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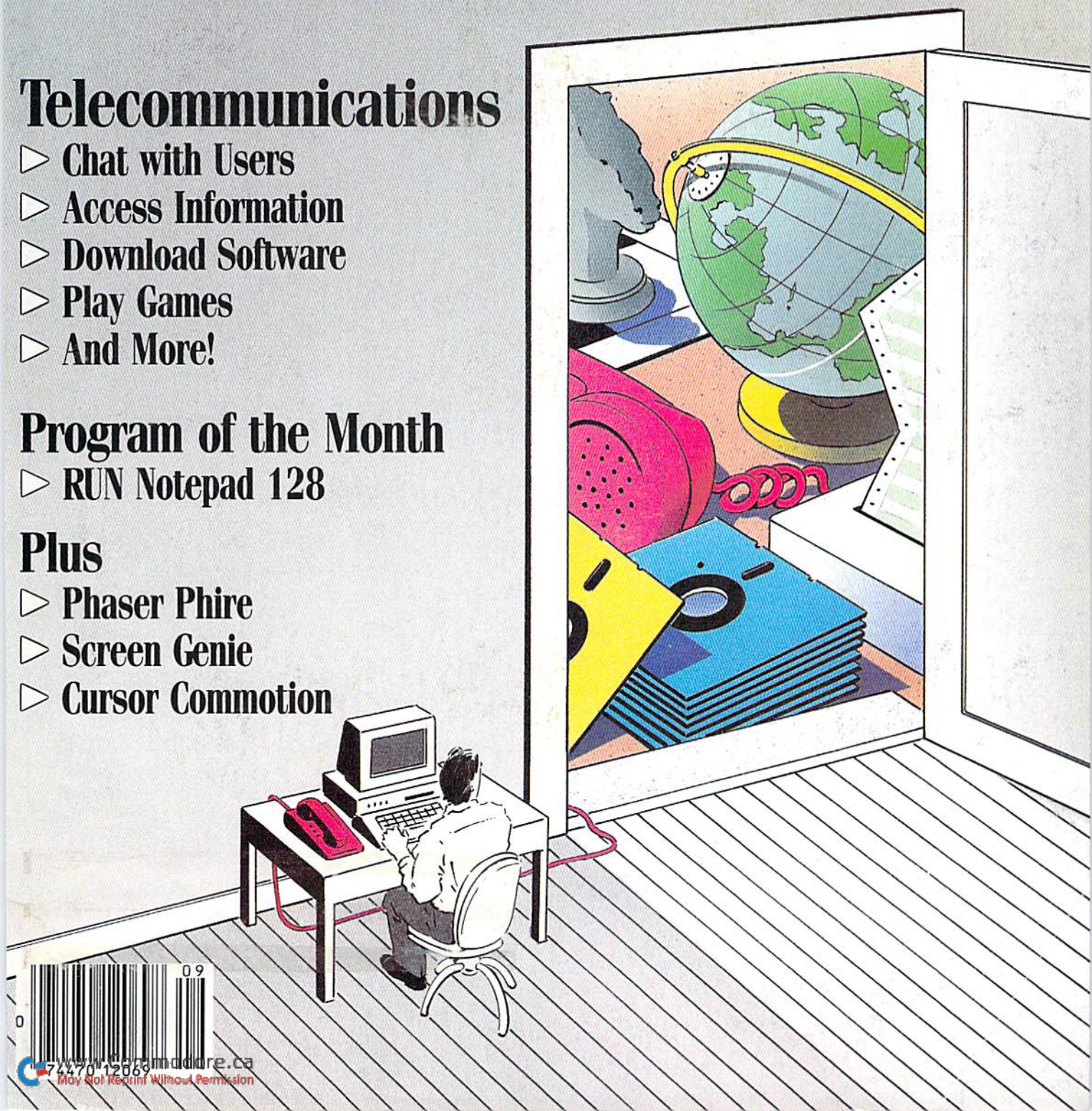

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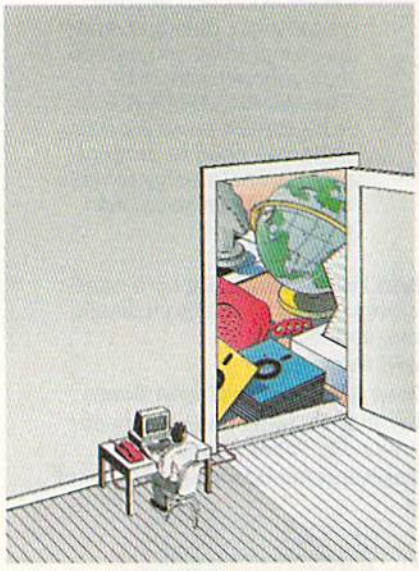

COVER ILLUSTRATION BY MIN JAE HONG

FEATURES

ONLINE SERVICES OVERVIEW *by Margaret Morabito* 36
Join a telecommunications network and access libraries of information, chat with other computerists, purchase merchandise and much more.

THE ONLINE ARCADE *by Louis Wallace* 40
Gaming is more fun than ever when you play online.

PLUG INTO TELECOMMUNICATIONS *by David Bradley* 42
To get online, you need a modem and a terminal program. Read how this hardware and software works and what to look for when you shop for a modem.

* **128 NOTEPAD** *by Bob Kodadek* 48
Now, *RUN*'s popular desktop accessory for the C-64 works on the C-128, too.

SUMMER CES: THE SHOW GOES ON *by Louis Wallace* 56
The vitality of the C-64 and C-128 was evident at this summer's Consumer Electronics Show. Unfortunately, Commodore missed the fun.

* **PHASER PHIRE** *by Robert Cook* 58
Even if you've never been a Trekkie, you'll have a blast routing those abominable Klingons.

* **C-64 FUNCTION KEYS MADE USEFUL** *by Kenny Lawson* 63
With this program, the function keys on your C-64 become as beneficial as those on the C-128.

DEPARTMENTS

RUNNING RUMINATIONS 8
Increased phone rates for online time may challenge the telecommunications industry.

