D0/DEFS/OS9DEFS
*
IFP1
USE /D0/DEFS/OS9DEFS
ENDC
```

```
* DATA SECTION
ORG 0
BUFFER RMB 500
RMB 200 STACK
STACK EQU .-1
DATMEM EQU . DATA AREA SIZE
```

```
* PROGRAM SECTION
MOD ENDPGM,NAME,$11,$81,ENTRY,DATMEM
NAME FCS /MYDIR/
```

```
ENTRY EQU *
START LEAX ,U POINT X TO BUFFER
LDY #100 UP TO 100 CHAR TO BE READ
LDA #0 STD INPUT
OS9 I$READLN
LBCS ERROR
LEAX ,U POINT X TO BUFFER
LDY #100
LDA #1 STD OUTPUT PATH
OS9 I$WRITLN
LBCS ERROR
LEAX ,U
LDY #100
LDA #0
OS9 I$READLN BUT LET IT DIE
LBCS ERROR
LBSR FILBUF WIPE OUT LINE
BRA CONT
```

```
* PRINT HEADING
HEADIN FCB $0A LINE FEED
FCC /CREATED ON OWNER NAME
FCC / ATTR START SIZE/
FCB $0A
FCC /=====
FCC /=====
FCC /=====
FCB $0D CARRIAGE RETURN
CONT LEAX HEADIN,PCR POINT TO HEADING
LDY #250
LDA #1
OS9 I$WRITLN
BCS ERROR
```

```
* READ AND PRINT FORMATTED TABLE - EXIT ON ERROR
TABLE BSR FILBUF CLEAR BUFFER
LEAX ,U POINT X TO BUFFER
LDY #100
LDA #0
OS9 I$READLN
BCS ERROR
TFR Y,D
LEAX D,X POINT X TO EOL + 1
LEAX -1,X POINT X TO CARRIAGE RETURN
LDA # ' SPACE TO WIPE OUT CARRIAGE RETURN
STA ,X WIPE OUT CARRIAGE RETURN
LEAX 32,U PLACE FOR REST OF LINE
LDA #0
LDY #40
OS9 I$READLN
BCS ERROR
LDA #1 STD OUTPUT PATH
LEAX ,U BEGINNING OF WHOLE LINE
LDY #80
OS9 I$WRITLN
```

NOTE: THIS MUST INCLUDE THE SPACE AFTER #, PLUS ANOTHER ONE BEFORE THE COMMENT.

Continued on page 24
Color Micro Journal

Gold Plug 80

TRS-80+ MOD I, III, COCO, TI99/4a
TIMEX 1000, OSBORNE, others

GOLD PLUG - 80

Eliminate disk reboots and data loss due to oxidized contacts at the card edge connectors.
GOLD PLUG 80 solders to the board edge connector. Use your existing cables. (if gold plated)

GOLD PLUG 80 Mod I (6)	\$44.95	\$54.95
Keyboard/EI (mod I)	15.95	18.95
Individual connectors	7.95	9.95
COCO Disk Module (2)	16.95	18.95
Ground tab extensions	INCL	1.00
Disk Drives (all R.S.)	7.95	9.95
Gold Disk Cable 2 Drive		29.95
Four Drive Cable		39.95
GOLD PLUG 80 Mod III (6)		54.95
Internal 2 Drive Cable		29.95
Mod III Expansion port		10.95
USA shipping \$1.45		
Foreign \$7.		

SPECIAL
PRICES

COCO MODULE
INSTALLATION
AVAILABLE

Can/Mex \$4.
TEXAS 5% TAX

Ask your favorite dealer or order direct



ORDER TODAY!

E.A.P. CO.

P.O. BOX 14

KELLER, TEXAS 76248

(817) 498-4242

+ trademark Tandy Corp

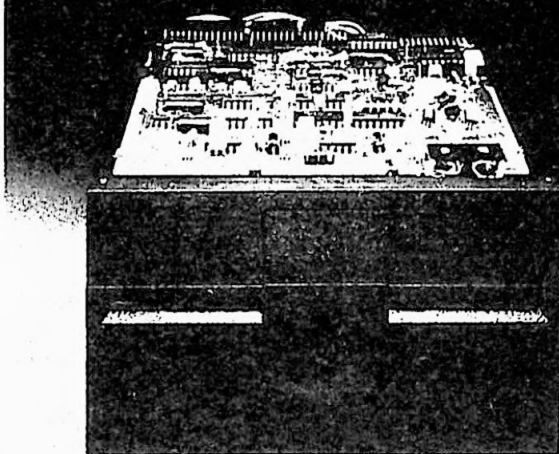
VISA

MC/VISA

NEW! DRIVES

only
\$159.00

**WITH CASE &
POWER SUPPLY
\$189.95**



TANDON MPI TEAC

Speed 5ms tk to tk
Capacity 250k unformatted
Tracks 40
Warranty 6 months

ORDER TOLL FREE!
1-800-635-0300



Even more savings!!

ALL DRIVES FULLY TESTED&WARRANTEED

Complete Disk Drive with Power Supply&Case	\$189.95
Two Drives in Dual Case & Power Supply	\$359.00
1/2 ht double sided double density Disk Drives (Shugart)	\$239.95
1/2 ht double sided double density Disk Drive with ps&case.....	\$289.95
Single ps&case	\$39.95
Dual ps&case	\$69.95

Color Computer Controller

Supports double sided double density drives
with 1 year warranty and manual.

\$139.95

Ask about our 3way Color Computer Drive Kits

Complete with Diskettes	starting at \$329.95
Diskettes with FREE library case	\$19.95
Head Cleaner Kits	\$Call
Unadvertised Specials	\$Call
Drives cleaned, aligned & tested	\$29.95

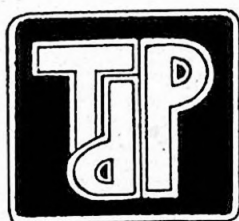


TECHNICAL STAFF ON DUTY, PLEASE CALL FOR ASSISTANCE.

CALL US TODAY!!

(617)234-7047

* DEALER INQUIRIES INVITED.



TRUE DATA PRODUCTS

195 Linwood Street, P.O. Box 546 -

Linwood, Massachusetts 01525

(617) 234-7047

HOURS MON-SAT 9-6 (EST)

We welcome

- Visa /Master Charge
- Checks (allow 2 weeks for clearing)
- C.O.D. Add \$2.00


```

BCS ERROR
BRA TABLE DO IT AGAIN
* ERROR PROCESSING AND FINISH
ERROR CMPB #D3 IS IT EOF?
BNE EXIT BAD TRIP
LDD #0A0A TWO LINE FEEDS
STD ,U PUT INTO BUFFER
LDD #0A0D LF + EOF
STD 2,U
LEAX ,U
LDA #01
LDY #100
OS9 I$WRITLN GIVE LINE FEEDS + EOF
CLRB NO ERRORS
EXIT OS9 F$EXIT
FILBUF LEAX ,U
LDA # SPACE ($20)
LDB #72
FILL STA ,X+
DECB
BNE FILL
RTS
EMOD END OF MODULE
ENDPGM EQU * END OF PROG
END END ASSEMBLY

00001 * PROGRAM MYDIR -- A PIPE FILTER TO EXPAND THE PRINTING OF
00002 * THE DIR E COMMAND
00003 NAM MYDIR
00004 *
00005 OPT F,W80,D58
00006 * USE /D0/DEFS/OS9DEFS
00007 *
00008 IFP1
00009 ENDC
00010
00011
00012 * DATA SECTION
00013 D 0000 ORG 0
00014 D 0000 BUFFER RMB 500
00015 D 01F4 RMB 200 STACK
00016 D 02BB STACK EQU -1
00017 D 02BC DATMEM EQU . DATA AREA SIZE
00018
00019 * PROGRAM SECTION
00020 0000 87CD0133 MOD ENDPGM,NAME,$11,$81,ENTRY,DATMEM
00021 0000 4D594449 NAME FCS /MYDIR/
00022
00023 0012 ENTRY EQU *

```

