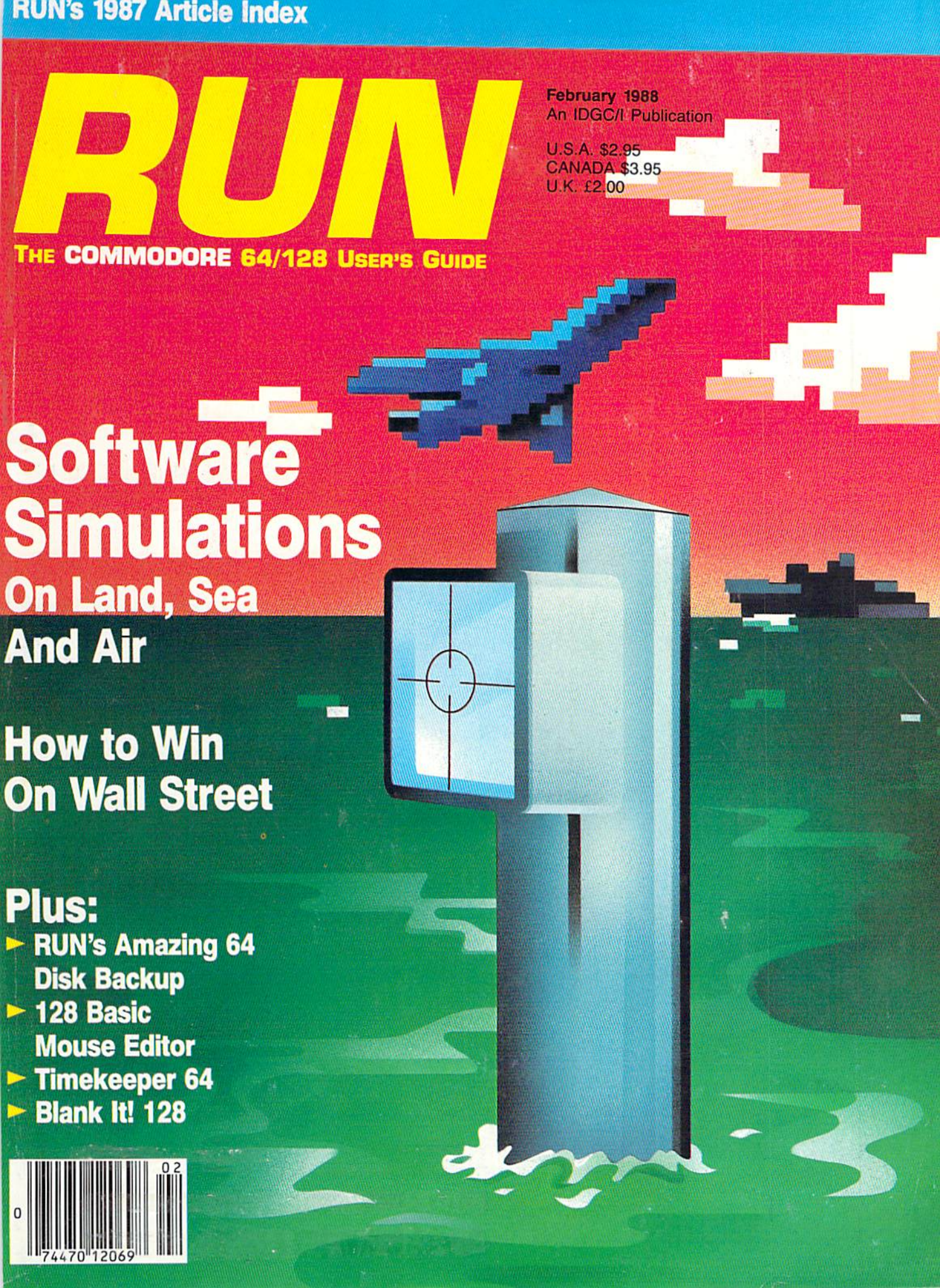
RUN's 1987 Article Index

RUN

THE COMMODORE 64/128 USER'S GUIDE

February 1988
An IDGC/I Publication

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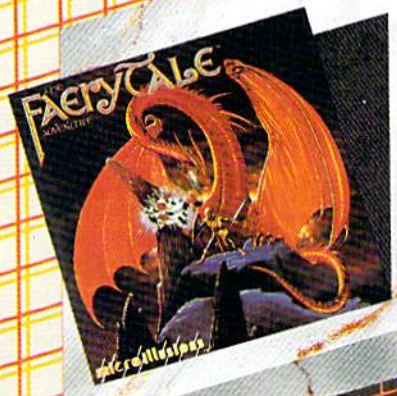
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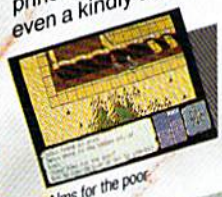
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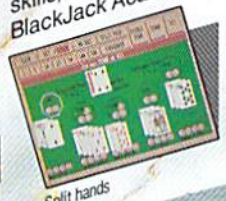


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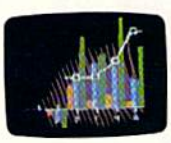
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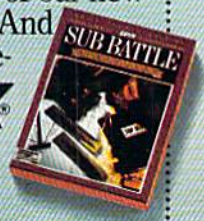
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RUNning Ruminations

This month, RUN *investigates why simulations are the next best thing to being there.*

Simulations: The Real Thing

At a recent meeting of the Software Publishers Association, one representative of a major software company boldly announced that there is no such thing as consumer software. He added, "It's now more appropriately called, 'electronic interactive media.' "

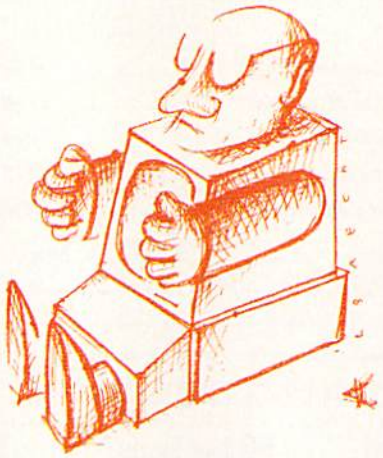
Whether you find that description pretentious or not, software developers *are* presenting users with an interactive experience on the computer screen. Games are more sophisticated, require more user involvement and feature spectacular visuals. The evolutionary time line places us beyond arcade games, strategy games, adventure games, role-playing games, dungeon-and-dragon-type games and fantasy games. Like it or not, we are now at the point where simulations software is the dominant games genre. It remains the fastest-growing category of software development over the past year.

I realize that not everyone is a big fan of simulations. I'll admit that there was a time when I felt that the world needed another flight simulator about as much as the American auto industry needed more foreign competition.

But simulations have improved greatly since then, with better sound, better graphics and more entertainment value. According to profiles of our readership over the years, interest in games has never waned. Behind home productivity, it ranks a strong second.

With the advent of some super-sophisticated and exciting programs—in the areas of flight, naval and sports simulations—that interest is as strong as ever. Realistic simulations put you right in the midst of the action. When you're not in the cockpit trying to follow Chuck Yeager around the sky, you can be behind the controls of a submarine or battlecruiser trying to outmaneuver your opponents. Or, if it's on the ballfield where you really shine, then there's probably a sports simulation for you.

Beginning on page 38, *RUN* takes a look at software that simulates sports, naval and flight scenarios. So whether



you're more comfortable in cleats or sneakers, a flak jacket or a warm-up jacket, a helmet or a batting cap, you can set the scene for hours of simulation excitement.

Investments, Backups And Mouse Use

Playing the stock market is not a matter of fun and games. You need all the help you can get—especially in light of the recent market collapse. That's why a computer is a must.

In this issue, we take a look at a number of investment programs—for both the 64 and 128—to help you make some smart choices and keep track of investment transactions. These programs help to take a byte out of those bulls and bears before they take a bite out of you. For the less adventuresome, there is also financial simulation software that lets you play Wall Street tycoon without risk.

This issue also features an amazing disk copier program for the 64. RUN Copy helps eliminate the number one headache of 1541 owners who attempt disk backups. If you've ever experienced this time-consuming process with your 1541, then you'll appreciate RUN Copy, with which you can experience speed increases of up to 500 percent.

Also in this issue, for C-128 owners who have been looking to use the Commodore 1351 mouse to better advantage, we have a handy programming tool that lets you edit Basic code on the screen. With the mouse, you can position the cursor in your program listings and scroll through program lines.

An Invitation

For those of you who may not be familiar with *RUN*'s bulletin board, the RUNning Board, now is a good time to get online.

We have added several new features to our bulletin board and installed the new Fiscal 20-megabyte hard disk drive for increased dependability. Our BBS now uses the popular Punter software, which allows much more interaction between us and our readers.

If you have a modem, terminal software and a Commodore computer, you can call in to the system to send messages to, or receive messages from, other users; download and upload an interesting collection of programs and articles; access information; or chat with *RUN* editors who monitor the system and respond to questions online.

Of course, we post information that we feel will be of importance to our readers—about the magazine and supporting products, article information and updates, product information and the Commodore industry. Remember, you can access the bulletin board any time, day or night, 24 hours a day for the most up-to-date information.

Another nifty feature of the board is its polling capability, which asks readers to vote and/or reply to certain questions. Results of the survey are periodically posted. Your messages, comments and suggestions are welcome, so give us a call to find out what the RUNning Board is all about.

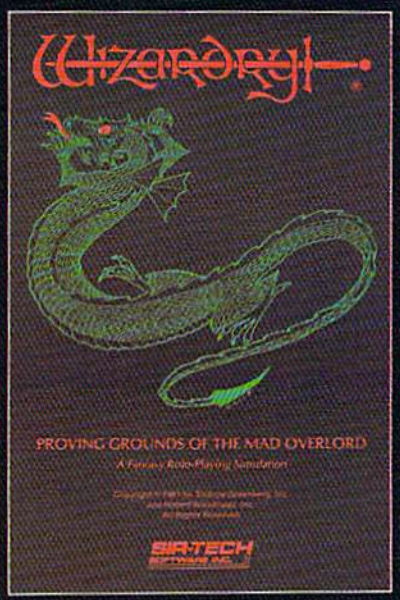
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MAGIC

Learn how to find Data statement errors in listings you typed in; discover some 1581 revelations; and make your 64's screen positively "glow."

Compiled by TIM WALSH

$469 Finding Data Statement Errors

Everyone, including myself, makes mistakes typing in Data statements from magazine listings, especially if a checksum is not used. Usually you'll get an Error in Data message or Illegal Quantity Error in Line XX.

Here is an outline of a method for finding incorrectly typed or missing numbers, missing commas and periods mistyped for commas. Suppose, for example, you run the program you've spent so much time typing in and get an Illegal Quantity Error in line XX. Line XX is that line containing the command READ D, and the line might appear as follows:

```
30 FOR T=49152 TO 50035: READ D: POKE T,D: CK=CK+
   D: NEXT
```

Line 30 generates the error because READ D, the command to read the Data statements, encounters a number it can't read, such as 3036 (too many digits or a comma missing) or 3.036 (a period substituted for a comma). So the problem actually lies in one or more Data statements.

What you can do is modify line 30 by adding two lines to give you a routine that puts each number in the Data statements on the screen for you to check against the magazine listing. To line 30 (or whatever line contains the READ D command), append PRINT D directly after the READ D command, and delete anything following it in that line. Here's an example:

```
30 FOR T=49152 TO 50035: READ D: PRINT D
```

Now enter the following two lines to complete the routine, using your own appropriate line numbers:

```
31 GET A$: IFA$="" GOTO 31
32 NEXT
```

Run the program, and the first number from the Data statements will appear on the screen. When you've verified that the number coincides with the listing, press any key to get the second data number. Continue until you find the incorrect one, press the stop key, list the line with the error, make the correction and press return to enter the line into memory.

Now run the routine again, holding down the space bar to return to the last data number you checked. Continue to verify the numbers and make any needed corrections.

Once all the corrections have been made, type in the original line 30, remove lines 31 and 32 and re-save your program. The program should then work well. You can use this trick to troubleshoot programs written for any Commodore computer.

—TIM WALSH, *RUN* STAFF ►

TRICK OF THE MONTH

$46A 64 Screen Glow

A mere description won't do this program enough justice. You'll have to type it in to see how good it is. An interrupt-driven, character-color screen manipulator, 64 Screen Glow cycles the C-64's characters through the Commodore rainbow of colors, even while other programs are running. No other color-cycling routine could possibly add more eye-catching sparkle to your text displays. Its only limitation is that it won't work with other wedge-type programs occupying memory locations 49152 to 49269.

```
Ø REM 64 SCREEN GLOW - DAILAH HODGE
                                        :REM*51
1Ø FOR T= 49152 TO 49269:READ A:POKE T,A:
   S=S+A:NEXT                           :REM*1Ø
2Ø IF S<>1Ø54Ø THEN PRINT"ERROR IN DATA":
   END                                  :REM*193
3Ø SYS 49152                            :REM*2Ø4
4Ø DATA 12Ø,169,21,141,2Ø,3,169,192,141,2
   1,3,16Ø,Ø,14Ø,84,192,14Ø             :REM*5
5Ø DATA 86,192,88,96,172,84,192,2ØØ,14Ø,8
   4,192,192,3,2Ø8,49,16Ø,Ø             :REM*143
6Ø DATA 14Ø,84,192,172,86,192,185,87,192,
   162,Ø,157,Ø,216,157,Ø,217            :REM*22Ø
7Ø DATA 157,Ø,218,157,Ø,219,141,134,2,232
   ,2Ø8,238,169,Ø,141,32,2Ø8            :REM*2ØØ
8Ø DATA 141,33,2Ø8,2ØØ,192,3Ø,2Ø8,2,16Ø,Ø
   ,14Ø,86,192,76,49,234,Ø              :REM*149
9Ø DATA Ø,Ø,6,9,11,2,8,4,14,12,1Ø,5,3,15,
   7,13,1                               :REM*85
1ØØ DATA 1,13,7,15,3,5,1Ø,12,14,4,8,2,11,
    9,6,Ø                               :REM*178
```

—DAILAH HODGE, ST. CROIX, VIRGIN ISLANDS

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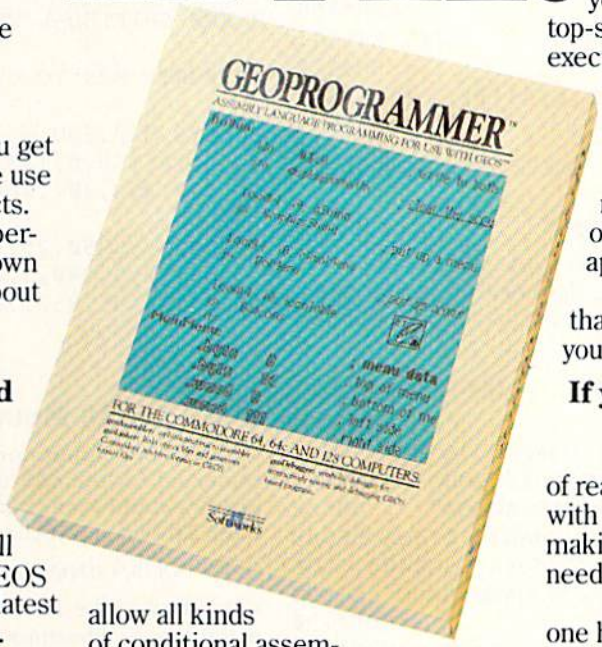
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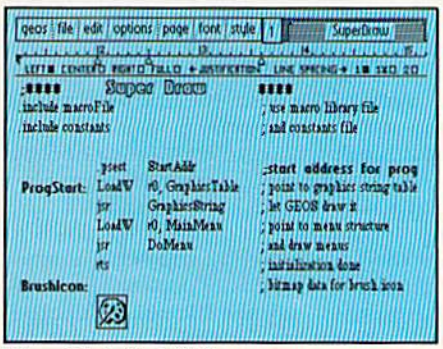
It reads and writes and stomps on bugs.

The first three tools that any serious programmer needs are an assembler, a linker and a debugger. So we've installed all three, complete with sample GEOS applications that teach you the latest programming tricks in seconds.

geoAssembler not only reads directly from geoWrite files, but contains enough Pseudo Ops to allow all kinds of conditional assemblies. It has all the state-of-the-art features you'd expect, including some you probably never thought possible. For example, integrating graphics is as simple as cutting and pasting the image from geoPaint directly into your program.

geoLinker ties your program modules together, supporting GEOS SEQ and VLIR applications and desk accessories. You can even use geoAssembler and geoLinker to create non-GEOS applications.





*Also available for 80 col. C128's.

geoDebugger allows your program to be tested in memory with full symbolic disassembly, along with line assembly for patching code in memory. It also allows your code to be single-stepped or top-stepped, with sub-routines fully executed. It can stop a running program with one key, or use up to eight conditional breakpoints. When your program hits the breakpoint, it prominently displays the error in an overlay window, leaving the applications screen intact.

Pro enough for you yet? Well, that's only a *partial* list of what you're in for.

If you understood all that, read on.

Chances are that we lost a lot of readers by now. But if you're still with us, hang in there. You have the makings of a real GEOS pro. All you need now are the right tools.

And all of them come in this one handy box.

So if you're serious about programming, consider geoProgrammer. After all, you've got nothing to lose —except your amateur status.

To order call 1-800-443-0100 ext. 234

geoProgrammer $69.95

(California residents add 7% sales tax.)

$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

Commodore, Commodore C64 and C128 are trademarks of Commodore Electronics, Ltd. GEOS, geoProgrammer and Berkeley Softworks are tradenames of Berkeley Softworks.

GEOPROGRAMMER



Berkeley Softworks

The brightest minds are working at Berkeley.

Circle 140 on Reader Service card.

$46B Basic Artwork 64

Dazzling, animated computer-generated graphics are all the rage at art museums. Artistically inclined C-128 owners have it easy, because plenty of short "artsy" Basic 7.0 animation programs have been published for that machine. Animated C-64 graphics, on the other hand, usually consist of many Basic 2.0 commands and/or cryptic machine language routines.

My program, Basic Artwork 64, creates animated "op-art" with only four short lines of Basic 2.0. Your screen comes alive with a fully synchronized, changing pattern of scrolling lines, sure to draw crowds at any art show.

```
Ø REM BASIC ARTWORK 64 - MATT MCELLIGOTT
                                        :REM*1ØØ
1Ø POKE5328Ø,Ø:POKE53281,Ø:POKE646,1: A$="
   {COMD Y}{SHFT E}{SHFT D}{SHFT *}{SHFT F
   }{SHFT R}{COMD P}"                   :REM*233
2Ø FOR I=1TO7:A$(I)="{2 SPACEs}":FORJ=1TO5
   :A$(I)=A$(I)+MID$(A$,I,1):NEXTJ,I
                                        :REM*189
3Ø FORI=1TO7:PRINTA$(I),A$(I),A$(I),A$(I):
   NEXTI                                :REM*229
4Ø FORI=7 TO 1STEP-1:PRINTA$(I),A$(I),A$(I
   ),A$(I):NEXT:GOTO3Ø                  :REM*95
```

—Matt McElligott, Alfred, NY

$46C Play It Again, Axel

Long after you've forgotten the weak plot and mediocre story line in "Beverly Hills Cop," the movie's beautiful theme song, "Axel F," stays in your mind. Here's a flawless rendition for your C-128.

```
Ø REM AXEL F ON THE 128 - JONATHAN EACOTT
                                        :REM*1Ø6
1Ø TEMPO 19:PLAY"T5 V1 O3AO4CO3A O4CO3AGAO
   4E O3AO4FECO3AO4EA O3AGEBARHRQ AO4CO3A
   GAO4E O3AO4FEC O3AO4EAO3AGEBA"  :REM*22
2Ø PLAY" T5 V1 QRHRQO3A O4AO3E O4EGAO3FO4F
    O3GO4GO3GAO4AR GEDCO3AO4A O3GO4GE O3GA
    O4AO3E O4EGAO3FO4F O3GO4GO3GA O4ARGEDC
   "                                    :REM*19Ø
3Ø PLAY"T5 V1 O3A O4CO3AO4DO3AGA O4EO3AO4F
   EC O3AGEBAR HRQO3A O4CO3AO4E O3AO4FECO3
   A O4EAO3A GEBARHRIR"                 :REM*254
4Ø PLAY "T5 V1 I E QEGGG#F#F#FEEGG #FE#CIR
   CQCCCDDDDEEEDEEEIRE QEGGG#F#F#FEEGG#FE#
   CIRC QCCCDDDDEEEDEEE"                :REM*112
5Ø TEMPO 2Ø:PLAY"T5 V1 WDQRHRO4AGE QDCHARR
   WDQRHRAGEQDCHARR QO3AO4CO3AO4DO3AGA O4E
   O3AO4FECO3A O4EAO3AGEBAQRHRO3QA O4CO3AO
   4DO3AGAO4E O3AO4FECO3AO4EAOAGEBA":REM*9
6Ø TEMPO 24:PLAY"V2 T9QRHRQO4CO3":FORS=1TO
   9:PLAY"GO4CO3":NEXT                  :REM*96
7Ø FORT=1TO8:PLAY"V2 T9 GO5CO4GO5CO4GO5CO4
   ":NEXT                               :REM*235
8Ø PLAY"V2 T9 O4GEDCDEGGEDCGEDCDEGED CCDEG
   EDCGEDCDEGEDCGEDC DEGEDCGEDCDEGEDC GEDC
   DEGEDCG EDCDEGEDCGEDCDEGEDC"  :REM*237
9Ø TEMPO 2Ø:PLAY"V1 T5IREQEGG#F#F#FEEGG #F
   ED#CIRCQCCCDDDDEEEDEEE IREQEGGG#F#F#FEE
   GG #FE#CIRCQCCCDDDDEEEDEEEIR"   :REM*63
1ØØ PLAY"V1 T5I#CQ#C#C#CDDDDEEEDDDE O3AO4C
   O3AO4DO3AGAO4E O3AO4FEO3AAO4EAO3AGEB O
   4AQRHR"                              :REM*2Ø6
```

—Jonathan Eacott, Woodstock, Ont., Canada

$46D Shifted-L Encryption

When you write C-64 Basic programs containing programming secrets or some personal notes, you don't want anyone to see them. To keep prying eyes and minds away from your listings, use lots of lines containing REM (SHIFT-L) statements throughout the program. These print a Syntax error to the screen whenever someone tries to list your program. Of course, you run the danger of not knowing which lines contain those shifted L's when you want to list the program to view those notes yourself. The trick then is to run my program, Shifted-L Encryptor, which disables the shifted-L Syntax error and lets you list programs containing shifted Ls.

```
Ø REM SHIFTED-L ENCRYPTOR - JEFF MARTIN
                                        :REM*66
1Ø FORT= 828 TO 872:READ A:POKET,A:NEXT
                                        :REM*169
2Ø SYS 828:END                          :REM*188
3Ø DATA 169,Ø,133,252,169,8,133,253,16Ø,Ø,
   177,252,2Ø1,2Ø4,24Ø,22,2Ø1,Ø,24Ø
                                        :REM*112
4Ø DATA 9,23Ø,252,2Ø8,2,23Ø,253,76,68,3,2Ø
   Ø,192,3,24Ø,3,76,7Ø,3,96,169,2Ø3:REM*67
5Ø DATA 145,252,76,68,3                 :REM*35
```

—Jeff Martin, Roseville, CA

$46E 64/128 Multiple Copies

Every Commodore computer offers some form of a Copy command for the disk drive. Yet Copy is much neglected, mainly because it's awkward to use, especially in its confusing Basic 2.0 syntax, which looks like:

```
OPEN 15,8,15,"C0:NEWFILE=OLDFILE":CLOSE 15
```

Complicating the issue, the C-128's Basic 7.0's Copy command has the filenames in reversed order:

```
COPY "OLDFILE" TO "NEWFILE"
```

In order to give *RUN* readers more exposure to Copy, I've written a useful utility that works in both 64 and 128 modes and uses the Basic 2.0 Copy command to make multiple copies of any sequential, program or user disk file you want. Place the disk containing the file to be copied into the disk drive; then enter the name of the file at the first prompt and the number of copies at the second prompt.

Bear in mind that this is intended to copy only noncopy-protected files, so don't waste time trying to copy your favorite flight simulator with this trick—it won't work.

My program truncates the filename you enter down to twelve characters, and then, for each copy, appends a number from 1 up to and including the number of copies you specify at the prompt. So if you enter, say, the filename "supercalifragilistic" and specify 15 copies, the copies will have the filenames "supercalifra#1," "supercalifra#2," and so on. The screen constantly displays the number of each copy as it's

Continued on p. 92.

NBA FRANCHISES AVAILABLE: RATES REASONABLE!

(REQUIREMENTS: Knowledge of professional basketball. Capable of dealing with giants. Ability to handle high-pressure situations. Must bring own temper.)

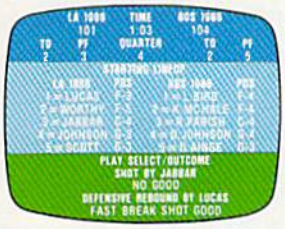
Can YOU do the job?

Find out if you have what it takes in **NBA,** the animated stat-based basketball game. Take control of Larry Bird, Dominique Wilkins, Michael Jordon, Kareem Abdul-Jabbar and Bob Cousey. Pick the starting line-ups, send in substitutes and call for the fast break and full-court press. **NBA** takes into account everything that occurs on court. On offense, you call the play. Choose the sequence of passes, but be careful: it increases the chance of two points, but also can lead to a steal or blocked shot. Work the outside, or just go for the three-pointer. On defense, set up outside or close to the basket, go for the rebound, or turn on the pressure and try for a steal. A good NBA coach has to work the bench as well as the floor. Each player's stamina is rated by the number of minutes he can play. Use up your starter too early in the game, and you'll have to send in a sub during those final crucial minutes, and that could turn an overwhelming victory into a closely-contested defeat.

From the designers of Super Sunday, NBA is the first and only fully-animated statistically-accurate basketball game on the market, coming in like a fast break with the following features:

- **A STAT-KEEPER PROGRAM** that allows you to keep track of how well your team is doing. This valuable accessory lets you save stats from the **NBA** game for later review. Individual players' performances and statistics are updated throughout the game. You can view them during and after the game on your screen or printer.
- **20 GREAT TEAMS** from the 1959-60 Boston Celtics to the four top teams from the 1985-86 season: Boston, Milwaukee, Houston and Los Angeles! In between are some of the greatest teams that ever played the game: the 1966-67 Philadelphia 76ers with Wilt Chamberlain and the classic match-up from the 1969-70 season between the Lakers and the New York Knicks!
- **YOUR BRILLIANT PLAY** re-enacted by all 10 players on screen.
- **THREE MODES OF PLAY:** head-to-head, solitaire and autoplay. The autoplay function also allows you to play the same teams several games in a row . . . a needed option to replay a season.

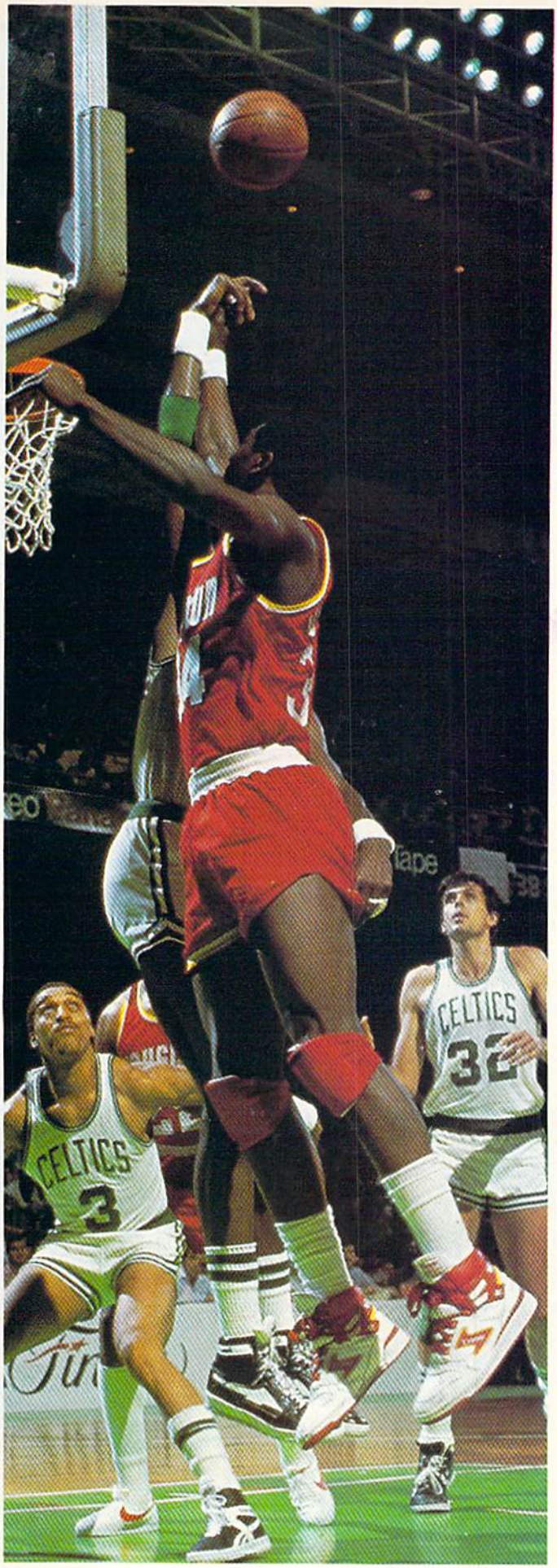




NBA can be played on the Apple® II family, Commodore® 64/128 or IBM® PC computers.
Price: $39.95.
Watch for the release of Accessory disks; **1987 Season** and **GM Disk.**

OFFICIAL NBA LICENSED PRODUCT ®

Available at leading game and computer stores . . . or call TOLL FREE **1-800-638-9292** for ordering information.

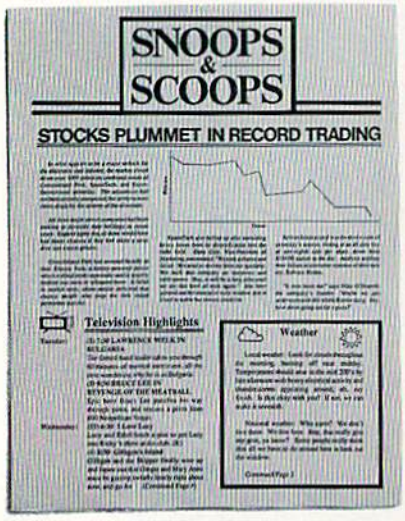


AH GAMES OF STRATEGY

microcomputer games DIVISION
The Avalon Hill Game Company
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4517 Harford Road, Baltimore, MD 21214

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SNOOPS & SCOOPS

STOCKS PLUMMET IN RECORD TRADING

Television Highlights

Weather



ED'S WEEKLY

The views and news of Ed.

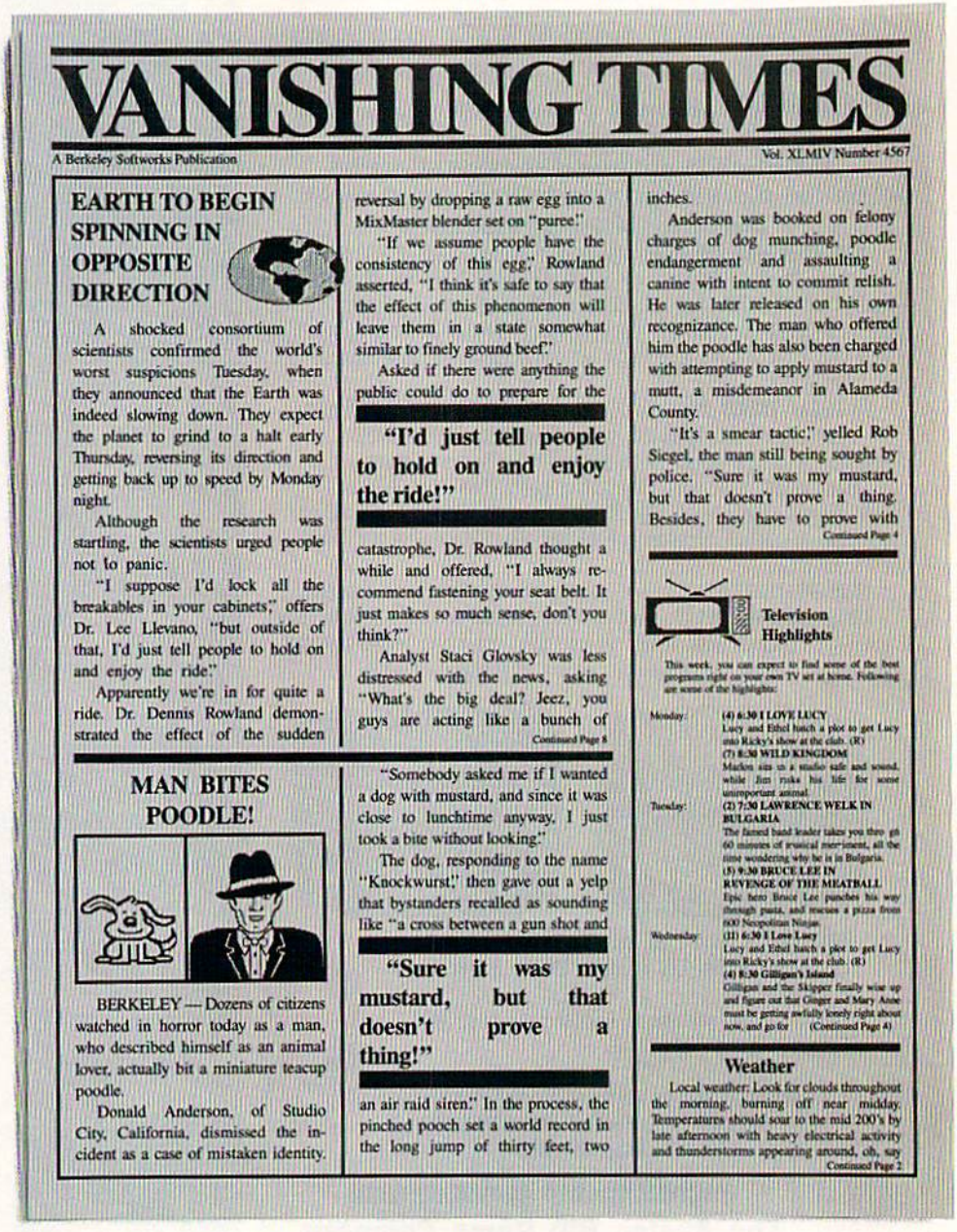
December 3

Basquing in The Beauty of Andorra

Weather

More people reading stuff like this!

Text can be printed in every font available through GEOS. These documents were printed on an Apple Laser Writer



VANISHING TIMES

A Berkeley Softworks Publication

Vol. XLMIV Number 4567

EARTH TO BEGIN SPINNING IN OPPOSITE DIRECTION

A shocked consortium of scientists confirmed the world's worst suspicions Tuesday, when they announced that the Earth was indeed slowing down. They expect the planet to grind to a halt early Thursday, reversing its direction and getting back up to speed by Monday night.

Although the research was startling, the scientists urged people not to panic.

"I suppose I'd lock all the breakables in your cabinets," offers Dr. Lee Llevano, "but outside of that, I'd just tell people to hold on and enjoy the ride."

Apparently we're in for quite a ride. Dr. Dennis Rowland demonstrated the effect of the sudden reversal by dropping a raw egg into a MixMaster blender set on "puree!"

"If we assume people have the consistency of this egg," Rowland asserted, "I think it's safe to say that the effect of this phenomenon will leave them in a state somewhat similar to finely ground beef."

Asked if there were anything the public could do to prepare for the catastrophe, Dr. Rowland thought a while and offered, "I always recommend fastening your seat belt. It just makes so much sense, don't you think?"

"I'd just tell people to hold on and enjoy the ride!"

Analyst Staci Glovsky was less distressed with the news, asking "What's the big deal? Jeez, you guys are acting like a bunch of

Continued Page 8

MAN BITES POODLE!

BERKELEY — Dozens of citizens watched in horror today as a man, who described himself as an animal lover, actually bit a miniature teacup poodle.