MAGIC *by Jim Borden* 12
The original column of hints and tips for performing Commodore computing wizardry.

NEWS AND NEW PRODUCTS 16
Recent developments and releases in the world of Commodore computing.

MAIL RUN 20
Input from our readers.

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SOFTWARE GALLERY 24
Reviews of:
- Cash In—Cash Out
- Accolade's Comics
- Video Vegas
- Star Trek: The Promethean Prophecy
- Up Periscope!
- Legacy of the Ancients
- World Tour Golf

GEOWATCH *by Matthew Stern* 66
RUN's column for users of the GEOS operating system. This month: setting up a geoFile database.

* **EASY APPLICATIONS** *by John Ryan* 68
Short but useful applications for your Commodore computer. This month: a program that calculates screen and color addresses for character-graphics layouts.

TELECOMPUTING WORKSHOP *by David Bradley* 74
Advice and answers to your questions on modems, terminal programs, bulletin boards, and more.

RESOURCE CENTER *by Margaret Morabito* 76
RUN's column on Commodores and education. This month: educational opportunities offered by online services.

HARDWARE GALLERY 78
Reviews of:
- The Final Cartridge
- Comp-U-Temp, Version 2.0

COMMODORE CLINIC *by Jim Strasma* 82
Got a problem or question related to Commodore computing? This monthly column provides the answers.

* **MEGA-MAGIC** *by Mark Joerger* 90
Tips and techniques that are bigger than Magic. This month: a miniprogram that lets you save *anything* you input from the keyboard.

HOW TO TYPE *RUN* LISTINGS 92
Using *RUN*'s Perfect Typist checksum programs.

LIST OF ADVERTISERS 96

COMING ATTRACTIONS 96

*THIS ARTICLE CONTAINS A PROGRAM LISTING. THE PROGRAM IS ALSO AVAILABLE ON THE SEPTEMBER-OCTOBER 1987 RERUN DISK. SEE PAGE 32 FOR DETAILS.

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RUNning Ruminations

A proposed FCC rate hike could seriously dampen activity in the online community.

Is the Party Over?

Remember the promise of telecommunications to create a generation of computerists who could communicate, shop, work, bank and access tons of information—all from the comfort of their homes?

While a generation of stay-at-home computerists has not yet materialized, the telecommunications industry—after a few stumbles—boasts a modest, although growing, number of users.

Today we see thousands of computerists getting online to access news, exchange information, download programs, leave messages, take courses, play games and chat with other users.

In fact, this social aspect of telecommunications has prompted some to compare these online gatherings with a computer cocktail party. But the party may soon be busted.

The FCC is the party-crasher, threatening this burgeoning market with a proposal that would, in effect, greatly increase the cost to computerists accessing these services. Phone charges, which start at a low of $3.60 per hour of online time, could double as a result of the proposal. This could "have the effect of potentially killing the market," QuantumLink vice-president Steve Case was recently quoted as saying in the *Wall Street Journal*.

Whereas the business community might be able to absorb such a rate increase, the home computer market would be much harder hit. If this devastating proposal goes into effect, officials predict that the number of online searches for information and online chatter could be drastically reduced.

With this threat looming over the industry, users, as well as officials of the information services, have mobilized and expressed their concerns to the FCC.

The threat notwithstanding, the computer network industry has made great strides in the last year. We've seen more and more activity online, with numerous new services being added to attract home computer users.

This month we take a look at some of the types of services and features offered by the computer networks for Commodore users. We'll tell you how to get started online, give you a glimpse of the world of telegaming and show how you, too, can become involved online.

RUN Special Products

In response to requests from readers for more information about Commodore computing and the marketplace, *RUN* offers special products that supplement and take advantage of the information published in the magazine.

You'll notice in this issue ads outlining three of this year's special products that we have been working on. Some of you may already be familiar with our "specials," which, judging from your reactions in the past, contain valuable supplemental information for the 64 and 128.

Those who are not familiar with the specials owe it to themselves to check them out this year. They are generated with the *RUN* reader in mind. We're sure that there's something here to help readers of all skill levels—from the beginner to the more advanced C-64 and C-128 user—increase computing productivity. Let us know if you find these useful and if you have any suggestions for improvement.

Be on the lookout for the following offerings:

—**The Productivity Pak** makes its debut for the third year in a row, with new and improved programs. Everything you need is here on one disk—a word processor and a database management program and spreadsheet. In addition, it will give you a couple of applications, including a desktop accessory program.

These high-quality 64 and 128 programs are an inexpensive way for you to become involved with the essential "productive" applications of computing. We've designed them as easy-to-use for the beginner, but they pack plenty of power for the more advanced applications user.

—Making its fourth annual appearance is the popular ***RUN* Special Issue**, which includes many of the traditional Special Issue features that our readers have come to expect, as well as some new highlights.

Chief of these is the holiday gift guide, which offers shoppers plenty of gift-giving ideas for the computing relative or friend. Don't go shopping without this handy companion.

Back by popular demand in this year's issue are Jim and Ellen Strasma, who have compiled answers to the most commonly asked questions about Commodore computing. This is a helpful guide for the beginner or experienced user who has questions about software, hardware, applications, programming or new products.

You also won't want to miss this year's collection of Magic tricks, which by themselves are worth the price of the publication. Imagine a year's worth of hints and tips!

Also included are several useful utilities and applications listings that readers can type in and add to their software library collection.

Be sure to collect this year's free pull-out wall calendar inside the Special Issue. This computing calendar, which is a must for every Commodore computerist, highlights the important dates in the annals of personal computing, as well as the significant milestones in the history of Commodore computing.

—We're also introducing something new this year. It's called the **Limited Edition** and features the best Magic tricks published in *RUN* from its inception in January 1984 through the December 1986 issue. We've selected the best 200 tricks to help both the beginning and advanced 64 and 128 user. Nowhere else will you find such useful information packaged in such a convenient format.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

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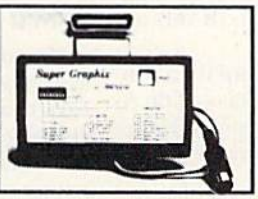

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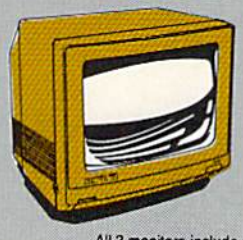

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MAGIC

Discover several undocumented characters in GEOS; use a handy C-64 sprite editor; read the joystick positions on your C-64; and more.