```

00024 0012 30C4 START LEAX ,U POINT X TO BUFFER
00025 0014 108E0064 LDY #100 UP TO 100 CHAR TO BE READ
00026 0018 8600 LDA #0 STD INPUT
00027 001A 103F8B OS9 I$READLN
00028 001D 102500E6 LBCS ERROR
00029 0021 30C4 LEAX ,U POINT X TO BUFFER
00030 0023 108E0064 LDY #100
00031 0027 8601 LDA #1 STD OUTPUT PATH
00032 0029 103F8C OS9 I$WRITLN
00033 002C 102500D7 LBCS ERROR
00034 0030 30C4 LEAX ,U
00035 0032 108E0064 LDY #100
00036 0036 8600 LDA #0
00037 0038 103F8B OS9 I$READLN BUT LET IT DIE
00038 003B 102500C8 LBCS ERROR
00039 003F 1700E2 LBSR FILBUF WIPE OUT LINE
00040 0042 207E BRA CONT
00041
00042 * PRINT HEADING
00043 0044 0A HEADIN FCB $0A LINE FEED
00044 0045 43524541 FCC /CREATED ON OWNER NAME
00045 0046 20202041 FCC / ATTR START SIZE/
00046 0047 0A FCB $0A
00047 0048 3D3D3D3D FCC /=====
00048 0049 3D3D3D3D FCC /=====
00049 004A 3D3D3D3D FCC /=====
00050 00C1 0D FCB $0D CARRIAGE RETURN
00051 00C2 308DFF7E CONT LEAX HEADIN,PCR POINT TO HEADING
00052 00C6 108E00FA LDY #250
00053 00CA 8601 LDA #1
00054 00CC 103F8C OS9 I$WRITLN
00055 00CF 2536 BCS ERROR
00056
00057 * READ AND PRINT FORMATTED TABLE - EXIT ON ERROR
00058 00D1 8D51 TABLE BSR FILBUF CLEAR BUFFER
00059 00D3 30C4 LEAX ,U POINT X TO BUFFER
00060 00D5 108E0064 LDY #100
00061 00D9 8600 LDA #0
00062 00DB 103F8B OS9 I$READLN
00063 00DE 2527 BCS ERROR
00064 00E0 1F20 TFR Y,D
00065 00E2 308B LEAX D,X POINT X TO EOL + 1
00066 00E4 301F LEAX -1,X POINT X TO CARRIAGE RETURN
00067 00E6 8620 LDA # SPACE TO WIPE OUT CARRIAGE RET
00068 00E8 A784 STA ,X WIPE OUT CARRIAGE RETURN
00069 00EA 30C820 LEAX 32,U PLACE FOR REST OF LINE
00070 00ED 8600 LDA #0
00071 00EF 108E0020 LDY #40
00072 00F3 103F8B OS9 I$READLN
00073 00F6 250F BCS ERROR
00074 00F8 8601 LDA #1 STD OUTPUT PATH
00075 00FA 30C4 LEAX ,U BEGINNING OF WHOLE LINE
00076 00FC 108E0050 LDY #80
00077 0100 103F8C OS9 I$WRITLN
00078 0103 2502 BCS ERROR
00079 0105 20CA BRA TABLE DO IT AGAIN
00080
00081 * ERROR PROCESSING AND FINISH
00082 0107 C1D3 ERROR CMPB #D3 IS IT EOF?
00083 0109 2616 BNE EXIT BAD TRIP
00084 010B CC0A0A LDD #0A0A TWO LINE FEEDS
00085 010E EDC4 STD ,U PUT INTO BUFFER
00086 0110 CC0A0D LDD #0A0D LF + EOF
00087 0113 ED42 STD 2,U
00088 0115 30C4 LEAX ,U
00089 0117 8601 LDA #01
00090 0119 108E0064 LDY #100
00091 011D 103F8C OS9 I$WRITLN GIVE LINE FEEDS + EOF
00092 0120 5F CLRB NO ERRORS
00093 0121 103F06 EXIT OS9 F$EXIT
00094
00095 0124 30C4 FILBUF LEAX ,U
00096 0126 8620 LDA # SPACE ($20)
00097 0128 C648 LDB #72
00098 012A A780 FILL STA ,X+
00099 012C 5A DECB
00100 012D 26FB BNE FILL
00101 012F 39 RTS
00102
00103 0130 38C8B2 EMOD END OF MODULE
00104 0133 ENDPGM EQU * END OF PROG
00105
00000 error(s)
00000 warning(s)
$0133 00307 program bytes generated
$02BC 00700 data bytes allocated
$1C8D 07357 bytes used for symbols

```



I HAVE SOMETHING TO SAY!

For as little as 46 cents a program you can enjoy great games like FROGJUMP, FRENZY, CATERPILLAR CAVE, SHOOTIN GALLERY, and great adventures. Use powerful home management programs such as BUDGET, STOCK MARKET, BARTENDER, TINY CALC, and COST OF LIVING. Also, enjoy the use of powerful programming utilities such as COCO MONITOR, GRAPHIC SCREEN PRINT, RAM TEST, HIGH RESOLUTION TEXT, and SINGLE DISK COPY. Increase your knowledge with educational programs such as BASIC SPEED UP TUTORIAL, FLASH CARD, TRIGONOMETRY TUTOR, and our 8 PART SERIES ON MACHINE LANGUAGE.

** Many programs use machine language! **



Every month you will receive a cassette tape with 10 ready to run documented programs.

16K Extended Required

ORDERS SENT SAME DAY!
FIRST CLASS SHIPPING!
Back Issues Available from July, 1982.
Call or write for our free catalog.
Dealer Inquiries Invited.

PRICES

1 YR (12 ISSUES) . \$55.00
6 MO (6 ISSUES) . \$30.00
SINGLE COPIES . \$ 6.00

MICHIGAN RESIDENTS ADD 4% TO ORDER
OVERSEAS ADD \$10.00 TO SUBSCRIPTION AND \$1.00 TO SINGLE COPIES

PERSONAL CHECKS WELCOMED!

★★★★★ **FREE PROGRAMS** ★★★★★

FOR EACH ORDER OF 20 OR MORE TAPES YOU WILL RECEIVE TWO COLOR COMPUTER PROGRAMS OF THE ABOVE PRODUCT!



COMPUTER CASSETTES

TGD Computer Products
P.O. Box 256-C
Holland, MI 49423
(616) 396-7577




ITEM	PRICE	QUANT	TOTAL
C-10	.59		
C-20	.69		
C-60	.85		
C-90	.99		
Outside USA Add \$2.00		Subtotal	3.00
USA funds only		Mich. Res. TOTAL	4%

Name _____
Address _____
City _____ St. _____ Zip _____
Credit Card _____ Exp. _____

Converting COCO BASIC to OS-9 BASIC09

Part II

Continued from last Month

ERROR HANDLING

COCO BASIC error handling is severely limited in power. Whereas most BASIC implementations allow the interception and logical handling of many types of errors, COCO BASIC does not support the familiar

ON ERROR GOTO label

statement, which specifies that control is to be transferred to label "label" if an error occurs, as supported by most BASIC implementations, including BASIC09.

COCO BASIC error handling is limited to user-supplied code to prevent such situations as division by zero, and the EOF(n) to detect end of file.

GRAPHICS AND MUSIC

BASIC09, itself, supports none of the high-resolution graphics, music, and certain other features supported by COCO BASIC that are specific to the TRS-80 Color Computer. This is due to the fact that COCO BASIC was developed especially for the TRS-80 Color Computer and BASIC09 was developed for a general 6809 processor-based system.

This does not imply that none of the high-resolution graphics or music functions of the hardware may be used from BASIC09. It does imply that such use will be made more difficult and, not being directly supported by BASIC09, will not be performed in the same manner. Generally, all required COCO BASIC graphics functions and statements will be recoded as BASIC09 PROCEDURE calls. A library of PROCEDURES equivalent to the COCO BASIC graphics and music may be developed and dynamically called, using standard BASIC09 and OS9 linkage. The Procedure GFX is included with the CoCo Basic09 Package to handle some of the Graphics capabilities (see the conclusion of this series next month).

FUNCTIONS

Function calls provide much of the notational power of the BASIC language, and both COCO BASIC and BASIC09 support function calls, although in somewhat different means and with different restrictions. Therefore, the entire area of function calls must be carefully studied to ensure correct conversions.

BASIC09 suffers from the lack of the DEF and USRn statements and the inability to call PROCEDURES as functions. Thus, many BASIC expressions must be carefully rewritten during the conversion to BASIC09. Not only must DEF functions be expanded, other function calls without direct equivalents must be split, with a preceding statement calculating the value previously calculated by the function, placing it into an appropriate temporary variable, which may be then substituted for the original function call. Not only does this cause a loss of notational convenience and power, but there is a possibility of subtle problems affecting the results of the calculations.

For an example of the problems of expanding expressions to include DEF functions, consider the following COCO BASIC program fragment:

```
DEF FNA(X)=LOG(-X)+1
:
:
Y=2*FNA(Z-1)
```

The direct substitution of the body and parameter of function FNA would produce the following incorrect results:

```
Y=2*LOG(-(Z-1))+1
```

whereas the following statement represents the correct conversion of the original statement:

```
Y=2*(LOG(-(Z-1))+1)
```

so function parameters and bodies should be enclosed in parentheses (when necessary) to maintain the integrity of the original expressions.

For an example of the operations required to call a BASIC09 PROCEDURE to calculate a value previously

calculated by a COCO BASIC function call, consider the following COCO BASIC statement:

```
IF HEX$(S)="ABCD" THEN GOTO 100
```

which converts an Integer value in S to its hex equivalent and compares it to a constant value. The equivalent BASIC09 code would be, similar to the following:

```
RUN HEX$(S,TEMP$)
IF TEMP$="ABCD" THEN GOTO 100
```

In which it is assumed that the user has previously declared variable TEMP as Integer and has coded a PROCEDURE named HEX which converts an Integer represented by its first argument to the equivalent hex string and returns it in the string variable named as its second argument.

Following is a summary of the changes required to convert COCO BASIC function calls to BASIC09. Many differences are discussed elsewhere in this article. A brief comment appears with each function.

COCO BASIC FUNCTION --- BASIC09 EQUIVALENT
VALUE RETURNED

ABS (n) --- same
absolute value of n
ASC (s\$) --- same
numeric value of first character of s\$
ATN (n) --- same
arctangent of n
CHR\$ (n) --- same
ASCII character corresponding to n
COS (n) --- same
cosine of n
CVN (s\$) --- replace with PROCEDURE call
numeric equivalent of 5-byte s\$
EOF (n) --- EOF(#n)
test file n for end of file condition
EXP (n) --- same
e to power n
FIX (n) --- same
rounded integer value of n
FREE (n) --- replace with PROCEDURE call
number of free granules on disk drive n
HEX\$ (n) --- replace with PROCEDURE call
hex string equivalent of numeric n
(BASIC09 may need following \$FF)
INKEY\$ --- replace with GET#0,s\$
Input one character from keyboard
INSTR ((n,s1\$,s2\$) --- SUBSTR(s2\$,s1\$)
first occurrence of s2\$ in s1\$ starting
at character n or 1: zero if not found

(use MID\$(s1\$,... if n not equal to 1)
INT (n) --- same
truncated integer value of n
JOYSTK (n) --- replace with PROCEDURE call
A to D value of Joystick designated by n
LEFT\$ (s\$,n) --- same
string representing n characters
starting at left of s\$
(BASIC09 may need following \$FF)
LEN (s\$) --- same
length in bytes of s\$
LOC (n) --- replace with PROCEDURE call
current record number in file n
LOF (n) --- replace with PROCEDURE call
highest record number in file n
LOG (n) --- same
natural logarithm of n
MEM --- none
number of bytes of unallocated memory
MID\$ (s\$,n1,n2) --- MID\$(s\$,n1,n2)
string representing n2 (or remaining)
characters starting at n1
characters into s\$
(BASIC09 may need following \$FF and
requires starting position and length)
MKN\$ (n) --- replace with PROCEDURE call
5-byte equivalent of numeric n
PEEK (n) --- same: see text
8-bit numeric value at address n
POINT (n,n) replace with PROCEDURE call
test graphics cell at argument
coordinate (n1,n2)
POS (n) --- POS
character position in file n buffer
(BASIC09 restricts POS to PRINT
statement)
PPOINT (n,n) --- replace with PROCEDURE call
color of cell at argument coordinate
(n1,n2)
RIGHT\$ (s\$,n) --- same
string representing n characters at
at the end of s\$
(BASIC09 may need following \$FF)
RND (n) --- same
random number between 0 and 1
(BASIC09 interprets n differently)
SGN (n) --- same
sign of n
SIN (n) --- same
sine of n
SQR (n) --- same
square root of n
STR\$ (n) --- same
string conversion of numeric n
(BASIC09 may need following \$FF and
may format differently)
STRING\$ (s\$,n) --- replace with PROCEDURE call

THE PEEPER

A UNIQUE INTERRUPT-BASED PROGRAM TRACER

Imagine being able to monitor the operation of a machine-language program WHILE IT IS RUNNING. To display any portion of memory in any of Coco's 26 documented display modes, and to move through memory using the arrow keys. To slow the action to a crawl, or freeze it at will. Instantly switch between watching the output of your program and watching Peeper dynamically display (on screen or printer) the contents of the 6809's registers and stack, showing changes as they are happening. In the slowest speed mode, Peeper provides continuous single-stepping; faster modes give a coarser trace. Or, halt the action and single-step by repeatedly pressing the space bar. Peeper supports breakpoints, memory examine/change, and more. Think how much easier it would be to modify someone else's ML software if you could determine what routines were being executed at any given point!

For fun, (and this requires no ML experience), use Peeper with arcade games, watching the fine details of the animation effects in slow motion. See how the game looks and plays in other graphics modes. Or watch what is happening on "hidden screens" you never see. (Makes a superb demonstration.)

16K

cassette (copyable to disk)
with assembler listing

\$21.95
\$24.95

FASTAPE

THE NEXT BEST THING TO A DISK DRIVE

Fastape gives you cassette I/O at 3000 baud—TWICE NORMAL SPEED. It uses the high-speed (POKE 65495,0) mode, and makes it convenient to stay in this mode throughout. Features automatic adjustment of cassette and printer parameters when speed mode is changed. Control-key functions for many Basic commands and for changing speed modes. Compatible with all tape file types. Can be used with Telewriter-64 and many other utilities.

"I strongly recommend this fine utility" Rainbow, 7/83.

"A treat for those without disk systems" Hot Coco, 10/83

16K

cassette

\$21.95

SPECTROSYSTEMS

11111 N. Kendall Drive,
Suite A108
Miami, Florida 33176
(305) 274-3899

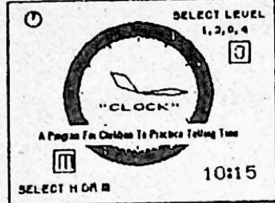
Please add \$2 shipping

CompuServe 72355.407

EDUCATIONAL PROGRAMS for Your TRS-80 COLOR COMPUTER*

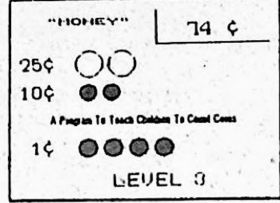
B5 SOFTWARE

1024 Bainbridge Pl. • Columbus, Ohio 43228 • (614) 276-2752



B5 SOFTWARE

1024 Bainbridge Pl. • Columbus, Ohio 43228 • (614) 276-2752



APPEALING GRAPHICS • FUN REWARDS • SOUND
Used Successfully in Classrooms and in Homes

ALL PROGRAMS REQUIRE EXTENDED BASIC
(OH Residents add 5% Sales Tax) *trademark of Tandy Corporation.

PROGRAMS	16K C.	32K D.	32K C.	16K D.
Clock	\$24.95	\$26.95		
Money	\$19.95			\$21.95
Subtract/Borrow	\$19.95	\$21.95		
Question	\$19.95	\$21.95		
Carry	\$19.95	\$21.95		
Skip Counting	\$16.95	\$18.95		
Keyboard	\$19.95	\$26.95	\$24.95	
ABC's	\$ 9.95			\$11.95
Spelling	\$16.95	\$18.95		
Hangword/Scramble	\$14.95	\$16.95		
Mathfact	\$16.95	\$18.95		

Brochure describing other fine
B5 programs available upon request.

WRITE FOR FREE DESCRIPTIVE BROCHURE
OR ASK FOR DEALER DEMONSTRATION

B5 Software



1024 Bainbridge Pl. • Columbus, Ohio 43228 • (614) 276-2752

Color Computer Software

SUPER SLEUTH DISASSEMBLER Each \$99-FLEX
(specify for 6800/6502 \$101-OS/9
or for Z80/8080/5)

Object-Only Version (6800/6502) \$50.00
For Color FLEX or OS/9

CoCo Sleuth \$49.00

CROSS-ASSEMBLERS Each \$50-FLEX
(specify for 6800/1.6805, \$55-OS/9
6502 Z80, or 8080/5)

DEBUGGING SIMULATORS Each \$75-FLEX
(specify for 6805 or 6502) \$100-OS/9

6502-TO-6809 ASSEMBLER XLATOR \$75-FLEX
\$85-OS/9

6800-9 & 6809 PIC XLATORS Both \$50-FLEX
\$75-OS/9

FULL SCREEN TSC XBASIC PROGRAMS FOR FLEX
(with full cursor control)

MAILING LIST \$100
INVENTORY/MRP \$100
TABULA RASA SPREADSHEET \$100

5.25" DSDD SOFT-SECTORED DISKETTES \$1.50 each in 50's
(with hub rings, Tyvek jackets, write-protect tabs, labels)

Computer Systems Consultants, Inc.
1454 Latta Lane
Conyers, Georgia 30207
404-483-1717/4570

Programs in source on 5 1/8" disk.
Detailed printed manuals provided.
Call for catalog or dealer information.
VISA and MASTERCARD accepted. US Funds Only.
Add 5% Shipping.
Add \$4.00 per 50 Diskettes for Shipping.

* FLEX is a trademark of Technical Systems Consultants
* OS/9 is a trademark of Microware

* X,A,B,CC CHANGED.