Donald Anderson, of Studio City, California, dismissed the incident as a case of mistaken identity. "Somebody asked me if I wanted a dog with mustard, and since it was close to lunchtime anyway, I just took a bite without looking."

The dog, responding to the name "Knockwurst," then gave out a yelp that bystanders recalled as sounding like "a cross between a gun shot and an air raid siren." In the process, the pinched pooch set a world record in the long jump of thirty feet, two inches.

"Sure it was my mustard, but that doesn't prove a thing!"

Anderson was booked on felony charges of dog munching, poodle endangerment and assaulting a canine with intent to commit relish. He was later released on his own recognizance. The man who offered him the poodle has also been charged with attempting to apply mustard to a mutt, a misdemeanor in Alameda County.

"It's a smear tactic!" yelled Rob Siegel, the man still being sought by police. "Sure it was my mustard, but that doesn't prove a thing. Besides, they have to prove with

Continued Page 4

Television Highlights

This week, you can expect to find some of the best programs right on your own TV set at home. Following are some of the highlights:

Monday:
(4) 6:30 I LOVE LUCY
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(7) 8:30 WILD KINGDOM
Marlon ties up a studio safe and wound, while Jim risks his life for some unimportant animal.

Tuesday:
(2) 7:30 LAWRENCE WELK IN BULGARIA
The famed band leader takes you thru 60 minutes of musical merriment, all the time wondering why he is in Bulgaria.
(5) 9:30 BRUCE LEE IN REVENGE OF THE MEATBALL
Epic hero Bruce Lee punches his way through pasta, and rescues a pizza from 600 Neopolitan Ninjas.

Wednesday:
(11) 6:30 I Love Lucy
Lucy and Ethel hatch a plot to get Lucy into Ricky's show at the club. (R)
(4) 8:30 Gilligan's Island
Gilligan and the Skipper finally wise up and figure out that Ginger and Mary Anne must be getting awfully lonely right about now, and go for

(Continued Page 4)

Weather

Local weather: Look for clouds throughout the morning, burning off near midday. Temperatures should soar to the mid 200's by late afternoon with heavy electrical activity and thunderstorms appearing around, oh, say

Continued Page 2

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T MADE
GE NEWS.

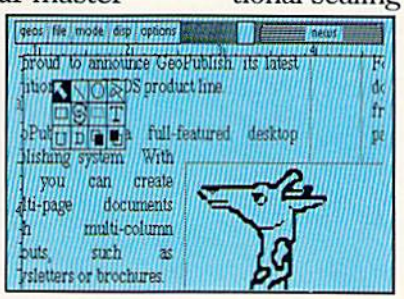
These days, the biggest story in the news is geoPublish. The page-making program for GEOS-equipped 64's and 128's that replaces lifeless layouts with page after page of powerful, punchy professionalism.

Freedom of the press.

Actually, geoPublish is very patriotic software. After all, what other application guarantees your freedom of self-expression? Well, geoPublish sure does. In fact, every piece it prints is dedicated to the preservation of your personality on paper.

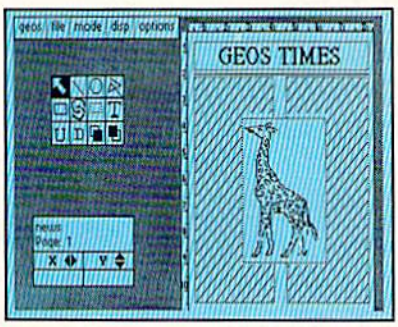
Which means that finally, your newsletters never need to look like anyone else's, ever again.

All you do is draw a bunch of columns for your master layout. They could be two, four or sixteen across the page. They could be short and squat, or long and skinny. It's your call. After that, you just "pour" your geoWrite document, text, graphics and all—into column after column. Page after page.



Everything fills up automatically until it fits firmly into your finely fashioned format.

Extras! Extras! Read all about 'em!



As every editor knows, even the best stories need punching up before they go to press. Which is why geoPublish features an array of artistic appliances designed to earn your pages a place in the history books.

You can resize text. Change fonts. Even insert or delete graphics anywhere on the page. You can lay text over graphics. Graphics over text. Or even wrap text *around* graphics.

And if your image doesn't fit, no problem. The proportional scaling tool can shrink or enlarge any art, be it your original or the stuff you find in Print Shop.™

Finally, those of you intent on making banner headlines should know that geoPublish doesn't wimp out when it comes to headlines. It screams them out, with genuine, newspaper-sized, 96 point megafonts.

Now, if you think that sounds terrific on paper, just wait until you see it printed out on a Laser-Writer.™

We've saved the best news for last.

And now, for the best part: you can create and save not one, but hundreds of layouts for later use.

And because it's part of the GEOS family, you can fully integrate text and graphics from all your other programs into every geoPublish piece you print.

So now that you know the latest scoop in software, why not subscribe to geoPublish yourself? Who knows? With stuff like this, you could be making front page news in no time.

To order call 1-800-443-0100 ext. 234

geoPublish $69.95

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$2.50 US/$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

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GEOPUBLISH



GEOS COMPATIBLE

Berkeley Softworks

The brightest minds are working at Berkeley.

SCIENTISTS A
STOP THE AGI

Time passes. Things get old. Let's face it, even Willie Mays retired. So there's no way your Commodore can compete with a newer machine, right?

Wrong.

The fact is that there's actually more power in your Commodore 64 or 128 than when you bought it. All you need is GEOS or GEOS 128 to find it.

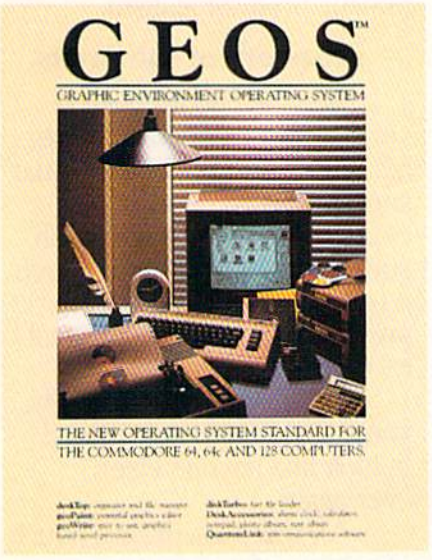
GEOS is the revolutionary operating system that works your hardware up to seven times harder than it's ever worked before. Loading. Processing. Accessing information. All at the mere touch of a mouse or joystick.

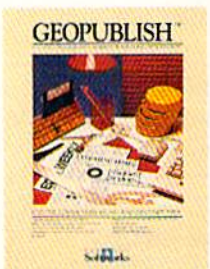
Time Warps Discovered

With GEOS, everything speeds up. Including you. Because the system is incredibly fast and ridiculously easy to learn: GEOS shows you options, you point at what you want and click your mouse.

End of lesson.

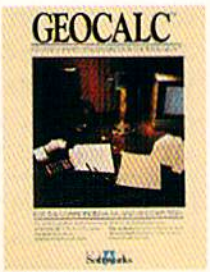
Now, once you know that, you know how every other GEOS application works, too. Like geoWrite, which lets you punch up paragraphs with five different fonts. Or geoPaint, which dresses up diagrams with an arsenal of artistic appliances. Both are built right into the GEOS disk. And when you put them together with geoWrite Workshop's LaserWriter compatibility, every new GEOS document comes out looking like an old master.





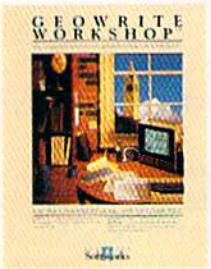
GEOPUBLISH

NEW The desktop publishing program that lets you design formats, column widths and page layouts. Accepts any geoWrite text and converts non-GEOS text. Wraps text around graphics automatically. Headline fonts up to 192 pt. Complete graphics toolbox.



GEOCALC

The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections.



GEOWRITE WORKSHOP

NEW All the GEOS-compatible tools a writer needs, including new geoWrite 2.1 with headers, footers, margins to 8" and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability.



GEOFILE

The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.



GEOPROGRAMMER

NEW A programmer's dream for writing your own programs or supercharging someone else's. With easy yet mind-boggling features like graphics that insert by simply cutting and pasting directly from geoPaint. Comes with geoAssembler, geoLink and geoDebugger for modular assembly and testing.



GEOSPELL

NEW Over 28,000 word geoDictionary for checking spelling. Lets you add words, switch dictionaries, edit, and automatically search and replace. Customize and create fonts up to 48 pt. with geoFont.

Circle 138 on Reader Service card.

AT BERKELEY
NG PROCESS!

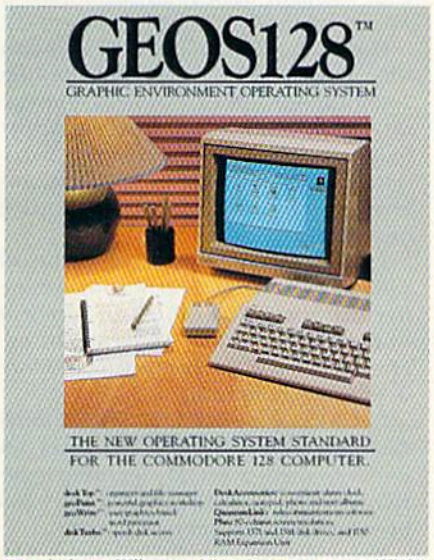
Avoid Old Age Forever!

But how does all this affect your Commodore's future? Well, it means you don't ever have to worry about it becoming obsolete, because there are all kinds of GEOS applications for almost every purpose.

You can finally get organized with geoFile, the database that searches, finds and lists almost anything that you want to search, find and list. You can manipulate mathematics or figure out financial formulas with geoCalc. If writing's your style, geoWrite Workshop can help you hammer out any kind of report. And geoPublish is the desktop publishing program that is still making headlines throughout the entire industry.

Of course, that's merely a sampling of what the GEOS environment has to offer. Because even as you read this, legions of our engineers are hard at work, developing even more GEOS applications for even more uses.

All of which means you get a whole lot more out of your Commodore than you ever bargained for. And while that may not actually keep your Commodore from getting older, that's certainly something it could live with for a long, long time.



128 version features 128K memory, full 80 column screen, supports 1571/1581 disk drives. 1750 RAM expansion and runs at a full 2 MHz for lightning speed.

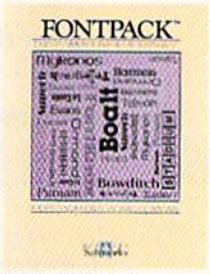
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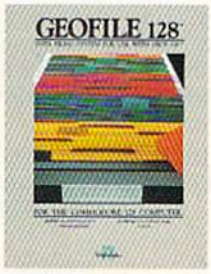
DESKPACK

NEW Six GEOS-compatible applications: Graphics Grabber for importing art from Print Shop,™ Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer. Now includes geoDex, the GEOS-compatible directory that allows you to create lists by name, address, phone number, and geoMerge to customize form letters and invitations. In either 40 or 80 col. mode.



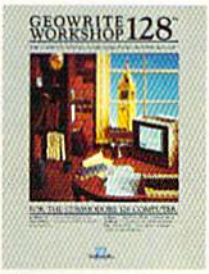
FONTPACK 2

NEW A collection of even more fonts for use with GEOS applications, in various shapes and sizes for more expressive and creative documents. Includes font editor. In either 40 or 80 column mode.



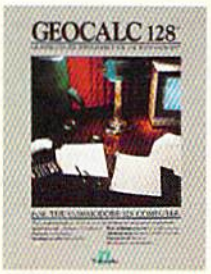
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NEW The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there. 128 version features full 80 column screen. Due soon!



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MAIL RUN

Commodore kudos and complaints; mail order maligned and vindicated; and the keyboard controversy continues.

DOING DVORAK

Greetings from The New Stelex Sector, my Punter C-64 BBS up here in Toronto. In response to Carolyn Butler's letter praising the Dvorak keyboard in last October's issue, I'd like to report that I'm planning to add a Dvorak command to my BBS. As I envision it, when a user enters "dvorak", the BBS will immediately begin to echo back in ANSI Dvorak. This way, callers who are used to Dvorak typing can log in from a Qwerty keyboard (say, at a friend's house) and still use their favorite layout.

—ROMAN KOWALCZUK
THE NEW STELEX SECTOR
POSTAL STATION A
TORONTO, ONTARIO
CANADA, M5W 1P6

As an additional note on Dvorak, here at the RUN *editorial offices we've received a catalog of keyboard accessories manufactured by the Hooleon Corp., PO Box 201, Dept. CT, Cornville, AZ 86325; 602-634-7515. Their products include Dvorak conversion keytops.*

—EDITORS

There is little doubt in my mind that there could be a more efficient keyboard than the Qwerty, considered the standard for nearly all typewriter and computer use.

However, tens of millions of people have learned to type on the Qwerty, and I think it would be futile to attempt to re-educate the reflexes that automatically react when one thinks of a particular letter or number. It's my belief that the vast majority of typists would never want to change to the Dvorak keyboard.

—DON ROSE
YUCCA VALLEY, CA

COMMODORE: FRIEND OR FOE?

I've always been a Commodore believer. I started with a VIC-20 and even began saving for a Plus/4 and C-16 before it became evident that they were dying breeds. Then I semi-retired my VIC and bought a C-64 because of its large software base. Along came the C-128 and Amiga 1000. I made a financial decision to purchase the 128 and fell in love with Basic 7.0, the fast disk access and C-64 compatibility. The short life of the Amiga 1000 made me hesitant about buying a 500 or 2000. Being the Commodore fanatic I am, I bought a PC10-2 because the MS-DOS compatibility is a necessity when you're in college as I am. However, when I called some of *RUN*'s advertisers to ask about the machine, I was told that it had been discontinued!

I feel that I'm one of the lucky ones in that I've (so far) picked the machines that Commodore has also decided to support. But, if Commodore can't stick with a machine for a while, even if it means getting stuck behind the competition, I'll have to start worshipping another manufacturer.

—WAYNE LOWE
BRYAN, TX

HELP!

I recently updated my Commodore DPS 1101 printer to a Citizen Premier 35. Although the Premier 35 is touted as Diablo 630 compatible, when I use the Diablo 630 proportional spacing printer driver with WordPro 64/S, the output is a disaster. Calls to the software developer—ProLine in Canada—were unproductive. Do any *RUN* readers have a printer driver for this setup to allow for proportional printing, justification, flush right, centering, and so forth?

—RICHARD L. GEYSER
479 SOUTH ROCKY RIVER DRIVE
BEREA, OH 44017

We've included Mr. Geyser's complete address in case any reader has the printer driver he's looking for and is willing to share it with him.

—EDITORS

THANKS FOR THE MEMORIES

RUNning Ruminations, November 1987, was a nostalgic treat! With so many new developments in computer technology, it's refreshing to occasionally reflect on the early days of personal computing. The editorial served as a pleasant reminder to those of us who were there, and, I'm sure, a source of information to those who were not.

—BUTCH SORGS
CINCINNATI, OH

Your editorial in the November 1987 issue brought back fond memories of what you so aptly called the "glory days."

However, you neglected to mention what I consider to be one of the best "publications" for PET owners—the cassette magazine, *Cursor*. Although it only lasted 30 issues, each month a cassette containing four to six programs arrived wrapped in a one- to four-page newsletter.

I still have an 8K colored keyboard with built-in cassette and nine-inch monitor that uses Basic 1.0. It's in excellent working order! Will my C-64 still be operating in 1994: probably! Commodore does make good iron!

Of all machine manufacturers, I think Commodore has the best products per dollar in the market. My learning experience alone over the past ten years has been worth every penny I've spent.

Keep up the excellent articles you have in your magazine.

—DOUG JEWELL
COQUITLAM, B.C., CANADA

SHINING SOFTWARE

Vizawrite and Vizastar constitute by far the best word processing/database system for the C-128 I've seen. I read constantly about new systems of this type and the improvements they offer, but without exception I find the "improvements" are already part of Vizawrite/Vizastar.

—J.H. GARNER
FPO NEW YORK

We reviewed these programs in the "Big Software for Small Business" article in the October ►

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Circle 152 on Reader Service card.

1986 issue of RUN. *Our reviewer, Louis Wallace (who has since become* RUN*'s technical manager), also was enthusiastic about them. The package is now distributed by Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204; 303-825-4144.*

—EDITORS

MORE ON MAIL ORDER

I read with understanding Anita Hales' complaints about being charged unfairly for postage by mail order companies. We in the military have had trouble for years. Our mail is sent to New York or San Francisco, so no special packaging or service is required. Yet we're charged double for postage. This problem is especially aggravating because, while our Navy exchange sells a great deal of hardware, it fails to back it up with accessories and software. Our only recourse is mail order.

The House of Representatives was supposed to address this issue, but whether they have I don't know. If they have, the companies are ignoring it. I wish mail order houses would give us Americans who don't live on the mainland a break. We give them a lot of business.

—FREDERICK O. SMITH
FPO NEW YORK

Tussey Computer Products deserves a pat on the head for good service, both in sending software and hardware (a PC-10) and in providing telephone advice (when I couldn't get the PC-10 to work).

—PAT HOLLIN
APO NEW YORK

I have a contact for readers of *RUN*, either foreigners or Americans not living in the contiguous 48 states, who are having trouble ordering software. Tom Faulkner, an entrepreneur in Durham, North Carolina, is happy to sell software to such folks through his company, Faulkner Supply. You can pay by MasterCard or Visa, an irrevocable letter of credit or a check drawn on a U.S. bank.

I found Faulkner on CompuServe and spoke to him on the phone to make sure he sounds trustworthy. You can write him at 213 West Main St., Durham, NC 27701, or call him at 919-683-2078. If you're within the contiguous 48 states, you can also reach him on his BBS at 919-383-4905.

—CHRISTINE ADAMEC
AUTHOR, "MAIL ORDER MAXIMS"
RUN, MAY 1987

A CALL TO READERS

This page is your stage, so stand up and say a few words. Extend praise, air grievances or offer advice and information.

Send your letters to Mail RUN, 80 Elm St., Peterborough, NH 03458. Each letter must include the writer's name and complete address. RUN *reserves the right to edit letters for style, clarity and space.* ■



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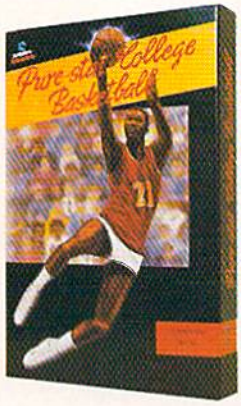
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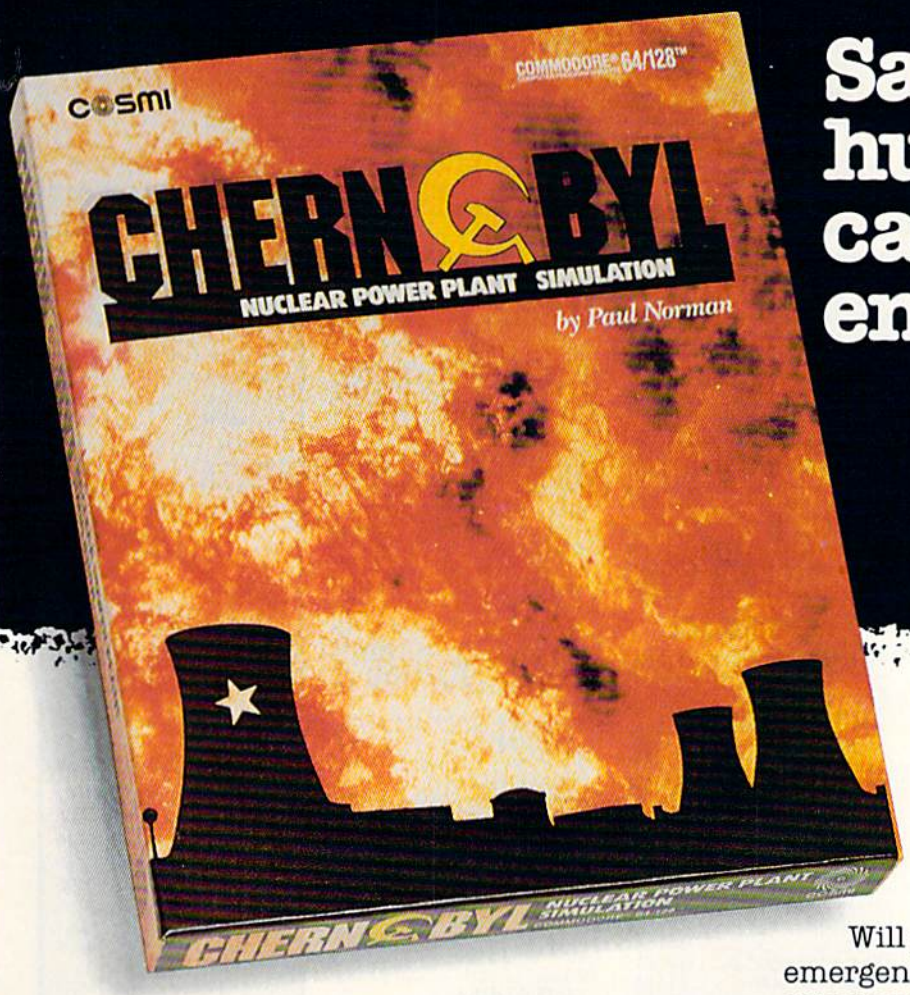
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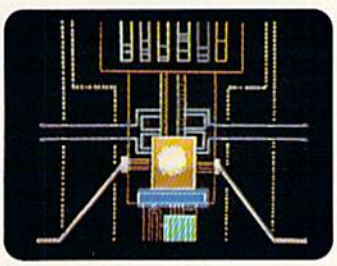
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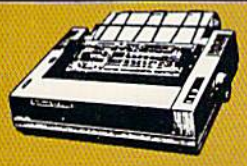
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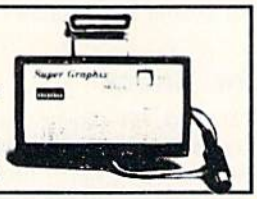
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News and New Products

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Compiled by HAROLD R. BJORNSEN

Explode!

MONTGOMERY, IL—Explode! Version 3, a cartridge-based software utility package for the C-64 and C-128, features a fast-loader, captures hi-res graphics and text screens and saves them while the program is running, then prints them out in true gray scale.

The cartridge also has a disk operating system with one-, two- and three-keystroke commands and a built-in sequential and program-file reader that lets you read the contents of a disk without the need of a word processor. In addition, it restores Basic programs after a full reset or after a New command has been executed. Explode! V3 is available for $29.95 from The Soft Group, PO Box 111, Montgomery, IL 60538.

Check Reader Service number 400.

Sucker for Soccer

NORTHBROOK, IL—Feinting, trapping, kicking and juggling are just some of the skills you must master to become a player on a SportTime Soccer League team in Superstar Soccer, the new sports simulation for one or two players from Mindscape (3444 Dundee Rd., Northbrook, IL 60062). If you haven't the stamina, you can coach the team or be the team owner and general manager. Existing players age with each new season, and it's up to you as owner to decide who to trade and recruit as you prepare your team for a championship season. It's available for the C-64 for $34.95.

Check Reader Service number 408.

Happy Learning

VENICE, CA—Shannon Software (11926 Santa Monica Blvd., Suite 117, Los Angeles, CA 90025) has released two educational programs on a single disk for children of ages three through seven. It's available for the C-64 for $29.95.

Happy Spell teaches spelling by associating a graphics image with a word. The child is shown the image with a series of blanks for filling in each letter of the word.

Happy Math gives instruction in addition through several degrees of ability, selected by the student or instructor, from 1 + 1 to 99 + 99.

Check Reader Service number 407.

Future Shock

SAN MATEO, CA—Force 7, an action strategy game for the C-64, launches you into a future where Earth survivors are being held hostage on the planet Karis. As commander of the Special Forces unit sent to rescue your colleagues from a strange race of deadly aliens, you explore the six-level Energy Production Plant where the hostages are imprisoned. Here, you are faced with the strategic challenge to send the right crew member to the planet's surface at the right time and then back to Earth without sacrificing any lives to the aliens. Force 7 is available for $19.95 from Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404.

Check Reader Service number 403.

Chip Fix

SPRING VALLEY, NY—The Commodore Diagnostician, a laminated chart of information to help locate and fix faulty chips in your C-64 and peripherals, is now available from Kasara Microsystems (33 Murray Hill Drive, Spring Valley, NY 10977). The cure rate of repair is claimed by the company to be over 95 percent. The chart has over 80 variations that can locate faulty chips, using the symptom/solution method. A "hint" section has suggestions of what to look for if a problem is not in a chip, and another section shows you where to buy replacement chips. The Commodore Diagnostician is available for $6.95.

Check Reader Service number 404.

Search for ALF

LAGRANGE, IL—Free Spirit Software (538 S. Edgewood, LaGrange, IL 60525) has released the C-64 version of Galactic Frontier, a space exploration game wherein you, as the explorer, search for life forms among the 200 billion stars that make up our galaxy. All data about each star is correct by current scientific knowledge and theory.

Star data includes spectral class, luminosity, spectroscopic analysis, temperature and age. Planet data includes chemical analysis, length of year and day, distance from nearest star, temperature, atmospheric pressure, number of moons and lifeforms. You must consider these and other factors in your search, which will cost you $29.95.

Check Reader Service number 401.

For Hacks and Hack-Nots

STAMFORD, CT—Waldenbooks, a national bookstore chain, recently introduced its first computer software store, Waldensoftware, in Poughkeepsie, New York. Other stores are scheduled to open in Manassas, Virginia; Orlando, Florida; Framingham, Massachusetts and Johnson City, New York.

"Waldensoftware enters the computer software market with the advantage of having learned from our competitors' strengths and weaknesses," says Glenn Ochsenreiter, Director of Waldensoftware. "We will be providing services and products that are currently unavailable in other software stores."

Customer service features will include computer accessories, product information and demonstrations and in-store computers available for customers who want to try out software before buying. The stores will be located in malls and high-traffic locations throughout the country.

Communicate

UNION LAKE, MI—Two new telecommunications programs for the C-64 have been released by Made In America (9069 Sussex, Union Lake, MI 48085).

BananaTerm! is a terminal program designed for remote communication with computer bulletin boards and computer information services such as CompuServe. In addition to the stan-

dard features of a terminal program, it boasts a phone-book system, support for up to 600 baud on standard 300-baud modems and custom character graphics. $24.95.

System 64!, a bulletin board system, creates an environment to which other computer users can connect with their modems and terminal software and exchange messages and files. It includes the ALEX programming language for messages, a customizable environment and support for up to 600 baud on 300-baud modems. $49.95.

Check Reader Service number 402.

Membership in CALC

RINDGE, NH—Margaret Morabito, former associate editor at *RUN* and promoter of the educational uses of Commodore computers, has announced the creation of a national learning resource center for parents, students and teachers. The center, called CALC (Computer-Assisted Learning Center), will act as a clearinghouse of information on using your Commodore computer for education at home and in school.

CALC will publish a monthly newsletter and distribute public domain educational programs, donated by educators around the country, for the C-64, C-128 and Amiga. The newsletter also contains readers' letters, comments and questions on using Commodore computers for teaching and learning.

A year's membership in CALC can be yours for $15. It includes the newsletter and access to low-cost public domain education programs. To join, send a check or money order made payable to Margaret Morabito, CALC, PO Box 132, Rindge, NH 03461.

Tax Program Time

ANYTOWN—Flashback: 11:55 pm, April 15, 1987. If you were one of those hoping to get your tax returns postmarked by midnight, the following is for you. Let one of these commercially available tax programs give you a head start this year:

Tax Master
Master Software
6 Hillery Court
Randallstown, MD 21133
301-922-2962
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Includes a coupon for a discount on the 1988 version.

Tax Command Professional
Practical Programs
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Deerfield, IL 60015
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Yearly updates, half price.

The Tax Advantage
Double Eagle Software
2210 Wilshire Blvd., Suite 875
Santa Monica, CA 90403
213-459-9748
C-64/$59.95
Yearly updates, $35.95.

Soldier Simulator

BALTIMORE—Airborne Ranger has you controlling the soldier instead of the aircraft. Each of the game's 12 missions, which take place in three different regions of the world, requires tactical thinking and lightning reflexes for success. Your soldier is initially armed with an M-16 assault rifle, bayonet and grenades, and you can make him walk, run or crawl in eight directions across a 3-D terrain to outmaneuver the enemy, pick up hidden caches of weapons and first-aid supplies and proceed to mission objectives. The enemy is armed with a vast array of offensive and defensive weapons. It's available for the C-64 for $34.95 from MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030.



In MicroProse's Airborne Ranger, you control your soldier's mission in one of three regions of the world.

Check Reader Service number 406.

Is Something Burning?

WILMINGTON, CA—In Chernobyl, a nuclear power plant simulation game for the C-64, you'll operate a nuclear power plant under crisis conditions. You'll learn the principles of atomic fission as related to the generation of electrical power while trying to master the intricacies of the power plant control room. It's available for $24.95 from Cosmi, 415 North Figueroa, Wilmington, CA 90744.

Check Reader Service number 409.

Inner Sanctum is Out

MOUNTAIN VIEW, CA—Commodore 64 users can now wander through the land of Varn in a quest for the mysterious Inner Sanctum, in the fantasy role-playing game, Book One: Secret of the Inner Sanctum, from Activision (PO Box 7286, Mountain View, CA 94039).

You and up to five of your friends must guide a party of six adventurers through the three-dimensional Land of Varn, crossing oceans, climbing mountains and searching through castles and dungeons in search of the Inner Sanctum. During the quest, there are 50 areas to explore, with 13,000 locations, any of which may contain the winning clue. It's available for $39.95.

Check Reader Service number 405. ■

SOFTWARE GALLERY

Interactive fiction, graphics, education, windows, gambling: sounds like an interesting month for you and your valentine!

Compiled by BETH S. JALA

REBEL CHARGE AT CHICKAMAUGA ..... A

You Command the Action In This Bloody Civil War Conflict

On the morning of September 19, 1863, Union and Confederate forces met in the woods and fields that bordered a creek named for the Cherokee word meaning "river of death." It was supposed to be another in a string of victories for the North. The Federal army under Major General Rosecrans was marching to Chattanooga, but General Bragg's Tennessee army was more than ready. For the first time in a long while, the Confederates had the Union forces outnumbered.

The two days at Chickamauga Creek were bloody and confusing. The generals made brilliant decisions and disastrous blunders. When it was over, the South had won what was probably their last major offensive thrust.

Rebel Charge at Chickamauga is the third in a series of Civil War strategy games from SSI, written by the same authors of Battle of Antietam and Gettysburg: The Turning Point. Antietam received much acclaim for being one of SSI's best war strategy games. Gettysburg was even better, and Rebel Charge at Chickamauga is the best to date.

In Rebel Charge at Chickamauga, you control either the Union or the Confederate forces. You can also play against another human opponent or let the computer play both sides. There are three levels of play: a basic game that has simplified rules, an intermediate and an advanced game. Within each level, you can change the difficulty, ammunition and reinforcements; command control requirements; set time limits; use either hidden or non-hidden units; and use icons or symbols to represent units.

Once you have set all the options, you control the individual units with the keyboard. You can move units, set targets, build levels of fortification, transfer leaders between units and even split units into two separate forces or regroup them. You can perform reconnaissance of enemy units, change the screen from tactical to strategic views or undo a move if you think you have made a mistake.

When you've finished moving all your units and have decided who will attack, melee, bombard, and so on, the computer takes over. It calculates all the odds and resolves all conflicts. The game is divided into turns representing two hours of real time. Each turn has 12 to 14 stages, including recover/rally phases, operations phases, combat phases, and so forth. The combat phase is divided into eight stages—all computer controlled—with artillery, defensive fire, offensive fire, retreat and advance and melee stages.

There are dozens of other options, factors, settings and alternatives covered in the comprehensive 25-page manual. If you've never played a strategy simulation, then expect to spend a number of hours learning the system even in the basic game. If you're a veteran war gamer, then Rebel Charge has more than enough to satisfy you.

According to the package, once you have mastered the playing system, the average game will probably take you ten to 15 hours—a conservative estimate!

One of the nicest features of Rebel Charge is the Save Game option—at the end of each phase, you're given the opportunity to save. The menu lets you perform all disk operations: format a blank disk, read the directory, save and delete games or load saved games.

Rebel Charge at Chickamauga may be the best strategic war simulation game yet. SSI seems to have learned from all their other games, incorporating good features and eliminating annoying ones.

There are very few things to criticize in Rebel Charge at Chickamauga and a great deal to recommend. It's all that a computer strategy game should be. In a relatively short amount of time, you're playing the game rather than trudging through the manual. The system of play and the computer quickly become invisible and you are immersed in the battle, wondering where the enemy is, wondering if your front line can hold out long enough for reinforcements to arrive, cheering units when they rout the foe and cursing units when they succumb to an assault.

Strategy games are not for the joystick jockies who have lightning-fast reflexes. They're games that require hours of ►

REPORT CARD

A Superb!
An exceptional program that outshines all others.

B Good.
One of the better programs available in its category. A worthy addition to your software library.

C Average.
Lives up to its billing. No major hassles, headaches or disappointments here.

D Poor.
This program has some problems. There are better on the market.

E Failure.
Many problems; should be deep-sixed!

The best hockey and soccer for all of you.



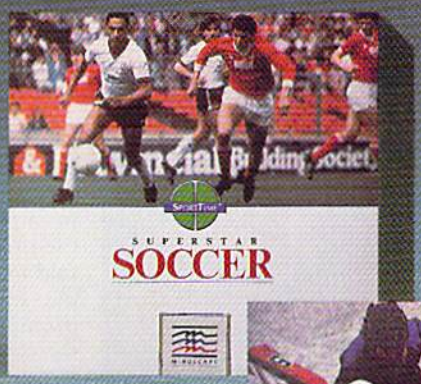
The Star.

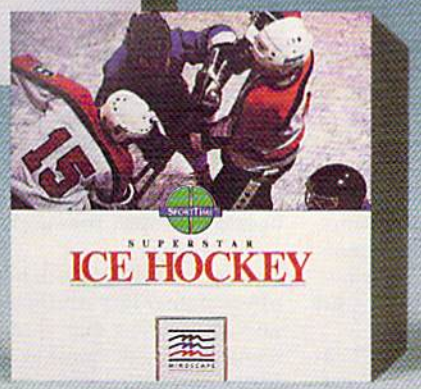


The Coach.



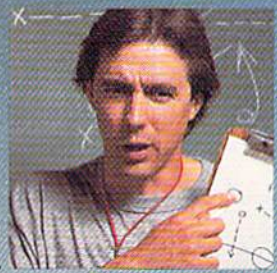
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careful consideration, deliberation and very little fast action. Civil War buffs will enjoy Rebel Charge at Chickamauga because of its historical accuracy. Computer war gamers will enjoy Rebel Charge at Chickamauga because it's probably the best strategy simulation game of this genre. *(Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94043. C-64/$49.95.)*

—GUY WRIGHT
AMIGAWORLD STAFF

ALTERNATE REALITY: THE DUNGEON ..... A–

Question: Stay in an Alternate Reality, or Attempt Vengeance on Earth?

Beneath every large city is a maze. In the world of everyday, mundane reality, these are service tunnels, basements and transitways; but in an Alternate Reality, beneath THE city, you'll find The Dungeon!

In this second installment of Data-Soft's epic maze adventure series, you can continue with a character from Alternate Reality: The City, or start anew. Either way, your long-term goal is to make it back to Earth or track down and punish some alien kidnappers. One warning: long term means just that, because at least five additional Alternate Reality scenarios are in the works.

Your immediate concern is to avoid becoming ghoul food! The first of four dungeon levels is a passageway and room maze packed with thieves, demons and so on. Many of the items you find are dripping with noxious curses. If some monster or disease doesn't put you under, there's always a chance you'll annoy an otherwise friendly or neutral personage, find yourself on the wrong side of a guild feud, or even get lost and perish from thirst or starvation. But, to balance its hazards, the labyrinth supplies restorative fountains, a non-lying (!) oracle, and other services, from smithing and weapons enchantment to potion making and banking.

A new character begins with attributes and equipment roughly amounting to "warm meat" status. Still, you do get to start in a well-lit area with a 3-D perspective of nearby walls and doors.