Compiled by JIM BORDEN

$415 Save Time by Saving to Side B First

Using a disk that's been formatted in 1571 mode theoretically saves time by eliminating the need for disk swaps when you save and access data files. However, in reality the time advantage is lost, because when the drive program is saving to side B, it has to check the block allocation map (BAM) on side A after writing every block.

To overcome this problem, format a new disk and then run my BAM Filler program, which allocates all blocks on side A (except the directory). Then save the main program and support files to side B. Finally, use the Collect command to free side A once again.

Wait until after Collect finishes executing to put an autoboot program on the disk. Otherwise, it will free the autoboot block.

```
10 REM SIDE A BAM FILLER-IAN PEARSE
20 NU$=CHR$(0)
30 OPEN15,8,15,"I0":OPEN8,8,8,"#":PRINT#15
   ,"UA:8,0,18,0"
40 PRINT#15,"B-P:8,4":FORX=4TO71:PRINT#8,N
   U$;:NEXT
50 PRINT#15,"B-P:8,76":FORX=76TO143:PRINT#
   8,NU$;:NEXT
60 PRINT#15,"UB:8,0,18,0":PRINT#15,"I0":CL
   OSE8:CLOSE15
```

—IAN W. PEARSE, EARLVILLE, QLD., AUSTRALIA

$416 Scratching with Wild Cards

If you intend to scratch several files beginning with the same few characters by using a wild-card character (* or ?), it's easy to see which files will be scratched by using the same character with the DOS Wedge or the Directory command. For example, if you're thinking of scratching all files whose names start with FILE, use @$0:FILE* with the Wedge, or type in DIRECTORY "FILE*" on the C-128. Then you can go ahead and use the wild card, or individually scratch only those files you really want to eliminate.

—IAN W. PEARSE, EARLVILLE, QLD., AUSTRALIA

$417 1541 vs 1571 Sector Interleave

I write C-64 programs on both the C-64 and C-128, with 1541 and 1571 disk drives. When I use fast-loaders, C-64 programs that I've saved with a 1571 drive require nearly twice as much time to load as those saved with a 1541 drive.

Investigation showed that the blocks in the 1541-saved files ►

TRICK OF THE MONTH

$418 C-64 River Run

One day, as you speed downstream in your new powerboat, you suddenly hear a roaring ahead. Beware! There are rapids ahead!

River RUN works on the C-64 or in 40-Column mode on the C-128. The farther downstream you travel, the more rocks you'll encounter and the higher your score will be. Use the comma key to make the boat turn left and the period key to turn right. When you crash, you'll be asked if you want to play again.

```
1 REM RIVER RUN - ROBIN BLAINE
10 A$="{COMD 7}{COMD *}{CTRL 9}{2 SHFT Ms}
   {6 SPACEs}{2 SHFT Ms}{COMD *}{CTRL 0}":
   B$="{COMD 7}{CTRL 9}{SHFT LB.}{2 SHFT N
   s}{6 SPACEs}{2 SHFT Ns}{CTRL 0}{SHFT LB
   .}":C$="{COMD 7}{CTRL 9}{2 COMD Ms}{7 S
   PACEs}{COMD H}{COMD G}{CTRL 0}":SC=1184
20 PRINT"{SHFT CLR}{COMD 7}";:POKE5328Ø,13
   :POKE53281,13:POKE53265,23:POKE65Ø,128
30 P$="{HOME}":FORA=1TO24:P$=P$+"{CRSR DN}
   ":NEXT:P=14:B=2Ø:Q=RND(-TI)
40 FORX=1TO25:PRINTSPC(P+1);C$:NEXT
50 A=INT(RND(1)*3)+1:IFP<5THENA=1
60 IFP>22THENA=2
70 T=INT(RND(1)*4Ø):POKE1984+T,3Ø:POKE5625
   6+T,5:GETK$:POKESC+B,174
80 ONAGOTO9Ø,1ØØ,11Ø
90 P=P+1:PRINTP$;SPC(P);A$:Q=Ø:GOTO12Ø
100 PRINTP$;SPC(P);B$:P=P-1:Q=Ø:GOTO12Ø
110 PRINTP$;SPC(P+1);C$:Q=1
120 S=S+1:PRINT"{HOME}";S:IFK$=","THENB=B-
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130 IFK$="."THENB=B+1
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    1)*(5+2*Q)):R=T+P+4-Q:POKE1944+R,2Ø9
170 P%=P%+5*ABS(S/2Ø=INT(S/2Ø)):GOTO5Ø
180 POKESC+B,17Ø:FORX=1TO1ØØØ:NEXT:PRINT"{
    HOME}";S
190 FORX=1TO1Ø:GETA$:NEXT:INPUT"{HOME}{CRS
    R DN}PLAY AGAIN (Y/N){2 SPACEs}Y{3 CRS
    R LFs}";A$:PRINT"{SHFT CLR}"
200 IFLEFT$(A$,1)="Y"THEN RUN
```

—ROBIN BLAINE, LOUISVILLE, MS

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were separated by ten blocks (interleave = 10), while blocks in the 1571-saved files were separated by six blocks (interleave = 6). Typically, a 1541 fast-loader program can transfer *two* blocks of a program to the computer with each revolution of the disk. When programs are saved with a 1571, however, the blocks are too close, and the fast loaders can read only *one* block per revolution.

In 1571 mode, the drive is fast enough to pick up three blocks on each spin. Unfortunately, the default interleave is 6 in both 1571 and 1541 modes. Fortunately, you can change the interleave default with this program line:

```
10 REM 64/1571 INTERLEAVE-RAY ROBERTS
20 OPEN 15,8,15:PRINT#15,"M-W"CHR$(105)CHR
   $(0)CHR$(1)CHR$(10):CLOSE15
```

The final CHR$ value is the interleave value, in this case, 10. If you use this line before saving programs on a 1571, your C-64 fast-loaders will work at full speed. However, using this line for 128 programs will make them load more slowly in 1571 mode.