```
OUTSTR EQU *
LDA ,X+ GET A CHARACTER
CMPA #04 IS IT EOL?
BEQ OUTSTX GO IF SO
JSR OUTCH2 OUTPUT CHR TO SCREEN
BRA OUTSTR GET NEXT ONE
OUTSTX RTS
ENDIF
```

* for RS

IFC 'A','R'

* PARSE A FILENAME STRING AND MOVE IT TO STORAGE.
* THE NAME IS STORED IN 3 CONTIGUOUS FIELDS.

* NAME 8 BYTES LEFT JUSTIFIED BLANK FILLED
* EXTENSION 3 BYTES LEFT JUSTIFIED BLANK FILLED
* DRIVE NUMBER 1 BYTE BINARY

* IF THE EXTENSION IS NOT SPECIFIED THE DEFAULT
* BIN IS USED

* ENTRY REQUIREMENTS
* X POINTS TO THE FILENAME STRING
* Y POINTS TO THE SAVE AREA

* EXIT CONDITIONS
* ALL REGISTERS ARE CHANGED

PARSFN PSHS X,Y SAVE PARAMETERS
LDA DFLTDD DEFAULT DRIVE
STA DFLTDD

* MOVE 11 BLANKS TO FILENAME BUFFER

LDX #FNBUFF
LDB #11

LDA #BLANK

PARSF1 STA X+

DECB

BNE PARSF1

* GET LENGTH OF FILENAME STRING

LDX ,S GET ADDRESS OF STRING
LDA #', COMMA

BSR INXCHR GET LENGTH

PULS X GET ADDRESS AGAIN

LEAY <PARSF2,PCR RETURN ADDRESS
PSHS Y

CLR -S LOWER STACK

JMP SETOPN LET DOS PARSE FILENAME

PARSF2 LDA FNBUFF+8 EXTENSION

CMPA #BLANK WAS EXTENSION SPECIFIED?

BNE PARSF3 GO IF YES

LDD #4249 ELSE STORE 'BIN'

STD FNBUFF+8

LDA #N

STA FNBUFF+10

PARSF3 PULS U STORE ADDRESS

CMPU #FNBUFF SHOULD IT BE MOVED?

BEQ PARSF4 GO IF NOT

LDX #FNBUFF MOVE FROM (X) TO (U)

LDB #11 MOVE 11 BYTES

LBSR MOVEM

LDA DFLTDD DRIVE NUMBER

STA ,U

PARSF4 RTS

ENDIF

* for FLEX

IFC 'A','F'

* PARSE THE FILENAME AND MOVE IT TO STORAGE

* THE NAME IS SAVED IN FLEX FORMAT

* THE FCB IS USED. THE DEFAULT EXTENSION IS USED.

* ENTRY REQUIREMENTS

* X: POINTS TO FILENAME STRING

* Y: POINTS TO SAVE AREA

* EXIT CONDITIONS

* ALL REGISTERS ARE CHANGED

* PARSFN EQU *

LDU BFPTR LINE BUFFER POINTER

PSHS U SAVE IT

LEAU SFCB+3,PCR ADDRESS OF FILENAME FIELD

PSHS Y,U SAVE IT AND OUTPUT AREA TEMPORARILY

STX BFPTR FOR GETFIL

LEAX SFCB,PCR FCB

JSR GETFIL PARSE THE FILENAME

LBCS FERR GO IF ERROR IN FILENAME

CLRA SET BINARY DEFAULT

JSR SETEXT SET EXTENSION

LBCS FERR REPORT ERROR IF NECESSARY

PULS U ADDRESS OF SAVE AREA

CMPU ,S++ WILL FILENAME BE MOVED?

BEQ PRSFNX GO IF NOT

LEAX SFCB+3,PCR GET BEGINNING OF STRING

LDB #12 MOVE 12 BYTES

BSR MOVEM MOVE THE FILENAME

PRSFNX PULS X RESTORE LINE BUFFER

STX BFPTR

RTS

* SUBROUTINE TO CALL FMS AND PERFORM
* ERROR CHECKING
* ENTRY REQUIREMENTS:
* FUNCTION CODE IN BYTE 0 OF FCB
* X: POINTS TO FCB
* A: IF OUTPUT A CONTAINS THE CHARACTER.
* EXIT CONDITIONS
* A: IF INPUT A CONTAINS THE CHARACTER
* CC CHANGED. ALL OTHER REGS SAVED.
* IF THERE IS AN ERROR FERR IS CALLED
* WHICH REPORTS THE ERROR AND ABORTS.

RCHR JSR FMS

LBNF FERR

RTS

ENDIF

* TABLE SEARCH

* ENTRY REQUIREMENTS

* X POINTS TO TABLE

* Y POINTS TO ITEM TO COMPARE

* B ITEM LENGTH

* LAST BYTE OF TABLE MUST BE \$FF

* EXIT CONDITIONS

* C Z SET IF ITEM FOUND, CLEAR IF NOT

* X POINTS TO TABLE ENTRY IF MATCH, END OF TABLE

* IF NOT

* A,B CHANGED

* SEARCH EQU *

SERCH1 LBSR COMPARE CURRENT ITEM

BEQ SERCHX GO IF MATCH

ABX ELSE POINT TO NEXT ITEM

TST ,X END OF TABLE

BPL SERCH1 LOOP IF NOT

SERCHX RTS

* for RS

IFC 'A','R'

* OPEN ROUTINE

* ENTRY REQUIREMENTS:

* X: POINTS TO PARSED FILENAME STRING.

* STRING IS 80C FILENAME STRING ENDING

* WITH ZERO.

* A: "I"INPUT/"O"PUT

* B: FILE DEVICE NUMBER

* Y: IF A HAS AN "I" THEN Y CONTAINS THE TYPE

* AND FORMAT.

* MSB: TYPE

* LSB: FORMAT

* EXIT CONDITIONS: ALL REGISTERS CHANGED

* SET UP FOR OPEN

SOPEN EQU *

PSHS A,B,Y SAVE PARAMETERS

PSHS X SAVE FILENAME POINTER

LDU #FNBUFF BASIC'S FILENAME BUFFER

LDB #11 11 BYTES

LBSR MOVEM MOVE TO BASIC

PULS X RESTORE FILENAME POINTER

LDA 11,X GET DRIVE NUMBER

STA DFLTDD GIVE TO BASIC

* OPEN THE FILE

PULS A,B,X RESTORE PARAMETERS

STX FTYPE SAVE FILE TYPE FOR DOS

LDX #256 RECORD LENGTH

STX FLEN

JSR OPEN GO OPEN THE FILE

RTS

ELSE

* else for FLEX

* OPEN ROUTINE

* ENTRY REQUIREMENTS

* X POINTS TO PARSED FILENAME

* A 1 OPEN FOR INPUT

* 2 OPEN FOR OUTPUT

* EXIT CONDITIONS

* ALL REGISTERS CHANGED

* SOPEIN EQU *

LEAY SFCB,PCR FCB

STA ,Y FUNCTION CODE

LEAU 3,Y POINT TO FILENAME IN FCB

LDB #12 12 BYTES IN FILENAME

LBSR MOVEM MOVE NAME TO FCB

TFR Y,X ADDRESS OF FCB

JSR FMS OPEN THE FILE

BEQ SOPEIN1 GO IF OK

BSR OPNERR GO IF ERROR

SOPEIN1 LDA #FF NO BLANK SUPPRESSION

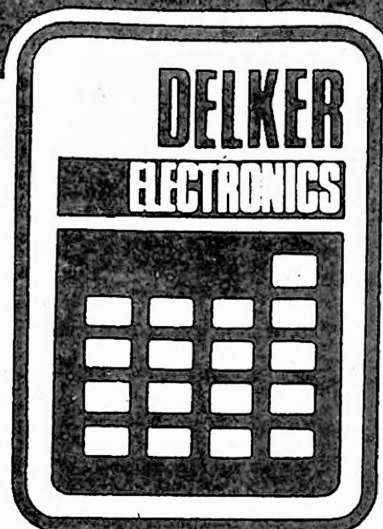
STA 59,X

RTS

Continued on page 30

CoCo HEADQUARTERS

Looking to unlock the capacity of your Color Computer?
Search no more.....



FEATURING. . . .

Discounted Hardware
Accessories for your every need
Quality software by MSI

HARDWARE SPECIALS

Now \$39.95!

Extended Basic w/bk	\$ 39.95	26-3026e 16k Extended CoCo2	\$ 189.95
64k (DEI) Memory Upg	\$ 59.95	26-3026e64 64k Extended CoCo 2	\$ 259.95
Amdek Disk Drives	\$ 499.95	26-1261 TP-10 Thermal Printer	\$ 89.95
26-3029 CoCo Drive 0	\$ 349.95	26-1192 CGP-115 Printer/Plotter	\$ 179.95
26-3023 CoCo Drive 1	\$ 239.95	C. Itoh Banana Serial 50 cps	\$ 249.95
HJL Keyboard (D,E,F)	\$ 79.95	26-3024 RS Multi-Pac Interface	\$ 149.95
Super Pro Keybd. (D,E)	\$ 64.95	Botek Ser/Par Interface	\$ 69.95

ACCESSORIES

RS D.C. Modem IB	\$ 89.95	26-3030 OS-9 (64k)	\$ 64.95 (disk)
Novation J-Cat Modem	\$ 129.95	Basic-09 (req. OS-9)	\$ 87.95 (disk)
RS D.C. Modem II	\$ 179.95	FHL O-Pak (req. OS-9)	\$ 34.95 (disk)
Hayes SM 300 Modem	\$ 239.95	Elite Word	\$ 59.95 (d&c)
CoCo Switcher	\$ 39.95	Elite Calc	\$ 59.95 (d&c)
Elephant Disks ssdd	\$ 22.95	Color Term Plus	\$ 29.95 (cass)

MSI SOFTWARE (Dealer inquiries invited)

"Software that works when you've finished playing games."

MSI DISKUTIL

Display or change data in any record. Maintain extra copy of disk directory for easy error recovery plus more.

A must for every disk owner.

NEW
\$ 19.95

COLOR FINANCE I

Let your CoCo manage your financial records. Handles multiple checking accounts, loans, expenses, budgets, etc. Print monthly and year to date reports. More...

RAINBOW
\$ 49.95

COLOR FINANCE II

Same as COLOR FINANCE I plus checkwriter, auto reconciliation and MSI CALENDAR. Perfect for Home or Business.

NEW
\$ 69.95

MSI NAMEFILE

Maintain over 600 name and addresses with direct access to each name. Up to 15 user defined fields. Print name list or labels.

RAINBOW
\$ 24.95

MSI CALENDAR

Print or display any month for years 1900-1999. Maintain special dates, appointments, recurring payments and more...

NEW
\$ 19.95

All MSI Software Requires 32k Disk/Extended Basic (Printer Recommended for Finance Programs)

TOLL FREE

TENNESSEE

1-800-545-2502

All of the above units covered by our 120 day carry in warranty.

TRS-80 Trademark Tandy Corporation. Prices subject to change without notice.

Write for our FREE newsletter!

Call for prices and availability of your other favorite software
All advertised items subject to availability

Prices do not include shipping & handling **1-800-251-5008**

TOLL FREE

FACTORY DIRECT
PURE RADIO SHACK EQUIPMENT
"THE COCO PROFESSIONALS"



DELKER ELECTRONICS, INC.
P.O. BOX 897 DEPT D
SMYRNA, TN 37167
800-251-5008
800-545-2502 (TENNESSEE)
615-459-2636 (TENNESSEE)
615-254-0088 (NASHVILLE)

OS-9™ SOFTWARE FOR COCO

SDISK — Standard disk driver module allows the use of 35, 40, or 80 track single and double sided drives with CoCo OS-9 plus you gain the ability to read/write/format the standard OS-9 single and double density disk formats used on other OS-9 systems. **\$29.95**

FILTER KIT #1 — Eleven utilities used as filters (with pipes) to give you "wild card" directory lists, copies, deletes, moves, lists, pagination, etc. **\$29.95**

HACKER'S KIT #1 — Disassembler and memory dump/fill utilities allow you to disassemble OS-9 assembly code from disk or memory. **\$24.95**

Send SASE for current catalog.
Terms: Prepaid check, MO, Visa, Mastercard or COD. Add \$1 S&H, (COD \$3 extra).

**D.P. Johnson, 7655 S.W. Cedarcrest St.
Portland, OR 97223 (503) 244-8152**
(We appreciate your calling only between 9-11 AM PST.)

OS-9 is a trademark of Microware and Motorola Inc.

COLOR COPY

COLCOPY is a menu driven copy utility that copies data files or programs: disk to tape, tape to disk or disk to disk. It also kills files or programs.

Many options are provided: copies basic programs, machine language programs or data files, allows selection by groups of filenames or extensions, individual files by menu selection, writes multiple copies of files to tape, backup a disk to tape, restore a disk from tape, copies files in alphabetic sequence and much more.

Written in basic with machine language sub-routines. Includes program on cassette and instructions.

Requires 32K, DOS. **ONLY \$15pp**

CASSETTE DIRECTORY

REVISED! Displays hex addresses to printer or screen. Still only \$2.50 or FREE with any product - ask for it!

FREE CATALOG with order or send self addressed stamped envelope.

Send check or money-order to:

**COCOPRO
P.O. BOX 37022
ST. LOUIS, MO 63141**

Postage paid on all pre-paid orders in U.S.
Missouri residents add 5.625 percent sales tax.

DEALER INQUIRES INVITED