Learning the ropes, honing your skills, careful mapping and luck all impact your prospects for success. During encounters, common sense helps too. Sometimes selecting the Transact option, rather than Attack or Run, yields valuable information, a lucrative quest or even a chance for skill-enhancing membership in a guild. Almost every action also affects your "moral alignment," which, in turn, influences relations with various dungeon personages.



What will you decide to do in The Dungeon's Potion Brewery?

Each orientation (good, neutral or evil) offers momentary advantages; so, there's no requirement that you wrap up the scenario's major quest as a "good guy." You've succeeded if you make it through The Dungeon with a character who's tougher, more skilled and better prepared for future adventuring.

Despite an excellent manual, mapping grid and other aids, getting started in a game designed to challenge developed City characters is very rough for beginners. Explicit prompts and status displays are of great help and, except for the extra disk flipping necessitated by reliance on a single drive, mechanics remain unobtrusive. Featuring effective graphics, good sound and a spectacular introduction, The Dungeon quickly draws you into one of adventure gaming's more elaborate, most entertaining alternate realities. *(DataSoft; distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$39.95.)*

—JEFF HURLBURT
HOUSTON, TX

POWER C ..... B+

Try Your Computer Tongue at a New Language

If you've been thinking about experimenting with something besides Basic and machine language on your Commodore computer, perhaps you should try C. Spinnaker's Power C, in its Better Working series, provides a package that comes with disks, happily unprotected, for both the C-64 and C-128.

The software is easy to use. You first load a special program—a shell—that provides you with a mini operating system tailored to the C development environment.

As with most micro-based language compilers, program development can be tedious. In order to compile a program, you first load the compiler, which prompts you to insert the work disk with the program source on it. Next, you're told to insert the system disk again for the translation phase. Then, you're prompted for the work disk again so the object file can be created.

You're not through yet, however! In order to run the program, you must go through a link phase so that C library functions can be combined with your object files to create an executable program module. This requires you to load the linker from the system disk, then load your program's object files from the work disk, and finally load the library routines from the library disk!

Fortunately, you can minimize the swapping by backing up the system disk and using the backup as a combination system/work disk. If you're lucky enough to have two disk drives, you might not have to swap disks at all.

For C-128 owners, the package is smart enough to let you use some of the extra available memory as a pair of small RAM disks. You can copy your program, along with any of the standard C library source files that it needs, into RAM and edit or compile from there. This minimizes swapping and allows for instantaneous file access for all 128 users with single disk drives. Of course, if you use this feature you must remember to copy all your work to a real floppy before turning the system off, because the RAM disks disappear when the electrons stop flowing.

Power C contains a full screen editor for source-code creation and maintenance. In fact, there are actually two editors: the longer version checks the source for language syntax errors.

Since the language is designed to be portable, an important part of any C development environment is the runtime library, which provides functions for input/output, string handling and math. Power C has very good runtime support, including a special function that lets you call machine language subroutines from within your C programs.

The manual is well written, despite the ►

JUMP OUT OF THE PAGES...
And into the heart-pounding simulation.



RED STORM RISING is one of the most dramatic and detailed stories of modern warfare ever written. Read by millions, its gripping realism has become the hallmark of author Tom Clancy and his technical collaborator Larry Bond.

Their counterpart in entertainment software, MicroProse founder Sid Meier, is the world's leading creator, designer and programmer of simulation software. His award-winning titles, including F-15 STRIKE EAGLE and SILENT SERVICE, have sold more than two million copies and are renowned for their authenticity and originality.

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fact that it's cheaply printed on thin paper. It's logically organized, and obvious pains have been taken to describe not only which features of the language aren't implemented (bit fields, for example), but also non-evident ways of writing efficient programs. The documentation is by no means a C tutorial; there isn't a complete sample program anywhere in the manual, although there are a few on the system disk. If you want to learn C, the recommended reading list in the back of the manual is excellent.

Power C is an affordable way to get exposure to a powerful programming language that is fast gaining popularity on computers of all sizes. Check it out. Who knows? You may never go back to writing Basic programs again. *(Spinnaker Software Corp., One Kendall Square, Cambridge, MA 02139. C-64, C-128/ $39.95.)*

—MICHAEL BROUSSARD
HERNDON, VA

THE ADVANCED OCP ART STUDIO ..... B+

A Graphics Program With a Flavor From Abroad

It does seem that just about everything that can be done in a drawing program for the C-64 has been done. So why review another one? In this case, it's a good package with a foreign flair to it: The Advanced OCP Art Studio is a product of British ingenuity.

The Art Studio has followed in the footsteps of icon-driven programs. It's relatively easy to use, accommodates keyboard, joystick, mouse or KoalaPad, fully supports both disk and cassette (which is still in use, mostly outside the U.S.), and operates in Multicolour (English spelling!) mode.

For a patient artist, Art Studio offers all the tools necessary to create some pretty sophisticated images. But, I really think you have to try a program like this in order to evaluate its ease of operation. Personally, I found it no more difficult than my favorite programs, and more user-friendly than many of those I've reviewed. The selection of "pens and brushes," along with an impressive variety of patterns, lets you readily add subtle touches.

The Advanced OCP Art Studio includes the ability to add text to your pictures. It comes with a futuristic-looking computer font. You can also copy the standard CBM character set into memory for use in your pictures, although it tends to look somewhat ragged, particularly when enlarged.

Other features of the program are basically standard. Windows can be defined and manipulated. They can be inverted, pasted into another position, enlarged, squashed, reduced, stretched, flipped and rotated. Geometric shapes are a snap—lines, circles, boxes and even triangles are simple to create.

Because of the way the computer stores color information, it's sometimes difficult to keep all the colors the way you want them in a graphics program.



See what you can create with The Advanced OCP Art Studio.

While Art Studio can't change the way the computer works, it does let you select color priority and exclusion lists. That's helpful when you want to draw behind existing images.

A variety of printers are supported, with the program coming initially set up for the MPS-801. The package allows for sideways printing of full-screen images.

The manual is complete without being overbearing. The disk is protected in a very simple way: It requires that you input a particular word from the documentation before it can function. Since computer hackers are notorious for losing or never obtaining the documentation, it seems a reasonable way to offer some protection without knocking the head in your disk drive out of alignment.

While the manual is in English, a glossary translates key words into German and French. That's a nice touch for an international program.

If you're in the market for a graphics program or like to collect them, The Advanced OCP Art Studio receives my endorsement. The only reason I rated it less than excellent is because it joins so many already popular and versatile programs here in the states. *(Firebird, PO Box 49, Ramsey, NJ 07446. C-64/$39.95.)*

—JIM GRUBBS
SPRINGFIELD, IL

THE ACCELERATED READER ..... B

A Reading Teacher's Testing Aid For All the Grades

Most English teachers have some interesting book report stories. A child who turned in a summary of an assigned biography of Franklin Roosevelt furnished my own personal favorite. What book the student read, if any, was brought into question by his describing *Teddy* Roosevelt, not Franklin, as being confined to a wheelchair throughout his life.

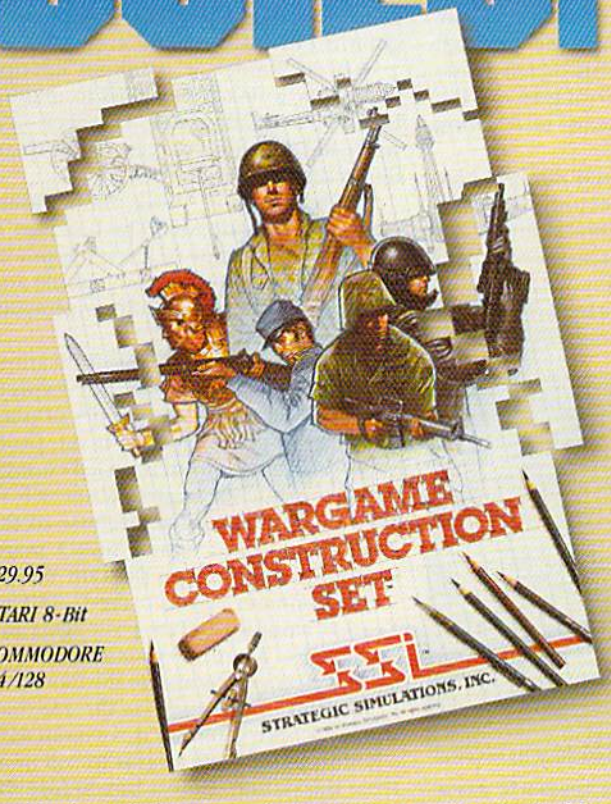
Such odd compositions may be a thing of the past. The Accelerated Reader offers elementary and secondary schools the use of computers as an alternative to traditional book reports.

The software package contains six disks. Two are a record-keeping program disk and its backup. The other four disks contain tests for 150 books. Each book falls under one of three categories: the Basic Reading Series (100 books with reading levels ranging from 3.1 through 8.1), Children's Classics (25 books with reading levels of 7.2 through 10.4) and the Bridge to Adult Reading (25 books with reading levels of 7.3 through 12.3). The Basic Reading Series asks ten multiple-choice questions on each work, while the other two categories have 20 questions.

Each of the 150 books is assigned a maximum number of "reading points," which are calculated by adding ten to the book's reading level, multiplying the sum by the number of words in the text and dividing that product by 100,000. After applying this formula, Bambi, for example, receives a maximum reading point total of 7, while Anna Karenina receives 73.

If a student scores at least 60% on a ten-question exam or 70% on a twenty-question test, he or she earns actual reading points based on the book's maximum point total multiplied by the percentage of correct answers. However, the pupil doesn't receive any points if the exam's minimum percentage is not reached. Also, a student who fails is not allowed a retest on that book unless the ►

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If you get hit, you'll have to decide whether to bail out or stick it out and do your job — reducing Ploesti's total oil production below what was accomplished historically. If you succeed, you'll be told how much you would have shortened the war in Europe!

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Circle 25 on Reader Service card.

teacher first modifies the Program Disk.

To use The Accelerated Reader, an educator assigns a unique computer password to each class member. The students then read unabridged versions of titles chosen from the program's reading list.

After completing a book, a child takes the computer test. The program disk records the results and updates the pupil's records.

The Accelerated Reader can generate printed reports for individual students and for a class as a whole. It can also produce additional tests for books that aren't on its reading list. The documentation explains in great detail how to estimate any text's reading level and word total. The number of maximum reading points can be calculated with this data.

The instruction manual recommends the use of material rewards, perhaps valued at five or ten cents per actual reading point, to motivate students' efforts. It suggests that schools establish a "store" where earned reading points are traded for popular merchandise.

The software does have some potential problems. One involves the test questions. They occasionally ask about some of the finer details of a story. As a result, the more time that passes after a book has been read, the more likely it is that some details will be forgotten and fewer actual reading points will be earned. Because of this, students should have ample access to the program.

On the other hand, pupils shouldn't have unlimited access to The Accelerated Reader. This could result in cheating, which seems to be a major concern of the software's developers. To combat it, they instituted the password system and programmed a change in the order of possible responses each time a question is asked.

But children will still be tempted to cheat, especially considering the material rewards they may gain. Therefore, strict control must always be maintained over the software if answer-sharing and even disk-copying are to be prevented.

Another, more basic difficulty is the possible misuse of the program, which could actually impede the learning of literature.

The Accelerated Reader is a testing, not a teaching, program. All of its questions are literal; none are interpretative or evaluative. Students who don't get a passing score don't learn the correct responses to the questions they missed, nor even which of the questions they answered properly.

However, understanding literature is more than just memorizing facts to pass such tests. Instead, its essence is the appreciation of the human message that the author conveys in his or her work. It would be seriously wrong to use the program as the sole means of teaching literature.

But the software, if used wisely in conjunction with other techniques, does have significant educational merit. For one thing, its 150 books are all excellent additions to any reading list. Also, the program can save teachers that most valuable of educational resources—



The options given in the teacher's menu of Readup's Accelerated Reader.

time. And the support provided by a user-friendly operating system and clear instructions helps to make a very attractive software package.

Readup, Inc. also offers a generous warranty that encourages schools to try the program. If students are not reading more and better books within one year of purchase, the company will issue a refund. This is still another reason for teachers to expose their classes to the benefits of The Accelerated Reader. *(Readup, Inc., PO Box 95, Port Edwards, WI 54469. C-64/$300.)*

—MARILOU LATOCHA
OAK PARK, IL

EXPRESS RAIDER ..... B

Look What They've Done to Our Arcade Game

While other companies strive to break new ground in entertainment software, Data East stands out from the crowd by sticking to a tried-and-true formula for enjoyable programs.

Like other Data East favorites, Express Raider is based on an arcade game. And like its predecessors, the program is entertaining and enjoyable.

Express Raider is a "shoot-'em-up" that's easy to learn but hard to master. Unlike an arcade game, however, you won't have to spend a bag full of quarters trying to conquer it.

That's the good thing about home versions of arcade hits. The bad part is that some programs lack staying power because game play is usually simple and you can play forever without wiping out your bank account.

If my experience is any indication, that won't be a problem with Express Raider. After 10–12 total hours of playing time, I haven't tired of it yet, probably because the action is varied enough and the challenge is strong enough to keep my attention. The premise of the game is fresh, too—there aren't many computer games set in the Old West.

Bandits have captured the Gold City Express, along with all the passengers and valuables on board. It's your job to rescue the travelers and recapture the loot.

You start your quest at the railroad station, where you must duke it out with a bandit as the train begins to roll away from the station. Defeat him before the train pulls out, hurdle a few obstacles, and you'll find yourself perched on top of the train's very last car.

Now you have to fight your way to the front of the train. Each car offers a new foe. Some fight like you, with bare hands, but others have weapons.

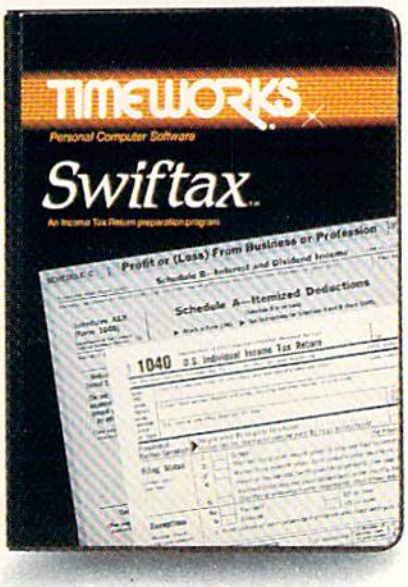
Should you reach the train's locomotive, you'll recapture the loot. The scenario then changes, and you find yourself riding horseback alongside the train while bandits on board shoot at you. During this stage of the game, you have to dodge their bullets and try to pick them off one at a time with your own six-gun, which is difficult, because there's more than one bandit on each car, and they keep ducking for cover.

The joystick and fire-button control all the action in Express Raider. In the first part of the game, the stick is used much the same way as it's used in martial arts simulations. You duck, jump, lie down or walk by moving the joystick in the corresponding direction. You punch or kick by hitting the fire-button. In the second part of the game, the joystick lets you move in any of eight directions as you ride alongside the train. This helps you dodge bullets and also determines where your own bullets will land.

One thing that makes Express Raider a pleasure to play is the way the on- ►

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screen action responds to joystick movements. Nothing is more frustrating than playing a shoot-'em-up that responds slowly or erratically to joystick input. Happily, that isn't the case here.

The graphics and play action also make Express Raider enjoyable. While certainly not state of the art, the graphics are attractive, clear enough to let you see what's happening at all times and free of any noticeable flicker or other distractions. You get a real feeling of train movement when you're hopping from car to car in the first part of the game, and you can truly imagine yourself on the horse in the second part.

The best players will rack up record point totals while reaching the locomotive in both stages of the game. But even players who find it impossible to reach the locomotive can enjoy the challenge of trying to break their own personal point records.

The game's various options make it easy to get the practice required to set such records. There are three Play modes and four levels of difficulty in each mode. The different Play modes correspond to the number of lives you have and number of trains you must complete to save the Gold City Express. Another option lets you pick up right where you left off after you've lost all of your allotted lives.

Features such as those are typically missing from arcade games, so you might say that in some ways the home version of Express Raider is better than any arcade version could be. But for the most part, Express Raider follows Data East's tried-and-true formula, and it proves there's absolutely nothing wrong with that. *(Data East, 470 Needles Drive, San Jose, CA 95112. C-64/$34.95.)*

—SCOTT WASSER
WILKES-BARRE, PA

PLUNDERED HEARTS ..... B

Finally, A Woman's Romance Novel On the Computer Screen

Almost all adventure games ever created have been aimed at a traditionally male-dominated market, on the assumption that women account for only a small percentage of entertainment software purchases. With that being so, Infocom's Plundered Hearts breaks out into new territory.

Plundered Hearts is designed by a woman, for women. The storyline is reminiscent of a steamy romance novel set in the late 17th century. You play the part of a beautiful young Englishwoman who has just received a letter from Jean LaFond, governor of the island of St. Sinistra and purported friend of your father. LaFond insists that you leave London immediately and come to your father's side at St. Sinistra in the West Indies. He has fallen victim to a tropical disease, and only your presence will aid his recovery.

On the way to St. Sinistra, your ship is attacked by pirates. The pirate captain, a young outcast socialite named Nicholas Jamison, warns you that the letter and your dad's illness are tricks to lure you to the island. Jamison has an old score to settle with Lord LaFond, and offers to help free your father. You decide to trust the young pirate, and begin a long and hazardous journey to free dad from the dungeon of Jean LaFond.

Plundered Hearts is touted as interactive fiction. By typing in spoken English words, you affect the final outcome of the story. The plot can take several different directions, depending on how you react to the various puzzles and dilemmas you encounter. Infocom has one of the best parsers (the part of the program that deciphers your input) in the business, perfecting it to such an extent that you feel as though you're actually talking to the story rather than just typing.

Plundered Hearts is, however, considerably less interactive than most Infocom games, and it sports a much smaller vocabulary of words that it can understand—approximately 700—whereas most can process between 1000 to 2000 words. But what the game lacks in words, it more than makes up for in plot.

There's a lot of reading involved. While you might find that you have little or no control over many of the situations that arise during the course of play, Plundered Hearts' well-written prose should keep you in the thick of the plot until the very end.

Plundered Hearts is not quite at the introductory level. It's challenging enough to entice even the most seasoned adventure gamer, regardless of sex, while still rudimentary enough not to overwhelm first-time players. Of course, Infocom's ledgendary reputation for supplying first-rate documentation is still justified.

But this is a romance story, with all that entails, and aside from the small vocabulary and obvious cliches scattered throughout the story, Plundered Hearts finally offers something for women other than the worn out slash-and-slay dramas. *(Infocom, Inc., 125 Cambridgepark Drive, Cambridge, MA 02140. C-64/$34.95.)*

—JOHN RYAN
BILOXI, MS

C-MORE ..... C+

These Helpers Even Do Windows!

C-More advertises itself as a "new operating system" that will "change forever the way you use your Commodore 64." It is a window- and menu-based system that provides a set of tools: a word processor, spreadsheet, database manager and scientific calculator.

C-More's windowing and multi-tasking capabilities are its outstanding features. Up to four windows, in various configurations, can be on the screen at once, and up to eight different "tasks" or programs can be assigned at one time. If you have more tasks than windows, the idle tasks wait patiently in the background until you pull them into a window and restart them.

Because the tasks can outnumber the windows, they are identified by helper names: Jill, Robert, Phil, Anthony, Lizzie, Susan, David and Mary. Notice that each helper name begins with a different letter, so you can reference them by typing a single character. In order to move to a task window, you specify the name of the helper rather than the window number or the utility in that window. This seems a little confusing at first, but turns out to be practical, because you can use the word processor with two different helpers to edit documents in two separate windows, or two parts of the same document in separate windows.

The windowing software is great. You can easily change the screen display from one to four windows in various horizontal and vertical configurations. Each window's background and character color can be different. Pop-up menus at the bottom of the screen aid the navigation between tasks, and each utility program has its own set of help menus.

Unfortunately, the utilities are somewhat of a disappointment compared to the operating environment that supports them. For example, the word processor, Writer, is somewhat primitive compared to other commercially avail- ►

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able word processors. It has the basic full screen editing features you'd expect, like word wrap, search with replace and block move or delete. But it falls short in the formatting department—you can only specify top, bottom and side margins, and whether the output should be single- or double-spaced. Moreover, the format parameters you establish are in force for the entire document, and there's no way to automatically center lines, to add page numbers, headers or footers, or to chain documents together. I tried using it to write part of this review, and was soon frustrated by the lack of features.

One of the most irritating of Writer's idiosyncrasies is that the paragraph marker is generated by the shift/up arrow keys, instead of simply pressing return as in most other word processors. To make matters worse, pressing the return key is how you get back to Command mode. I was constantly pressing return by mistake and then having to type the entry command to get back to Input mode.

The spreadsheet, Formulator, works reasonably well. It's limited to 64 rows and eight columns—the size of a printed page. That might prove a little lean for more ambitious applications. Column width is preset at ten, so only four columns fit on the screen at one time. You can, however, split the screen into two horizontal windows and have two tasks working on the same spreadsheet simultaneously. Although Formulator is by no means sophisticated, it's certainly powerful enough for budgeting and other home applications.

Keeper, the database manager, is adequate for mailing lists, phone directories and other home uses. Database definition is done with a special Basic support program outside of C-More that can be a little difficult to learn. The Calculator program is well thought out and includes four on-screen memories and a range of built-in functions for things like computing loan payments. Filer and Copier are typical disk management and copy utilities, respectively.

Also included in C-More is a specialized utility that, at first glance, seems out of place in the program. Home Buyer can be used to explore financial issues like comparing mortgages or buying versus renting. After studying the manual, however, you'll discover that you can adapt your own Basic programs (up to 6K long) to run as tasks in the C-More environment.

C-More's documentation is very impressive, with clear descriptions of all the commands and utilities. The package also comes with a demo disk that does an excellent job of illustrating each feature.

If you're already familiar with a word processor like PaperClip or a spreadsheet like Multiplan, the limited capabilities of the C-More counterparts will probably prove somewhat disappointing. On the other hand, if you're a casual correspondent with modest database and financial planning requirements, C-More's utilities might be perfectly adequate for your needs. For under $60, Jill, Robert and the rest of the gang will be happy to help you write, file, copy and count. And best of all, they love doing windows. *(C-More Products, PO Box 81548, Chamblee, GA 30366. C-64/$49.95.)*

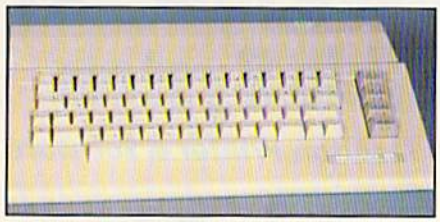
—MICHAEL BROUSSARD
HERNDON, VA ■



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The Commodore Connection

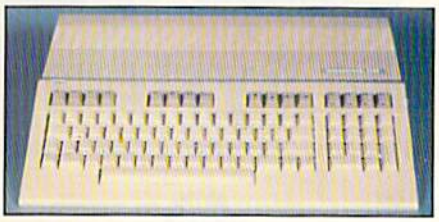
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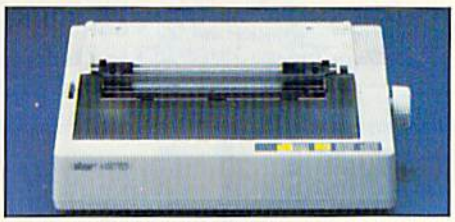
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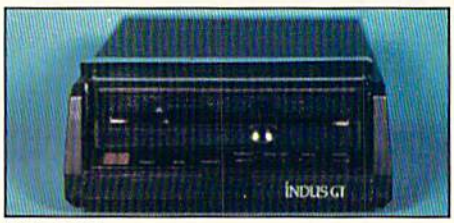
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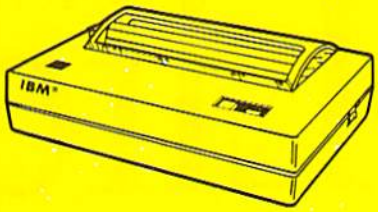
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Simulating Real-Life Action . . .

One of the hottest-selling categories of entertainment software these days is simulation software. And it's no mystery as to why. What other form of entertainment can put you in control of real-life situations? The movie *Top Gun* may be exciting to watch on the silver screen, but it can't put you in the pilot's seat and at the controls of the latest hi-tech fighter plane. The World Series *can* be exciting with the right teams, but only a baseball simulation can give you that every year. And taking a cruise on a hydrofoil is great fun, if you can find one; but if not, you can get a lot of fun out of a simulation where you're at the controls.

In this issue, *RUN* explores three of the most popular categories of simulation software for the C-64. So lace your sneakers for a run in a variety of sports, don your admiral's hat to map naval strategy, or get behind the controls of a hot jet in a flight simulation. There are some great Commodore simulation programs out there for almost anyone's taste in excitement.



. . .On the Playing Field. . .

By TIM WALSH

FIVE SECONDS LEFT in the fourth period and the score is tied. Who will get the last basket? Poised on the edge of your chair, you guide your players smoothly down the court, and . . . your opponents steal the ball!

Well, it was fun, anyhow, and that's what computer simulations of sports are all about—the excitement of athletic competition when you're not athletically inclined or a blizzard is raging outside.

Whatever the sport you enjoy or would like to try, chances are you can find a computer version for your Commodore. While some of these programs resemble one another because the same people wrote them, they tend to differ in the level of player involvement and overall sophistication. Nearly every sports simulation requires work disks for saving scores, and most of them use a joystick as the primary input device. You should spend a little more than you might wish and get the highest quality joystick you can to complement your fine shootin' arm.

This article is a survey of a number of football, baseball, basketball, golf, bowling, ice hockey and ►

ILLUSTRATED BY BOB SCOTT

soccer simulations, along with a couple of general interest games. First, to the golf course.

World Class Leader Board

I'm not a golfer, maybe because I've never worked in a financial institution or for a major brewery, so when I tell friends I spent Saturday morning "on the green," I'm referring to mowing the lawn. In fact, I've avoided golf, since I thought it was little more than a waste of time and effort unless I could earn a living at it, like Arnold Palmer.

However, my thoughts did a complete about-face after playing World Class Leader Board, a C-64 golf simulation developed by the famous duo of Bruce and Roger Carver. Marketed by Access Software, this game puts you right on the course where you have to fight trees and sand traps. Access also offers Volumes I and II of Famous Courses of the World, two disks that require the Leader Board package.

Leader Board lets you select your skill level, your clubs and the course to play. Using a joystick as your golf club, you hold down the fire-button and release it in a synchronized way to determine your backswing (power) and whether the shot will be straight, a hook or a slice. Leader Board taught me the not-so-subtle difference between a 1-wood and a putter, and how variables in my selection of club and swing affect each shot.

All the Leader Board courses are so enjoyable to play, I feel guilty being paid to review them. Do yourself a favor and get this game to learn the fun of playing golf, or, if you're already a golfer, tee off on the next rainy Saturday.

Tenth Frame

I spent many of my Friday and Saturday nights as a teenager at the candle-pin bowling alley. Candle-pins, found exclusively in New England, are much like ten-pins, except the ball is smaller, so you can roll it faster, and the pins, thinner and taller, are more difficult to knock down.

I probably wouldn't have spent so much time at the alley if the C-64 and 10th Frame had existed at the time. This game, which simulates ten-pins and not candle-pins, is another Bruce and Roger Carver original from Access Software that translates into lots of fancy graphics and plenty of realism. You can even adjust the sound of your ball rolling down the lane and crashing into the pins.

You use a joystick to position your bowler, then press and release the fire-button in a smooth, precise manner to give the ball the amount of speed and hook needed to accurately hit the pins. Until you develop style and form, your rolls are as unpredictable as in real life.

Get 10th Frame for hours of kegling fun, but also get Leader Board to provide yourself with a break from the alley.

Championship Baseball

As long as I'm in an effusive mood, I'll continue with a sensational C-64 baseball simulation: Championship Baseball, from Activision.

Championship Baseball uses a vertically split screen, with the right half occupied by large, accurate depictions of pitchers and batters. The left half contains the baseball diamond with the players positioned about the field. In Practice mode, you can use your joystick to swing at a series of pitches thrown by the computer-controlled pitcher. In Game mode, you take turns batting and fielding.

Hitting a pitch in Championship Baseball isn't easy. Then again, hitting one of Roger Clemens' fastballs isn't easy, either. Scrutinizing the pitcher's moves precisely is the only way to avoid swinging too late or too soon. When you hit the ball just right, the players in the left half of the screen scramble to field it.

When you're the pitcher, you alter your throws by making minute movements of the joystick and pressing the fire-button. I occasionally throw some strikes, but it isn't easy to do consistently unless you use all your powers of concentration.

Once the opposing team gets a hit, you must assume the role of the fielder the ball lands closest to, reacting instantly and precisely with your joystick.

Championship Baseball seems every bit as hard and every bit as rewarding as the real-life game.

Pure-Stat Baseball

A sports simulation roundup wouldn't be complete without mention of Software Simulations' Pure-Stat Baseball. In typical sports simulation fashion, Pure-Stat Baseball lets you play against a friend or the computer. Two unnotched disks, one a game disk, the other containing data on all the teams from the 1985 National and American Leagues accompany the package. The documentation includes a 42-page instruction manual, along with a 26-page Manager's Guide Book.

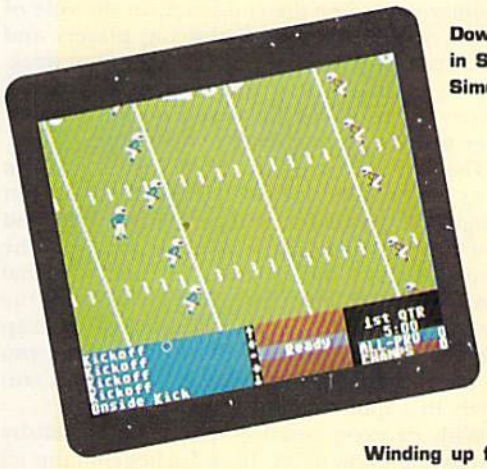
The play in Pure-Stat Baseball, as its name implies, is based on the statistical histories of the players. Your job is to draft and trade players astutely, then coach your assembled team to victory. Pure-Stat offers up to nine games per season, which translates into a lot of playing time.

To keep things interesting for long-term users, Software Simulations also sells accessory disks containing data on additional teams and stadiums. However, keeping things interesting for beginning players isn't a pressing need, because you're busy trying out stadiums, rotating pitchers and comparing the skills of batters and pitchers, fielders and base runners, plus making countless other decisions.

The graphics are good, the action is quick and the players' moves are convincingly realistic. A computer sports simulation couldn't be much better than Pure-Stat Baseball.

Street Sports Baseball

In Street Sports Baseball, you're not playing with professionals, but with a group of neighborhood kids on a lot full of rocks, trashcans and tree stumps. You don't have to read the manual to start playing this game, which is more of an arcade type than a sports simulation. You just assume the role of pitcher if your team is in the field, or you become the batter if your team



Down on the gridiron in Software Simulations' Football.



Winding up for a pitch with Championship Baseball.



Rarely is there a dull moment on the court with GBA Championship Basketball.

is up. You also play all the infield and outfield positions when the ball comes near.

The graphics are good, but Street Sports Baseball will probably bore adults. However, it's interesting and lively enough to keep kids, for whom it's designed, occupied for hours.

GBA Championship Basketball: Two-on-Two

With one of the longest titles in the software industry, GBA Championship Basketball: Two-on-Two (GBA for short) isn't your average computer basketball game. The sprites in this game actually do look like basketball players, proportionally correct as they run about the court. They also handle the ball realistically, whether dribbling, passing or shooting a jump shot.

Like most sports simulations, GBA has both practice and game modes. You can select one or two players, and every two-player game, whether you're playing against your best friend or the computer, gives each competitor a computer-controlled teammate. Any type of shot from any location on the court is tricky, especially if you're playing against the computer. You have to make synchronized joystick/fire-button moves to evade the player guarding you, while at the same time successfully getting off your shot.

Fortunately, you can return your opponent's favor by aggressively blocking his attempted shots. All in all, GBA Basketball is a fine sports simulation.

NBA

Unlike GBA Basketball, Avalon Hill's NBA isn't just a move-the-joystick-as-fast-as-you-can game. Rather, it transforms computer basketball into a slower-paced, thinking man's sport, which doesn't mean it's boring. You control the players' moves indirectly by using the joystick to choose various options from a list.

You select the visiting and home teams from 20 real NBA teams, then specify a computer or a one- or two-player game, the number of games to be played and any lineup changes you want to make. Playing NBA basketball isn't just a matter of controlling your players' moves; you get to implement both offensive and defensive strategy by selecting a point guard, then deciding how many passes, steals, outside shots, etc., you want your players to attempt. Considerable thought is required to decide who on your team is best fitted for each task, based on their statistical ratings. Needless to say, a good working►

knowledge of basketball and its related terminology is valuable when you play NBA.

Pure-Stat College Basketball

Software Simulations' Pure-Stat College Basketball is so similar to Avalon Hill's NBA that the only way I can tell them apart is to read the team rosters. Like NBA and Pure-Stat Baseball, it's a decision-by-decision game that lets you plan every move before executing it.

If you're a long-time college basketball fan, you'll like this game. If you're looking for fast-paced action, then you should seek out an alternative, such as GBA Championship Basketball: Two-on-Two.

Street Sports Basketball

A rather disadvantaged-looking youngster on the cover of Epyx's Street Sports Basketball sums up what this game is all about—low-budget, neighborhood competition. Forget about Larry Bird and Magic Johnson here; you'll find kids with names like Radar, Vic and Melissa.

As you'd expect with any C-64 Epyx game released in 1987, Street Sports Basketball features well-defined graphics. You control just one player on your team at a time, holding down the fire-button to make changes. You'll have to play the game a few times to get the hang of switching players quickly enough to maintain ball control.

Eventually, you'll also discover how easily your opponents can be knocked down and you can steal the ball. Of course, they'll be eager to get the ball back, so Street Sports Basketball evolves into a combination basketball game and small street riot—fun for kids of any age.

GFL Championship Football

Sometimes getting a new perspective on an old game offers some surprises. Such is the case with GFL Championship Football from Activision. As the program's packaging states, "No longer are you up in the stands watching the fleas on the left play the fleas on the right."

GFL Championship Football can be configured for play against another person or the computer. Using a joystick, you select one of the program's 27 teams, then control your chosen 11 by selecting offensive and defensive ball-moving options from a window.

While this program introduces worthy technological improvements and is an accurate representation of football play, I still don't feel comfortable with it. My uneasiness doesn't stem from the fact that the goal posts aren't clearly defined or the program is too slow. Rather, it's because ten years of video games has left me a traditionalist who prefers to sit up in the stands and control the football fleas.

4th & Inches

A late 1987 Accolade release, 4th & Inches is a football simulation that hit the market while I was in the midst of writing this article—which is a good thing, because it deserves mention.

You play this joystick-controlled game against another person or the computer. In the role of coach, you select your first-string players and their stats, ranging from "speed!" (fast but weak-kneed) to "big!" (slow and sure-footed). Once you're down on the field, you decide whether your team is playing defense or offense.

The atmosphere on the 4th & Inches gridiron is as action-intensive as real-life football. Get caught off guard for even a few seconds, and you'll get mauled or lose valuable yardage. The display follows the football, but unlike virtual scrolling, when long passes and kicks fly off the screen, the display is quickly updated to keep the ball in view. When the ball lands near you in the new display, you've got to respond correctly in a split second.

With its exceptional graphics, high-intensity action and excitement, 4th & Inches contains all the ingredients of a good football simulation.

Football

Football, from Software Simulations, is a one- or two-player game for those who like to go beyond the detached perspective of the coach and call every move the players make. Plenty of mediocre graphics depict the field, yardlines and players, and, whether you're playing offense or defense, you have to use your joystick between plays to select your next move from menus.

I uncovered an interesting aspect of Football by mistake. When, as a quarterback with possession of the ball, I ran back 20 yards to elude my pursuers, I found that I could run on into infinity, with most of the opposing team in pursuit. After I let them catch up, I discovered my team had lost only 11 yards!

The 73-page user's manual offers a thorough explanation of how to play Football, but the terminology in the manual and in the game itself requires that you know the names of the various maneuvers ahead of time.