—Ray Roberts, Gainesville, FL

$419 1541 DOS Wedge Command Summary

Many new C-64 users may not be aware of the full usefulness of the DOS Wedge utility that comes on the demo disk supplied with the disk drive. Here's a summary of the commands available with this very handy utility. Refer to the drive manual for a full explanation of the DOS commands. Note, however, that not all the DOS Wedge commands listed here are covered in the older manuals.

@—Returns the current disk status.
@$—Lists the directory to the screen without disturbing the program in memory. (Note: Tap the space bar to stop and start the directory.)
@I0—Initializes the disk drive.
@UJ—Software reset for the DOS.
@V0—Validates disk.
@#N (where N is the drive number, 8 to 15)—If you have two or more drives, this command lets you switch the DOS Wedge commands back and forth between drives. For instance, @#9 will send the commands to drive 9.
@N0:DISK NAME,ID—Formats a disk. (*Warning:* This command destroys all data on a disk.)
@C0:NEW FILENAME = 0:OLD FILENAME—Makes a copy of an old file on the same disk under a new filename.
@R0:NEW NAME = 0:OLD NAME—Renames a file on the disk.
@S0:FILENAME—Scratches a file from the disk.
/FILENAME—Loads a Basic program.
↑FILENAME—Loads and runs a Basic program.
%FILENAME—Loads a program back into memory at the exact place it was saved from. (For binary files such as DOS 5.1.) Note: The latter three commands can be used in a directory listing by typing the first character in the first column and pressing return; the Wedge will see only the filename within quotes and ignore any other characters on the line.
←FILENAME—Saves a program to disk.
@Q—Disables the DOS Wedge program.

Note that > can be used instead of @. Also, to use DOS Wedge commands in a program requires a different syntax. First type the @ and then include the command within quotes. For example, 10 @"I0" will initialize the drive (assuming the Wedge is active).

—Don Griffey, Hopkinsville, KY

$41A C-64 Wedge Handler

If you're like me, you'll want a copy of the DOS Wedge on each of your disks. I use the following program to load and boot the Wedge's DOS 5.1 program. Then, whenever I want to copy the machine language program onto other disks, that option is always available, and I can even save my wedge handler at the same time.

```
10 PRINT"{SHFT CLR}C-64 WEDGE HANDLER - JO
   E CHARNETSKI"
20 IF BY=0 THEN BY=52224:F$="DOS 5.1":LOAD
   F$,8,1
30 INPUT"{CRSR DN}(B)OOT OR (C)OPY";A$:IFA
   $="B"THEN PRINT"{SHFT CLR}":SYS BY:NEW
40 ON-(A$<>"C")GOTO30:INPUT"{CRSR DN}COPY
   THIS PROGRAM TOO (Y/N)";B$
50 PRINT"{CRSR DN}INSERT TARGET DISK - HIT
   ANY KEY"
60 GET C$:IF C$="" GOTO 60
70 OPEN15,8,15,"I0":OPEN7,8,9,F$+",P,W"
80 INPUT#15,D,E$:IF D THEN PRINTE$:GOTO110
90 PRINT#7,CHR$(0);CHR$(204);
100 FOR I=0TO857:PRINT#7,CHR$(PEEK(I+BY));
   :NEXT
110 CLOSE7:IF B$="Y"THEN SAVE "WEDGE HANDL
   ER",8:INPUT#15,D,E$:PRINT E$
120 IF D=0 THEN PRINT"DONE."
130 CLOSE15:GOTO30
```

—Joseph R. Charnetski, Dallas, PA

$41B C-128 Escape ESC

I've found an undocumented escape function in the C-128's screen editor. Just press the escape key twice. The double escape disables Reverse, Underline, Insert (from the insert-delete key) and Quote modes. The result is the same as pressing ESC O, but it's easier to type.

—Charles Lavin, Coral Gables, FL

$41C C-64 Joy Function

My joystick interpreter makes it easy to read the joystick positions on the C-64. This interrupt-driven program resides in the cassette buffer, and, when activated by SYS 828, it runs in the background until you press run-stop/restore.

You can find the positions of the joysticks by peeking memory location 252 for port 2 or 253 for port 1. Just like the Joy function in Basic 7.0, the locations of the joysticks are as follows:

```
8 1 2
7 0 3
6 5 4
```

Add 16 if the fire-button is pressed. If you peek location 252 and get a value of 20, that means joystick 2 is pushed in the southeast direction and the fire-button is pressed.

```
10 REM C-64 JOYSTICK TRANSLATOR PROGRAM -
   ROGER MOORE
20 FORX=828TO885:READA:POKEX,A:C=C+A:NEXT
30 IFC<>5208 THENPRINT"DATA ERROR!"
40 DATA 120,169,73,141,20,3,169,3,141,21,3
```

Continued on p. 86.

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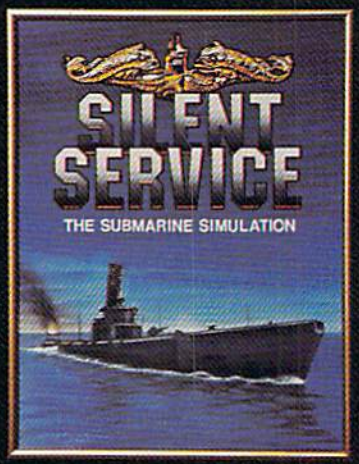

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NEWS AND NEW PRODUCTS

Find out what was new at the Summer CES in Chicago, and learn about some surprising buying trends among computer retailers.

Compiled by HAROLD R. BJORNSEN

SURPRISING BUYING TRENDS?