```
*
* OPEN ERROR PROCESSOR
* IF OPEN FOR OUTPUT THE ONLY ALLOWABLE ERROR
* IS FILE ALREADY EXISTS. IF SO ASK USER
* IF HE WANTS TO OVERLAY. IF HE DOES THEN
* DELETE OLD FILE. IF HE DOESN'T THEN STOP.
*
OPNERR LDA ,X GET FUNCTION CODE
DECA QUICK TEST FOR 0
LBFR FERR NO READ ERRORS ALLOWED
LDA 1,X GET ERROR CODE
CMPA #3 DOES FILE EXIST?
LBNE FERR NO - SOME OTHER ERROR
LEAX MSG10,PCR OVERLAY REQUEST MSG
LBSR INPUT SEND MSG AND GET ANSWER
CMPA #Y OVERLAY?
BEQ OPNRR1 GO IF YES
CMPA #Y ditto
LBNE BRK 60 IF NO DELETING FILE
OPNRR1 LEAX SFCB,PCR ELSE GET ADDRESS OF FCB
LDB FNBUFF+1,PCR GET 1ST CHR OF FILENAME
PSHS B SAVE IT. DELETE CHANGES IT
LDA #0C DELETE FILE CODE
STA ,X STORE IN FCB
JSR FMS DELETE IT
LBNE FERR 60 IF ERROR
PULS B RESTORE 1ST FILENAME CHR
STB FNBUFF+1,PCR
LDA #2 OPEN FOR WRITE
STA ,X
JSR FMS OPEN THE FILE
LBNE FERR 60 IF ERROR
RTS ELSE RETURN
ENDIF

*
* DATA
*
MSG1 PSTRNG 'MAIN PROGRAM NAME, OUTPUT FILE, NAME'
MSG2 PSTRNG 'MAP TO SCREEN OR PRINTER(S/P)'
MSG3 PSTRNG 'OUT OF MEMORY'
MSG4 PSTRNG 'LOAD LIBRARY DISK AND HIT ENTER'
MSG5 PSTRNG 'LOAD OUTPUT DISK AND HIT ENTER'
MSG6 PSTRNG 'END'
MSG7 PSTRNG 'LOAD MAP'
MSG8 PSTRNG 'TRANSFER'
PSTRNG 'ADDRESS'
MSG9 PSTRNG 'NAME TABLE OVERFLOW'