All told, Football is a fairly exciting, good-quality football simulation and a lot of fun to play.

Superstar Ice Hockey

Because the opposing teams in ice hockey talk loudly while carrying big sticks, some of the bloodiest, most spectacular fights imaginable routinely occur at professional games. Such full-blown knock 'em, sock 'em rink riots don't occur in Mindscape's Superstar Ice Hockey, which offers all the other major elements of realistic hockey. Fine graphic detail and virtual scrolling help make the game a first-rate product.

Superstar Ice Hockey pits you against either the computer or a friend. Using your joystick for making selections, you go through a coaching menu, then a player-recruiting menu where you select two, four or six individuals for your team and adjust their offensive and defensive abilities. You also choose Practice or Game mode, the number of minutes per period and whether the computer or the player controls the coach, center and goalie for each team, plus many other options. There's enough action in player trades, training camp, east and west divisions and team

Table 1. Distributors and prices.

World Class Leader Board and **10th Frame**
Access Software, Inc.
2561 South 1560 West #A
Woods Cross, UT 84087
801-298-9077
$39.95 each

Championship Baseball, GBA Championship Basketball: Two-on-Two and **GFL Championship Football**
Activision
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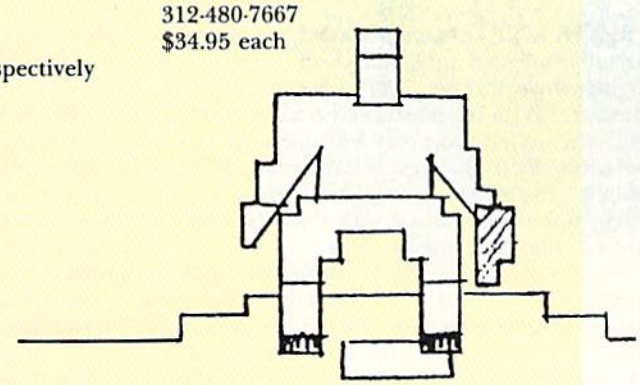
Pure-Stat Baseball, Pure-Stat College Basketball and **Football**
Software Simulations
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Stratford, CT 06497
203-377-4339
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NBA
Avalon Hill Game Company
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Street Sports Baseball, Street Sports Basketball and **California Games**
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histories to keep even ice hockey purists content.

Playing this game provides both fun and satisfaction. How much fun and satisfaction? Well, just imagine skating up to your opponent, whacking him with your hockey stick and sending him spinning like a top. Now, if that isn't the essence of hockey, I don't know what is.

As in real-life hockey, of course, such mischief doesn't go unpunished. I usually get thrown in the penalty box for 30 seconds, while my opponent camps out in front of my computer-controlled goalie and rapid-fires shots until one goes in the net.

Enough said in praise of Superstar Ice Hockey; I think most would-be hockey champs now have a good idea of the excitement and challenge this game offers.

SUPERSTAR SOCCER

Just as I was putting the finishing touches on this article, Superstar Soccer arrived in the *RUN* editorial offices, and fortunately I was able to squeeze it in. Superstar Soccer treats you to detailed graphics that weren't available in C-64 programs until recently. The field of play appears on a virtual-scrolling screen similar to that of Superstar Ice Hockey. When you're at one end of the field and kick the ball hard enough to send it flying to the other end, the screen scrolls horizontally to keep the ball, but not necessarily the players, in view at all times.

Superstar Soccer operates in a real-time environment where you're on the front line battling against the opposing team. Your foe is either a friend or the computer. There's a lot more to this game than chasing and kicking a soccer ball. Along with playing, you also manage and coach the team, which means you recruit, train and trade players.

You begin your first game as the worst of 64 teams in the league, but with the aim of rising to be the reigning team in the division. Whether or not you make it, be sure to get a new joystick ►

or two before starting your climb. You're liable to go through at least one in the process.

General Sports Simulations

Okay, let's suppose you're looking for a good sports simulation, but you're not interested in traditional games like baseball, football and hockey. You may be intrigued by two unique and highly enjoyable disks released late in 1987: Mindscape's Indoor Sports and California Games, from Epyx.

Indoor Sports provides graphics for playing darts, bowling and ping-pong that are some of the best you'll find in any C-64 program. In California Games, you enjoy surfing, foot bag, half-pipe skateboarding, roller skating, BMX bicycling and frisbee throwing with detailed, realistic graphics that surpass even those in earlier Epyx programs, which were noted for their graphics accomplishments.

So, lace up your Nikes, grab your software and head for your C-64. There's a wide selection of exciting sports fun awaiting you, and the clock's about to start! R

Tim Walsh is RUN*'s technical editor when he's not reliving his youth with fantasies engendered by playing sports simulations.*

. . .On the High Seas. . .

By BOB GUERRA

CREATE A REALISTIC FLIGHT simulator, especially one that puts you in the cockpit of a high-performance jet, and you've got instant excitement. With a realistic naval simulation, on the other hand, you may end up with instant boredom. First, the view is hardly breathtaking, usually consisting of little more than a static horizon, possibly dotted with the silhouettes of distant islands or enemy ships.

Second, things move a lot slower through the water than in the sky. Consequently, most C-64 naval simulations let you accelerate the flow of time so that a month-long mission can be compressed into a few playing hours. Even speeded up, however, combat at sea is a deliberate and calculated process.

Software Subs

Submarine attacks, for instance, are usually launched by slowly and silently closing in on the enemy like a cat sneaking up on a mouse. An end-run attack is often the best approach, requiring extra time to slip around to the front of an enemy convoy, where you can sit submerged and undetected as your targets float to within torpedo range.

Despite the necessarily slow pace and limited graphic potential of realistic submarine simulations, they're becoming increasingly popular with C-64 users. One reason is that because it takes so much patience and preparation to mount a successful torpedo attack, when you do finally sink an enemy ship, you feel a greater sense of accomplishment than the flight simulator pilot who simply soars through the sky blasting everything in sight.

Another stimulus to submarine simulation popularity is that they offer a much wider variety of strategic options than typical aerial combat simulators. On a patrol mission, for instance, you can hunt down an enemy convoy at periscope-depth and immediately launch a torpedo attack, or you can wait until nightfall and try a daring surface attack.

Resource management is also extremely important over the course of a long mission, since you usually begin with only 24 torpedos and a limited amount of diesel fuel. Fuel can be conserved by using electric motors when possible, but a sub's batteries can't be used for long without recharging. Also, using electric power decreases your sub's top speed, so must be avoided when you're trying to outrun enemy destroyers.

Sub Battle Simulator

The newest software submarine to hit the water, Epyx's Sub Battle Simulator, is an ambitious effort that offers many control options. After deciding whether to take charge of a German U-boat or a U.S. Navy submarine and choosing the year of your command (1939–1945), you are assigned one of 60 missions. These range from simple patrols to rescue missions. Advanced players can even tackle a wartime command that allows you to play every mission in sequence throughout the course of the war.

Unfortunately, despite the variety of missions and play options, Sub Battle Simulator fails to generate much real excitement, chiefly because of the program's slow response to keyboard input. Having to wait two or three seconds to see if your keystroke will be read correctly may build tension, but not the kind that results in an exciting simulation.

Another problem is static, jumpy animation that makes you feel as if you're watching a slide show of a naval battle rather than participating



in one. For example, as you rotate your periscope, using either the joystick or keyboard controls, the view changes every few seconds, but there is little illusion of any horizontal panning of sea.

Up Periscope!

Of the three submarine simulations reviewed here, Up Periscope! offers the best blend of realism and playability. Instead of requiring you to access several different screens to check your maps, instruments, armaments and periscope view, Up Periscope! puts everything necessary to command your sub on one main screen. Without leaving this screen, you can check your fuel, battery and oxygen levels; look out across the ocean; check your sub's speed, depth and heading; study patrol maps; check your radar and sonar for enemy ships; or lock in your aim on an enemy ship by calling up your Torpedo Data Computer (TDC).

The secret of providing so much valuable information on one screen is a bridge view that shrinks to half its normal size on the left side of the screen, while maps, radar or the TDC are displayed on the right side. Other displays that are less frequently employed are loaded as separate screens.

Silent Service

Although all the same options and information found on Up Periscope!'s main screen are available to Silent Service players, the designers at MicroProse have used separate screens to display maps, instruments, reports and the periscope view. You select from the game's several screens by using a joystick-driven menu, cleverly disguised as a sub captain in a conning tower. Move the captain to the map table to examine your maps; move him to the periscope to access your periscope view; and so forth.

While both Up Periscope! and Silent Service let you simulate either short missions or long patrols, gamers who demand realism and histor- ►

ical accuracy from their naval simulations will want to set sail with Up Periscope!. If, on the other hand, the idea of staring at a single screen through most of a lengthy patrol makes you seasick, you'll welcome the graphic variety of Silent Service.

Surface Battles

Two other popular naval simulations, Destroyer and PHM Pegasus, also place you in command of your own vessel. This time, however, you're up on the surface and, at least in the case of Destroyer, it's your turn to hunt down the submarines.

Destroyer

One of the reasons Epyx's Sub Battle Simulator seems a disappointment is that their Destroyer is such a tremendous success. Destroyer puts you in the role of captain of a Fletcher-class destroyer based in the Pacific during World War II. You can play Destroyer at any one of three difficulty settings, and there are seven different types of missions to choose from: Subhunter, Screen, Scout, Bombardment, Convoy Escort, Rescue and Blockade Runner. Depending on the scenario and difficulty level you select, you may face enemy subs, warships, island gun emplacements, fighter planes, or some combination of all four. To combat each threat you must learn to use your four weapon systems.

Each weapon is fired from its own screen, and you can quickly move from one to another by entering the appropriate two-letter code. Destroyer also features separate screens for radar, sonar and navigation, as well as a bridge screen that serves as a link to all other systems. Each screen is rich in color and graphic detail, and animated sequences such as the attacks by enemy fighters are superb.

PHM Pegasus

For those of you who'd like to experience a naval simulation based on a modern patrol vessel, rather than one of WWII vintage, PHM Pegasus, by Electronic Arts, is worthy of consideration. Pegasus is a Patrol Hydrofoil Missilecraft (PHM), equipped with a 76mm cannon and two types of guided missiles, as well as electronic radar and tracking systems like those in today's high-tech jet fighters. In addition, some missions also require you to control two auxiliary helicopters that provide additional radar coverage.

Instead of the usual convoy escort missions through the German- or Japanese-patrolled waters of World War II, Pegasus gives you a choice of eight up-to-date missions. You may choose, for example, to escort a supply ship out of the Persian Gulf. To reach the ship, you have to sail through the Straits of Hormuz to Kuwait. Perhaps the most interesting thing about this scenario is that it was designed several months before the U.S. warships actually began escorting Kuwaiti tankers through the Gulf. In other contemporary missions, you intercept and sink terrorist patrol vessels in the Mediterranean or photograph cargo ships suspected of smuggling arms to a South American dictator.

Multiple-Ship Simulations

For some, the most exciting naval simulations are those that let you command, not just a single ship or submarine, but an entire task group or carrier force, consisting of several warships that

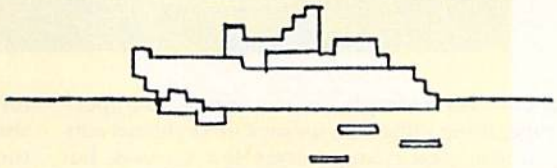
Table 1. Manufacturers and prices.

Up Periscope!
ActionSoft
122-4 S. Race St.
Urbana, IL 61801
$29.95

Bismarck: The North Sea Chase
Datasoft
19808 Nordhoff Place
Chatsworth, CA 91311
$29.95

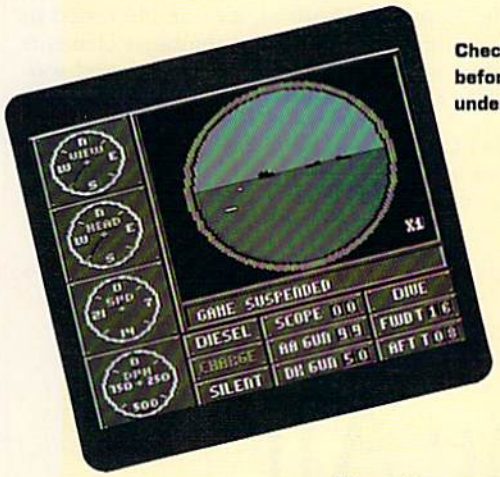
PHM Pegasus
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
$29.95

Sub Battle Simulator and **Destroyer**
Epyx
600 Galveston Drive
PO Box 8020
Redwood City, CA 94063



Silent Service
MicroProse
120 Lakefront Drive
Hunt Valley, MD 21030
$34.95

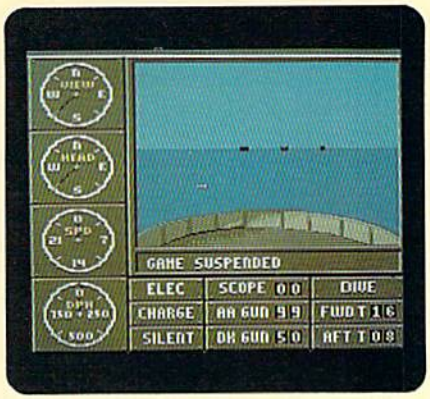
Warship and **Battlecruiser**
Strategic Simulations, Inc.
1046 N. Rengstorff Ave.
Mountain View, CA 94043
$59.95



Check your controls before you begin underwater warfare.



The action screen in Datasoft's Bismarck.



Know your vessel before you submerge in Sub Battle Simulator.

must be used together to achieve a specific objective.

Warship and Battlecruiser

One of the best games of this type is SSI's Warship, a game of tactical surface combat that lets you recreate historical naval battles between the U.S and Japanese navies during the Second World War. Warship features four pre-designed scenarios and 79 different classes of Dutch, U.S., British and Japanese ships, ranging from battleships to transports. You may even design your own ships and maps to create original scenarios.

A naval simulation with gameplay that's virtually identical to that of Warship is Battlecruiser, also by SSI. Like Warship, Battlecruiser lets you lead up to 20 ships into battle on the open seas. This time, however, the setting is the Atlantic and the game's eight historical scenarios are divided evenly between the First and Second World Wars.

It isn't the graphics that makes these games so realistic (both use plain white ship icons against a featureless black ocean); it's the fine attention to historical detail and accuracy. For example, each of the ships is rated individually for maximum speed, armor thickness, radar and number and types of guns. Even though SSI has given both Warship and Battlecruiser "advanced" ratings, players having little experience with map-based naval simulations should be able to do well after reading through the manuals once or twice and (more importantly) watching a demo game.

Bismarck

Just when I thought my roundup of naval simulations was complete, Datasoft released Bismarck: The North Sea Chase. Bismarck is an interesting combination of battleship simulation and wargame that puts you in charge of either the British Royal Navy or the famous German battleship. As commander of the British forces, your job is to hunt down and sink the Bismarck before it can reach the southern edge of the map; and for the German commander, the objective is to sink at least one British battleship, aircraft carrier or convoy.

Whenever British and German forces clash on the battle map, you're given an opportunity to take control of any ships that are directly involved in the engagement. The action screen you ►

use during battle lets you fire the ship's main guns or torpedos, close in on the enemy ship, pull away, or maintain the current distance. During some battles, you can even launch carrier-based torpedo plane raids against the Bismarck.

Although Bismarck is an enjoyable game, veteran war-gamers will find that it offers too little strategic challenge. Fans of games like Up Periscope! and Destroyer will probably be disappointed with Bismarck's lack of realism and tactical options. However, anyone interested in a beginner's level game that combines elements of both action simulations and map-based wargaming should give Bismarck a try. R

Bob Guerra, an editor for the cardiac unit of Massachusetts General Hospital, has written many software reviews for RUN *magazine.*

. . . In the Air

By LOU WALLACE

THE FLIGHT SIMULATOR was one of the most popular of the early computer games. It first appeared for the Apple computer in the form of SubLogic's Flight Simulator I program, which, by current standards, was extremely slow and had crude graphics. Yet in its time, it was quite an achievement and was the precursor of several generations of entertainment and educational software, including Flight Simulator II for the C-64, also from SubLogic.

Since the release of FS2 for the C-64, there's been a steady output of flight simulators of various craft for both peace-time and combat situations. And the last quarter of 1987 has seen the release of several new and innovative C-64 programs.

PROJECT: STEALTH FIGHTER

One of the best of these releases is Project: Stealth Fighter from MicroProse. This game simulates the F19 Stealth fighter plane the military reportedly has been developing. (The name Stealth comes from the phrase "stealth technology," which refers to various techniques designed to make the craft undetectable by enemy radar and defense systems.) Project: Stealth Fighter comes with over 100 pages of documentation, maps and keyboard overlays that, combined with some sophisticated graphics programming, offer one of the most realistic combat simulations yet released to the C-64 gaming community.

The Stealth Fighter is controlled via a combination of keyboard and joystick controls. Part of the screen display contains your view from the cockpit. Overlying the viewing area is the Head-Up Display, which gives you critical information necessary for flying the aircraft, such as pitch, heading, roll, airspeed and altitude. It may also contain a weapon gunsight that indicates an enemy's position. The lower half of the screen shows the cockpit control panel containing indicator lights, gauges and system displays.

Before going into combat, where the enemy will make every effort to cut your flight short, you can practice flying and attacking. Then you can attack geographical areas in North Africa, Central Europe—even Lybia and the Persian Gulf. The high-resolution graphics screen is updated quite quickly.

Stealth Fighter is meant to be a serious simulation of the stealth fighter and its missions. While it can be fast-paced and arcade-like in play, it is not a simple shoot-'em-up.

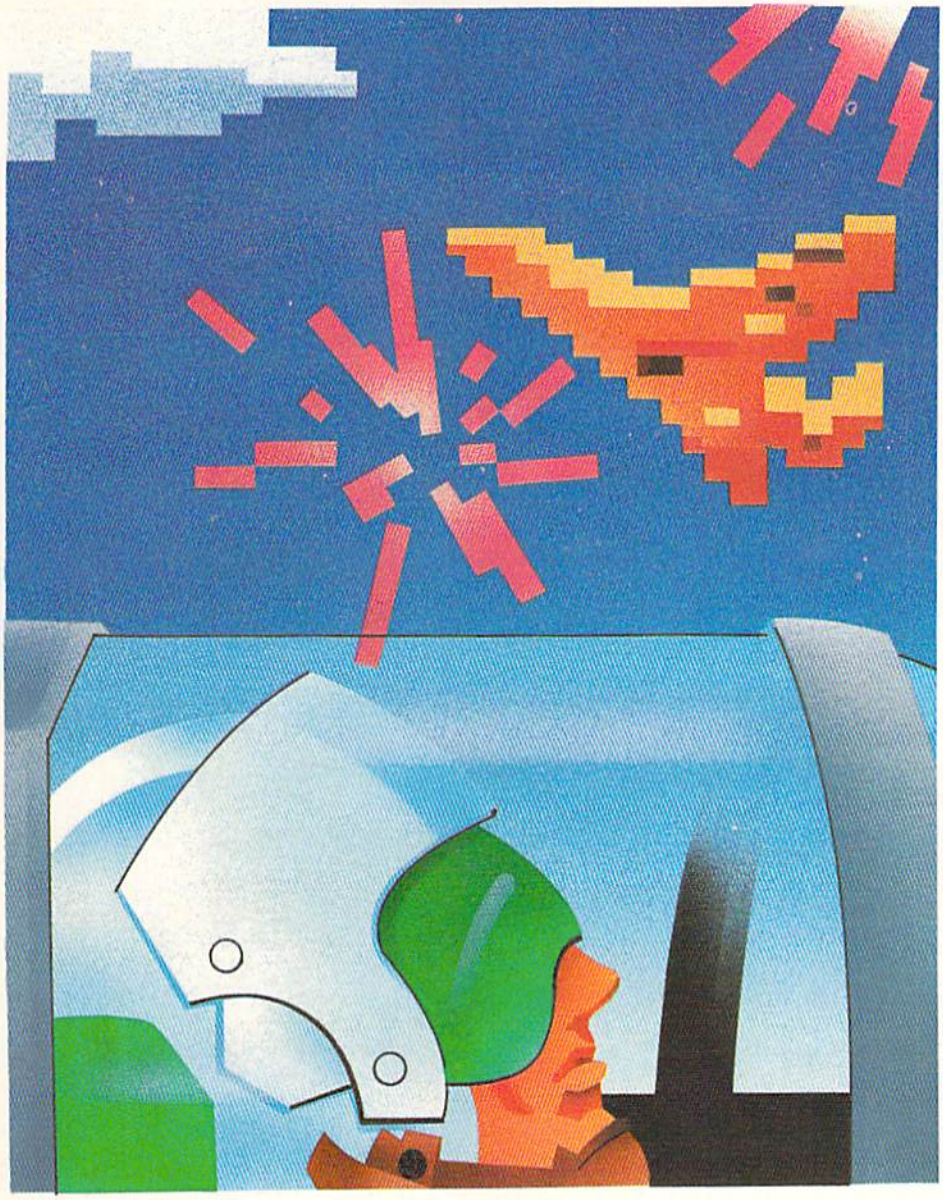
ECHELON

Heading into space brings us to another new entry in flight simulation. This is Echelon, from Access Software. In this space-flight simulation, which is more arcade-like than Stealth Fighter, you're the pilot of a C-104 spacecraft based at a space station in near-Earth orbit. Your mission is to defend Earth from space pirates, explore new regions of space and try to find the space pirates' stronghold.

The cockpit display combines a control panel and a viewscreen showing a three-dimensional grid that represents the planet's terrain and surface structures such as buildings. You control the craft's banking and rolling motions with the joystick and press the fire-button to increase or decrease your speed.

The use of weapons (missiles, photon cannon and high-density anti-proton projectiles) in Echelon brings us to an innovative feature that distinguishes the program from other arcade games—the LipStik. The LipStik is a headset with a voice-activated switch in the microphone, and while it's not a true voice-recognition system, you do use your voice to activate the C-104's weapons. Just say "Fire!" (or any other word) to launch a missile or fire the cannon. While the LipStik is being sold separately, a special version of it is included in the Echelon package.

I really like Echelon. The graphics are well done, but then so are all the others in this new generation of flight simulations. The combat is



fast and fun, and the Exploration mode has much in common with an adventure game.

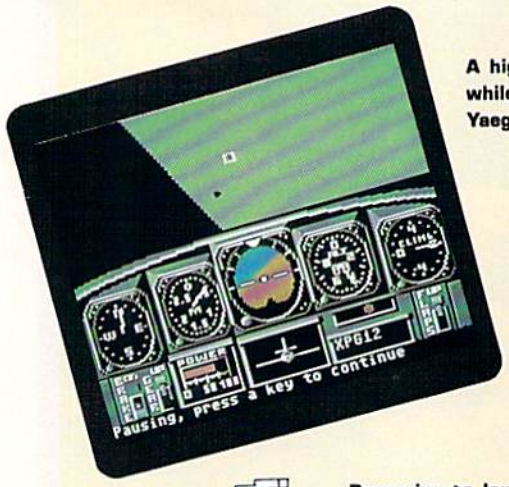
THUNDERCHOPPER

Back on earth again, we switch from spaceship to helicopter combat in ActionSoft's Thunderchopper. This game uses graphics techniques licensed from SubLogic, which is known for its fast, three-dimensional graphics. This simulation puts you inside the Hughes 530 MG Defender helicopter and offers a variety of scenarios, including combat, rescue, escort and simple flying excursions.

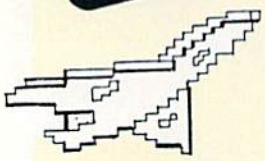
Depending on the mode of play selected, you'll be given a set of orders on targets or goals. You might guard a convoy from enemy gun installations. This requires you to seek out and find the source of the incoming shells and take out the enemy before they get you or the convoy. In Combat mode you'll be ordered to destroy a set of targets, such as bridges or buildings; at other times, you'll get orders to destroy moving objects such as trucks, tanks or aircraft.

Depending on the target, you must find it, choose the appropriate weapon system and destroy it. All the time you must keep an eye on the available fuel and the number of rounds left for each weapon. If you've wasted all your rockets or missiles destroying trucks, you won't be able to destroy a bridge with your machine guns, and you won't accomplish your mission.

It's inevitable that Thunderchopper will be compared with Gunship, from MicroProse. Both are helicopter-combat simulations that use 3-D graphics displays. But there is a distinct difference. Gunship, like Project: Stealth Fighter, has simulations that are much more complex and detailed. To play them effectively requires a good deal of reading, thought and practice. Thunderchopper, while also striving to be a realistic simulation, has more of an arcade quality. It doesn't require nearly as much study to play, and its manual is smaller and easier to follow. So the ►



A high-speed roll while chasing Chuck Yaeger.



Preparing to launch the Stealth Fighter.



Table 1. Manufacturers and prices.

Echelon
Access Software, Inc.
2561 South 1560 West
Woods Cross, UT 84087
$44.95

Project: Stealth Fighter
MicroProse
120 Lakefront Drive
Hunt Valley, MD 21030
$39.95

Thunderchopper
ActionSoft
201 West Springfield Ave.
Suite 711
Champaign, IL 61820
$29.95

Chuck Yeager's Advanced Flight Trainer
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
$34.95

two games are aimed at different audiences. Personally, what I liked most about Thunderchopper was the arcade aspect.

Chuck Yeager's Advanced Flight Trainer

From Electronic Arts comes Chuck Yeager's Advanced Flight Trainer. This is a non-combat flight simulator that gives you a feel for what it is like to fly very fast experimental aircraft.

The Advanced Flight Trainer has the fastest screen update of the four flight simulators I looked at. Like the others, you have a screen display that has a control panel, complete with gauges, dials and gadgets as well as a full-color view screen that gives you a pilot's-eye view of the 3-D terrain. And the terrain is more detailed than the other packages, making this program more interesting for simple sightseeing flights.

There are three levels of operation. The first teaches basic flight skills, like take-offs and landings; the second instructs you in advanced maneuvers; and the third is stunt flying, including playing follow-the-leader with Chuck Yeager, who may well leave you in his flight vapor!

You have a number of craft to choose from, from ancient models like the Sopwith Camel (with no beagle to help you) and the P-51 Mustang, to modern craft like the SR-71 Blackbird and the F18. Once you reach a certain level of expertise, you can try your hand at flying one of three experimental planes. However, you never know what will happen with those untested craft!

For me, this was the most fun of all the programs. I quickly tire of war games, and real-world simulations take too much thinking. With Chuck Yeager's Advanced Flight Trainer, I got to do just what I wanted, which is fly, and fly fast! ■

Lou Wallace, RUN*'s technical manager, particularly enjoys action games. He is by far the most adept of the staff at Stealth Fighter.*

Take Stock Of Investment Software

As the recent collapse of the stock market attests, investing is a risky business.



It was a crash heard round the world. On October 19, 1987, the stock market plummeted, and investors have been nervous ever since. Curiously, however, on the Tuesday after Black Monday, brokers' offices were flooded with customers who wanted to open new accounts, not close old ones.

Wall Street is a jungle where bulls and bears are always on the prowl, and, as Black Monday and the day after illustrated, no one can predict which way the market will go. For every observer who says it will skyrocket, there's another who says it will plummet. However, they all agree on one thing: Anyone who plays this market needs plenty of help; these days, a computer isn't a luxury for investors—it's a necessity.

To this end, there are now a number of investment programs available for the C-64 and C-128. Like stocks themselves, some are winners, some are losers, and some are blue chips worthy of the software ►

By PETER KING

PHOTOGRAPHS COURTESY OF BETTMAN ARCHIVES

Fortune 500. In this article, I'll survey four of these programs and also make brief mention of a few others, all of which can help you keep those bulls and bears under control.

Types of Investment Software

There are three distinct groups of investment software, with different tasks and different purposes. Financial analysis software screens companies' records for certain fundamental conditions that would make their stock a viable investment. Portfolio management software records the transactions in an investor's portfolio and then prints them out in various formats. Technical analysis software displays stock data in charts and graphs that a knowledgeable person can use to spot trends and predict if the stock will go higher or lower.



Any investment software package should adequately fulfill its main purpose and also be easy to use, even for those not versed in economics or business. In addition, the documentation should be well written and understandable, the program should have a certain elegance and sophistication, and, most important, its results should be accurate.

So, let's take a look at some of the most popular investment software available today for the C-64 and C-128. Refer to Table 1 for distributor information and prices.

Personal Portfolio Manager

A portfolio management program is a database for recording and reporting your investment transactions, not, as some suppose, an analytical tool for predicting which stock to buy or a device for charting stock movements. As a database, it should keep good, clear records, so you'll know at any time how much you're making (or losing). Come income tax time, the program should be able to print out a record of the year's gains and losses. Personal Portfolio Manager by Abacus does all this and more—and does it well.

There are two versions of PPM—one for the C-64 and one for the C-128. The latter supports both 40 and 80 columns.

The program is straightforward, so even as a beginner, you should be able to electronically record your portfolio in just a few hours. One word of warning, though: Don't forget to use the Exit program when you're done, or you'll lose all the data from that session.

PPM keeps good, professional records of investments. It separates the open stocks (those you currently hold) from the closed (those that you've sold), and it keeps complete year-to-date records that make a breeze out of completing the dreaded Schedule D of form 1040.

In addition, PPM can automatically dial the Dow Jones and Warner quote services to update your portfolio—even when you're not home! Or you can enter the quote information yourself, using the daily newspaper as your source.

The master disk comes with five report programs that should cover virtually all your needs. If not, you can customize the programs to print out reports any way you wish.

I used PPM with two printers, a Star NX-10 and a PowerType daisy wheel. The reports generated were clean, precise and professional.

I've seen programs like PPM for the IBM PC at a cost of $400–$500. Abacus's Personal Portfolio Manager does what its cousins do at a fraction of the cost. This program would make an excellent addition to any investor's software library.

Technical Analysis System

Believe it or not, there's an investment technique that's touted as able to pick a winning stock without any data on the financial state of the company. Called technical analysis, it involves charting and graphing a stock, using data such as high, low and closing prices, volume and moving averages. From these graphs, a technician can discern certain trends that indicate whether the stock will move higher, lower or even sideways.

Proponents of technical analysis say it's similar to a doctor reading a hospital chart and predicting whether the patient will get healthier or sicker. Its detractors say it's more like reading an astrology chart—and about as scientific. One thing is certain: The Technical Analysis System by Abacus is every bit as good as similar programs offered for the IBM PC—at one-tenth the cost.

Abacus makes both C-64 and C-128 versions of TAS, and I reviewed the latter. An 80-column program, TAS 128 takes full advantage of the hires capabilities of the 8563 chip. The charts are displayed in various formats, and the printouts are professional. ►

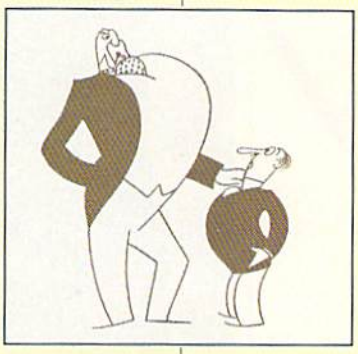
Online Help for Investors

By JOHN PREMACK

VESTOR, AN ON-LINE SERVICE from Investment Technologies, provides you with market research data and analyses formerly available only to professional money managers. Requiring no special software, it features more than 20 evaluative programs and an almost equal number of user help files and utilities, along with a comprehensive user's guide.

All you need to get online with Vestor is a 300- or 1200-baud modem and communications software. Vestor's VAX 11/785 computers, located in New Jersey, can be accessed directly or via Telenet. Several information services, including The Source, GEnie and Quotron, also offer gateways to Vestor.

The service is remarkably easy to use. Two-letter codes take you directly to a series of programs that screen, analyze, chart and rank the potential of investment opportunities in any of four areas: stocks, options, futures and market averages. A database of historical information on over 6000 issues from the New York Stock Exchange, American Stock Exchange and Over the Counter markets forms the foundation of the programs and is instantly available to support your research.



The standard report prepared by Vestor's Evaluate program provides daily technical analyses of price trend lines, performance predictions, Alpha (relative to market) and Beta (volatility) ratings and reward-to-risk ratios. Vestor also generates an Investment Strategy Rating for each stock, combining technical and fundamental predictions and evaluations.

Boon to Investors

Savvy investors will quickly learn how to set their own performance, yield and marketability parameters and conduct a search of every stock on the system. Option traders can follow issues with a pair of standard chart reports, one of which uses current prices while the market is open. The bar chart generated by Vestor's OpPlot program is calculated by applying 14 proprietary formulas to determine what a particular option's price "ought" to be.

If terms like price trend lines, moving averages and graded buy/sell signals are enough to send you to the bank to buy savings bonds, Vestor's newest program, TellMe, will help. It reduces the technical charts and jargon to unadorned English and presents an easy-to-read, computer-based technical opinion of a stock's rating and potential.

Two other Vestor programs will also appeal to the less sophisticated investor. Select provides a list of five stocks that have a favorable reward-to-risk ratio. Updated weekly, it also supplies a commentary on the fundamentals of each company. Model offers a portfolio of ten Vestor-selected issues as a guide for possible long positions in the stock market. Of course, despite having outperformed the Dow Jones Index for over 20 years, Vestor offers no assurances of future performance.

MyRecord, one of Vestor's utility programs, duplicates the record-keeping function of many personal financial programs by maintaining a list of your transactions and preparing reports on your holdings or realized profits and losses. This program happens to be one of the few inadequate features of Vestor, primarily because of its inability to evaluate current holdings.

In contrast, another Vestor utility, called MyList, is most useful. It lets you automate much of your time on the system by storing lists of stocks that can all be run through an analysis program at once.

At a Modest Cost

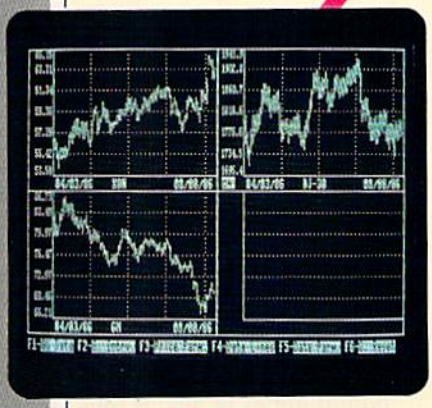
The price for this powerful information service is surprisingly low. The initial subscription fee of $49.95 includes the excellent 200-page user's guide and 30 days of unlimited access. After the first month, individual reports are billed at $1–$3 per issue. Investment Technologies offers a bounty of one month's free service if you provide referrals who sign up as permanent subscribers.

Telenet charges 20 cents per minute. If you access Vestor through an online service such as The Source, you'll avoid the initial fee, but charges for each stock analyzed or screened are double those paid by a Vestor subscriber.

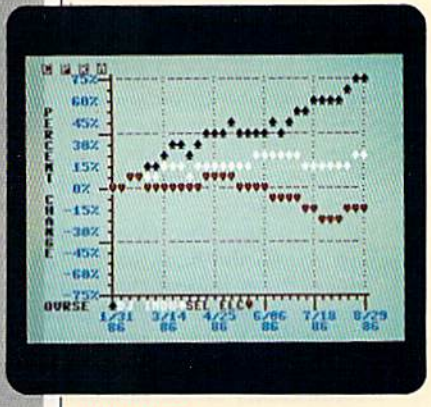
With its large database, relatively modest fee schedule and no monthly minimums, Vestor is an attractive alternative for the occasional investor, as well as the discount brokerage customer. For further information, contact Investment Technologies, Inc., 519 Thornhall St., Edison, NJ 08837. R

ILLUSTRATIONS COURTESY OF GRANGER COLLECTION





Abacus' Technical Analysis System will chart your stocks' movement over time.



Aspen Glen Software's Mutual Fund Prospector can graph your various funds' changes.



Main menu screen from Pyxis Software's Investment Simulation program. ►

Playing the Investment Game

By WALT LATOCHA

WOULD YOU LIKE TO BE A MILLIONAIRE? If so, you can realize your dreams—in a way—with just your C-64 and the investment simulation game of your choice.