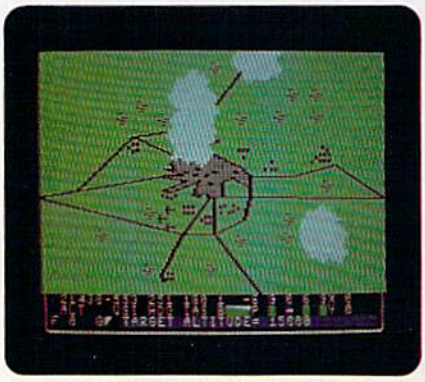
AMBLER, PA—IMS America, Ltd., Computer Markets Division, a market research organization, reports some surprising changes over the last year in retailer purchases in a number of categories of peripherals. The company's audit of February 1987 purchases by computer stores shows remarkable growth in several unrelated categories. The biggest of these changes is a 215.4 percent increase in dollar purchases of disk drives in formats smaller than four inches.

The report also shows, in part, that hard disk drive purchases grew 118.4 percent, keyboards gained 130.5 percent and circuit protection devices were up 84.6 percent. Video display terminals climbed 95.3 percent, networking devices were up 163.2 percent and accessories grew 99.8 percent.

On the down side, purchases of multifunction cards by computer stores declined 10.6 percent.

TAKEOFF!

MOUNTAIN VIEW, CA—The real-time flight simulator, B-24, is a simulation of 19 World War II missions flown by the 406th Bombardment Group to the Ploesti, Romania, oil fields. You act as pilot, copilot, navigator, engineer and bombardier in the lead B-24 Liberator plane, and determine the flight path, speed, altitude and bomb-drop points for the entire bomber formation.



You're on your own in Strategic Simulations' flight simulator, B-24.

Training missions to Mostar and Bucharest have been included to let you sharpen your take-off, landing and bombing skills. An on-screen instrument panel indicates altitude, rate of climb, heading, air speed, degree of bank/turn and degree of pitch. Features include the ability to select and adjust variables, such as the level of engine performance, the reliability of fighter escorts, bombing accuracy and the probability of being intercepted by enemy fighters and flak. To increase realism, you can choose to have random weather conditions.

B-24 is available for the C-64 at $34.95 from Strategic Simulations, 1046 N. Rengstorff Ave., Mountain View, CA 94043.

Check Reader Service number 407.

MECC/UM CENTER TO STUDY EDUCATIONAL TECHNOLOGY

ST. PAUL—The Minnesota Educational Computing Corporation (MECC) and the College of Education, University of Minnesota, have announced a preliminary agreement to form a partnership to create a Center for the Study of Educational Technology. The primary purpose of the Center will be to foster research within the two organizations on how technology can most effectively be used in schools.

Don Rawitsch, MECC administrative vice-president, said, "There is a great need to put more systematic study behind the decisions being made by schools that use technology and the companies that supply that technology."

The Center will collect information on how technology-based methods can help people learn. Research projects will focus on the design of effective technology-based learning materials, the systematic preparation of educators to use technology, and the organization of school operations to maximize the effectiveness of technology.

The Center is expected to support from five to ten projects during its start-up phase.

For more information on the MECC/UM Center for the Study of Educational Technology, contact the MECC Administrative Vice-President, 3650 Lexington Ave. North, St. Paul, MN 55126; 612-481-3650, or the Office of the Dean, College of Education, 104 Burton Hall, University of Minnesota, Minneapolis, MN 55455; 612-625-6806.

MANAGE YOUR OWN FOOTBALL TEAM

BALTIMORE—General Manager Disk, an expansion program for the computer football game, Super Sunday, has been released by The Avalon Hill Game Company (4517 Harford Rd., Baltimore, MD 21214). The program lets you, in the role of general manager, accumulate game statistics, build new teams through astute trades and even create different league standings. Everything can be printed out to help keep track of your team. It's available for the C-64 for $30.

Check Reader Service number 400.

GEOPROGRAMMER

BERKELEY, CA—Berkeley Softworks (2150 Shattuck Ave., Berkeley, CA 94704), developers of GEOS, the disk operating system for the C-64 and C-128, has released geoProgrammer, a full-featured, application-development software package. Targeted at programmers with a good understanding of 6502 assembly language, it is available for $69.95.

The company's word processor, geoWrite, is used as the editor for the assembler, allowing you to print special comments in your listings in boldface or italics to increase the readability of source code. When graphics need to be defined in a program, you can just paste in a picture from geoPaint. Graphics appear as pictures in the listing, instead of as a long list of numbers.

GeoProgrammer includes three functions: geoAssembler, geoLinker and geoDebugger.

GeoAssembler reads source text from a geoWrite document. You can define

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over 1000 labels for each assembly module. Any expressions you use can include any combination of arithmetic and logical operators. The macro facility supports nested invocation and multiple arguments. Pseudo-operators are incorporated into geoAssmbler for conditional assembly, memory segment-type definition and space allocation. The system also places error messages in your geoWrite document.

GeoLinker accepts link structure from geoWrite documents and reads relocatable object modules produced by geoAssembler. It also supports construction of GEOS Seq-type and VLIR (module-swapping) applications and resolves all cross references, and it evaluates unresolved arithmetic and logical expressions passed from the assembler.

GeoDebugger, the program's interactive symbolic debugger, automatically transforms the RAM expansion unit into a monitor, so you can debug applications using maximum available memory. The debugger also provides memory examination and modification commands, including symbolic line-disassembly and a line assembler for patching codes. All of the results are printed into a special overlay text window, so that an application's graphics screen is unaffected.

Check Reader Service number 402.

MicroProse Leads European Market in Entertainment Software

BALTIMORE—MicroProse Software Ltd., the United Kingdom subsidiary of MicroProse Software, Inc., has firmly established itself as the European market leader in entertainment software after only ten months in operation, according to Stewart Bell, managing director of the firm.

"We're doing a substantial volume of business," said Bell, "exceeding all of our turnover, sales and profit projections. We started with only one person in August 1986 and now have 27 employees."

MPS Ltd. is responsible for the manufacture, sale and marketing of MicroProse Software's product line throughout Europe. "Gunship has become the classic C-64 game in England," said Bell, "and we're expecting similar results from Pirates!"