* for FLEX, ? Delete
*
IFC 'A','F'
MSG10 PSTRNG 'DELETE INPUT FILE(Y/N)'
ENDIF

* if FLEX
*
IFC 'A','F'
CMDST FCC 'CMD' CMD EXTENSION
LNKNAM RMB 1 DRIVE NUMBER
FCC 'LINKER'
FDB 0 FILLER
FCC 'BIN'
ELSE

* else for RS
*
LNKNAM PSTRNG 'LINK BIN'
ENDIF

FCB 0 TO MARK END OF ENTRY IN TABLE

*
* VARIABLES, ETC
*
OUTFNM RMB 12 OUTPUT FILENAME STORAGE
TEMP RMB 12 TEMPORARY STORAGE
LDADD RMB 2 LOAD ADDRESS OF MODULE
RECADD RMB 2 LOAD ADDRESS OF RECORD
ENDADD RMB 2 END ADDR. OF MODULE/RECORD/PROGRAM
BASSTK RMB 2 STORE BASIC'S STACK FOR RETURN
PGMADD RMB 2 LOAD ADDRESS OF PROGRAM
XADD RMB 2 EXECUTION ADDRESS OF PROGRAM
OFFST1 RMB 2 OFFSET TO ADD TO LOAD ADDRESS
OFFST2 RMB 2 OFFSET FOR CALCULATING EXECUTION
ADDRESS
PGMTOP RMB 2 END OF PGM IN MEMORY
MODTBP RMB 2 POINT TO BEGINNING OF MOD TABLE
TABEND RMB 2 END OF MOD TABLE

* for RS
*
IFC 'A','R'
MEMEND RMB 2 END OF BUFFER
ENDIF

MODCNT RMB 1 MAIN MODULE FLAG
DSPDVC RMB 1 DISPLAY DEVICE NUMBER
RECFLG RMB 1 LOAD MODULE'S 1ST RECORD FLAG
BUFFAD RMB 2 ADDRESS OF BUFFER
MODTAB RMB 1536 MODULE NAME TABLE - 128 FILENAMES

* for FLEX
*
IFC 'A','F'
SFCB RMB 320 FCB
ENDIF

BUFFER EQU * PROGRAM BUFFER
END LOADER That's all, folks!
```

Linker Subroutine

```
OPT.PAG
NAM LINKER

* if RS, Sub-Title is
IFC 'A','R'
STTL RS DOS VERSION 1.0
ELSE
* else, it is
STTL FLEX VERSION 1.0
ENDIF

PAG

*
* LINK SUBROUTINE
*
*****
* COPYRIGHT (C) 1983 ROLAND WAGGONER
* and Computer Publishing Inc.
*
*****
* LINKS MODULES loaded by LOADER
*
* AUTOMATICALLY LOADED BY THE LOADER FOLLOWING THE
* LAST MODULE. THE EXECUTION ADDRESS OF THE LINKER
* IS SET AS THE PROGRAM EXECUTION ADDRESS
*
* TO ASSEMBLE THIS PROGRAM USE THE COMMAND LINE
* PARAMETERS 'R' OR 'F' TO INDICATE WHETHER
* THE PROGRAM WILL RUN UNDER 'R'S DOS OR 'F'LEX.
* FOR EXAMPLE ASMB LINKER,++F

*
* PROCESS
*
* SET Y POINTING TO THE JUMP TABLE BASE.
* BASE IS 0 FOR FLEX AND $0E00 FOR RS.
* GET EXECUTE ADDRESS FROM EACH MODULE AND
* STORE IT ON THE JUMP TABLE. THEN CALL
* INITIALIZATION CODE OF EACH MODULE.
*
* if FLEX
*
IFC 'A','F'
BASE EQU $0000 ADDRESS OF JUMP TABLE
ELSE

* else, for RS
*
BASE EQU $0E00 ADDRESS OF JUMP TABLE
ENDIF

*
* PREFACE
*
LINK FCB 0 MODULE NUMBER(DUMMY)
MAIN FDB 0 SPACE FOR MAIN'S LOAD ADDRESS
FDB END END OF ROUTINE
FDB 0 NO SUBROUTINES
FDB 0 NO INITIALIZATION
START LEAX LINK,PCR START EXECUTION HERE
LDD MAIN,PCR OFFSET TO MAIN'S LOAD ADDRESS
LEAX D,X ADDRESS OF MAIN
PSHS X SAVE
LDY #BASE
LEAU <END,PCR MARK END OF PGM
STU 254,Y FOR START OF VARIABLE AREA
LINK1 LDD 3,X OFFSET TO NEXT MODULE
LEAX D,X ADDRESS OF NEXT MODULE
TST ,X TEST MODULE NUMBER
BEQ LINK2 GO IF LAST MODULE
LDD 1,X OFFSET TO EXECUTION ADDRESS
LEAU D,X EXECUTION ADDRESS
LDB ,X MODULE NUMBER
CLRA MSB OF M.N.
ASLB X2
ROLA
STU D,Y STORE ON VECTOR
BRA LINK1 LOOP