The New York Stock Exchange, for instance, is the setting for Insight's The Financial Time Machine, which first appeared in 1985. In this game, designed for up to four players, you choose any five-year period between 1930 and 1984 and a starting "stake" of $25,000, $50,000 or $100,000. Then you buy and sell 27 common stocks, options, gold, Treasury bills and shares of a real estate index in an attempt to increase your holdings. The program provides updates on the status of your portfolio, your net worth, your cash flow, the current values of available investments, news events that may affect prices and the prime rate. It also lets you buy on margin and issue stop-loss limit orders.

Blue Chip Software distributes three investment simulations that were first released about 1983: a stock market game called Millionaire, a real estate game called Baron and a commodities game called Tycoon. All three have the same basic structure, are played by only one person and have a goal of amassing a net worth of $1 million or more. The programs calculate taxes, commissions and interest on loans and margin purchases, and they let you save your current net worth from one game to the next.

The Blue Chip games come with detailed instruction booklets that are far clearer than The Financial Time Machine's brief pamphlet. However, they suffer from long disk-access times at the start of a new game—more than 15 minutes for Millionaire, more than six minutes for Baron and more than 11 minutes for Tycoon—and they're incompatible with the Epyx Fast Load cartridge. Fortunately, reloading saved games takes less than three minutes.



With the Financial Time Machine, you can play the market in 1945.

Decisions, Decisions

In Millionaire, you must increase your initial $10,000 a hundredfold within 78 rounds of market activity. Aiding your decisions on whether to buy or sell 15 stocks and their options are brief news updates, corporate histories and charts that track the performance of individual stocks, industry groups and the market as a whole.

Baron is played on a "turf" encompassing the real estate markets of six states. You have 60 turns, spanning five years, in which to parlay $35,000 into seven figures. Play options include buying and selling residential buildings, business facilities and land, plus options on these properties, and you can place your excess cash in interest-producing second mortgages. Baron's trading aids include property descriptions, bulletins announcing major events and statistics and graphs showing fluctuations in market sectors.

The third Blue Chip simulation, Tycoon, provides 52 weeks in which to build your initial stake of $10,000 up to a million by trading in 15 commodities, including soybeans, Swiss Francs, pork bellies and the Standard & Poor's Index. Like Millionaire and Baron, Tycoon alerts you to news events and provides market descriptions. However, it adds a fictitious trader, named, appropriately enough, Cheat, whose net worth of $250,000 an unscrupulous gamer can assume for an undeserved head start toward his or her first million.

Some Commodore gamers may consider The Financial Time Machine and the Blue Chip programs dull, because of their minimal sound effects, rather static graphics and lengthy playing times. However, if you enjoy thinking, they'll probably be among your favorites. Tycoon is especially challenging in letting you make money even when the market value of your portfolio declines.

Do Games Help in Real Life?

Can these games help the experienced investor in real-life markets? Probably not. For one thing, they simulate only speculation, not long-term investment. Also, some of their assumptions are invalid for actual trading. For example, both Baron and The Financial Time Machine include long- and short-term capital gains, a distinction that recent tax legislation has largely erased.

All four of these games do match reality in one important respect: Like authentic markets, they're difficult to master. If they help you appreciate how much effort is needed to succeed in the real financial world, you'll have learned a valuable lesson.

The Financial Time Machine is available for $34.95 from Insight, a subdivision of Lehner Communications, Inc., 2708 Arlington Ave., Highland Park, IL 60035, 312-432-4606. Millionaire, Baron and Tycoon are distributed by Blue Chip Software, Inc., 345 Fourth St., San Francisco, CA 94107, 415-546-1866, and cost $29.95 each. ®

Like Personal Portfolio Manager, its sister program, TAS can call up Dow Jones and Warner to get quotes. Since these services maintain a day-by-day listing of price quotes for at least a year, they provide substantial histories to type into TAS.

Be forewarned that, while TAS is easy to learn, technical analysis is not. The program's documentation gives good background information, but, if you're unfamiliar with technical analysis, you'll need to seek out a textbook on the subject in the library. Otherwise, the charts may look like meaningless jumbles of lines.

The power of this program is enormous, and, once you know something about technical analysis, it won't be long before you're writing macros to take advantage of its vast capabilities. Abacus's Technical Analysis System is a winner.

Mutual Fund Prospector

Many small investors have come to the painful realization that picking the right stock isn't easy. Too often, while the market resembles a herd of stampeding bulls, your portfolio lies there like a dead fish.

The answer for many has been investing in mutual funds, in which you buy a share of a fund that's managed by professionals. Over the past few years, most mutual funds have proven to be excellent investments.

Okay, so you no longer have to worry about which stock to buy, but which mutual fund should you choose? *The Wall Street Journal* lists scores of them, each with a number of subdivisions, so picking a good mutual fund may look as hard as picking a good stock.

That's where Mutual Fund Prospector, which tracks families of mutual funds, can help. You input the closing prices for each fund once a week; then the program determines which has performed best over a given period of time. In addition, the Moving Average program calculates an entire fund's performance, giving you an overall look at the quality of its management.

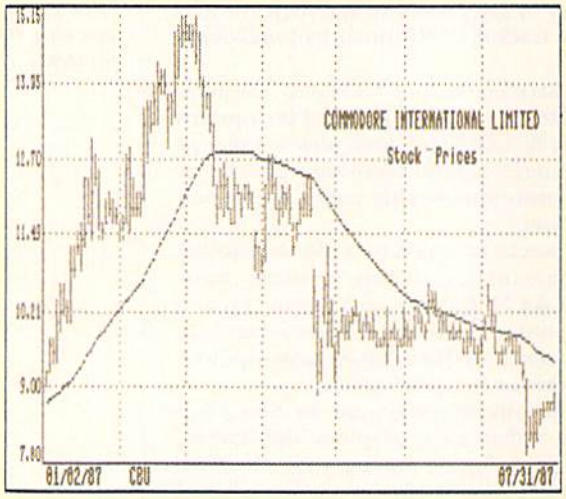
MFP's instruction manual is well written, and the program itself is straightforward. You can chart as many as five funds at once and print out several lists, with the funds ranked in order of performance. One weakness, unfortunately, is that the printout of the graphs is less than professional-looking.

You must input a history of each fund's closing prices to build up a database for analyzing trends, but once this research is complete, doing the weekly updates is easy. All in all, Mutual Fund Prospector is a fine program that should help you choose the right mutual fund.

Aspen Glen Software has introduced two new programs that complement Mutual Fund Prospector. The Moving Average Explorer helps investors discover the most advantageous number of weeks to use for the moving average calculations of the funds they're following.

The second program, File Manager, allows you to add additional data to existing Prospector files, and it also provides a spreadsheet-like printout.

Commodore: Sailin' On



C-64 AND C-128 USERS ARE KEENLY AWARE of the rollercoaster fortunes of Commodore International. Over the past four years, the company's stock has been as high as 60 and as low as 5.

On July 21, 1987, the stock hit a calendar-year low of 8. Which way was it headed from there? I used the Abacus Technical Analysis System to find out.

The vertical lines on the chart show the daily price range of Commodore stock (CBU is the ticker symbol) for the first seven months of 1987. Notice the line through the stock prices. It's called the 60-day moving average. The fact that Commodore was trading considerably beneath its moving average was one indication to technical analysts that its stock would move higher, despite the recent downturn.

And did it? Well, 60 days later, on September 21, Commodore stock was selling for 9¾, a gain of 22 percent! R

Investment Simulation Program

Well, now that you've made a killing in the market, what next? Build a multimillion-dollar apartment complex or put up a 100-story skyscraper? If you're in that league, then the Investment Simulation Program from Pyxis is for you. This package is used to analyze long-term investments and predict if and when a major project (usually involving real estate) will become profitable.

There are separate programs on the disk for the C-64 and the C-128, with the 128 version supporting both 40 and 80 columns. In order for you to get a proper hard copy, your printer must be capable of compressed mode (about 136 characters per line).

ISP is flexible, and the professional printouts offer an accurate appraisal of a project's potential—assuming you know enough about business investing to feed in accurate data. And there's the rub. This program is for knowledgeable users only. The documentation, written in technical jargon, assumes a familiarity with the basics of

Table 1. Distributors and prices.

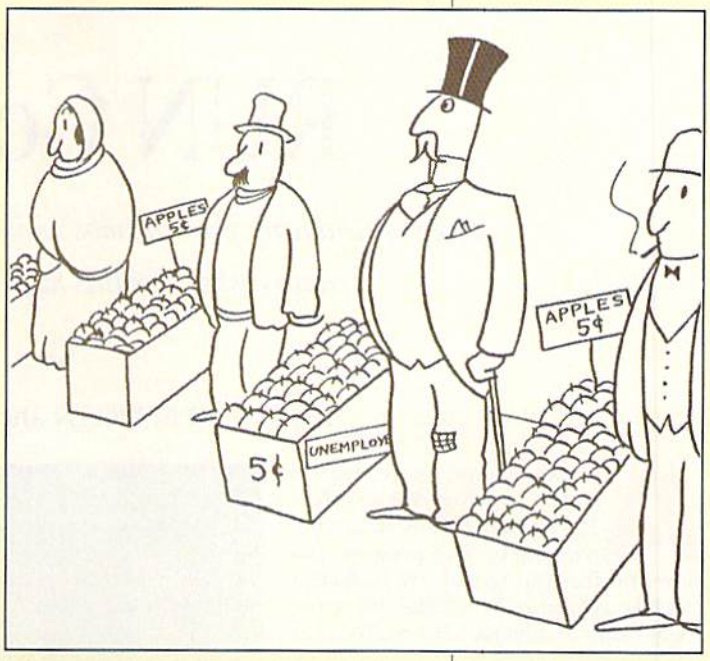
Personal Portfolio Manager
Technical Analysis System
Abacus Software
5370 52nd St. SE • Grand Rapids, MI 49508
616-698-0330
C-64 and C-128; $39.95 and $59.95, respectively, for each program

Mutual Fund Prospector
Moving Average Explorer
File Manager
Aspen Glen Software
2350 Sixth Ave., #6H • San Diego, CA 92101
619-235-8734; C-64; $49.95, $39.95 and $29.95, respectively

Investment Simulation Program
Pyxis Software
PO Box 18016 • Colorado Springs, CO 80935
303-596-6465
C-64 and C-128 on one disk; $36 (plus 10% for handling)

Strategist
Strategy Software
909 Carol Lane • Fairbanks, AK 99712
907-457-2294
C-128; $29.95

Microsoft Multiplan
Originally distributed by Epyx, Inc., but now available only through mail order or in computer stores.
C-64 and C-128; $59.95 each



investment and finance. However, if you have a lot of money to invest and business experience to back it up, ISP will serve you well.

FOOTNOTES

Strategist, from Strategy Software, arrived too late for me to review, but it's worth mentioning. Designed for the C-128, this program starts with a large historical quote file and a trading strategy you specify. Then it simulates realistic trades to see how well or poorly the strategy would have paid off. The package includes the main program; two supporting programs that create historical files and track week-to-week price activity; several utility programs; and several years of quotes for a fictional insurance company.

In addition to dedicated software, spreadsheet programs can also be used as portfolio managers. Microsoft Multiplan, a C-64 and C-128 program (originally from Epyx, but now available through mail order or computer stores), even has a template called Stock Portfolio right on the disk.

Spreadsheets are more flexible than dedicated stock programs, so you can set them up in any format you wish. They're also faster than the typical portfolio manager, because all your data is in one file, and usually on one screen.

However, you lose some of the excellent features of a good portfolio manager. For example, the ability to print out reports is curtailed, and you can't tie into quote services. Also, you need to come up with formulas to enter on your own, and spreadsheets take more work to update.

So, there's a look at some of the investment software that's available for you and your Commodore. Now, off you go to stalk those bulls and bears. Good luck and happy hunting! ■

Peter King is a freelance editor and writer for several financial and investment newsletters.

RUN Copy 64

Tired of twiddling your thumbs while backing up those important data disks? Try this high-speed disk copier.

By DAVID MARTIN and PETER PATEL

As many Commodore owners know, copying disks with a 1541 disk drive and its accompanying backup program is a slow and frustrating process. In fact, it can take as long as 20 minutes. We wrote RUN Copy to alleviate this problem. It lets you make a disk copy in three minutes or less—a more than 500 percent increase in speed!

Normal 1541 copying is slow because only one bit of data at a time is sent over the serial data line. RUN Copy achieves its speed by placing a special program in the drive's RAM and special input/output routines in the computer's RAM. These enable the drive to send or receive two bits of data at a time, one over the serial data line and one over the serial clock line.

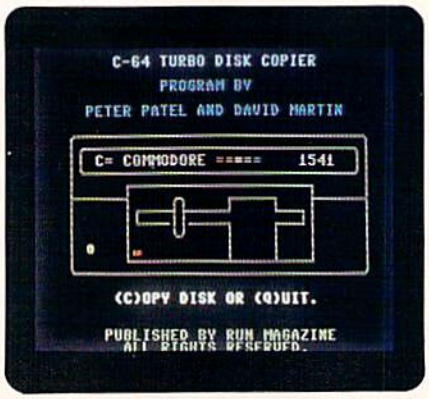
Type in RUN Copy, using *RUN*'s Checksum program, and then save it to disk. Before running it, shut off the computer, remove all cartridges and make sure every peripheral on the serial bus except the one 1541 is disconnected or turned off. Any extra peripherals could interfere with the program.

RUN Copy duplicates all the sectors on the source disk, regardless of their allocation status. Therefore, if you plan on backing up a disk that contains only a couple of short files, you'd save time by using a file copier instead.

Making Copies

When you run the program, the title screen asks if you want to copy or quit. Assuming you want to copy, enter C; then, at the next prompt, place a write-protected source disk in the drive and press return to start the copying process. As the data moves, keep an eye on the 1541 picture on the screen; its drive light operates in sync with the real drive's light.

Soon the bell rings, and a prompt to insert a copy disk appears. Be sure your copy disk doesn't contain any programs or other files you need, because the data from the source disk will obliterate them.



Use RUN Copy to copy all your noncopy-protected disks.

Insert the copy disk and press return. After a short wait, a prompt to switch back to the source disk appears. It takes three of these source-disk-copy-disk sequences to complete the copy. When it's done, press return to go to the main prompt, then C to make another copy or Q to quit.

Error Handling

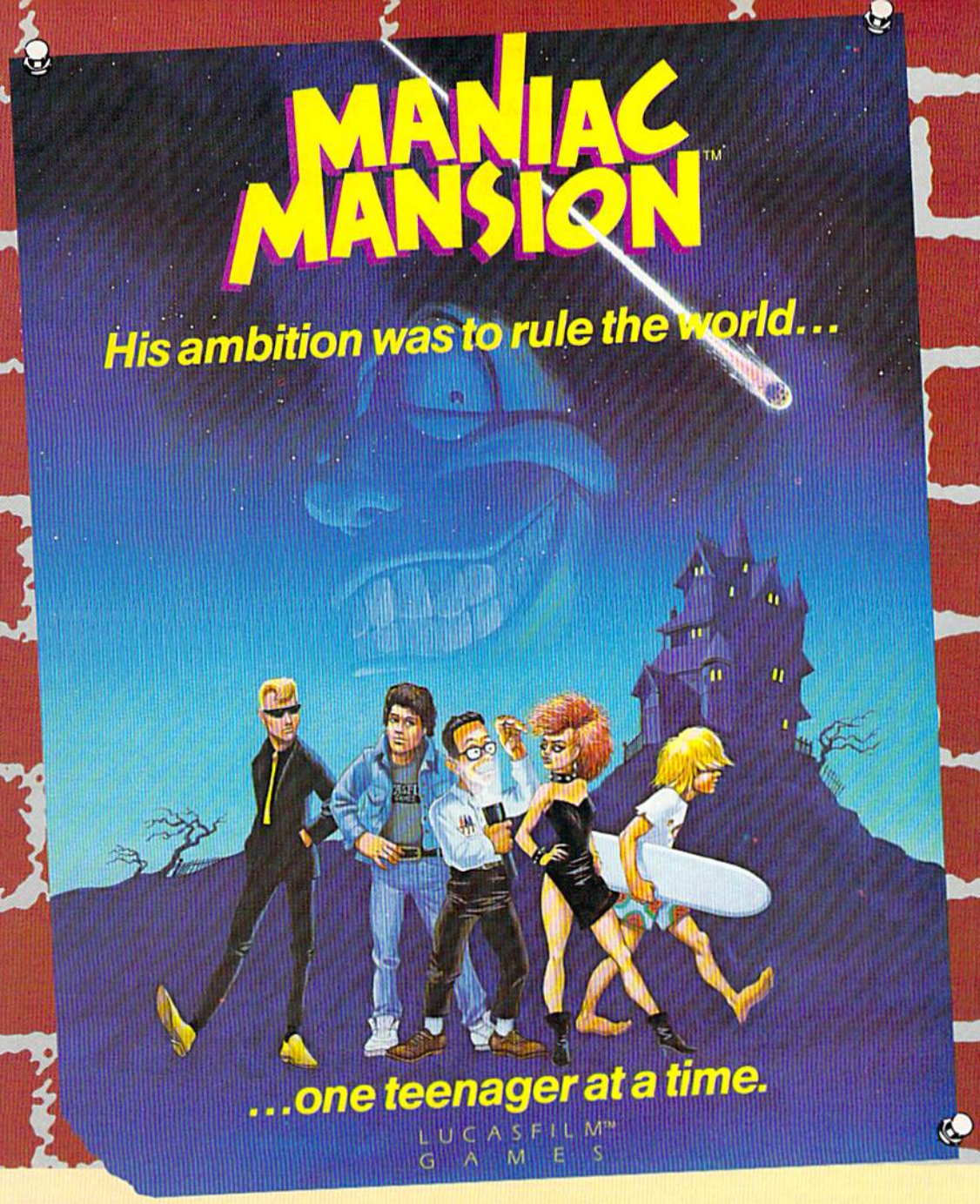
If an error is encountered during copying, RUN Copy tells you at the end of the current pass on which disk the error occurred. The duplication process isn't aborted, because RUN Copy is able to remove disk errors. It will repair data, however, only in sectors containing a #22 or #23 error. Other errors are removed so the program can proceed, but the restored data from these bad sectors will be of unpredictable content. R

David Martin is a frequently published programmer and writer. Peter Patel, also a programmer, is president of Patech Software.

Listing 1. RUN Copy program.

```
10 REM RUN COPY C64/1541 - MART
   IN/PATEL              :REM*236
15 OPEN 8,8,8,"RUNCOPY,P,W"
                         :REM*182
20 READ A$:IF A$="-1" THEN CLOS
   E8:END                :REM*176
25 IF LEN(A$)<62 THEN 65
                         :REM*227
30 B$=MID$(A$,1,20)+MID$(A$,22,
   20)+MID$(A$,43,20)    :REM*252
35 FOR I=1 TO 30         :REM*207
40 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*171
45 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55             :REM*91
50 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55             :REM*113
55 BY=H*16+L:PRINT#8,CHR$(BY);
                         :REM*185
60 NEXT:GOTO 20          :REM*129
65 IF LEN(A$)<21 THEN B$=A$:GOT
   O 80                  :REM*164
70 IF LEN(A$)<42 THEN B$=LEFT$(
   A$,20)+RIGHT$(A$,(LEN(A$)-21
   )):GOTO 80            :REM*239
75 B$=LEFT$(A$,20)+MID$(A$,22,2
   0)+RIGHT$(A$,LEN(A$)-42)
                         :REM*182
80 FOR I=1 TO LEN(B$)/2:REM*203
85 C$=MID$(B$,(I*2)-1,2):H$=LEF
   T$(C$,1):L$=RIGHT$(C$,1)
                         :REM*134
90 H=VAL(H$):IF H$>"9" THEN H=A
   SC(H$)-55             :REM*46
95 L=VAL(L$):IF L$>"9" THEN L=A
   SC(L$)-55             :REM*78 ►
```

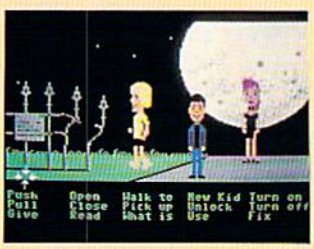
RUN it right: **C-64; 1541 disk drive**



These guys got problems! *Jeff just wants to party. Bernard's flashlight batteries are going dead. Syd and Razor are just trying to start a band. Then on top of it all, Dave's girlfriend Sandy gets kidnapped, and she's being held captive by strange Dr. Fred!*

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```
100 BY=H*16+L:PRINT#8,CHR$(BY);
                        :REM*138
105 NEXT:GOTO 20        :REM*182
110 DATA 0108A088A009E3230036 3
    1000000A9008D9102A9 8E20D2F
    FA9808D9102A9       :REM*108
111 DATA 068D20D0A9008D21D04C E
    809A9268D01D4A9F98D 06D4A90
    F8D18D4A9118D       :REM*43
112 DATA 04D4A9108D04D4A90085 C
    6A2FFA0088D0FD86A8 209FFF2
    0E4FFC900DF01F      :REM*122
113 DATA A6A8CAD0EAA2A0A0FF88 D
    0FD86A8209FFF20E4FF C900DF00
    7A6A8CAD0EAF0       :REM*226
114 DATA B1A2008E18D486C660EA E
    AEAEAEAEAEAEAEAEAEA EAEAEAE
    AEAEAEAEAEAEA       :REM*201
115 DATA EAEAEAEAEAEAEAEAEAEA E
    AEAEAEAEAEAEAEA2077 0D93131
    1E9209A432D36       :REM*69
116 DATA 3420545552424F204449 5
    34B20434F5049455211 0DEE201
    F50524F475241       :REM*249
117 DATA 4D2042591100DE6201F50 4
    554455220504154454C 20414E4
    4204441564944       :REM*116
118 DATA 204D415254494E1100D97 E
    420D5EFC3EFC3C3C900D E420C2D
    5EFC3EEC3C9C2       :REM*11
119 DATA 0DE42C2C2209843 3D20 4
    34F4D4D4F444F52452 0 1C3D813
    D9E3D1E3D1F3D       :REM*239
120 DATA E4209831353431972020 C
    2C20DE420C2CAEFC3EE C3CBC20
    DE420C2E520B0       :REM*56
121 DATA F3C3AEE52C20DE420AB E
    5C3B3E420D5C9E420B0 E4C3AEE
    320ABE5C3B30D       :REM*243
122 DATA E420C2E52C2B0E3C3B3 A
    BE4C3BDE420ADC3C3AE C2E52C
    20DE420C2E520       :REM*95
123 DATA C2ADE3C3C2C2E4C3AEE4 2
    0B0C3C3BDC2E520C20D E420C2E
    520C2E420CACB       :REM*164
124 DATA E420C2E420C2E320C2E5 2
    0C20DE420C2201ED197 E320C21
    CB997E920C2E4       :REM*120
125 DATA 20C2E320C2E520C20DE4 2
    0C2E520ADEAC3B1E4C3 B1E3C3B
    DE520C20DE420       :REM*254
126 DATA CAEFC3F0C3CB0D0060A9 F
    4A0A58D3108C30032 0 A708A00
    8A217182 0F0FF      :REM*140
127 DATA 2077 0D1E505424C4953 4
    8454420425920525 54E 204D414
    7415A494E4500       :REM*53
128 DATA A00AA218182 0F0FF2077 0
    D1E414C4C2052494748 5453205
    2455345525645       :REM*108
129 DATA 442E00A000A214182 0F0 F
    F2077 0D052020202020 2020202
    02843294F5059       :REM*199
130 DATA 204449534B204F522028 5
    1295549542E2020202020 2020202
    02000582 0E4FF      :REM*232
131 DATA C943F007C951F0064C72 0
    A4C860A6CFCFF207B0C A90885B
    A2 0B1FFA96F85       :REM*107
132 DATA B9203FFA94920A8FFA9 3
    020A8FF20AEFFA97685 BBA90C8
    5BCA90585B7A9       :REM*201
133 DATA 0885BAA96F85B920D5F3 A
    5BA20B4FFA5B9206FF A900859
    020A5FF482042       :REM*96
134 DATA F668291 0D0034CE30AA9 0
    58D20D020BA0D20B90C A9588D6
    70CA9038D680C       :REM*220
135 DATA A0CB84FBA900F85FCA908 8
    5BA20B1FFA96F85B920 93FFA00
    0B1FB8D6A0CB9       :REM*34
136 DATA 64 0C20A8FFC8C007D0F5 2
    0AEFFA5FB38E901B002 C6FC85F
    BCE67 0C1 0CDA9     :REM*172
137 DATA 0885BA20B1FFA96F85B9 2
    093FFA000B96B0C20A8 FFC8C00
    5D0F520AEFF78       :REM*51►
```


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```
138 DATA AØ238CØØDDC8DØFDAØCB A
    2ØF2Ø87ØEAØCBA21Ø2Ø 87ØEAØC
    BA2112Ø87ØEAØ          :REM*2
139 DATA CBA2122Ø87ØEA92Ø8D89 Ø
    7A9Ø185Ø378A91785FC A9ØBAØ1
    52Ø4BØE2ØC9ØD          :REM*1Ø
14Ø DATA 2ØEDØCA9Ø185Ø3A91785 F
    CA9ØBAØ152Ø69ØE2ØFD ØDA9ØC8
    5Ø3782ØC5ØE2Ø          :REM*1Ø4
141 DATA 7BØC2ØCEØEA91785FCA9 Ø
    6AØ152Ø4BØEA9Ø5AØ13 2Ø4BØE2
    ØC9ØD2ØC5ØE2Ø          :REM*43
142 DATA EDØCA9ØC85Ø3A91785FC A
    9Ø6AØ152Ø69ØEA9Ø5AØ 132Ø69Ø
    E2ØFDØDA91785          :REM*229
143 DATA Ø3782ØC5ØE2Ø7BØC2ØCE Ø
    EA91785FCA9Ø2AØ132Ø 4BØEA9Ø
    6AØ122Ø4BØEA9          :REM*241
144 DATA Ø5AØ112Ø4BØE2ØC9ØD2Ø C
    5ØE2ØEDØCA91785Ø3A9 1785FCA
    9Ø2AØ132Ø69ØE          :REM*112
145 DATA A9Ø6AØ122Ø69ØEA9Ø5AØ 1
    12Ø69ØE2ØFDØD58AØØØ A214182
    ØFØFF2Ø77ØD1C          :REM*118
146 DATA 2Ø2Ø2Ø2Ø2Ø2Ø434F5Ø59 2
    Ø434F4D5Ø4C45544544 2Ø5Ø524
    5535320524554          :REM*76
147 DATA 55524E2E2Ø2Ø2Ø2ØØØ2Ø 2
    9Ø84C1CØ84D2D57ØØØ4 Ø1Ø04D2
    D45ØØØ34D2D52          :REM*72
148 DATA 16ØØØ24D2D52ØØ1CAØØ2 A
    214182ØFØFFA9Ø58D2Ø DØ2Ø77Ø
    D1F494E534552          :REM*51
149 DATA 542Ø534F555243452Ø44 4
    9534B2Ø414E442Ø5Ø52 4553532
    Ø52455455524E          :REM*176
15Ø DATA 2ØØØ582ØE4FFC9ØDDØF9 A
    ØØ2A214182ØFØFF2Ø77 ØD9C2Ø2
    Ø2Ø2Ø52454144          :REM*2Ø4
151 DATA 494E472Ø46524F4D2Ø44 4
    9534B2Ø5Ø4C45415345 2Ø57414
    9542Ø2Ø2Ø2ØØØ          :REM*165
152 DATA 786ØAØØ2A214182ØFØFF A
    9Ø88D2ØDØ2Ø77ØD1F2Ø 494E534
    552542Ø434F5Ø          :REM*192
153 DATA 592Ø4449534B2Ø414E44 2
    Ø5Ø5245535320524554 55524E2
    Ø2ØØØ582ØE4FF          :REM*243
154 DATA C9ØDDØF9AØØ2A214182Ø F
    ØFF2Ø77ØD9C2Ø2Ø2Ø2Ø 2Ø57524
    954494E472Ø54          :REM*2
155 DATA 4F2Ø4449534B2Ø5Ø4C45 4
    153452Ø57414954Ø2Ø 2Ø2Ø2ØØ
    Ø786Ø586Ø484A          :REM*8Ø
156 DATA 4A4A4A2Ø6CØD6829ØFØ9 3
    ØC93A9ØØ269Ø64CD2FF 488A489
    848AØØØBAFEØ4          :REM*245
157 DATA Ø1DØØ3FEØ5Ø1BDØ4Ø185 3
    BBDØ5Ø1853CB13B3ØØD FØØ52ØD
    2FF9ØE268A868          :REM*236
158 DATA AA686ØC9EØ9ØF138E9EØ 8
    53AC8C63AB13B2ØD2FF C63ADØF
    788FØC4AØØ2A2          :REM*17
159 DATA 15182ØFØFF2Ø77ØDFF2Ø Ø
    Ø6Ø2Ø35Ø F2ØBAØDADØØ 16FØ28A
    ØØ2A215182ØFØ          :REM*35
16Ø DATA FF2Ø77ØD1C2Ø2Ø2Ø2Ø2Ø 2
    Ø2Ø2Ø5245414420455 2 524F525
    32Ø4F4E2Ø4449          :REM*215
161 DATA 534BØØ6Ø2Ø35ØF2ØBAØD A
    DØØ16FØ28AØØ2A21518 2ØFØFF2
    Ø77ØD1C2Ø2Ø2Ø          :REM*22Ø
162 DATA 2Ø2Ø2Ø2Ø575249544520 4
    552524F5253204F4E2Ø 4449534
    BØØ6Ø84848484          :REM*99
163 DATA 84848485858585858586 8
    6868686868687878787 878785F
    E84FDA91F2ØD2          :REM*72
164 DATA FFA5FD85FF78E6Ø32Ø98 Ø
    EE6FCC6FFDØF7C6FEDØ EC6Ø85F
    E84FDA91F2ØD2          :REM*157
165 DATA FFA5FD85FF78E6Ø32ØBØ Ø
    EE6FCC6FFDØF7C6FEDØ EC6Ø84F
    B86FCAØØØB1FB          :REM*15
166 DATA 99ØØ16C8DØF84CCEØE2Ø 3
    5ØFAØØ84FB84Ø1B9ØØ 1691FBC
    8DØF8A93785Ø1          :REM*2Ø ►
```