A-MAZE-ING!

ALAMEDA, CA—In Soko-Ban, you're in the midst of a maze, with large boxes scattered throughout. Your job is to efficiently and neatly arrange the boxes in one specific location. Patience and a well-developed strategy are the name of the game, if you're to successfully move each box to where it belongs. Moving the wrong box too early can make it difficult or even impossible to access others.

There are 99 floors, 50 of them with predesigned layouts to keep your mind stimulated. You can create an additional 49 mazes of your own. Soko-Ban is available for the C-64 from Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501. Price unavailable at press time.

Check Reader Service number 403.

It's in the Cards

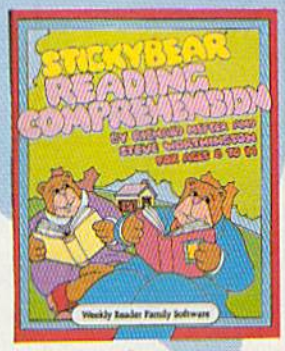
CHERRY HILL, NJ—Two new thematic greeting card collections, Season's Greetings and Merry Christmas, have been released by Classic Compu (3100 W. Chapel Ave., Cherry Hill, NJ 08002). The continuous tractor-feed greeting cards are designed to be used with any word processor and printer. You can add personal pizzazz to messages, greetings and announcements inside each card. In addition, each collection is packaged with 50 stationery cards and 40 matching envelopes. It's available for the C-64 for $11.95.

Check Reader Service number 406.

Improving Reading Comprehension

MIDDLETOWN, CT—Stickybear Reading Comprehension, a multilevel reading program designed to improve the reading skills of children ages 8–11, has

Teachers can enter their own stories and questions in Weekly Reader's Stickybear Reading Comprehension.



been released by Weekly Reader Family Software (245 Long Hill Rd., Middletown, CT 06457). The package contains more than 30 stories, each one followed by comprehension questions for children to answer. Features include entering your own stories and questions, choosing appropriate grade-level stories (grades 2–4) and printing out the stories and answers. The program also automatically advances to the level of the child. The package, for the C-64, includes a user's guide and poster, and retails for $29.95.

Check Reader Service number 405.

Amnesia and the Battles Of Normandy

SAN MATEO, CA—Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404) has released two games for the C-64. Prices were unavailable at the time we went to press.

In the mystery thriller, Amnesia, a full-length interactive novel, you learn that a strange woman wants to marry you, a strange man is trying to kill you, the state of Texas wants you for murder—and you don't know why! You'll explore over 4000 Manhattan locations, including the entire subway system, as you search for your identity.

Battles of Normandy, the sequel to Battlefront, relives the 1944 Allied invasion of Normandy and the two months of hard fighting that followed. Eight historic battles are fought on a full hex-grid map of the Normandy peninsula, or you can use the battle construction set to create completely new battles.

Check Reader Service number 401. ■

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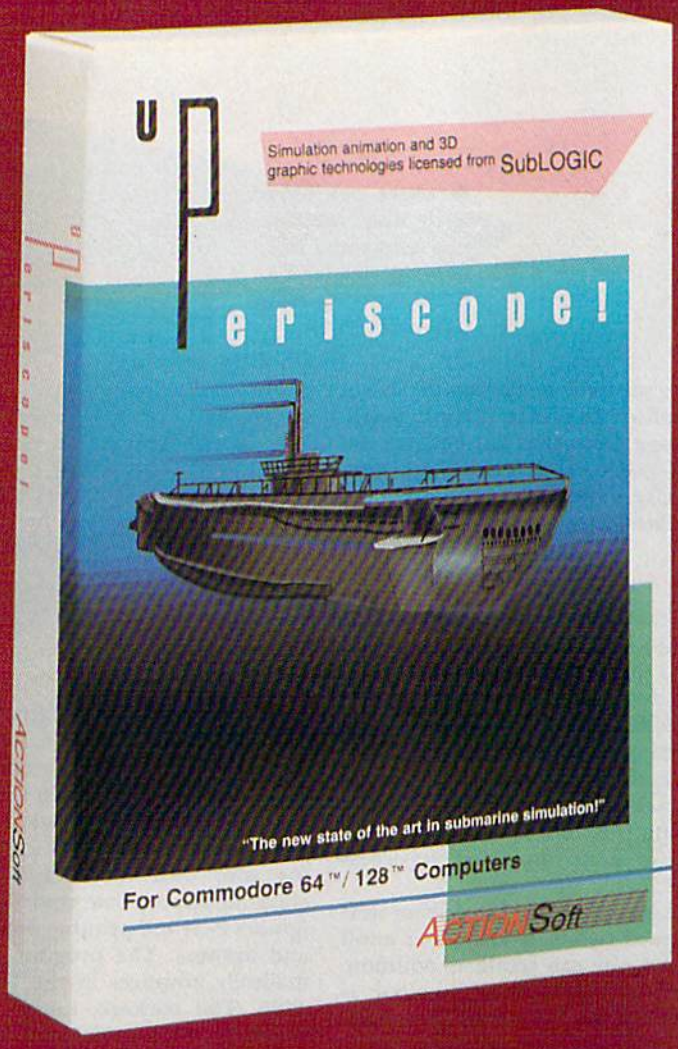
WE'VE BLOWN THE COMPETITI



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Fire 6	Radar Screen	Yes	No
Fire 7	Accu-Sound™ realism	Yes	No
Fire 8	Torpedo Types	3	1
Fire 9	Auto or Manual Torpedo Launch	Yes	Yes
Fire 10	Time-Day-Month-Year Selection Capability	Yes	No
Fire 11	Zoom Feature	Map or Ship Views	Map View Only
Fire 12	Submarine Strategy & Tactics Manual by John Patten, Capt. USN (Ret.)	Yes	No
Fire 13	Auto-Load Feature on C128	Yes	No
Fire 14	Joystick Required	No	Yes