* START INITIALIZATIONS
LINK2 EQU *
LDX ,S ADDRESS OF MAIN
BRA LINK34 GO INITIALIZE MAIN
LINK3 LDD 3,X OFFSET OF NEXT MODULE
LEAX D,X ADDRESS OF NEXT MODULE
TST ,X TEST IF LAST MODULE
BEQ LINK4 GO IF SO
LINK34 LDD 7,X OFFSET TO INIT. ROUTINE
BEQ LINK3 GO IF NONE
PSHS X,Y SAVE POINTERS
JSR D,X DO INIT.
PULS X,Y
BRA LINK3 LOOP
LINK4 EQU *
PULS X ADDRESS OF MAIN
LDD 1,X OFFSET TO EXECUTION ADDRESS
JMP D,X START PROGRAM
END EQU *
END START End of Linker Subroutine
```

— the end —

'68

\$2.95^{USA}

Australia A \$ 4.75
Singapore S \$ 9.45
Malaysia M \$ 9.45

New Zealand NZ \$ 6.50
Hong Kong H \$ 23.50
Sweden 30:-SEK

MICRO JOURNAL

You have **HEARD** about FLEX(tm); now **LEARN** about FLEX.
Subscribe to the '68' Micro Journal!

You have **HEARD** about the power of the 6809 Computer Chip
in your Color Computer; now **LEARN** how to use this power.
Subscribe to the '68' Micro Journal!

You have **HEARD** about the "Multi-User, Multi-Tasking" UNIX(tm) style
Operating Systems (such as OS-9(tm) and UniFLEX(tm)); now **LEARN** about them.
Subscribe to the '68' Micro Journal!

You have **HEARD** about all the Software available for the 68xx Series Based
Computer Systems, now **LEARN** about this Software AND the Computer Systems.
Subscribe to the '68' Micro Journal!

'68' Micro Journal provides INFORMATION thru:

Regular MONTHLY Columns like "FLEX Users Notes" by Ron Anderson, "OS-9 Users
Notes" by Peter Dibble, "C Users Notes" by Norm Commo, "Color Users Notes"
by Bob Nay, etc.

Regular MONTHLY Features like the "Bit Bucket", Reviews, Articles, Programs,
etc., covering Software Development, Business Use, Operating System
operation, hints, etc.

DON'T MISS A SINGLE ISSUE; SUBSCRIBE NOW!

OK, PLEASE ENTER MY SUBSCRIPTION

Bill My: Master Charge ☐ — VISA ☐

Card # _____ Exp. Date _____

For ☐ 1-Year ☐ 2 Years ☐ 3 Years

Enclosed: \$ _____

Name _____

Street _____

City _____ State _____ Zip _____

My Computer Is: _____

68 Micro Journal
5900 Cassandra Smith Rd.
Hixson, TN 37343

SUBSCRIPTION RATES

USA

1 Year \$24.50, 2 Year \$42.50, 3 Year \$64.50

*FOREIGN SURFACE Add \$12.00 per Year to USA Price

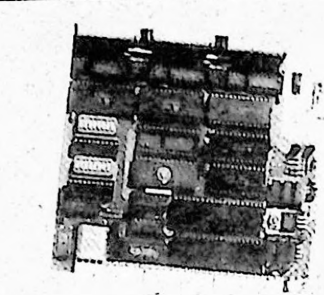
*FOREIGN AIRMAIL Add \$36.00 per Year to USA Price

**CANADA & MEXICO Add \$5.50 per Year to USA Price

Cash (USA) or drawn on a USA Bank!!!



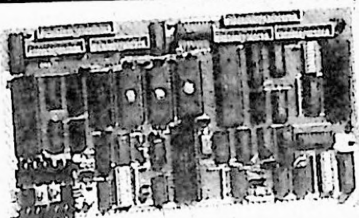
Intelligent Serial I/O Processor Board #11



The GIMIX Intelligent Serial I/O Processor Board #11 is a multi-user system that provides a high-speed, multi-channel serial interface for the GIMIX 6809 CPU Plus Board #05. It features a 28-pin DIP package and a 10-pin header for the host CPU. The board is designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

- Independent on-board 2MHz 6809 CPU
- Up to 20K on-board memory (10K RAM and 10K ROM)
- Full-speed data transfer between host and on-board CPU
- 28-pin DIP package with 128 pins for host CPU and multi-channel serial interface
- Three RS-232C serial ports (AS/4U) with software selectable baud rates, word length, stop bits, and parity
- Each port has two handshaking lines for modern control applications
- The on-board 6809 can be reset by the host processor
- Compatible with memory-to-memory DMA transfers between the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05
- Serial interface and status LEDs that can be used to select software options and indicate board status
- Separate 2-pin cable connectors for each port
- Appropriate on-board firmware and operating system drivers are required. Up to three #25 cable sets (28 pins) are required. Up to three #25 cable sets (28 pins) are required.
- See evaluation kit - Intelligent Serial I/O Processor Board #11 for the 50 pin bus

Intelligent Parallel I/O Processor Board #12



The Intelligent Parallel I/O Processor Board #12 can be used to improve system performance by buffering data transfers to parallel peripherals such as printers and/or by buffering and pre-processing parallel input data from keyboards, sensors, etc.

- Independent on-board 2MHz 6809 CPU
- Up to 20K on-board memory (10K RAM and 10K ROM)
- Full-speed data transfer between host and on-board CPU
- 28-pin DIP package with 128 pins for host CPU and multi-channel serial interface
- Four fully buffered 8-bit parallel ports with handshaking and interrupt/output lines (two 6821 VIA) Each 6821 also has two 16-bit counter/timers and a shift register for serial data transfer
- Software programmable direction for each bit on two of the four ports (1 per VIA), the other 2 ports can be individually programmed as 8 in or 8 out. The bidirectional data bus can be programmed as input or output
- On the on-board 6809 can be reset by the host processor
- Full 20-bit address decoding. 8 can be addressed on any 4 byte boundary in 1M byte of address space
- Compatible with memory-to-memory DMA transfers between the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05
- Serial interface and status LEDs that can be used to select software options and indicate board status
- Separate 2-pin cable connectors for each port (each 30-pin Centronics parallel connector) Each 30-pin connector uses 2 pins to allow full implementation of the Centronics protocol interface
- Appropriate on-board firmware and operating system drivers are required. Up to three #25 cable sets (28 pins) are required. Up to three #25 cable sets (28 pins) are required.
- See evaluation kit - Intelligent Parallel I/O Processor Board #12 for the 50 pin bus

OS-9 firmware and drivers for the Intelligent 3-port Serial Interface

The OS-9 firmware and drivers enhance the performance of multi-user systems while providing functions (including single channel I/O) equivalent to the standard ACIA type drivers normally used for terminals and serial printers. Input line status functions (backspace, echo, line drop and repeat, etc.) are handled by the I/O board, rather than the host, allowing the host more time for other processing tasks. The host is only interrupted when a complete input line (terminated by a "CR") is received, or certain special characters are received. Input and output data are buffered on the I/O board so that the host can perform other tasks while serial data is being transferred or received. When used with the GIMIX 6809 CPU Plus Board #05, the I/O board can be used to select software options and indicate board status. In addition to performance enhancements, features such as software selectable baud rates and transmission characteristics (number of data bits, stop bits, parity, etc.) are provided. The board also transmits "messages" to any or all I/O ports to indicate that the I/O board is ready and "waiting" for the host, and that the host is "on line" and has opened a path to the port. Messages to individual ports can be disabled.

GIMIX 2MHz Input/Output Boards

Serial Interface Boards

Serial Interface Boards use the versatile 6809 microprocessor to provide a high-speed, multi-channel serial interface for the GIMIX 6809 CPU Plus Board #05. They are designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

- 2 Port Serial Interface #43
- 8 Port Serial Board #46
- Single Port Serial Interface #41

2 Port Serial Interface #43
Solenoid jumpers provide easy selection and changing of options.
(for the 50 pin bus)

- 2 separate RS-232 ports with handshaking on a single 50 pin board
- Full-speed data transfer between host and on-board CPU
- 28-pin DIP package with 128 pins for host CPU and multi-channel serial interface
- Three RS-232C serial ports (AS/4U) with software selectable baud rates, word length, stop bits, and parity
- Each port has two handshaking lines for modern control applications
- The on-board 6809 can be reset by the host processor
- Compatible with memory-to-memory DMA transfers between the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05
- Serial interface and status LEDs that can be used to select software options and indicate board status
- Separate 2-pin cable connectors for each port
- Appropriate on-board firmware and operating system drivers are required. Up to three #25 cable sets (28 pins) are required. Up to three #25 cable sets (28 pins) are required.
- See evaluation kit - Intelligent Serial I/O Processor Board #11 for the 50 pin bus

#95 Cable Sets for I/O Boards
Cable sets include 28-pin cable with a matching connector for the I/O board, a 25-pin D-type cable connector for back panel mounting, and mounting hardware. Please specify when ordering cable sets.

8 Port Serial Board #46
The GIMIX 8 Port Serial Board #46 is a 3-board type interface board that provides a high-speed, multi-channel serial interface for the GIMIX 6809 CPU Plus Board #05. It features a 28-pin DIP package and a 10-pin header for the host CPU. The board is designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

- 8 Port Serial Board #46
- Single Port Serial Interface #41

8 Port Serial Board #46
The GIMIX 8 Port Serial Board #46 is a 3-board type interface board that provides a high-speed, multi-channel serial interface for the GIMIX 6809 CPU Plus Board #05. It features a 28-pin DIP package and a 10-pin header for the host CPU. The board is designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

- 8 Port Serial Board #46
- Single Port Serial Interface #41

Single Port Serial Interface #41
The GIMIX Single Port Serial Interface #41 is a 1-board type interface board that provides a high-speed, multi-channel serial interface for the GIMIX 6809 CPU Plus Board #05. It features a 28-pin DIP package and a 10-pin header for the host CPU. The board is designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

Parallel Interface Boards

Parallel Interface Boards use the versatile 6809 microprocessor to provide a high-speed, multi-channel parallel interface for the GIMIX 6809 CPU Plus Board #05. They are designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

- 2 Port Parallel Interface Card #42
- 8 Port Parallel Interface Board #45

2 Port Parallel Interface Card #42
The GIMIX 2 Port Parallel Interface Card #42 is a 1-board type interface board that provides a high-speed, multi-channel parallel interface for the GIMIX 6809 CPU Plus Board #05. It features a 28-pin DIP package and a 10-pin header for the host CPU. The board is designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

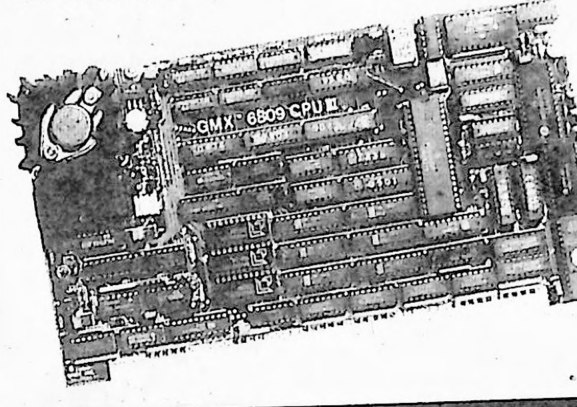
- 2 Port Parallel Interface Card #42
- 8 Port Parallel Interface Board #45

8 Port Parallel Interface Board #45
The GIMIX 8 Port Parallel Interface Board #45 is a 3-board type interface board that provides a high-speed, multi-channel parallel interface for the GIMIX 6809 CPU Plus Board #05. It features a 28-pin DIP package and a 10-pin header for the host CPU. The board is designed for use with the GIMIX 6809 CPU Plus Board #05 and the GIMIX 6809 CPU Plus Board #05.