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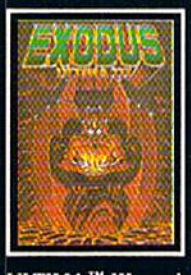
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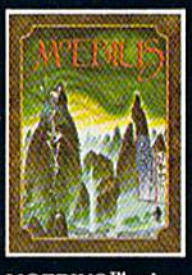
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167 DATA 4CC5ØEAØØØ84FB84Ø1B1 F
    B99ØØ16C8DØF8A93785 Ø12ØCEØ
    EAD8BDA49Ø28D       :REM*1Ø7
168 DATA 8BDA6ØAØØØ2CØØDD5ØFB B
    9ØØ16AA29ØF8DØ3ØF8A 4A4A4A4
    AAA38AD12DØE9       :REM*161
169 DATA 329ØØ429Ø7FØF5A9Ø78D Ø
    ØDDBD25ØF8DØØDD4A4A 29F38DØ
    ØDDA2ØØBD25ØF       :REM*1Ø7
17Ø DATA 8DØØDD4A4A29F38DØØDD A
    923EAC88DØØDDDØBB6Ø AD12DØC
    9ØABØF94CD5ØE       :REM*77
171 DATA Ø78727A747C767E71797 3
    7B757D777F7AØØØ2CØØ DD5ØFB3
    8AD12DØE9329Ø       :REM*188
172 DATA Ø429Ø7FØF5A9Ø38DØØDD Ø
    AØAØAØAØAØA4DØØDD4A 4AEA4DØ
    ØDD4A4AEA4DØØ       :REM*145
173 DATA DD4A4AA2234DØØDD8EØØ D
    D99ØØ16C8DØCA6Ø78AØ Ø88CØØ1
    8C8DØFD2Ø21Ø3       :REM*64
174 DATA EE4BØ32Ø21Ø3EE4BØ32Ø 2
    1Ø3EE4BØ32Ø21Ø34CØØ Ø4A97A8
    DØ218AØØØA9Ø1       :REM*168
175 DATA 8DØØ182CØØ18DØFB248Ø A
    DØØ18ØAEAEA4DØØ18ØA ØAØA4DØ
    Ø18ØAEAEA4DØØ       :REM*25Ø
176 DATA 1899ØØØ4C8DØD9A9Ø88D Ø
    Ø186Ø4C4BEB78ADØF18 29DF8DØ
    F18ADØØ1CØ9Ø8       :REM*254
177 DATA 8DØØ1C2Ø82F9A9EE8DØC 1
    CA9Ø385BFA9Ø1852185 BEA9238
    5BAA9ØB85BD85       :REM*111
178 DATA BCA9Ø385314C83Ø5A97A 8
    DØ218AØØØA9Ø18DØØ18 2CØØ18D
    ØFB248ØADØØ18       :REM*2Ø5
179 DATA ØAEAEA4DØØ18ØAØAØA4D Ø
    Ø18ØAEAEA4DØØ189ØØØ Ø3C8DØD
    9A9Ø88DØØ184D       :REM*232
18Ø DATA ØØ1C8DØØ1C6ØAØØØA2ØØ B
    9ØØØ34A4A4A4A8D94Ø4 B9ØØØ32
    9ØF8EØØ18AABD       :REM*174
181 DATA B6Ø4AEØØ18DØFB8DØØ18 Ø
    A29ØFA2ØØ8DØØ18BDB6 Ø4A2ØØ8
    DØØ18ØA29ØFC8       :REM*152
182 DATA 8DØØ18DØC9EAA9Ø88DØØ 1
    84DØØ1C8DØØ1C6ØØFØ7 ØDØ5ØBØ
    3Ø9Ø1ØE6ØCØ4         :REM*78
183 DATA ØAØ2Ø8ØØA9FFA622E421 F
    Ø3ØBØØ2A9Ø185C91865 228522A
    2Ø218ADØØ1C65       :REM*5Ø
184 DATA C929Ø385C8ADØØ1C29FC Ø
    5C88DØØ1CA9BØ8DØ518 2CØ5183
    ØFBCADØDFFØC8       :REM*122
185 DATA A5222Ø4BF2852Ø85B98A Ø
    AØAØAØAØA85C9ADØØ1C 299FØ5C
    98DØØ1C6ØADØC       :REM*49
186 DATA 1C291FØ9CØ8DØC1CA9FF 8
    DØ31C8DØ11C6ØA9DØ8D Ø5182CØ
    5181Ø1A2CØØ1C       :REM*138
187 DATA 3ØF6A9DØ8DØ5182CØ518 1
    ØØB2CØØ1C1ØF6ADØ11C B8186Ø3
    86ØA93Ø85C9A5       :REM*197
188 DATA 16451745184519851A2Ø 3
    4F92Ø2DØ5BØ14AØØØ5Ø FEB8B92
    4ØØCDØ11CDØØ7       :REM*12
189 DATA C8CØØ8DØFØ186ØC6C9DØ E
    3386ØA5BFA2ØBC9Ø1DØ Ø2A2ØD8
    6BD86BCE8A9ØØ       :REM*25Ø
19Ø DATA 9DØØØ2CA1ØFA85BB2ØC6 Ø
    4A6BBA9ØØ9DØØØ285B8 A522851
    8A9ØØ8519A9Ø2       :REM*196
191 DATA 85C42Ø53Ø5BØ312Ø2DØ5 B
    Ø2CAØØØ5ØFEB8ADØ11C 99ØØØ3C
    8DØF4AØBA5ØFE       :REM*1Ø8
192 DATA B8ADØ11C99ØØØ1C8DØF4 2
    ØEØF8A538C9Ø7DØØ72Ø E9F5C53
    AFØØBC6C4DØC6       :REM*192
193 DATA A6BBA5229DØØØ22Ø6EØ4 C
    6B9FØ46A6B8A522C919 BØ12BD1
    CØ6C52Ø9ØØ4E6       :REM*22Ø
194 DATA B8DØED8519E6B84CBØØ5 B
    D3ØØ64CØ7Ø6Ø7ØE0Ø1Ø8 ØFØ2Ø91
    ØØ3ØA11Ø4ØB12       :REM*156
195 DATA Ø5ØC13Ø6ØD14Ø6ØC12Ø1 Ø
    7ØDØ2Ø8ØEØ3Ø9ØFØ4ØA 1ØØ5ØB1
    1A6BBBDØØ2FØ        :REM*18Ø
196 DATA Ø2E6BBE621C6BDFØØ34C 9
    CØ5A52138E5BC8521AØ ØØB9ØØØ
    299ØØØ3C8DØF7       :REM*225
197 DATA 2Ø6EØ4A6BCE8A9ØØ85BB 9
    DØØØ2CA1ØFAADØØ1C29 F78DØØ1
    C2ØC6Ø4A52285       :REM*29
198 DATA 18A9ØØ851985B82Ø34Ø4 A
    DØØ1CØ9Ø88DØØ1C2ØE9 F5853AA
    9Ø385312Ø8FF7       :REM*233
199 DATA 2Ø1AØ5AØØ3A9558DØ11C 5
    ØFEB8E8DØFA88DØF2A5 B985C8A
    5164517451845       :REM*1Ø3
2ØØ DATA 19851A2Ø34F9A2Ø5A9FF 8
    DØ11C5ØFEB8CADØF7AØ ØØB924Ø
    Ø8DØ11C5ØFEB8       :REM*148
2Ø1 DATA C8CØØ8DØF2A245AØØ2A9 5
    58DØ11C5ØFEB8CADØF5 88DØF2E
    619C6C8DØBE2Ø       :REM*36
2Ø2 DATA ØØFEA9ØØ8519Ø2Ø53Ø59Ø Ø
    AA6BBA5229DØØØ24C46 Ø7A2Ø95
    ØFEB8CADØFA2Ø       :REM*212
2Ø3 DATA 1AØ5A2Ø5A9FF8DØ11C5Ø F
    EB8CADØF7AØBBB9ØØØ1 8DØ11C5
    ØFEB8C8DØF4B9       :REM*52
2Ø4 DATA ØØ38DØ11C5ØFEB8C8DØ F
    45ØFEB82ØØØFEC6B9FØ 2FA6B8A
    522C919BØ21BD       :REM*2Ø5
2Ø5 DATA 1CØ6C52Ø9ØØ4E6B8DØED 8
    519E6B82Ø34Ø42ØE9F5 853AA9Ø
    385312Ø8FF74C       :REM*84
2Ø6 DATA Ø2Ø7BD3ØØ64C58Ø7A6BB B
    DØØØ2FØØ2E6BBE621C6 BCFØØ34
    C7EØ6AØØØB9ØØ       :REM*184
2Ø7 DATA Ø299ØØØ3C8DØF72Ø6EØ4 C
    6BFA5BFFØ16ADØØ1C29 F78DØØ1
    C2Ø34Ø4ADØØ1C       :REM*243
2Ø8 DATA Ø9Ø88DØØ1C4C83Ø558AD Ø
    Ø1C29F78DØØ1C4CAØEA 1A1A1A1
    A1A1A1A1A1A1A       :REM*248
2Ø9 DATA 1A1A1A1A1A1A1A1A1A1A 1
    A1A1A1A1A1A1A1A1A1A 1A1A1A1
    A1A1A1A1A1A1A       :REM*177
21Ø DATA 1A1A1A1A1A1A1A1A1A1A 1
    A1A1A1A1A1A1A1A1A1A 1A1A1A1
    A1A1A1A1A1A1A       :REM*176
211 DATA 1A1A1A1A1A1A1A1A1A1A 1
    A1A1A1A1A1A1A1A1A1A 1A1A1A1
    A1A1A1A1A1A1A       :REM*191
212 DATA 1A1A1A1A1A1A1A1A1A1A 1
    A1A                 :REM*146
213 DATA -1             :REM*71 ■
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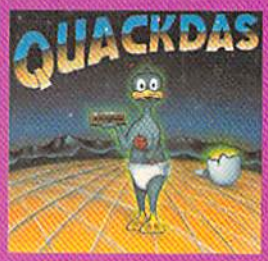
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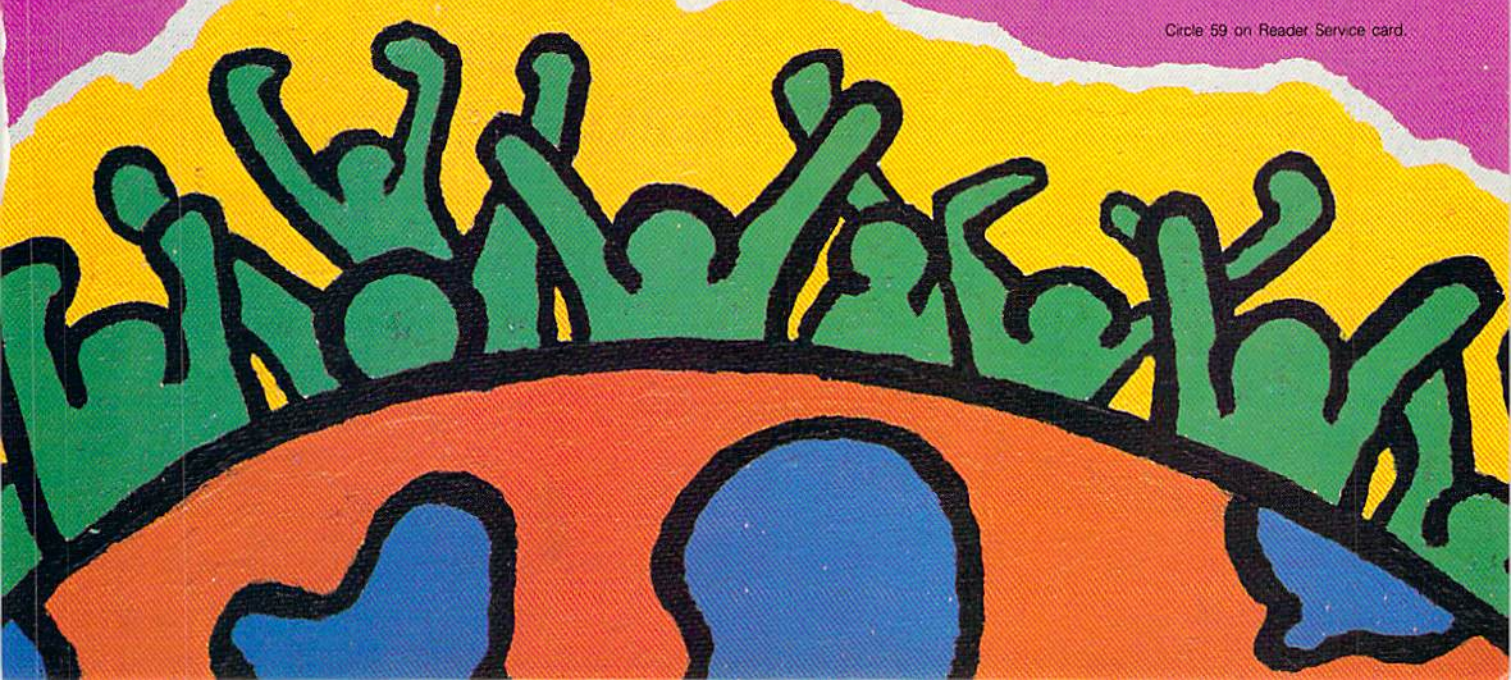
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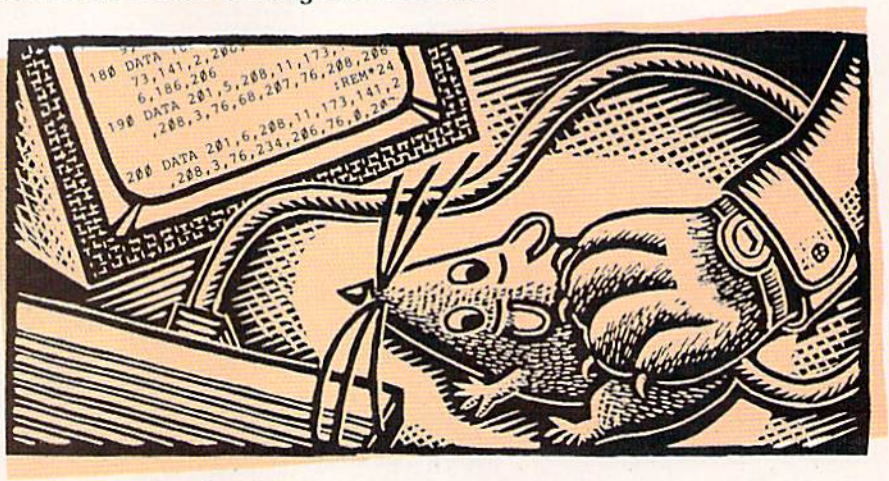
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Your Basic Mouse Editor

C-128 programmers: use your 1351 mouse as a full-screen editing tool for your programs.

By LOREN LOVHAUG and JOHN KRESS



The 1351 mouse is certainly a boon to the C-128, but support for it has so far been limited mostly to applications software. We spend a great deal of time writing and editing our own Basic programs and have often wished we could use a mouse for positioning the cursor in listings and scrolling through program lines. So, we set out to add mouse support to the C-128 for editing Basic code.

On the surface, this looks like a trivial exercise in reading the joystick/mouse ports and positioning the cursor accordingly. However, the situation is complicated by the facts that the cursor position must be updated very frequently and that the code to do this must fit in memory with the Basic interpreter and the C-128's wonderful, but complicated, screen editor.

Ordinarily, it's easy to create a C-128 program that runs "constantly" in the background by wedging into the IRQ interrupt-handling routine—that part of the operating system that's called on 60 times a second to perform mundane, but vital, tasks such as cursor-flashing, scanning all input devices, updating the system clock and handling various screen functions. Wedging into this routine is accomplished by altering its indirect vectors to point to the custom routine you want to invoke. After the computer executes your routine, it goes to the normal IRQ code to handle the jobs described above.

This scheme functions flawlessly in 40-Column mode, but there's a problem in 80-Column mode. The 8563 video display controller handles operations such as scrolling the screen through multiple-instruction sequences, and if you interrupt the flow of data, the computer performs erratically or even locks up. In fact, page 293 of the *C-128 Programmer's Reference Guide* states that "You should not, directly or indirectly, access the 8563 during interrupts. . ."

After months of seeking a way to avoid interrupting screen-editor activity, we contacted Fred Bowen, Commodore's C-128 expert, and he devised a method that works. It involves checking the stack for a return address that points to the screen editor's delay loop, a bit of code where the screen editor idles when it's not performing normal housekeeping chores. When this address is on the stack, it's okay to proceed with the wedge mouse routines; when it's not, the normal interrupt routine is executed. If you're an assembly language programmer, you might want to study this routine with the C-128's built-in machine language monitor, beginning at address $14CE (5326).

Inserting the Wedge

Using *RUN*'s Checksum program, type in Listing 1 and save it to disk with DSAVE "MOUSE LOADER". When you run it, you'll be prompted to insert a disk into your drive (device 8) and press a key, thus creating a binary disk file called Mouse Editor.

To load the wedge into your computer, either before or during a programming session, enter BLOAD "MOUSE EDITOR", and activate it with SYS 4865. At the top of the screen, you'll see a message saying the mouse editor is active, along with the last line of any Basic program in memory. If there's no Basic program in memory, a message to that effect appears.

RUN it right: **C-128; 1351 mouse**

Mousing Around

With the wedge activated, you position the cursor by holding down the left button on the mouse and rolling it in the direction you want the cursor to move. You're also free to use the keyboard, including all of the C-128's screen-editor functions.

If you position the cursor over the Basic line at the top of the screen, then hold the left button down and roll the mouse upward, your Basic listing will scroll backward. Similarly, you can scroll forward through a listing by placing the cursor on the bottom line of the program, pressing the left mouse button and rolling the mouse downward. In fact, you can start scrolling from any point in the program by entering a line number, *followed by a space*, at the top or bottom of the screen and then rolling the mouse up or down.

If there's no Basic line number on the ►

ILLUSTRATED BY BETH KROMMES

Get Results

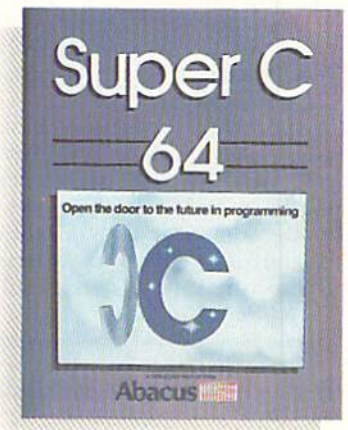
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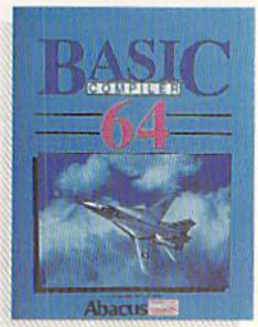
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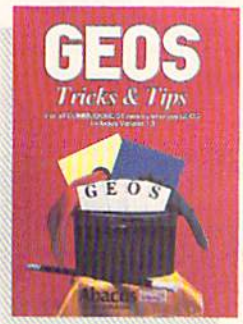


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Circle 8 on Reader Service card.

screen, you can use the function keys to set flags to turn off the mouse and prevent scrolling beyond the listing. The F4 key, redefined as "SYS 5178" + CHR$(13), turns off the wedge, and the F6 key, redefined as "SYS 4865" + CHR$(13), reactivates it. To clear these flags, turn the wedge off and on.

Another handy feature of the mouse editor is fast access to Text Insert mode. Just press the right mouse button to toggle in and out. Also, because the mouse editor doesn't interfere with Basic and Screen Editor commands, you're free to use escape sequences and change Basic lines by retyping them and pressing return. You can even use the wedge with the C-128's built-in machine language monitor and for positioning the cursor on memory dumps or disassemblies. However, the forward-and-reverse scroll feature works only with Basic programs.

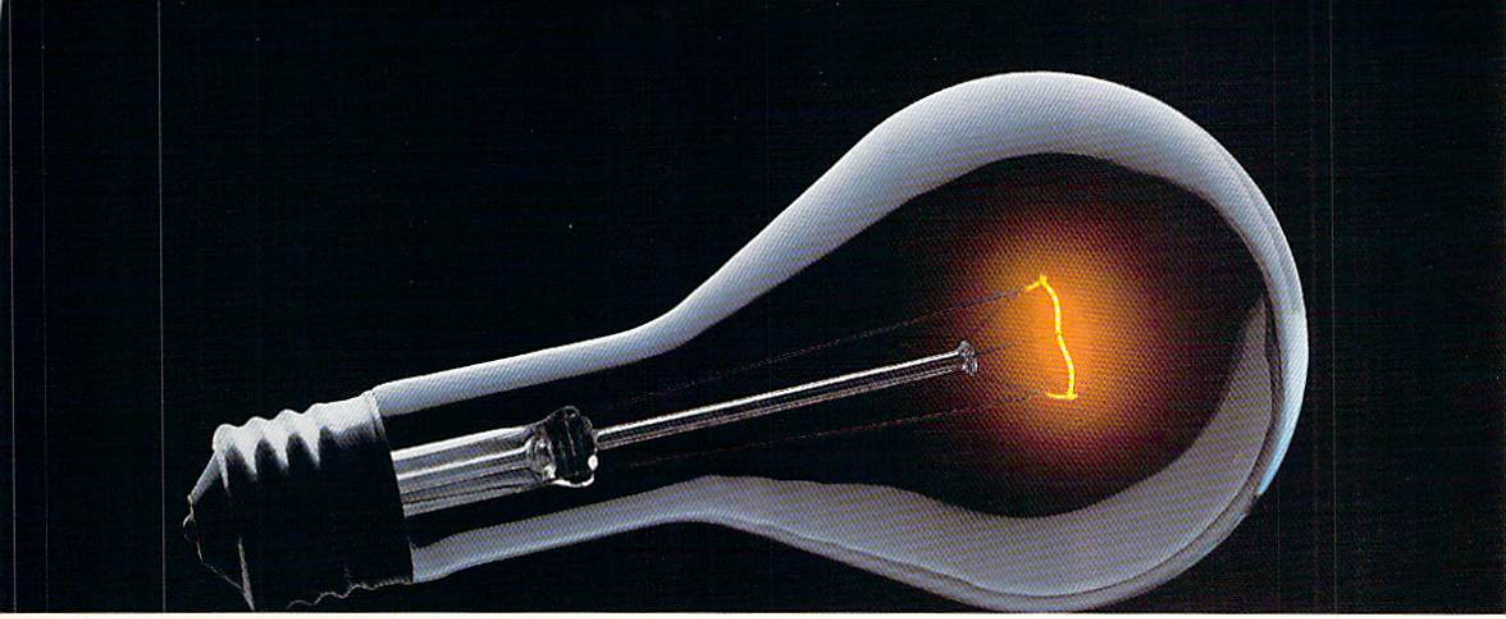
Note that we deactivated the F8 key's normal MONITOR + CHR$(13) function, because of the way the C-128 reads the mouse buttons. If we hadn't, the operating system might mistake the mouse button for F8 and activate the machine language monitor.

Be sure to disable the wedge before executing a Basic program, because the two programs might be incompatible. The same holds true when you're performing disk operations. Of course, altering the IRQ interrupt vector or poking data into the area between addresses $1301 and $1981 (4865 and 6529) renders the wedge useless. R

Writer/programmer Loren Lovhaug is editor of Twin Cities 128, *a newsletter for C-128 users. He is also the SYSOP of Q-Link's C-128 SIG and a co-SYSOP of GEnie's Commodore Flagship.*

Listing 1. Mouse Editor Wedge program.

```
10 REM C-128/1351 MOUSE - JOHN
   KRESS AND LOREN LOVHAUG
                        :REM*233
20 FAST: PRINT"READING DATA FOR
    THE MOUSE EDITOR WEDGE..."
                        :REM*118
30 FOR I= 4865 TO 6528:READ D:P
   OKE I,D:T=T+D:NEXT  :REM*174
40 IF T<>178076 THEN SLOW:PRINT
   "DATA ERROR!{2 SPACEs}CHECK
   YOUR DATA STATEMENTS.":END
                        :REM*101
50 PRINT"PLACE A FORMATTED DISK
    IN DRIVE 8"         :REM*13
60 PRINT"AND PRESS A KEY TO CRE
   ATE WEDGE."          :REM*22
70 GETKEY A$            :REM*40
80 BSAVE"MOUSE EDITOR",D0 ON U8
   ,B0,P4865 TO P6529   :REM*168
90 SLOW                 :REM*165
100 DATA 173,20,3,201,205,240,2
    48,120,173,20,3,141,83,21,1
    73,21,3,141,84      :REM*25
110 DATA 21,169,205,141,20,3,16
    9,20,141,21,3,169,250,160,0
    ,132,250,132,251    :REM*29
120 DATA 132,252,162,8,32,101,2
    55,36,215,48,3,76,71,20,32,
    125,255,147,14,9    :REM*162
130 DATA 9,9,109,79,85,83,69,32
    ,101,68,73,84,79,82,32,119,
    69,68,71,69,32      :REM*183
140 DATA 105,78,83,84,65,76,76,
    69,68,13,9,9,9,112,82,79,71
    ,82,65,77,77,69     :REM*29
150 DATA 68,32,66,89,32,106,79,
    72,78,32,107,82,69,83,83,13
    ,9,9,9,116,69,67    :REM*112
160 DATA 72,78,73,67,65,76,32,1
    12,76,65,78,78,73,78,71,32,
    66,89,32,108,79     :REM*76
170 DATA 82,69,78,32,108,79,86,
    72,65,85,71,142,0,169,42,13
    3,250,169,20,133    :REM*184
180 DATA 251,169,250,160,8,162,
    6,32,101,255,169,50,133,250
    ,169,20,133,251     :REM*135
190 DATA 169,250,160,8,162,4,32
    ,101,255,169,0,141,189,20,1
    41,188,20,32,202    :REM*254
200 DATA 202,169,19,32,210,255,
    173,17,18,197,46,208,9,173,
    16,18,233,2,197     :REM*142
210 DATA 45,240,46,169,255,141,
    194,20,141,195,20,32,205,22
    ,173,198,20,174     :REM*60
220 DATA 199,20,133,22,134,23,3
    2,100,80,173,199,20,174,198
    ,20,32,195,22       :REM*98
230 DATA 162,7,160,0,24,32,240,
    255,32,93,200,88,96,32,125,
    255,78,79,32,80     :REM*205
240 DATA 82,79,71,82,65,77,32,7
    3,78,32,77,69,77,79,82,89,4
    6,0,76,1,20,83      :REM*104
250 DATA 89,83,52,56,54,53,13,8
    3,89,83,53,49,55,56,13,120,
    169,101,141,20,3    :REM*106
260 DATA 169,250,141,21,3,88,96
    ,32,125,255,147,13,77,79,85
    ,83,69,32,69,68     :REM*101
270 DATA 73,84,79,82,32,87,69,6
    8,71,69,32,73,78,83,84,65,7
    6,76,69,68,13,80    :REM*204
280 DATA 82,79,71,82,65,77,77,6
    9,68,32,66,89,32,74,79,72,7
    8,32,75,82,69,83    :REM*239
290 DATA 83,13,84,69,67,72,78,7
    3,67,65,76,32,80,76,65,78,7
    8,73,78,71,32,66    :REM*182
300 DATA 89,32,76,79,82,69,78,3
    2,76,79,86,72,65,85,71,13,0
    ,76,158,19,127,0    :REM*240
310 DATA 46,0,152,135,135,135,6
    2,0,163,20,7,0,0,7,0,20,0,0
    ,210,0,205,34       :REM*120
320 DATA 210,0,205,34,211,0,140
    ,0,21,0,0,186,189,7,1,201,1
    94,208,125,189,6    :REM*113
330 DATA 1,41,240,201,96,208,11
    6,169,0,141,184,20,141,183,
    20,141,204,20       :REM*12
340 DATA 238,170,20,162,1,173,0
    ,220,72,160,255,140,0,220,1
    40,47,208,189,0     :REM*77
350 DATA 220,221,0,220,208,248,
    170,104,141,0,220,138,74,17
    6,3,76,36,21,74     :REM*34
360 DATA 74,74,74,176,62,238,17
    2,20,36,215,48,3,32,159,205
    ,32,116,24,76,67    :REM*78
370 DATA 21,173,170,20,201,32,1
    44,21,169,0,141,170,20,165,
    246,240,3,169,0     :REM*69
380 DATA 44,169,128,133,246,169
    ,7,32,210,255,76,70,21,32,8
    5,21,36,215,48,3    :REM*70
390 DATA 32,111,205,169,0,141,0
    ,255,76,101,250,56,32,240,2
    55,142,181,20       :REM*252
400 DATA 140,182,20,173,180,20,
    141,187,20,78,187,20,78,187
    ,20,78,187,20       :REM*116
410 DATA 174,187,20,173,178,20,
    141,185,20,173,179,20,141,1
    86,20,78,186,20     :REM*6
420 DATA 110,185,20,78,186,20,1
    10,185,20,78,186,20,110,185
    ,20,172,185,20      :REM*50
430 DATA 196,230,240,3,176,1,13
    6,196,231,240,3,144,1,200,2
    28,229,176,7,232    :REM*232
440 DATA 238,184,20,76,176,21,2
    28,228,144,1,202,173,183,20
    ,240,120,173,189    :REM*188
450 DATA 20,240,3,76,136,22,169
    ,0,133,246,32,12,25,32,24,2
    5,32,234,23,144     :REM*154
460 DATA 24,32,12,25,169,145,32
    ,210,255,32,93,200,169,27,3
    2,210,255,169,74    :REM*86
470 DATA 32,210,255,32,234,23,3
    2,205,22,176,25,32,34,25,17
    6,20,32,188,202     :REM*118
480 DATA 32,12,25,32,185,22,32,
    125,199,169,0,141,188,20,76
    ,136,22,32,12,25    :REM*134
490 DATA 32,93,200,32,188,202,3
    2,125,255,76,65,83,84,32,76
    ,73,78,69,32,79     :REM*201
500 DATA 78,32,83,67,82,69,69,7
    8,0,169,1,141,189,20,169,0,
    141,188,20,96       :REM*172
510 DATA 173,184,20,240,71,173,►
```



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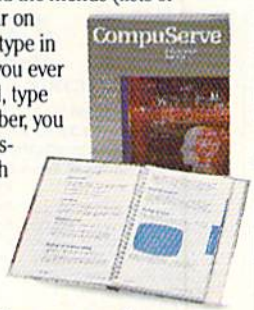
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MOUSE EDITOR

```
    188,2Ø,24Ø,2,2Ø8,79,169,Ø,1
    33,246,169,19,32    :REM*1Ø2
52Ø DATA 21Ø,255,32,234,23,144,
    23,169,19,32,21Ø,255,169,17
    ,32,21Ø,255,169     :REM*213
53Ø DATA 27,32,21Ø,255,169,74,3
    2,21Ø,255,32,234,23,32,2Ø5,
    22,176,41,32,2Ø2    :REM*28
54Ø DATA 2Ø2,169,Ø,141,189,2Ø,1
    69,19,32,21Ø,255,32,185,22,
    32,125,199,76       :REM*51
55Ø DATA 136,22,24,32,24Ø,255,1
    44,9,174,181,2Ø,172,182,2Ø,
    32,24Ø,255,32,93    :REM*59
56Ø DATA 2ØØ,96,169,19,32,21Ø,2
    55,32,2Ø2,2Ø2,32,125,255,7Ø
    ,73,82,83,84,32     :REM*158
57Ø DATA 66,65,83,73,67,32,76,7
    3,78,69,32,79,78,32,83,67,8
    2,69,69,78,46,Ø     :REM*1Ø
58Ø DATA 238,188,2Ø,76,136,22,1
    73,192,2Ø,133,97,173,193,2Ø
    ,133,98,173,199     :REM*215
59Ø DATA 2Ø,174,198,2Ø,32,68,23
    ,96,165,45,133,97,165,46,13
    3,98,16Ø,3,32       :REM*132
6ØØ DATA 236,66,2Ø5,195,2Ø,24Ø,
    62,165,97,166,98,141,192,2Ø
    ,142,193,2Ø,16Ø     :REM*11
61Ø DATA 1,32,236,66,141,197,2Ø
    ,2Ø1,Ø,24Ø,61,136,32,236,66
    ,141,196,2Ø,16Ø     :REM*2Ø6
62Ø DATA 2,32,236,66,141,198,2Ø
    ,2ØØ,32,236,66,141,199,2Ø,1
    6Ø,Ø,32,236,66       :REM*1Ø4
63Ø DATA 72,2ØØ,32,236,66,133,9
    8,1Ø4,133,97,76,213,22,136,
    32,236,66,2Ø5       :REM*7Ø
64Ø DATA 194,2Ø,2Ø8,185,165,45,
    197,97,2Ø8,8,165,46,197,98,
    2Ø8,2,56,36,24      :REM*174
65Ø DATA 169,Ø,141,Ø,255,96,76,
    5Ø,23,169,Ø,141,Ø,255,96,16
    Ø,3,132,75,132      :REM*35
66Ø DATA 17,32,5Ø,142,169,32,16
    4,75,41,127,32,12,86,2Ø1,34
    ,2Ø8,6,165,17,73    :REM*56
67Ø DATA 255,133,17,2ØØ,24Ø,219
    ,32,236,66,24Ø,214,16,233,2
    Ø1,255,24Ø,229      :REM*36
68Ø DATA 36,17,48,225,2Ø1,254,2
    4Ø,45,2Ø1,2Ø6,24Ø,67,17Ø,13
    2,75,169,68,16Ø     :REM*199
69Ø DATA 23,133,37,132,36,16Ø,Ø
    ,2Ø2,16,15,177,36,72,23Ø,36
    ,2Ø8,2,23Ø,37       :REM*3Ø
7ØØ DATA 1Ø4,16,244,48,239,2ØØ,
    177,36,48,178,32,12,86,2Ø8,
    246,96,17Ø,2ØØ      :REM*23
71Ø DATA 32,236,66,24Ø,169,132,
    75,2Ø1,2,144,39,2Ø1,39,176,
    35,1Ø5,126,17Ø      :REM*1Ø9
72Ø DATA 16Ø,9,169,7Ø,2Ø8,196,1
    7Ø,2ØØ,32,236,66,24Ø,143,13
    2,75,2Ø1,2,144      :REM*7Ø
73Ø DATA 13,2Ø1,11,176,9,1Ø5,12
    6,17Ø,16Ø,2Ø1,169,7Ø,2Ø8,17
    Ø,224,254,2Ø8,3     :REM*85
74Ø DATA 162,Ø,44,162,255,56,17
    6,4,16Ø,Ø,24Ø,178,76,83,23,
    165,232,141,2ØØ     :REM*194
75Ø DATA 2Ø,141,48,1Ø,165,231,1
    33,234,169,Ø,141,19Ø,2Ø,141
    ,191,2Ø,32,5Ø,24    :REM*231
76Ø DATA 2Ø1,32,24Ø,31,233,48,2
    Ø1,1Ø,176,23,72,32,6Ø,24,1Ø
    4,24,1Ø9,19Ø,2Ø     :REM*242
77Ø DATA 144,3,238,191,2Ø,141,1
    9Ø,2Ø,32,237,2Ø3,76,254,23,
    56,96,173,19Ø,2Ø    :REM*165
78Ø DATA 174,191,2Ø,141,194,2Ø,
    142,195,2Ø,24,96,169,3,133,
    214,32,92,193,76    :REM*115
79Ø DATA 88,2Ø3,173,19Ø,2Ø,141,
    2Ø2,2Ø,173,191,2Ø,141,2Ø3,2
    Ø,14,19Ø,2Ø,46      :REM*57
8ØØ DATA 191,2Ø,14,19Ø,2Ø,46,19
    1,2Ø,173,2Ø2,2Ø,24,1Ø9,19Ø,
    2Ø,144,3,238,191    :REM*179
81Ø DATA 2Ø,141,19Ø,2Ø,173,2Ø3,
    2Ø,24,1Ø9,191,2Ø,141,191,2Ø
    ,14,19Ø,2Ø,46       :REM*9Ø
82Ø DATA 191,2Ø,96,216,173,25,2
    12,172,174,2Ø,32,226,24,14Ø
    ,174,2Ø,24,1Ø9      :REM*7Ø
83Ø DATA 178,2Ø,141,178,2Ø,138,
    1Ø9,179,2Ø,141,179,2Ø,2Ø1,2
    ,144,31,2Ø1,24Ø     :REM*219
84Ø DATA 176,19,173,178,2Ø,2Ø1,
    127,144,2Ø,169,127,141,178,
    2Ø,169,2,141,179    :REM*39
85Ø DATA 2Ø,2Ø8,8,169,Ø,141,178
    ,2Ø,141,179,2Ø,173,26,212,1
    72,175,2Ø,32,226    :REM*217
86Ø DATA 24,14Ø,175,2Ø,56,73,25
    5,1Ø9,18Ø,2Ø,141,18Ø,2Ø,2Ø1
    ,199,144,22,2Ø1     :REM*126
87Ø DATA 224,176,1Ø,169,198,141
    ,18Ø,2Ø,238,183,2Ø,2Ø8,8,16
    9,Ø,141,18Ø,2Ø      :REM*129
88Ø DATA 238,184,2Ø,96,14Ø,176,
    2Ø,141,177,2Ø,162,Ø,56,237,
    176,2Ø,41,127       :REM*222
89Ø DATA 2Ø1,64,176,7,74,24Ø,18
    ,172,177,2Ø,96,9,192,2Ø1,25
    5,24Ø,8,56,1Ø6      :REM*254
9ØØ DATA 162,255,172,177,2Ø,96,
    169,Ø,96,166,228,164,23Ø,24
    ,32,24Ø,255,32      :REM*192
91Ø DATA 93,2ØØ,96,169,27,32,21
    Ø,255,169,74,76,21Ø,255,173
    ,196,2Ø,133,97      :REM*41
92Ø DATA 173,197,2Ø,133,98,16Ø,
    1,32,236,66,141,197,2Ø,72,1
    36,32,236,66,141    :REM*127
93Ø DATA 196,2Ø,133,97,1Ø4,133,
    98,16Ø,2,32,236,66,141,198,
    2Ø,2ØØ,32,236,66    :REM*142
94Ø DATA 141,199,2Ø,173,196,2Ø,
    174,197,2Ø,141,192,2Ø,142,1
    93,2Ø,16Ø,1,32      :REM*197
95Ø DATA 236,66,24Ø,7,169,Ø,141
    ,Ø,255,24,96,136,32,236,66,
    2Ø8,243,169,Ø       :REM*115
96Ø DATA 141,Ø,255,56,96,169,Ø,
    141,189,2Ø,141,188,2Ø,96,26
                        :REM*87
```

■

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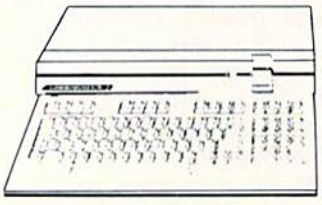
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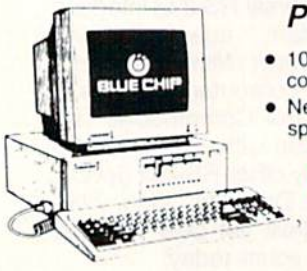
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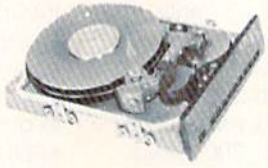
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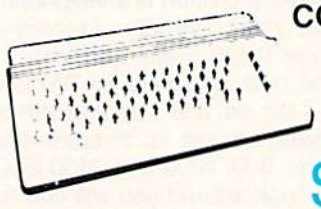


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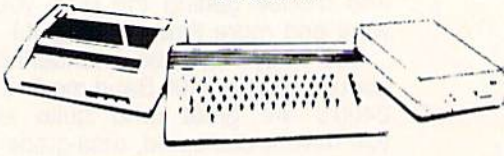


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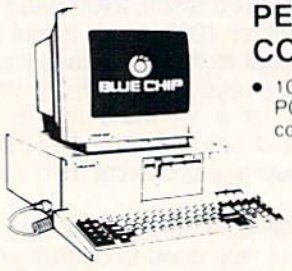
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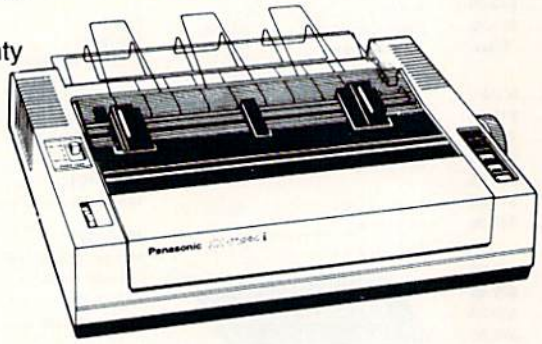
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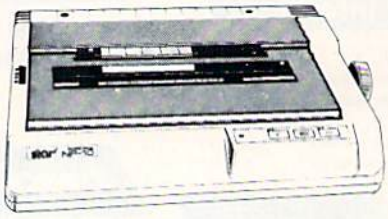
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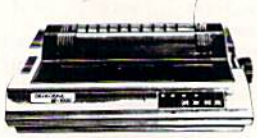
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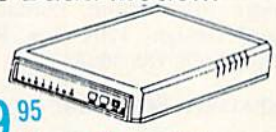
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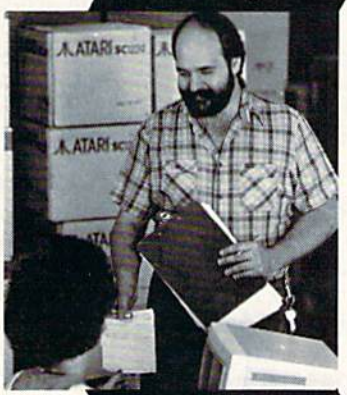
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GEOWATCH

A look at Mystic Jim Shareware, a clock/calendar, art clips and compatibility with Word Writer 3.

By MATTHEW STERN

When is an operating system not an operating system? Until other developers begin to support it. MS-DOS was just a collection of cryptic commands before Lotus 1-2-3 came along. And the Apple Macintosh was just a pretty assortment of menus and windows until companies like Microsoft and Aldus made it do useful things.