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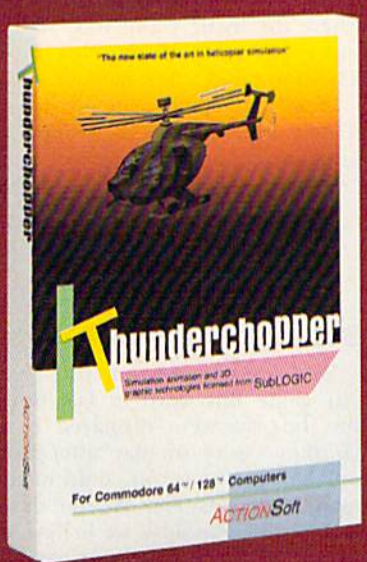

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Or write or call for more information. Up Periscope! and ThunderChopper are available on disk for the Commodore 64/128, Apple II, and IBM PC line of personal computers for the suggested retail price of $29.95. For direct orders please specify which computer version you want. Include $2.00 for shipping (outside U.S. $6.25) and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club charges accepted.

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Find out how readers are reacting to our new look, where to get your Cardco peripherals repaired and where you can buy software and return it if you're not satisfied.

CARDCO REPAIRS

The following information will be appreciated by people who, like myself, have been searching for help with Cardco products that have gone bad, since Cardco is no longer in business. The Supra Corporation has purchased the manufacturing and marketing rights for all of Cardco's Commodore peripherals. They'll also service items previously purchased directly from Cardco, although they cannot honor the old Cardco lifetime warranty. In the case of an item such as the Cardco Plus G interface, they would charge $15 for the repair and return the item postpaid.

If you're interested in having Supra repair a Cardco product, contact them at 1133 Commercial Way, Albany, OR 97321; 503-967-9075. They'll give you an estimate and a "return authority number," which you should mark prominently on the outside of the package when you send the item to them. Include a check for the amount they quoted, as well as a letter describing the symptoms of malfunction.

—R. T. SAPONAS
COLORADO SPRINGS, CO

WHERE'S THAT PROGRAM?

When I received last July's issue and turned to the table of contents, the feature, "Outlining Your Thoughts" caught my eye. After reading the article, I couldn't help but smile as I contemplated how you'd get the program listing on the ReRUN disk.

—RALPH E. BROWN
SHELTON, CT

Good point. We apologize for our slip in the table of contents. There shouldn't have been an asterisk in front of "Outlining Your Thoughts."

—EDITORS

RETURNING UNSATISFACTORY SOFTWARE

In last April's Mail RUN, Leo Garvey said that he knew of "no software store where you can buy a program and then, if you decide it's not right for your needs, return the program and get your money back." I'm the assistant manager of a B. Dalton Software Etc. . . . store, and it's our company's policy to let customers return any product with which they aren't satisfied, for whatever reason, for a full refund. We'll also open almost any package in the store and demo it. For this purpose, we keep various computers, including a C-128, on the premises. We can't demo the few products where the software writes to and configures the disk permanently, but our open return policy still applies.

—CLIFF DIRGO
B. DALTON SOFTWARE ETC.
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OLD FRIEND, NEW GUISE

One day early in June, I glanced into my mailbox and saw a strange magazine that seemed to be trying to say it was an old friend—*RUN*. At first I thought, what have they done? When I brought it in, I discovered there were changes inside, too—the whole magazine had been remodeled. The kitchen had moved to where the living room was, Mail RUN was closer to the front, New Products RUNdown had a new name.

I read through to make sure it was still *RUN*. Luckily, it was. I'm getting over my initial objections to the facelift, and now I realize the new look is rather attractive.

—AARON PEROMSIK
WORCESTER, MA

BUZZWORD REVIEW

We were pleased that you reviewed our game Buzzword in last June's issue, but we were dismayed by Mike Hinshaw's criticism that "after playing a number of times, you could memorize many of the answers." We find that comment ironic, because we believe that a vocabulary game that doesn't enable the players to memorize (learn) the answers fails in its purpose. We were equally dismayed that Mr. Hinshaw criticized the game's time factor and what he considered to be a lack of plays easy enough for school-age children. He failed to mention that we recommend not using the game clock when young children are playing, and that one of the main purposes of the "cheat sheet" cards is to tailor the game to the interests and abilities of the players, including school-age children from fourth grade up.

—PAUL GRANCHELLI
PRESIDENT
BUZZWORD GAME COMPANY
5582 S. ZENO COURT
AURORA, IL 80015

WHICH COMES FIRST . . . ?

We've received several letters from readers pointing out that Annette Hinshaw's article "Do's and Don'ts of Computer Care" in the June 1987 issue contradicts the Commodore manuals when it says to turn on the disk drive and printer after the computer. The article is correct. While it really doesn't matter with the C-64, it matters a great deal which is turned on first with the C-128. If you turn on the 128 last, it'll attempt to autoboot the first file on the disk. If the disk isn't in the drive, the head will quickly go out of alignment.

—EDITORS

BIASED PUBLICITY

As president of the Maine State Sysop's Association, I make a point of reading your Telecomputing Workshop column to keep in touch with the telecomputing world. It's distressing to see that Public Domain Solutions is listed as the main source of public domain telecommunications software. I think you're overstepping your bounds by giving this one company free advertising and not referring the reader to a user's group where the same software could be had for free, at the same time promoting membership in these nonprofit organizations.