The GIMIX 6809 CPU III

The GIMIX 6809 CPU III board is an advanced design specifically intended for use with multi-user multi-tasking operating systems. Built on a multi-layer circuit board and utilizing high-speed, high-density logic, the GIMIX 6809 CPU III enhances the performance of the 6809 by providing such features as a 1M byte microsecond DMA block transfer from memory to memory or to the 25 memory segments of the 6809, and enhanced memory management with 2K segments and segment attributes. The board automatically attributes DMA transfers between the on-board DMA and external DMA devices such as disk controllers. The 25 memory segments allow more efficient memory usage. The segment attributes allow the trapping of out-of-range memory references, write protection, and a hardware single step function for software debugging.

The board prevents the execution of certain illegal instructions from creating the system by monitoring interrupts to the 6809 and its response to them. If the processor does not respond to an interrupt within 128 clock cycles the board resets the 6809 and asserts a special reset vector. The system can then close down the offending task and resume normal operation. This also limits the length of time that interrupts can remain masked by a user preventing users from keeping the system from task switching and servicing other users. To further protect the system, the CPU board supports separate user and system "pages" with automatic switching to the system page in response to interrupts and system (SWI) calls. Certain hardware and memory areas can only be accessed in the system page preventing unauthorized access.



Non-Volatile 64KB CMOS STATIC RAM Boards with Battery Back-up #64

All GIMIX boards have Gold Pin Connectors and are fully assembled, tested, and ready to use.

- Addressable in two 32K sections with separate register and extended address decoding for each section. Each section can be addressed to any 32K boundary in the address range (1M byte with extended addressing). Each 32K section is divided into four 8K blocks that can be individually enabled or disabled. Disabled sections do not occupy address space.
- Fully Static Memory does not require complicated refresh timing or clocks for data retention. Compatible with any of the 6800/6809 DMA techniques.
- Guaranteed 2Mbit Operation uses high speed (150ns) memory with no wait states or clock stretching required.
- Non-Volatile Memory with built-in battery. Lock-up internal data even with system power removed. With the battery fully charged, data remains intact for a minimum of 21 years.
- Ultra Low Power CMOS RAM requires less than 1uA (typical) at 5V.
- Low Bias Voltage Detection inhibits memory access during power-up and power-down to prevent data loss.

Winchestr EPROM Programmer

- Probably the most versatile EPROM Programmer available. Interface to 8000, 16000, 32000, 64000, 128000, 256000, 512000, 1024000, 2048000, 4096000, 8192000, 16384000, 32768000, 65536000, 131072000, 262144000, 524288000, 1048576000, 2097152000, 4194304000, 8388608000, 16777216000, 33554432000, 67108864000, 134217728000, 268435456000, 536870912000, 1073741824000, 2147483648000, 4294967296000, 8589934592000, 17179869184000, 34359738368000, 68719476736000, 137438953472000, 274877906944000, 549755813888000, 1099511627776000, 2199023255552000, 4398046511104000, 8796093022208000, 17592186044416000, 35184372088832000, 70368744177664000, 140737488355328000, 281474976710656000, 562949953421312000, 1125899906842624000, 2251799813685248000, 4503599627370496000, 9007199254740992000, 18014398509481984000, 36028797018963968000, 72057594037927936000, 144115188075855872000, 288230376151711744000, 576460752303423488000, 1152921504606846976000, 2305843009213693952000, 4611686018427387904000, 9223372036854775808000, 18446744073709551616000, 36893488147419103232000, 73786976294838206464000, 147573952589676412928000, 295147905179352825856000, 590295810358705651712000, 1180591620717411303424000, 2361183241434822606848000, 4722366482869645213696000, 9444732965739290427392000, 18889465931478580854784000, 37778931862957161709568000, 75557863725914323419136000, 151115727451828646838272000, 302231454903657293676544000, 604462909807314587353088000, 1208925819614629174706176000, 2417851639229258349412352000, 4835703278458516698824704000, 9671406556917033397649408000, 19342813113834066795298816000, 38685626227668133590597632000, 77371252455336267181195264000, 154742504910672534362390528000, 309485009821345068724781056000, 618970019642690137449562112000, 1237940039285380274899124224000, 2475880078570760549798248448000, 4951760157141521099596496896000, 9903520314283042199192993792000, 19807040628566084398385987584000, 39614081257132168796771975168000, 79228162514264337593543950336000, 158456325028528675187087900672000, 316912650057057350374175801344000, 633825300114114700748351602688000, 1267650600228229401496703205376000, 2535301200456458802993406410752000, 5070602400912917605986812821504000, 10141204801825835211973625643008000, 20282409603651670423947251286016000, 40564819207303340847894502572032000, 81129638414606681695789005144064000, 162259276829213363391578010288128000, 324518553658426726783156020576256000, 649037107316853453566312041152512000, 1298074214633706907132624082305024000, 2596148429267413814265248164610048000, 5192296858534827628530496329220096000, 10384593717069655257060992658440192000, 20769187434139310514121985316880384000, 41538374868278621028243970633760768000, 83076749736557242056487941267521536000, 166153499473114484112975882535043072000, 332306998946228968225951765070086144000, 664613997892457936451903530140172288000, 1329227995784915872903807060280344576000, 2658455991569831745807614120560689152000, 5316911983139663491615228241121378304000, 10633823966279326983230456482242756608000, 21267647932558653966460912964485513216000, 42535295865117307932921825928971026432000, 85070591730234615865843651857942052864000, 170141183460469231731687303715884105728000, 340282366920938463463374607431768211456000, 680564733841876926926749214863536422912000, 1361129467683753853853498429727072845824000, 2722258935367507707706996859454145691648000, 5444517870735015415413993718908291383296000, 10889035741470030830827987437816582766592000, 21778071482940061661655974875633165533184000, 43556142965880123323311949751266331066368000, 87112285931760246646623899502532662132736000, 174224571863520493293247799005065264265472000, 348449143727040986586495598010130528530944000, 696898287454081973172991196020261051061888000, 1393796574908163946345982392040522102123776000, 2787593149816327892691964784081044204247552000, 5575186299632655785383929568162088408495104000, 11150372599265311570767859136324176816990208000, 22300745198530623141535718272648353633980416000, 44601490397061246283071436545296707267960832000, 89202980794122492566142873090593414535921664000, 178405961588244985132285746181186829071843328000, 356811923176489970264571492362373658143686656000, 71362384635297994052914298472474731628737312000, 142724769270595988105828596944949463257474624000, 285449538541191976211657193889898926514949248000, 570899077082383952423314387779797853029898496000, 1141798154164767904846628775559595706059796992000, 2283596308329535809693257551119191412119593984000, 4567192616659071619386515102238382824239187968000, 9134385233318143238773030204476765648478375936000, 18268770466636286477546060408953531296956751872000, 36537540933272572955092120817907062593913503744000, 73075081866545145910184241635814125187827007488000, 146150163733090291820368483271628250375654014976000, 292300327466180583640736966543256500751308109952000, 584600654932361167281473933086513001502616219904000, 1169201309864722334562947866173026003005232439808000, 2338402619729444669125895732346052006010448799616000, 4676805239458889338251791464692104012020897599232000, 9353610478917778676503582929384208024041795198464000, 18707220957835557353007165858768416048083590396928000, 37414441915671114706014331717536832096167180793856000, 74828883831342229412028663435073664192335361587712000, 149657767662684458824057326870147328384670723175424000, 299315535325368917648114653740294656769341446350848000, 598631070650737835296229307480589313538682892701696000, 1197262141301475670592458614961178627077365785403392000, 2394524282602951341184917229922357254154731570806784000, 4789048565205902682369834459844714508309463141613568000, 9578097130411805364739668919689429016618926283227136000, 19156194260823610729479337839378858033237852566454272000, 38312388521647221458958675678757716066475705132908544000, 76624777043294442917917351357515432132951410265817088000, 153249554086588885835834702715030864265902820531634176000, 306499108173177771671669405430061725331805641063268352000, 612998216346355543343338810860123450663611282126536704000, 1225996432692711086686677621720246901327222564253073408000, 2451992865385422173373355243440493802654445128506146816000, 490398573077084434674671048688098760530889025701229376000, 980797146154168869349342097376197521061778051402458752000, 1961594292308337738698684194752395042123556102804917504000, 3923188584616675477397368389504790084247112205609835008000, 7846377169233350954794736779009580168494224411219670016000, 15692754338466701909589473558019160336988448822439340032000, 31385508676933403819178947116038320673976897644878680064000, 62771017353866807638357894232076641347953795289757370128000, 125542034707733615276715788464153282695907590579514740256000, 251084069415467230553431576928306565391815181159029480512000, 502168138830934461106863153856613130783630362318058961024000, 100433627766186892221372631771322626156726072463611792000, 200867255532373784442745263542645252313452144927223584000, 401734511064747568885490527085290504626904289854447168000, 803469022129495137770981054170581009253808579708894336000, 1606938044258990275541962108341162018507617159417788672000, 3213876088517980551083924216682324037015234318835577344000, 6427752177035961102167848433364648074030468637671154688000, 12855504354071922204335696866729288148060937275342309376000, 25711008708143844408671393733458576296121874550684618752000, 51422017416287688817342787466917152592243749101369237504000, 102844034352575377634685574933834305184487498202738475008000, 205688068705150755269371149867668610368974996405476950016000, 411376137410301510538742299735337220737949992810953900032000, 822752274820603021077484599470674441475899985621907800064000, 1645504549641206042154969198941348882951799971243815600128000, 329100909928241208430993839788269776590359994248763120025600