GEOS has not yet attracted the volume of third-party support now enjoyed by MS-DOS and the Macintosh, but there are independent developers writing products expressly for it. You may have to hunt to find them.

Mystic Jim Shareware

The first place to look is Denver, Colorado. There you will find probably the largest GEOS developer outside of Berkeley. Mystic Jim has a growing collection of GEOS utilities, clip art, fonts and educational games (including geoKids, described in last December's geoWatch). Mystic Jim's shareware collection includes a number of useful GEOS utilities, some of the best of which are:

GEODump, a desk accessory that makes a graphic printout of your screen. You can use it to print the contents of your disk, make a quick hard copy of a graphic, or produce screen dumps for manuals and newsletters.

MacGeoPaint, which brings the treasury of Macintosh artwork to GEOS. First, transmit your MacPaint graphic by modem from the Macintosh to the Commodore. Then, MacGeoPaint converts it into geoPaint format. Mystic Jim's disks also include conversion programs for Print Shop, Newsroom, Doodle!, Koala, and run-line-encoded (RLE) graphics.

Auto Preference. This utility brings up the Set Preferences dialog box when you first start GEOS. Copy the Auto Preference file to your boot disk so that it comes before the first input driver.

GEOTab. Do you hate pressing control/I for tabs? This utility modifies the GEOS Kernal to use the left-arrow key for tabs.

GEOIcon II. Many of Mystic Jim's programs are programming tools. This disk includes an editor for creating disk, file and dialog-box icons.

Mystic Jim's disks also include a number of "hacker programs" that, for instance, create bootable work disks and change serial numbers. You will also find Basic and machine language conversion utilities.

Shareware Suggestions

As useful as Mystic Jim's programs are, you can't just use them right out of the box. First of all, there's no box nor printed documentation. (If you download the software from his bulletin board, you even have to provide your own disk!) The documentation comes in a geoWrite file, which you print out before using the program. Take care! Some of the hacker programs modify your boot and work disks, so you can lose valuable data if you don't use those programs correctly.

Another important tip: always make a backup of your disks before modifying them. Use Diskcopy to duplicate your work disks and Backup to copy your boot disk files. Then, if something happens to your disk, you can copy the files back to it.

Having a Good Time with GEOS

As well as all this software, Mystic Jim makes an interesting piece of hardware. Tim's Timer is a battery-powered clock/calendar. About 2¼ inches long, it plugs into joystick port 2 and has a pass-through plug for attaching a dongle or joystick to the other end. The circuits and battery are permanently sealed, but, according to Mystic Jim, Tim's Timer can run 20 years before the battery stops.

A disk included with Tim's Timer has utilities and documentation for using the clock/calendar. The Write.RTC program takes the time and date as set by preferences and saves it to the clock/calendar. The Read.RTC program reads the time and date and sets the GEOS clock.

An assembled and tested Tim's Timer sells for $42.50, including disk. If you're technically inclined and a little daring, you can purchase a do-it-yourself kit with schematics, main chip and program disk for only $26.

For more information on Mystic Jim's products, call his BBS at 303-321-8954, or write to 2388 Grape, Denver, CO 80207.

Fonts and Clip Art

A few GEOS developers are working on fonts and clip art that will suit many users' tastes. A program called Fox Fonts One includes several attractive and useful fonts. IBM is a serifed font based on the IBM character set; another consists of Commodore graphics characters; a symbol font includes the complete Greek alphabet. Fox Fonts One sells for $9.95 from Rabid Concepts, 1423 S. Wabash Ave., Lakeland, FL 33804.

For those who may be new to GEOS, clip art is a collection of time-saving drawings that you can paste together to produce ads, newsletters or illustrations. Lamb Art and Design offers two double-sided disks full of geoPaint clip art. It includes arrows, borders, pointing fingers and other objects.

You can copy the objects you want into another geoPaint graphic or a geoWrite document. Most of the drawings overlap, so when you select one with the edit box, you might also have to copy part of another picture with it. If there is an illustration you use frequently, you can paste it into a scrapbook. The art was created by Susan Lamb, a commercial artist whose talent and 20 years of experience are reflected in the quality of her work. You'll find that her drawings will add a professional look to your work. The clip art disks sell for $19.95 each or $35 for the pair. For more information, contact Lamb Art and Design, 1764 Ave. B, Yuma, AZ 85364; 602-782-3053.

GEOS-Compatible Software

The third-party software I've discussed so far comes from small companies and independent programmers. No large commercial software devel-

oper, except for Berkeley Softworks, has produced GEOS applications, but there are a few software programs that are "GEOS-compatible."

Timeworks' Word Writer 3 is one such example, as it includes a conversion program that changes Word Writer documents into a text scrap to paste into geoWrite. The program does not, however, use any of the GEOS features—no pull-down menus or fonts. You can load the program by double clicking its icon on the GEOS 64 deskTop. (Since Word Writer 3 is a C-64 application, it is not compatible with GEOS 128.) When you're done with it, it returns you to the GEOS deskTop.

GEOS 128 Update

When I first looked at GEOS 128 in the August 1987 geoWatch, it was compatible with GEOS 64 programs that were then available (including geoWrite and geoPaint). However, GEOS 128 is *not* compatible with newer GEOS 64 programs, including geoFile and geoCalc. By now, 128 versions of most GEOS 64 programs should be available. Not only will these programs work with GEOS 128, but they should take advantage of its special features. Next month's geoWatch will discuss GEOS 128 in detail. ■

The geoWatch column addresses RUN *readers who have Berkeley Softworks' GEOS for the C-64 or the C-128. Your questions and comments are welcome. Send them to:*

Matthew Stern
geoWatch
RUN Magazine
80 Elm St.
Peterborough, NH 03458

You can also contact Matthew Stern on Q-Link. His online name is Matt S3.

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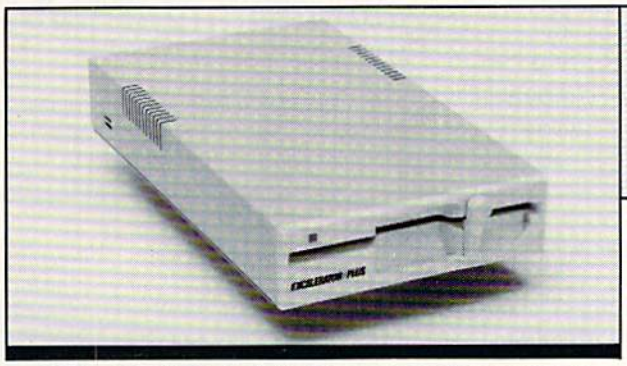
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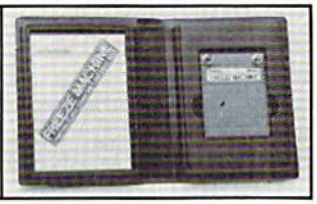
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Time-Keeper 64

Keep track of the time while you're programming.

By BOB KODADEK

My Time-Keeper 64 clock-calendar continuously displays the time and the current month, day and year in the upper-right corner of your monitor as you use your computer. The program includes an autoleap-year function and a built-in alarm that can be both heard and seen (an excellent aid for the programmer who forgets to go to bed!). The clock-calendar is updated once per second and the data is stored in easily accessible RAM locations. This information can then be used in one of your own custom applications.

Time-Keeper 64 contains two listings. The first, the boot program, loads the object file and sets the date, the time and the alarm. Listing 2, Time-Keeper File Generator, creates the fast-loading object file (OB.TK 64) on your disk. When you've typed in and saved both listings, using *RUN*'s Checksum to check your typing, run the File Generator program. When the OB.TK 64 file is written to disk, the disk error channel will report 00,OK,00,00. List the directory to make sure the new file is present.

Time To Use Time-Keeper

When you want to use Time-Keeper 64, just load and run the boot program. You'll be prompted to enter the correct time and date and whether you wish to set the alarm. Time-Keeper's display begins with an asterisk, followed by the month, day, year, hours, minutes, seconds and the characters "al," for alarm. The asterisk prevents the Basic editor from replacing or deleting a Basic program line should you press return while the cursor is at the top of the screen.

When you set the alarm, the characters "al" will appear in reverse video. When the alarm goes off, they'll flash, and the SID chip will emit a bell-like chime for about 30 seconds. You may cancel the chime by pressing shift/control C. However, the alarm will remain set for the time you originally designated.

Though the display is continuous, you may turn it off by pressing shift/control/F and back on again with shift/control/N. I used this combination of key presses so that Time-Keeper would not conflict with other programs.

I've tested Time-Keeper 64 with 64 Notepad, Shopping List and the DOS wedge. You'll find that it works with almost any Basic program. In most instances, Time-Keeper should be the first program you load and run. One exception is 64 Notepad, which uses the same Time of Day clock. The Notepad program must be loaded and run first. Then disable the Notepad with run-stop/restore and load and run Time-Keeper 64. Finally, use the proper SYS command to restart the Notepad interrupt.

For Programmers Only

The following RAM locations contain the data in the format indicated:

Location	Data	Format
49710	tenths	BCD
49711	seconds	BCD
49712	minutes	BCD
49713	hours	BCD
49714	month	decimal
49715	day	decimal
49716	year	decimal

Binary Coded Decimal data (BCD) can be unpacked very easily by reading each byte as a high and low nibble (four bits). The high nibble is read by ANDing the byte with the value 240. To read the low nibble, just AND the byte with 15. To convert this information into its decimal equivalent, divide the contents of the high nibble by 16, multiply the result by 10, and then add the contents of the low nibble. You can use the following routine to read and print the time from within one of your own programs:

```
100 FOR I=0 TO 2:B=PEEK(49713-I)
    AND 127
110 PRINT CHR$((240 AND B)/16+48)
    CHR$((15 AND B)+48);
120 IF I<2 THEN PRINT ":";
130 NEXT
```

Use the following routine to read and print the current date:

```
150 FOR I=0 TO 2:B=PEEK(49714+I)
160 PRINT MID$(STR$(B),2);
170 IF I<2 THEN PRINT"/";
180 NEXT
```

Now, wherever you happen to be computing, you can always know *when* you're there—to the second! R

Bob Kodadek, a long-time RUN *author, is publisher of Time-DOS 64/128, a commercial date- and time-stamping utility.*

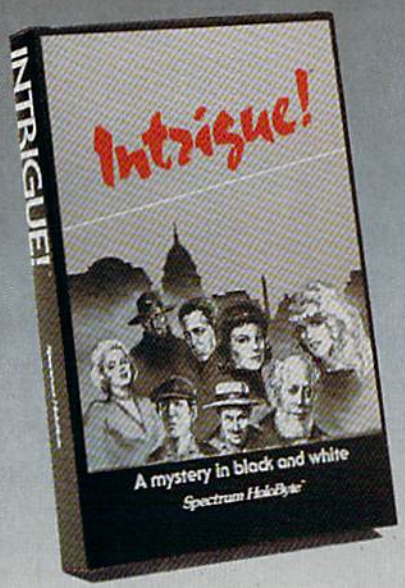
Listing 1. Time-Keeper 64 boot program.

```
1 REM TIME-KEEPER 64    :REM*2Ø6
2 REM (C) 1987 BOB KODADEK
                        :REM*1Ø9
3 REM                   :REM*146
4 F$="OB.TK 64":PRINT"LOADING "
  F$:IF A=Ø THEN A=1:LOAD (F$),
  8,1                   :REM*237
5 PRINT CHR$(147) CHR$(14) CHR$
  (13) SPC(11)"{SHFT T}IME-{SHF
  T K}EEPER 64":PRINT   :REM*3Ø
6 DIM MD(12):FORI=1TO12:READ MD
  (I):NEXT              :REM*166
7 ML=497ØØ:CL=49712:U$=CHR$(145
  )+CHR$(145)           :REM*16Ø
8 FORI=ØTO3:E$=E$+CHR$(32):NEXT
                        :REM*236
9 FORI=ØTO3:E$=E$+CHR$(157):NEX
  T                     :REM*2Ø2
1Ø PRINT SPC(8)"{SHFT S}ET THE ►
```

RUN it right: C-64

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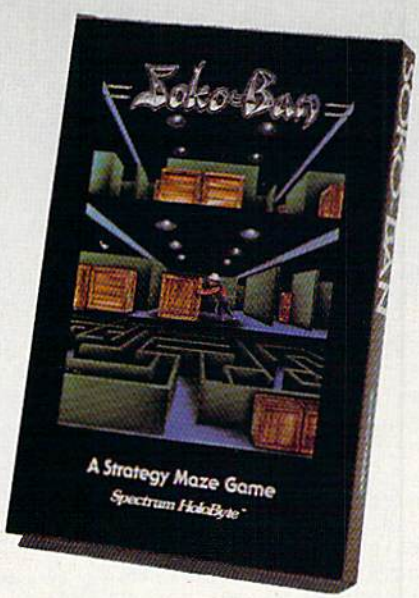
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```
   DATE (MN/DT/YR)":PRINT
                          :REM*44
11 PRINT"MONTH{2 SPACEs}(1-12)"
   E$;:INPUT MN           :REM*245
12 IF MN<1 OR MN>12 THEN PRINT
   U$:GOTO11              :REM*187
13 S$=RIGHT$(STR$(MD(MN)),2)+")
   "                      :REM*223
14 PRINT SPC(1)"DATE{2 SPACEs}(
   1-"S$ E$;:INPUT DT     :REM*218
15 IF DT<1 OR DT>MD(MN) THEN PR
   INT U$:GOTO14          :REM*16Ø
16 PRINT SPC(1)"YEAR (86-99)"E$
   ;:INPUT YR             :REM*2Ø1
17 IF YR<86 OR YR>99 THEN PRINT
    U$:GOTO16             :REM*17
18 PRINT:PRINT SPC(8)"{SHFT S}E
   T THE TIME (HR/MS/AM-PM)"
                          :REM*127
19 GOSUB24:POKE CL,MS:POKE CL+1
   ,HR                    :REM*145
2Ø POKE CL+2,MN:POKE CL+3,DT:PO
   KE CL+4,YR             :REM*217
21 PRINT:PRINT SPC(8)"{SHFT S}E
   T THE {SHFT A}LARM? (Y OR N)
   ";:INPUT A$            :REM*36
22 HR=Ø:MS=Ø:IF A$="Y" OR A$="{
   SHFT Y}" THEN GOSUB 24
                          :REM*83
23 POKE CL+5,MS:POKE CL+6,HR:SY
   S ML:END               :REM*213
24 PRINT:PRINT"HOURS{2 SPACEs}(
   1-12)"E$;:INPUT HR     :REM*193
25 IF HR<1 OR HR>12 THEN PRINT
   U$:GOTO24              :REM*19
26 PRINT SPC(1)"MINS{2 SPACEs}(
   Ø-59)"E$;:INPUT MS     :REM*113
27 IF MS >59 THEN PRINT U$:GOTO
   26                     :REM*161
28 PRINT"AM-PM{3 SPACEs}(A/P)"E
   $;:INPUT P$            :REM*5
29 IF P$ <>"A" AND P$<>"P"THEN
   PRINT U$:GOTO28        :REM*223
3Ø FLAG=Ø:IF P$="P" THEN FLAG =
    128                   :REM*75
31 BY=HR:GOSUB33:HR=BY OR FLAG
                          :REM*163
32 BY=MS:GOSUB33:MS=BY:RETURN
                          :REM*2Ø7
33 X=INT(BY/1Ø):Y=BY-1Ø*X:BY=16
   *X+Y:RETURN            :REM*111
34 DATA 31,29,3Ø,31,3Ø,3Ø,31,31
   ,3Ø,31,3Ø,31           :REM*39
```

Listing 2. Time-Keeper 64 file generator program.

```
1 REM TIME-KEEPER 64 OBJECT
                          :REM*218
2 REM (C) 1987 BOB KODADEK
                          :REM*1Ø9
3 REM                     :REM*146
4 F$="OB.TK 64":PRINT"PLEASE WA
  IT, READING DATA...." :REM*48
5 SA=497ØØ:EA=5Ø38Ø:ND=679:A=78
  Ø:X=781:Y=782           :REM*213
6 FOR I=Ø TO ND:READ B:POKE SA+
  I,B:CK=CK+B:NEXT        :REM*13Ø
7 IF CK<> 77461 THEN PRINT"DATA
   ERROR!":END            :REM*121
8 PRINT:PRINT"WHEN READY TO SAV
  E, PRESS RETURN":SYS65487:OPE
  N1,8,15                 :REM*191
9 PRINT#1,"SØ:"+F$:FOR I=1TOLEN
  (F$):POKE827+I,ASC(MID$(F$,I,
  1)):NEXT                :REM*179
1Ø POKE A,Ø:POKE X,8:POKE Y,Ø:S
   YS 65466:POKE A,LEN(F$):POKE
    X,6Ø                  :REM*211
11 POKE Y,3:SYS 65469:B=SA:GOSU
   B15:POKE 251,L:POKE 252,H
                          :REM*86
12 B=EA:GOSUB15:POKE X,L:POKE Y
   ,H:POKE A,251:SYS 65496
                          :REM*7Ø
13 INPUT#1,E$,F$,G$,H$:CLOSE1:C
   $=","                  :REM*71
14 PRINT:PRINT E$+C$+F$+C$+G$+C
   $+H$:END               :REM*124
15 H=INT(B/256):L=B-256*H:RETUR
   N                      :REM*134
16 DATA 76,55,194,76,1Ø3,194,76
   ,2Ø1,194,Ø,Ø,Ø,Ø,129,9,7,87,
   Ø,129,162,146          :REM*236
17 DATA 142,45,194,173,15,221,4
   1,127,141,15,221,174,48,194,
   16Ø,2,173,49           :REM*244
18 DATA 194,32,12Ø,194,173,15,2
   21,9,128,141,15,221,174,53,1
   94,173,54,194          :REM*228
19 DATA 24Ø,8,32,13Ø,194,169,12
   8,141,153,195,169,127,141,13
   ,22Ø,32,143            :REM*2Ø4
2Ø DATA 194,169,129,141,13,22Ø,
   32,142,196,96,2Ø1,18,24Ø,4,2
   Ø1,146,2Ø8,2           :REM*87
21 DATA 73,128,141,11,221,142,1
   Ø,221,14Ø,9,221,14Ø,8,221,96
   ,169,164,16Ø           :REM*224
22 DATA 194,141,24,3,14Ø,25,3,1
   69,156,141,2Ø,3,169,195,141,
   21,3,96,216            :REM*126
23 DATA 169,127,141,13,221,172,
   13,221,48,23,32,188,246,32,2
   25,255,2Ø8,15          :REM*172
24 DATA 32,143,194,32,163,253,3
   2,24,229,32,142,196,1Ø8,2,16
   Ø,76,114,254           :REM*34
25 DATA 169,127,141,13,22Ø,32,1
   38,255,169,129,141,13,22Ø,96
   ,173,128,196           :REM*14
26 DATA 24Ø,8,173,153,195,73,12
   8,141,153,195,16Ø,Ø,173,5Ø,1
   94,32,8Ø,195           :REM*131
27 DATA 2ØØ,173,51,194,32,8Ø,19
   5,2ØØ,173,52,194,32,8Ø,195,2
   ØØ,162,32,173          :REM*6Ø
28 DATA 49,194,72,41,16,24Ø,2,1
   62,49,138,32,123,195,1Ø4,32,
   1Ø8,195,2ØØ            :REM*124
29 DATA 173,48,194,32,99,195,2Ø
   Ø,173,47,194,32,99,195,169,1
   ,44,49,194,16          :REM*6
3Ø DATA 2,169,16,32,123,195,2ØØ
   ,169,1,44,153,195,16,2,169,1
   29,32,123,195          :REM*67
31 DATA 169,12,44,153,195,16,2,
   169,14Ø,32,123,195,16Ø,17,18
   5,111,195,24Ø          :REM*2Ø8
32 DATA 6,153,Ø,4,2ØØ,2Ø8,245,9
   6,141,154,195,169,Ø,17Ø,236,
   154,195,24Ø,8          :REM*225
33 DATA 248,24,1Ø5,1,216,232,2Ø
   8,243,72,74,74,74,74,32,1Ø8,
   195,1Ø4,41,15          :REM*196
34 DATA 24,1Ø5,48,2Ø1,48,2Ø8,6,
   192,Ø,2Ø8,2,169,32,153,13Ø,1
   95,2ØØ,96,42           :REM*183
35 DATA 32,48,57,47,48,56,47,56
   ,55,32,49,5Ø,58,51,48,58,48,
   48,8Ø,32,65,76         :REM*46
36 DATA Ø,128,Ø,Ø,6Ø,216,16Ø,3,
   185,8,221,153,46,194,136,16,
   247,2Ø6,155            :REM*17
37 DATA 195,2Ø8,13,169,6Ø,141,1
   55,195,44,152,195,16,3,32,21
   5,194,44,49            :REM*56
38 DATA 194,48,7Ø,173,45,194,2Ø
   8,7Ø,169,255,141,45,194,174,
   5Ø,194,224,2           :REM*92
39 DATA 2Ø8,17,169,29,172,52,19
   4,192,88,24Ø,11,192,92,24Ø,7
   ,192,96,24Ø,3          :REM*139
4Ø DATA 189,129,196,2Ø5,51,194,
   2Ø8,23,16Ø,1,14Ø,51,194,238,
   5Ø,194,173,5Ø          :REM*225
41 DATA 194,2Ø1,13,2Ø8,18,14Ø,5
   Ø,194,238,52,194,2Ø8,1Ø,238,
   51,194,2Ø8,5           :REM*88
42 DATA 169,Ø,141,45,194,173,54
   ,194,24Ø,67,173,13,221,41,4,
   24Ø,5,169,45           :REM*32
43 DATA 141,128,196,173,128,196
   ,2Ø8,7,169,128,141,153,195,2
   Ø8,43,2Ø6,127          :REM*199
44 DATA 196,173,127,196,41,2Ø7,
   2Ø8,33,169,15,141,24,212,16Ø
   ,9,162,Ø,14Ø,5         :REM*248
45 DATA 212,142,6,212,169,48,14
   1,1,212,169,32,141,4,212,169
   ,33,141,4,212          :REM*32
46 DATA 2Ø6,128,196,173,141,2,1
   64,197,2Ø1,5,2Ø8,33,192,2Ø,2
   Ø8,5,169,Ø,141         :REM*143
47 DATA 128,196,192,39,2Ø8,8,17
   3,152,195,9,128,141,152,195,
   192,21,2Ø8,8           :REM*23Ø
48 DATA 173,152,195,41,127,141,
   152,195,76,49,234,Ø,Ø,Ø,31,2
   8,31,3Ø,31,3Ø          :REM*183
49 DATA 31,31,3Ø,31,3Ø,31,16Ø,Ø
   ,185,156,196,24Ø,6,32,21Ø,25
   5,2ØØ,2Ø8,245          :REM*53
5Ø DATA 96,147,142,13,13,32,32,
   32,32,32,84,73,77,69,45,75,6
   9,69,8Ø,69,82          :REM*19
51 DATA 32,54,52,32,13,32,4Ø,67
   ,41,32,49,57,56,55,32,66,79,
   66,32,75,79,68         :REM*58
52 DATA 65,68,69,75,13,Ø :REM*3
```

■



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TELECOMPUTING WORKSHOP

AT commands explained, a new file compiler unveiled and survey results revealed.

By DAVID BRADLEY

I WAS LOOKING OVER some past columns recently when I realized that I've never given a full explanation of the AT commands I often mention when talking about the Commodore 1670 or Hayes-compatible modems. AT commands let you manipulate your modem from the Terminal mode of practically any terminal program.

AT is an abbreviation for Attention, something nearly all commands must start with. Two possible commands you can use to dial are ATDP (Attention Dial Pulse) and ATDT (Attention Dial Tone). If your local telephone system supports tone dialing, then you'll probably want to use tone because it's faster than pulse dialing. An easy way to find out if tone dialing is supported is to try sending an ATDT command. If the dial tone remains present after the number has been dialed, then your system doesn't support tone.

A phone number must follow both ATDT and ATDP. Using pulse, if you were to call my BBS, you'd enter ATDP18133775941 and return. If you're calling long-distance, or you want the modem to wait longer for a carrier, add a comma to the command at the point you want the pause to happen. For example, if you found that your local system requires a bit of a pause after the 1 and then another pause after the area code, you would enter ATDP1,813, 3775941 and press return.

If you want to transmit the last command sent to the modem, enter A/ but don't press return. (This is used mostly to re-dial phone numbers.) That is one of two commands that don't require the AT prefix. The other is the + + + command. While in Terminal mode and using a 1670 modem, if you enter + + +, you'll be disconnected from whatever system you're connected with. If you're using a Hayes or compatible modem, entering + + + lets you send an AT command to the modem while you remain online.

You are also able to combine commands. Whenever I load in my terminal program and then go to Terminal mode, I enter ATE1S0 = 0 and press return. Table 1 gives an explanation of some other AT commands.

ONLINE GAMING

If you're a member of QLink, and you enjoy playing games, check out Rabbit Jack's Casino (see "The Online Arcade," *RUN*, September 1987). The additional disk required costs $9.95, but it opens up a new dimension in online games. Black Jack, Poker, Bingo and the ever popular one-armed bandit are available in the casino.

Besides playing the games, you can talk to players in the casino, transfer chips to other users and ask the piano player for a song.

Rabbit Jack's Casino is a plus service, which means it costs eight cents per minute or $4.80 for an hour.

FILE COMPILE

I've found another program that combines many files into one for up- and downloading purposes. The name of the program is Arkive V2. Written by Edward Rohr, 3063 Edgemont St., Philadelphia, PA 19134, it operates basically the same as Will Corley's Lynx (see Telecomputing Workshop for August 1987). If you download and see a file that ends in .ARK, you'll need Arkive V2 to dissolve it.

Arkive V2 takes up to 143 files and turns them into one program file. It handles all types of Commodore files (program, sequential, user and relative) and appears to be another good freeware program.

If you want to get a copy of Arkive V2, look on QLink or send a disk and return postage to Edward at the address above.

SATELLITE HOOKUP

I received a few letters that I plan to forward to Captain Kuster and his crew (see the Telecomputing Workshop column in the August 1987 issue). One note regarding satellites came from Don Pickinpaugh of Terceira, Azores, and the other came from Philip B. Shuman, PE, St. Croix, Virgin Islands. Both offer some very interesting insights and, with luck, we'll get the Captain online in the near future.

RUN WITH US

The RUNning Board, *RUN*'s BBS (603-924-9704), is now operating with Steve Punter's BBS program, a 300/1200-baud modem and a 20-megabyte Lt. Kernal hard drive (available from Xetec Inc., 2804 Arnold Rd., Salina, KS 67401). The BBS supports messages, up- and downloading with Punter and Xmodem protocols, bulletins that you can read, and lots of other features.

If you want to send a message to the folks at *RUN*, type E at the Command prompt, enter the subject of your message, and then enter SYSOP when you're asked for the addressee of the message. When you're finished typing, press return on a blank line to exit that section and then H to see a list of the available editing commands.

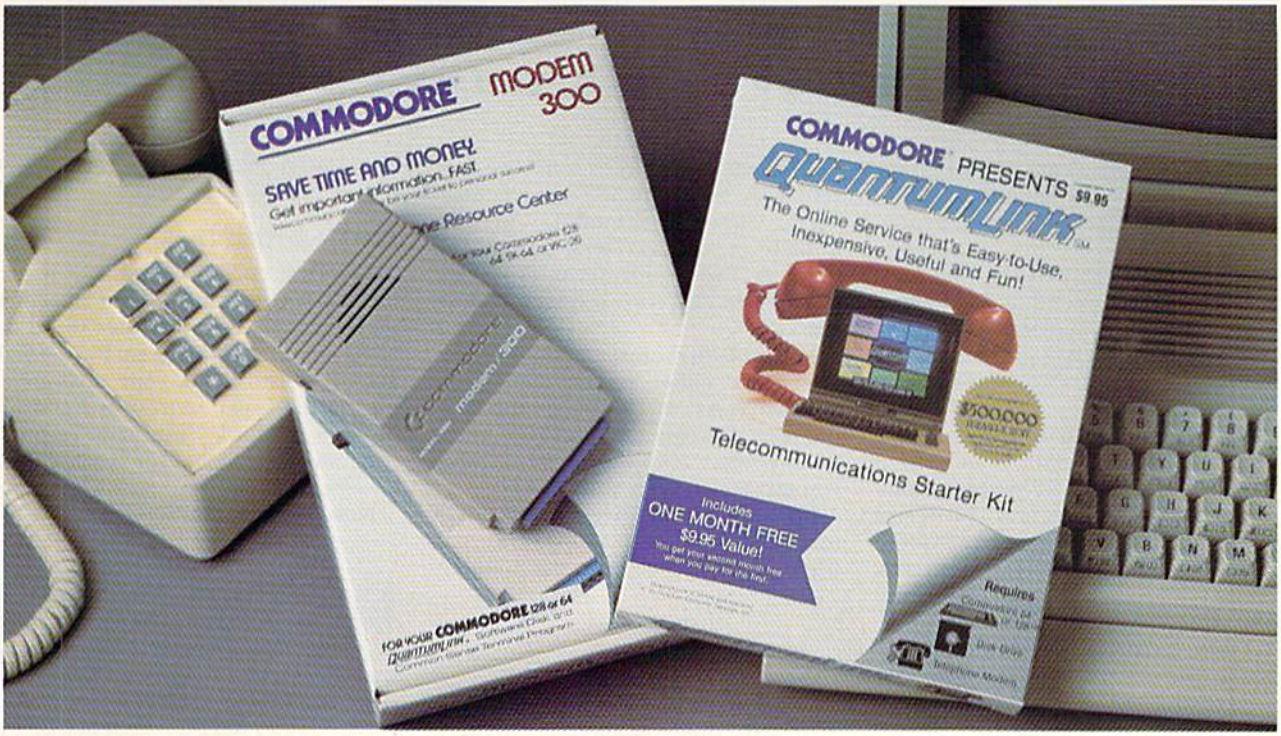
If you run into trouble, try Help, H or ?. If you're interested in getting information on Steve Punter's BBS program, call his BBS, after 6 PM EDT, at 416-896-1446. Steve's program has been around a long time and has evolved into a very reliable, comprehensive system.

SURVEY SAYS!

Here are some results of the survey I started back in June of 1987. On the computer scene, 57 percent of the users that responded have C-128s, 40 percent have 64s, two percent own Amigas and one percent own VIC-20s.

Forty-five percent of the respondents have 1670 modems, 25 percent have 1650s or compatibles, 12.5 percent own 1660s, seven percent have Volks 6480s/Aprotek 12Cs, five percent own Hayes, two and one-half percent own Avatex, two percent have TCM-1200Hs, and one percent have 1600 VicModems.

The most popular printer seems to be the Commodore MPS-801/1525 (28 percent). A close second is the MPS-801/1525 equipped with the Wilanta Arts' descender-adding, character-enhancing EPROM (27 percent). Third in popularity is the MPS-802/1526 at 20 percent, and finishing tied for fourth ►



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place are Epson, Gemini, Panasonic, Seikosha and the Commodore MPS-1200, each with five percent of the votes.

The favorite online information service is QLink at 33 percent, with local BBSs coming in second at 27 percent, CompuServe (19 percent), GEnie (12 percent), PLink (five percent), and The Source and PlayNet with two percent each.

The most widely used terminal program is TouchTerm, with 14 percent of the votes, Multiterm, 12 percent, BobsTerm Pro at 10 percent, and ThirdTerm and Comterm each garnering seven percent. Common Sense, FirstTerm, EagleTerm, and CG128 took five percent each. NezTerm, SCTerm, PhoenixTerm, Ultraterm, XmoBuf, VidTerm, MindTerm, Vidtex, Caesar's Term, Fasterm, TriTerm, GFX Term, Electronic Cottage, and QTerm all came in at two percent.

Most of the aforementioned programs are either public domain or shareware. As you can see by the large number of programs mentioned, there is no perfect terminal program; what you use depends on your needs.

Looking at hard drives, 75 percent of users who own them have the Lt. Kernal, while 12.5 percent have the Commodore 9060/9090 or one of InConTrol's "Chief" series.

Not Another One!

Yes, here comes yet another survey. I'd like you to send me the specifications for what you consider to be the ultimate terminal program for the C-64 and/or C-128. Send your answers to me via the usual address at *RUN*, but be sure to mark "Ultimate Terminal Program Specs" on the back of the envelope.

Now, on to a question. . . .

Q *I've read all the available articles on telecomputing and am very interested in getting online. However, I know my weaknesses, and since I'm not in a toll-free access city, I won't buy a modem and assorted accessories until I can gain access to QLink or GEnie without paying long-distance charges.*

I keep reading about TeleNet, Tymnet and Uninet, but have never seen a phone number or address where I could get information regarding the how to, how much, where and when of subscribing.

—Elaine L. Beach
Plainville, CT

A QLink can be reached at 1-800-392-8200 from within the U.S. and at 1-703-883-0788 from Canada. If there is a local number for getting onto a network, they should be able to help you find it. If that doesn't work, try calling 1-800-TEL-ENET to get the nearest TeleNet number.

I can understand your reluctance to obtain a modem if you feel that you're going to be facing huge long-distance telephone bills. You might check out the local scene to see if there are any BBSs run by nearby user groups. To find these numbers, pick up a copy of The Computer Shopper, which contains quite a few pages of BBS numbers and user group listings. ■

Telecomputing Workshop is a monthly column dedicated to the needs of RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions and comments to:*

David Bradley
Telecomputing Workshop
RUN Magazine
80 Elm St.
Peterborough, NH 03458

You can leave online messages for David Bradley on QuantumLink (DavBradley), American PeopleLink (DavBradley), Delphi (DavidBradley) or via the PunterNet to 13/Sysop or 13/David Bradley.

Table 1. Various AT commands.

ATE0—Makes AT commands invisible on screen as they are entered. This means "blind" typing, so type carefully.

ATE1—Displays the AT commands on the screen as they're entered. It's probably best for beginners to have the modem show you what you are typing.

ATF0—Sets the modem to half-duplex operation. You're in full duplex if you find that you can see what is coming in, but can't see what you're typing. This usually happens when you're talking directly to another user.

ATF1—Sets the modem to full-duplex operation. If you're online and find that you're getting ddoouubbllee lleetttteerrss, you're in half duplex when you should be in full.

ATM0—The speaker in modem remains off during entire online period. This is appropriate for late-night telecommunications when you don't want to wake up the rest of the house (or let your mate know "you're on that computer again!").

ATM1—The speaker in modem is on during dialing, but off when a carrier is detected. This is how most people use their modems. It lets them hear the dialing and also tells them when they've made a successful connection or reached a busy signal or wrong number.

ATM2—The speaker in modem stays on during dialing, initial connection and during the entire online session.

ATS0 = ?—Selects the number of rings the modem will wait before answering the phone. I usually set this to zero so that the modem won't answer the phone at all. To have the modem answer after five rings, you'd enter ATS0 = 5.

ATS7 = ??—Sets the length of time (in seconds) that the modem will wait for a carrier. This setting defaults to 30 seconds. If you call long-distance a lot, you could enter ATS7 = 60, instead of putting commas at the end of the dialing command.

ATV0—Displays the modem's response codes in numeric form. See Table 2 for details.

ATV1—Displays the modem's response codes as words. See Table 2 for details.

ATZ—Resets the modem. This makes the modem act as if it had just been turned on.

Table 2. Modem response codes.

Word	Number	Word	Number
OK	0	No Carrier	3
Connect	1	Error	4
Ring	2	Connect 1200	5

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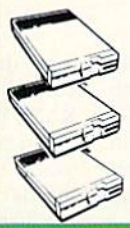
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COMMODORE CLINIC

How good are the C-64 emulators for the Amiga? What can you do about unwanted characters on your screen?

By LOUIS WALLACE

SOFTWARE

Q *Can Mike Konshak's Datafile 3.6 be made to run on the C-128 in 128 mode? If so, what do I need to do?*

—A. R. GREEN
KALAMAZOO, MI

A No, Datafile 3.6 was written specifically for the C-64. However, Mike did make a C-128 version, which he markets directly. You can order DFile 128 by calling 303-596-4243 or by writing to Michaelsoft, 4821 Harvest Court, Colorado Springs, CO 80917.

Q *I'm having problems running Presto Write 128* (RUN, *June 1987). When I run the program, the screen goes blank and I can get no further. What's wrong?*

—JAMES PHILLIPS
DULUTH, MN

A It sounds as though you're running it in 40-Column mode. Presto Write 128 is an 80-column program that uses the C-128's 2 MHz Fast mode. Fast mode blanks the 40-column screen, and is normally used with 80-column monitors only. (Some 40-column programs will temporarily go into Fast mode in order to speed up some computational tasks, then return to the Slow mode of operation.) In general, if you're using a 40-column display and a 128 program causes the screen to go blank, it's a good bet that it only works in 80-Column mode.

Q *I have a C-64, a 1541 disk drive and a 1525 printer. Thanks to* RUN, *RUN Script and PrintRite, I also have a very good-quality word processor. Does* RUN *have a spelling checker for RUN Script?*

—CARLTON EDWARDS
EASTLAND, TX

A We sure do. It's on *RUN*'s Productivity Pak III disk. The enhanced RUN Script for both the C-64 and C-128 comes complete with a spelling checker and dictionary, and it can print addresses on labels as well. The Productivity Pak III costs $19.97, which is not bad considering it also has a spreadsheet, database, notepad and several other programs. You can order the Productivity Pak III by calling 1-800-254-5473.

Q *After reading Matthew Stern's review of Integrator 2 in the August 1987* RUN, *I rushed right out and bought one. Imagine my displeasure to discover that I'm sitting with 2000 pieces of clip art for Newsroom, which I cannot use in any other program! Integrator only converts graphics into Newsroom format, not from Newsroom to another format! My question is, do you know of any public domain programs that can convert Newsroom graphics to any other format?*

—W. H. GRIFFEN, JR.
HAMPTON, VA

A Yes, I know of at least one. It's available on QuantumLink in the C-64 graphics software library and is called PS/PM/NR V1.2. It converts graphics back and forth between Print Shop, PrintMaster and Newsroom. It's also available from *RUN*'s BBS, the RUNning Board (603-924-9704, 300/1200 baud 8N1). If you want to download it from the RUNning Board, you need a terminal program that supports either Punter or Xmodem protocol.

HARDWARE

Q *I hope you can help me with a problem with my C-128. When the computer is in 80-Column RGB mode, small squares appear on the screen in column 27. While they don't interfere with anything, they do not look very good when I'm using the screen! This does not occur in 40-Column mode. Any ideas about what is wrong?*

—THOMAS FORNEY
ANDERSON, IN

A It is very likely one of two things. Either you have a bad 8563 video display chip (which creates the 80-column display), or one of the two RAM chips for the 8563 (it has its own video RAM) is bad. Either way, it will require a trip to your local CBM service center. Since the RAMs are soldered to the mother board, replacing them is a job for a skilled electronic technician.

Q *I currently own a C-64, but I'm planning on purchasing a PC10-2 (Commodore's MS-DOS compatible computer). Is there any emulator available that would allow me to run my 64 software on the PC10?*

—PETE BUSHBAKER
DEARBORN HEIGHTS, MI

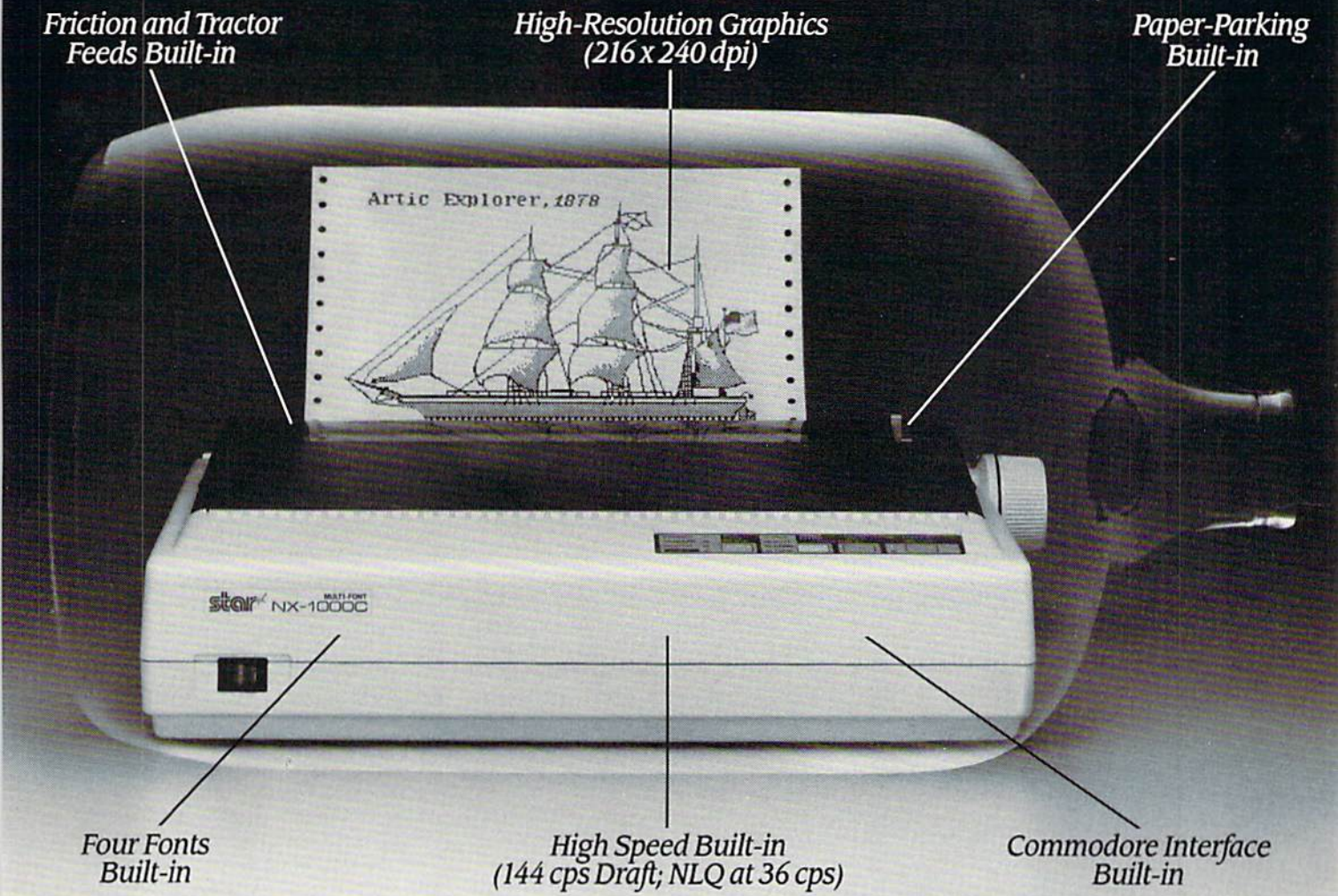
A No, it's not possible and is extremely unlikely ever to be so. In order for any computer to emulate the 64 (or any other computer) via software, it's necessary to translate all the 64's instructions and abilities into those of the computer emulating the 64, in this case your PC10. Since the PC10 is a relatively slow computer, the computational overhead would be so large that even if 64 programs could be made to work, they would run at one tenth or less of normal speed. Even on a high-speed computer like the Amiga, the 64 emulators available are so slow that they are essentially useless.

The only way it could be done is to have the 64 hardware (CPU, RAM, graphic and sound chips) on a board that could be inserted into the computer (like the Amiga's MS-DOS Bridge-Board). But the cost of such a board would probably be as much or more than a 64 by itself. The only practical method is that used by the 128, which is to have the 64 hardware installed as an integral part of the computer.

It has come to my attention that a fair number of 64 users are planning on upgrading to the Amiga in the belief that they will still be able to use their 64 software, using one of the commercially available Amiga C-64 emulators.

I checked with *RUN*'s sister publication, *AmigaWorld*, about this, conferring with Guy Wright, *AmigaWorld*'s editor-in-chief (who was at one time technical ►

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editor here at *RUN* and is still a 64 user). He was at that moment writing a review on C-64 emulators for *Amiga World*'s February 1988 issue.

After testing both the GO 64 and C-64 Emulator programs, he came to the general conclusion that both are so slow that even the programs that will run (and most do not) are far too slow to be usable. After watching a few demonstrations, I came to exactly the same conclusion. So, better forget about using your C-64 library on the Amiga.

To be fair, however, there are two other products available that allow you to use some 64/128 *hardware* on an Amiga. One is the C-View cable from C-Limited. This cable will connect your Amiga 500's RGB output to a 1702 or compatible composite monitor, giving you a readable color display. Another product is Access 64, which allows you to use your 1541/1571/1581 drives as well as MPS-801 compatible printers on an Amiga, in Amiga mode. It is not an emulator, but it does have some software for transferring datafiles (like word processing files) between the Amiga and the C-64.

Q *I have a 64C, a Blue Chip BCD disk drive and a Magnavox CM 8501 Color Monitor 40. When I use Easy Script for word processing, I only get a maximum of 40 columns of text on the screen. If I were to switch monitors to a Magnavox 80-column monitor, would the display change to 80-column format? (Easy Script does have 80-column support.)*

—DAVID DE ROIA
TORRANCE, CA

A No. Switching to an 80-column monitor will not change your display. That's determined by the computer and its software. The C-64 uses only a 40-column text display, and changing monitors won't affect it at all. The 80-column format provided by Easy Script involves the use of scrolling the screen, but it still never displays more than 40 columns of text at a time.

There are two ways to get an 80-column display on the 64, but neither are very satisfactory solutions. One is to create a special character set using 4 × 8 pixel cells for the font, and using bitmap Graphics mode to display them. This is slower than Text mode, it's hard to read and very memory-intensive.

The other is to use an 80-column cartridge, which gives a true 80-column display. However, these are expensive and not supported by many software companies. Batteries Included (now out of business, but some of their product line is still available from Electronic Arts) at one time sold both an 80-column cartridge and a word processor, PaperClip, that supported it. The program is still available from Electronic Arts, but they don't carry any Batteries Included hardware. If you need customer assistance for a Batteries Included product, call 1-415-578-0316.

Q *I recently read the Basic 8 review in the November 1987 issue of* RUN. *The review mentioned it was possible to replace the 128's 16K 80-column VDC RAMs with 64K. Is it also possible to replace them with 256K chips? If so, this would allow more than one hi-res screen in memory at a time. Perhaps the computer could be drawing in one screen and displaying a second. Would that be possible?*

—WILLIAM STOTTARD
PASCAGOULA, MS

A No, it's not possible to add 256K RAM to the 128 for 80-column display purposes. The 64K (using 120 nanosecond 4464 RAM chips) is the maximum it can be expanded to. But as for the possibility of having more than one screen in memory at a time, that is already quite possible when using Basic 8. You can have up to four monochrome screens in memory simultaneously (if you have 64K of VDC RAM), and Basic 8 is designed for drawing in one screen while looking at another (a technique called double buffering). With the 64K you can also have a large variety of different-size virtual screens, as well as variable size color displays.

By the way, while older C-128's came with only 16K of VDC RAM, the new C-128D has the full 64K video memory installed at the factory.

Q *I had a VIC-20 about three years ago. During that time I bought a number of game cartridges that work only on a VIC. Now I have a C-128 and a 1571 disk drive, but I would still like to use those games! Is there any sort of hardware adapter that will let me run them on my 128? Perhaps something like the Spartan, which allows the C-64 to use Apple II + software and hardware.*

—STEVE WILLIAMSON
FREMONT, CA

A No, there is no hardware emulator for the 64 or 128 that allows VIC software or cartridges to be used; and, for the same reasons given above about C-64 emulators, there is not likely to ever be one. If you want to use those ►

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games, the only solution is to buy a VIC-20 (there are still some around at very low prices) and use it as a game machine.

PROGRAMMING

Q *I've been looking for the* C-128 Programmer's Reference Guide *in every bookstore in town, but no one has heard of it. Does it really exist, and can you tell me where I can order one?*

—KEN JAMERSON
ZAINESVILLE, OH

A Oh yes, it certainly exists and is perhaps the single most important programming reference available for the C-128 (I usually carry one in my briefcase—honest!). It's over 700 pages long, contains a complete Basic 7 encyclopedia, sections on machine language, graphics, sprites, sound and CP/M. It also covers programming the 8563 80-column chip, a device input/output guide, memory maps and nearly 100 pages of hardware specifications.

It's published by Bantam Computer Books and retails for $24.95. You can order a copy by calling 800-223-6834, extension 479. Its reference number is 34378-5, and they accept credit cards (VISA, MasterCharge and American Express). You can also get information for ordering by mail from that number.

Q *I need information about both the inner workings of the C-128's ROM routines and those of the 1571 disk drives. Does Commodore sell documented ROM listings? If so, where can I find them and how much does it cost?*

—MARY SUE JENNINGS
TULSA, OK

A Commodore doesn't sell that information as far as I know, but you can get books with exactly that information from Abacus Software of Grand Rapids, Michigan (phone 616-241-5510). They have the *1571 Disk Drive Internals* ($19.95) and the *C128 Basic 7.0 Internals* ($24.95), which has extensive documentation on ROM routines. Both are excellent reference books on the inner workings of the 128 Basic and the 1571 ROMS. Abacus also publishes a number of books for the 64 and 128.

Q *What is the difference between the space and shifted space characters?*

—JOSE RAMIREZ
GUADALAJARA, JALISCO, MEXICO

A The space character is a CHR$(32), while shifted space is a CHR$(160). They are different ASCII characters and should not be used interchangeably. For example, if you were typing in a *RUN* program listing and typed in a shifted space instead of a space, *RUN*'s Checksum program would generate an error, but the line would look correct to you, making it very difficult to debug. ■

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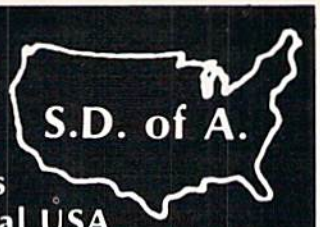
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Circle 245 on Reader Service card.

From p. 10.

being written to disk and displays how many copies of the file exist on the disk (including the original) when the copying is finished.

```
Ø REM 64 & 128 MULTIPLE COPIES - TIM WALSH
                                        :REM*73
1Ø A$=CHR$(34):PRINT "{SHFT CLR}ENTER NAME
    OF FILE TO COPY"                   :REM*217
2Ø INPUT N$                            :REM*16Ø
3Ø PRINT "ENTER NUMBER OF COPIES"      :REM*16Ø
4Ø INPUT P                             :REM*76
5Ø OPEN15,8,15                         :REM*166
6Ø FORK=1TOP:PRINT#15,"CØ:"+(LEFT$(N$,12))
   +"#"(STR$(K))"="+N$:PRINT"# "K:NEXT
                                        :REM*61
7Ø CLOSE15:PRINT"ALL DONE! YOU HAVE "K" CO
   PIES OF ":PRINT A$;N$;A$:END        :REM*117
```

—Tim Walsh, *RUN* Staff

$46F Keeping It in 64 Mode

Have you ever used C-64 software on your C-128 and noticed that pressing the reset button caused the computer to default to 64 rather than 128 mode? Chances are good that the software used a routine similar to the one below.

The 64-Mode Lock program works by setting the system vector pointing to the C-64-mode Kernal routine at address $FF4D (65357). The added benefit of my program is that even though the C-64-mode vectors are reset, most programs will remain in memory. Consequently, other utilities can be used to un-new programs and reactivate wedges by using their appropriate SYS calls.

```
Ø REM 64 MODE LOCK - JON ALLEN          :REM*7
1Ø BANK 1:FORN=DEC("FFF5") TO DEC("FFF9")
                                        :REM*Ø
2Ø READA$: POKEN,DEC(A$):NEXT          :REM*76
3Ø DATA 43,42,4D,4D,FF                 :REM*19
4Ø GO 64                               :REM*25Ø
```

—Jon Allen, Newfane, NY

$470 Instant Freeze 64

Wouldn't you like to gain better control of your C-64 programs? One of the best ways to get some additional control is to use a routine that pauses the execution of a program until you're ready to continue.

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While Instant Freeze 64 is a very handy utility with numerous applications, it does, unfortunately, disable run-stop/restore. So, when you need run-stop/restore, enter SYS 2048.

```
Ø REM INSTANT FREEZE 64 - PETER LOTTRUP
                                        :REM*93
1Ø FORI=828 TO 911:READ A:POKEI,A:CK=CK+A:
   NEXT                                :REM*134 ►
```


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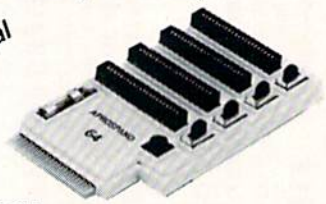
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MAGIC

```
2Ø IF CK<>8139THENPRINT"ERROR IN DATA":END
                                        :REM*52
3Ø SYS 828:END                          :REM*194
4Ø DATA 169,71,141,24,3,169,3,141,25,3,96,
   72,138,72,152,72,169,135,16Ø,3,141,24
                                        :REM*74
5Ø DATA 3,14Ø,25,3,173,Ø,4,141,52,3,173,Ø,
   216,141,53,3,173,143,3,141,Ø         :REM*139
6Ø DATA 4,169,3,141,Ø,216,88,32,228,255,2Ø
   1,32,2Ø8,249,173,52,3,141            :REM*166
7Ø DATA Ø,4,173,53,3,141,Ø,216,32,6Ø,3,76,
   188,254,72,138,72,152,72             :REM*16
8Ø DATA 76,188,254,144                  :REM*89
```

—Peter Lottrup, Buenos Aires, Argentina

$471 More Argentinian Magic

If you write large Basic programs for the C-64 or the C-128, minimize wasted time and frustration by keeping a list of all permissible variables. My program prints out a hard copy of that list.

```
Ø REM PERMISSIBLE VARIABLE NAMES - RICARDO
   SASSY                                :REM*71
1Ø OPEN4,4:DIMB$(11)                    :REM*226
2Ø A$="ABCDEFGHIJKLMNOPQRSTUVWXYZØ12345678
   9"                                   :REM*163
3Ø DATA DO,DS,EL,ER,IF,ON,OR,PI,ST,TI,TO
                                        :REM*75
4Ø FORI=1TO11:READB$(I):NEXT            :REM*233
5Ø FORI=1TO26:PRINT#4,MID$(A$,I,1)+"$";SPC
   (2);:NEXT:PRINT#4                    :REM*2Ø5
6Ø FORI=1TO26:FORJ=1TO36                :REM*81
7Ø NM$=MID$(A$,I,1)+MID$(A$,J,1)        :REM*151
8Ø FORL=1TO11:IF NM$=B$(L) THENNM$="**":GO
   TO1ØØ                                :REM*193
9Ø NEXT                                 :REM*22Ø
1ØØ PRINT#4,NM$+"$";SPC(1);             :REM*1Ø4
11Ø NEXT:PRINT#4:NEXT                   :REM*34
12Ø CLOSE4:END                          :REM*42
```

—Ricardo H. Sassy, Buenos Aires, Argentina

$472 Underline 64 Cursor

Most C-128 users know they have an underline cursor in 80-Column mode by pressing the ESC/U key combination. Not wanting the C-64 to suffer the indignity of lacking an underline-cursor option, I wrote Underline 64 Cursor. Type it in, save it, then run it. Your C-64's big, blocky cursor is quickly replaced with an underline cursor.

My underline cursor looks similar to the C-128's, but it works differently. Because the C-64's default cursor is actually a reversed image of the character beneath it, my program eliminates reversed characters and replaces them with underlined characters.

```
Ø REM UNDERLINE 64 CURSOR - JEFF MARTIN
                                        :REM*193
1Ø FORT=828 TO 967:READA:POKET,A:B=B+A:NEX
   T                                    :REM*23Ø
2Ø IFB<>2Ø972 THENPRINT"ERROR IN DATA!":EN
   D                                    :REM*1Ø9 ►
```


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```
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4Ø  DATA 169,48,133,52,133,56,133,251,173,1
    4,22Ø,41,254,141,14,22Ø,165,1   :REM*2Ø8
5Ø  DATA 41,251,133,1,169,Ø,133,25Ø,133,252
    ,133,254,169,52,133,253,169,2Ø8 :REM*43
6Ø  DATA 133,255,32,18Ø,3,2Ø1,212,2Ø8,249,1
    69,56,133,251,169,6Ø,133,253     :REM*53
7Ø  DATA 169,216,133,255,32,18Ø,3,2Ø1,22Ø,2
    Ø8,249,169,52,133,253,16Ø,7,169 :REM*35
8Ø  DATA 255,145,25Ø,145,252,24,152,1Ø5,8,1
    68,192,7,2Ø8,241,23Ø,251,23Ø    :REM*132
9Ø  DATA 253,165,253,2Ø1,56,2Ø8,231,165,1,9
    ,4,133,1,173,14,22Ø,9,1,141,14  :REM*96
1ØØ DATA 22Ø,173,24,2Ø8,41,24Ø,9,12,141,24
    ,2Ø8,96,16Ø,Ø,177,254,145,252   :REM*16
11Ø DATA 145,25Ø,2ØØ,2Ø8,247,23Ø,251,23Ø,2
    53,23Ø,255,165,255,96            :REM*9Ø
```

—JEFF MARTIN, ROSEVILLE, CA

$473 CURING 1581 WOES

Some software, such as Fontmaster 128, fully supports Commodore's 3½-inch 1581 disk drive, but most commercial C-128 software was written before the 1581 appeared. To use the 1581 with your C-128 software, set your 1581 to device 8 and your 1571 to device 9, using their respective DIP switches. (Don't attempt this with the C-128D's 1571—it comes without DIP switches. *Fie, Commodore!*).

Next, place your autoboot C-128 program disk in the 1571 and enter: SYS 65363,0,9,0. Your program will autoboot and communicate with the 1581, considered device 8 by the computer. True autobooting requires the auto-boot 128 utility that comes with the 1581. Use it to install an auto-boot to a file called Device 9 Boot on a formatted 3½-inch disk.

Now type in:

```
10 POKE 7,9:SYS 65363
```

Save it to your auto-boot 1581 with the name DEVICE 9 BOOT. Put your program disk in the 1571 and reset the C-128, and your program will boot from the 1571. Incidentally, if you need to copy spreadsheet, database and word processing files to the 1581, try the Uni-Copy program included with the 1581. It copies VizaStar worksheet files, among others.

—JESSE SHERWOOD, MARTIN, TN

$474 SCROLL CONTROL

Finally—a short routine that demonstrates a technique to prevent data from scrolling out of sight before you've read it. You'll find this routine is both easy to implement in any programs of your own design and works with the C-64 and with the C-128 in 40- and 80-Column modes.

When the routine is activated, tap the space bar to pause the output, and press it again to resume scrolling. To exit the program, press Q.

```
Ø REM SCROLL CONTROL - CHRISTINE CHARNETSK
  I                                  :REM*1Ø
1Ø X=128:P$="SPACEBAR PAUSES":Q$="Q = QUIT
   ":FORI=1TOX:PRINTI;P$,Q$          :REM*2Ø1
2Ø GETA$:IFA$<>" " OR A$="Q" THEN 4Ø
                                     :REM*212 ►
```

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MAGIC

```
30 GETA$:IFA$<>" " AND A$<>"Q" THEN 30
                                    :REM*131
40 IFA$="Q" THEN I=X                :REM*118
50 NEXT                             :REM*180
```

—CHRISTINE N. CHARNETSKI, PLAINS, PA

Magic is the original *column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

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MEGA-MAGIC

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BLANK-IT! 128

Last month's Mega-Magic featured Blank-it! 64, a utility that prevented screen burn from permanently ruining the display screen. For those readers who missed the January column, screen burn is a condition that results from a monitor screen being left on too long without a change in the display.

This column presents Gerald Elliot's 128 version of Blank-it!, which prevents screen burn on the C-128's 80-column screen. If no key press is made within ten minutes, the 80-column screen automatically blanks itself. Once the screen is blanked, pressing any key restores the screen to its original display.

To use Blank-it! 128, type in Listing 1, using *RUN*'s Checksum program, and save it to disk before running it. It erases itself after you run it, so you must save the program before executing it. Also have a work disk in the drive, because the program writes a one-block machine language file to disk called Blank-it! 128 as soon as you run it.

Whenever you want to access the ML file, use the Boot command if you're using a 1571 disk drive, or the Bload command if you're using a 1541 or clone to boot it. Use this syntax for a 1571 boot:

BOOT"BLANK-IT 128" <return> ►

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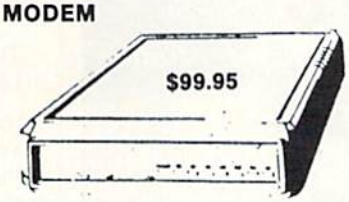
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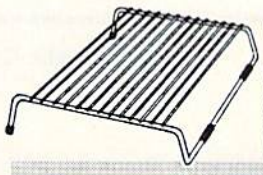
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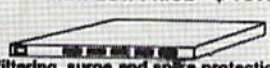
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MEGA-MAGIC

The 1541 Bload command requires a little more typing:
BLOAD "BLANK-IT 128",B0,P3584 <return>

Then enter SYS 3584 to activate it.

When you're ready to disable the program, press run-stop/restore. Entering SYS 3584 will re-activate the program. The program is interrupt-driven and resides in memory locations 3584 to 3798. Programmers will find the program easily relocatable. R

—GERALD W. ELLIOTT, SANFORD, NC

RUN it right: **C-128 (80-Column mode)**

Listing 1. Blank-it! 128 program.

```
10 REM BLANK-IT 128 BY GERALD W. ELLIOTT
                                        :REM*29
20 PRINT"{SHFT CLR}LOADING MACHINE LANGUAGE
                                        :REM*184
30 FOR AD=3584 TO 3798:READ D:POKE AD,D:CS=
   CS+D:NEXT                            :REM*192
40 IF CS=26575 THEN 60                  :REM*79
50 PRINT"ERROR IN DATA STATEMENTS":END
                                        :REM*26
60 SCRATCH"BLANK-IT 128":BSAVE"BLANK-IT 128
   ",B0,P3584 TO P3799                  :REM*219
70 PRINT"USE THE FOLLOWING METHODS TO ACTIV
   ATE"                                 :REM*184
80 PRINT"BLANK-IT 128:"                 :REM*72
90 PRINT"{CRSR DN}1571 USERS:":PRINT"BOOT"C
   HR$(34)"BLANK-IT 128"CHR$(34)"(RETURN)"
                                        :REM*154
100 PRINT"{CRSR DN}1541 USERS:":PRINT"BLOAD
    "CHR$(34)"BLANK-IT 128"CHR$(34)",B0,P35
    84 (RETURN)                         :REM*60
110 PRINT"FOLLOWED BY SYS 3584 TO ACTIVATE.
    ":NEW                               :REM*187
120 DATA 120,169,67,141,20,3,169,14,141,21,
    3,169,0,141,210,14,141,211,14       :REM*210
130 DATA 141,212,14,141,213,14,141,214,14,1
    62,18,169,24,32,204,205,232,169:REM*163
140 DATA 0,32,204,205,160,7,132,254,160,255
    ,132,255,32,202,205,198,255,208 :REM*91
150 DATA 249,197,254,240,5,198,254,76,49,14
    ,88,96,165,212,201,88,208,84    :REM*233
160 DATA 173,210,14,201,0,208,40,173,212,14
    ,201,10,240,36,238,214,14,173   :REM*109
170 DATA 214,14,201,60,208,23,169,0,141,214
    ,14,238,213,14,173,213,14,201     :REM*4
180 DATA 60,208,8,169,0,141,213,14,238,212,
    14,76,207,14,162,26,32,218,205 :REM*147
190 DATA 141,211,14,169,0,32,204,205,162,20
    ,169,24,32,204,205,232,169,8,32  :REM*8
200 DATA 204,205,169,255,141,210,14,76,207,
    14,173,210,14,201,0,208,14,169  :REM*54
210 DATA 0,141,212,14,141,213,14,141,214,14
    ,76,207,14,173,211,14,162,26,32 :REM*22
220 DATA 204,205,162,20,169,8,32,204,205,23
    2,169,0,32,204,205,169,0,141    :REM*82
230 DATA 210,14,76,164,14,76,101,250,0,0,0,
    0,0                             :REM*226 ■
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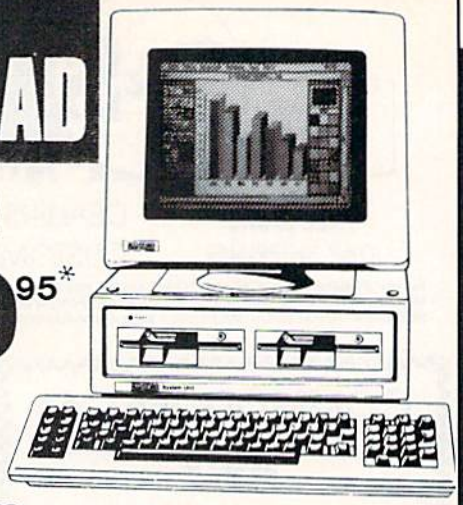
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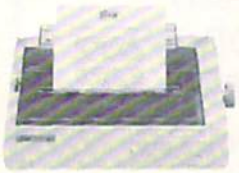
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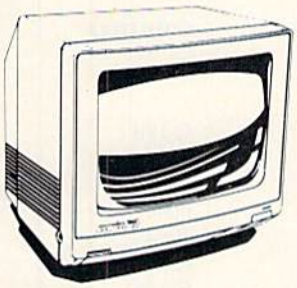


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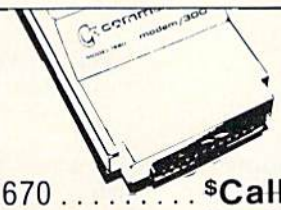


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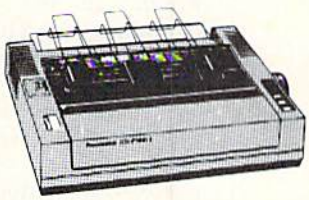
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RUN's Checksum

By BOB KODADEK

TYPE IN *RUN*'s CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running. When typing in a program from *RUN*, first load and run *RUN*'s Checksum. The screen will display the 64 or 128 version, whichever is appropriate, and a SYS number that deactivates the Checksum when typed in and followed by return. Always disable *RUN*'s Checksum before attempting to run another program. The same SYS number will reactivate the Checksum.

Keep the following in mind: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears directly below the line just entered. If this number matches the checksum value in the program listing, the line is correct. You enter the next line by typing it in right over the previous line's checksum value. If the number that appears *doesn't* match the listing's checksum value, carefully compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing in this way until all the lines have been correctly typed. Then deactivate *RUN*'s Checksum, using the SYS number. Save the finished program. R

Listing 1. *RUN*'s Checksum program.

```
10 REM RUN'S CHECKSUM 64/128 - WRITTEN BY
   BOB KODADEK
20 MO=128:SA=3328:IF PEEK(40960)THEN MO=64
   :SA=49152
30 FOR I=0TO140:READ B:CK=CK+B:POKE SA+I,B
   :NEXT
40 IFCK<>16951 THENPRINT"DATA ERROR!":END
50 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":
   PRINT
60 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO
   =128 THEN 90
70 POKESA+13,124:POKESA+15,165:POKESA+25,1
   24:POKESA+26,165
80 POKESA+39,20:POKESA+41,21:POKESA+123,20
   5:POKESA+124,189
90 POKESA+4,INT(SA/256):SYS SA:NEW
100 DATA 120,162,24,160,13,173,4,3,201,24,
    208,4,162,13,160,67,142,4,3,140
110 DATA 5,3,88,96,32,13,67,152,72,169,0,1
    41,0,255,133,176,133,180,166,22
120 DATA 164,23,134,167,132,168,170,189,0,
    2,240,58,201,48,144,7,201,58,176
130 DATA 3,232,208,240,189,0,2,240,42,201,
    32,208,4,164,180,240,31,201,34
140 DATA 208,6,165,180,73,1,133,180,230,17
    6,164,176,165,167,24,125,0,2,133
150 DATA 167,165,168,105,0,133,168,136,208
    ,239,232,208,209,169,42,32,210
160 DATA 255,165,167,69,168,170,169,0,32,5
    0,142,169,32,32,210,255,32,210
170 DATA 255,169,13,32,210,255,104,168,96■
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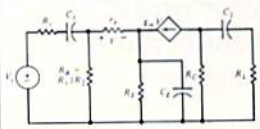
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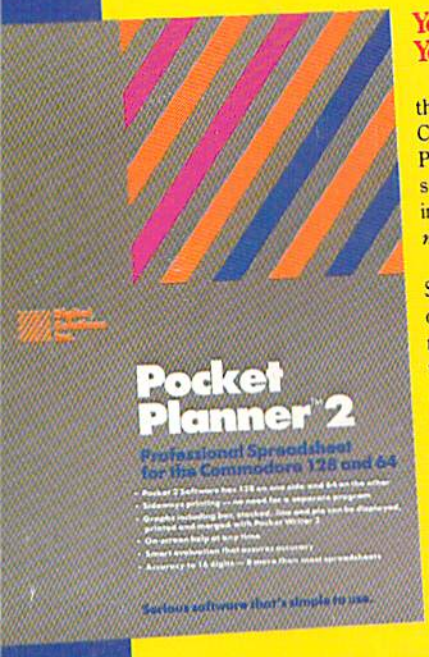
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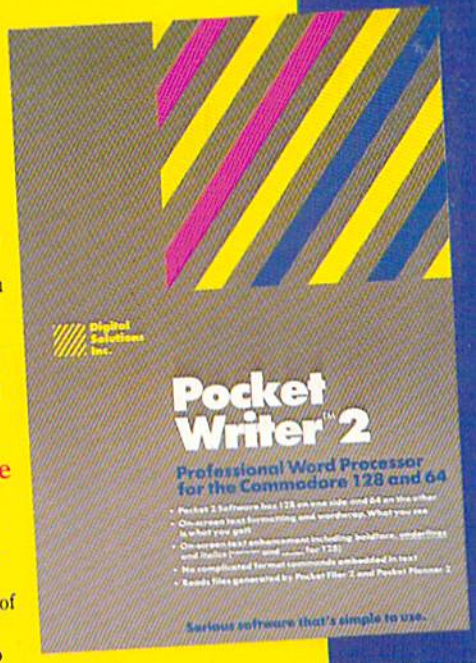
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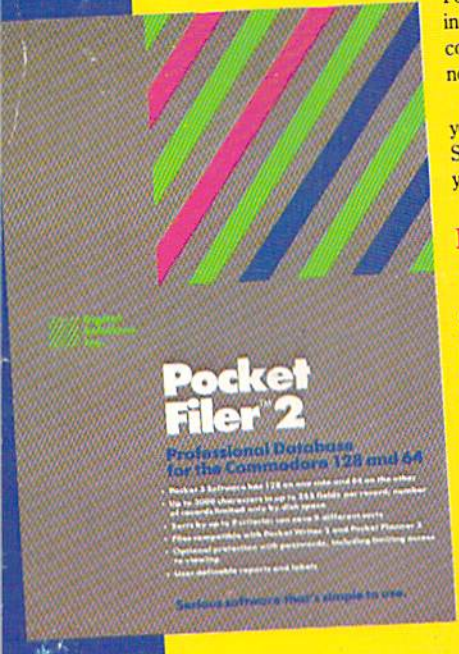
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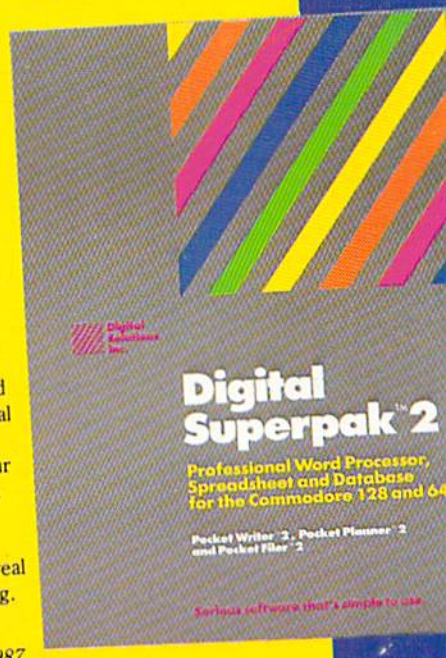
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