—RICHARD A. LEMBREE
KENNEBUNKPORT, ME

To rectify any overemphasis on one source, we plan to include a more complete list of ►

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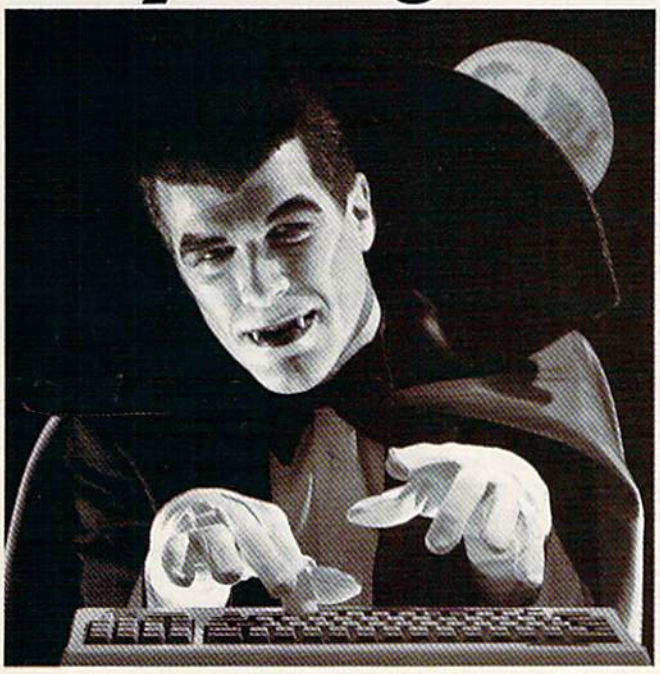
"Computing at night bit into my budget..."



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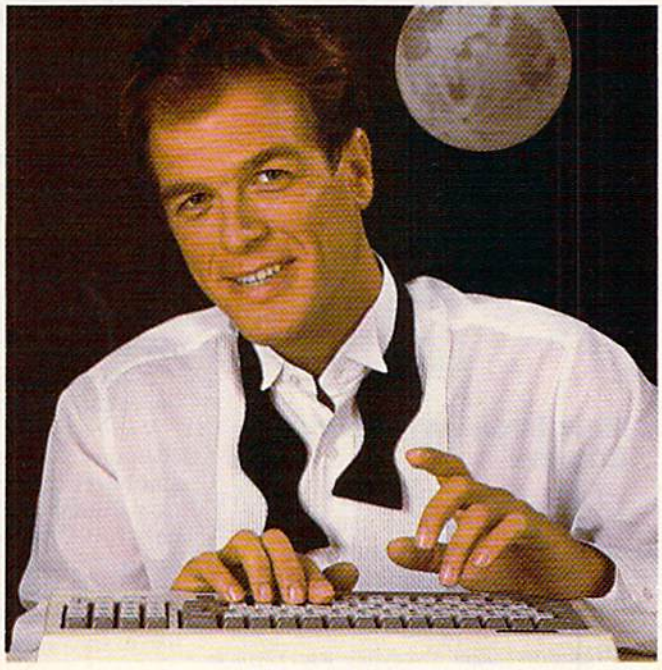

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sources of Commodore public domain software in a future issue. If readers have suggestions for sources—noncommercial or commercial—we hope they'll let us know. Send your suggestions to Mail RUN.

—EDITORS

LOSING THE FAITH

I've been a faithful *RUN* reader for three years, because your material has responded to my needs. However, now I'm disenchanted. In your new format, the articles blend in with the advertisements, making the magazine harder to read. Also, too much of the magazine is now devoted to the C-128. As a C-64 owner, I'm getting only half as much usable information as I used to.

—LARRY D. BAXLEY
SULPHUR SPRINGS, TX

NEW LOOK AND NEW COLUMN

I love your new look. It's very professional and brings *RUN* into the '80s. I especially like the shaded bands in the program listings. They make typing in the listings much easier.

The article, "GEOS One Year Later," is right on target. Everyone who owns a C-64 should have GEOS. It makes the 64 superior to most computers on the market. I hope you'll be publishing more on GEOS in upcoming articles—maybe even a department entirely devoted to GEOS.

—DOUGLAS F. AARON
ADDRESS UNKNOWN

No sooner said than done. As you've probably already discovered, last month we started our geoWatch column. Written by Matthew Stern, it'll keep you abreast of GEOS news and applications.

—EDITORS

C-128 DISK LIBRARIES

Being a regular reader of *RUN*, I feel I should respond to the letters that have been appearing in the Mail RUN column about the lack of software for the C-128. I was glad to see several positive responses in the June issue. I concur that some really fine commercial software for the 128 has surfaced during the past year, and Commodore user's groups are adding to the momentum by setting up C-128 disk libraries. My group, the Hamilton Commodore User Group, now has four such disks in its collection. I hope readers who've complained about the lack of C-128 software will support the efforts of both commercial enterprises and user's groups to increase the supply of programs for this machine.

—ROY G. TAYLOR
HAMILTON, ONTARIO, CANADA

USER'S GROUP HOSPITAL PROJECT

We at the Upper Peninsula Computer Users Club have recently approved a project to donate computer equipment and software to the pediatric departments of the two hospitals in Marquette County, Michigan. We feel these computers will help occupy the young patients' time constructively and relieve their anxiety at being alone, as well as create good feelings in our community and promote Commodore computing. The systems will be set up on wheeled bedside tables the nurses will bring into the children's rooms.

We've written to various suppliers of computer products, seeking donations, and have received favorable responses from a number of national software vendors. Any ideas from other *RUN* readers or user's groups, and, of course, donations, would be welcome. Perhaps other Commodore clubs in other areas would like to try a similar project.

—DAVID KUGLER
PRESIDENT, UPCUC
610 EAST RIDGE ST.
ISHPEMING, MI 49849

128 NUMERIC KEYPAD WITH MASTER GRADES

Thanks to Jim Borden for his C-128 Keys in 64 Mode program in last May's Mega-Magic. Teachers who use the Master Grades program from Midwest Software will be interested to know that the 128 Keys program is compatible with it. In using Master Grades, which is designed for the C-64, you input grades with the number keys across the top of the keyboard. With 128 Keys in place, you can use the C-128's numeric keypad instead, even though you're in 64 mode. Just load 128 Keys and run it, then load Master Grades as usual.

—CURTISS GRAY
BELLS, TX

RESCUING DATAFILE FILES

When I typed in the updated Datafile 3.6 program from last February's issue, I mistakenly typed an S where I should have typed a $. When I ran the program, it erased the entire disk that contained my stamp collection files.

To remedy the situation, I used the demo disk that came with my disk drive to copy track 18, sector 1 of the stamp collection disk. Next, I copied all the tracks and sectors and found where each file began. Then, using Disk Doctor from the June 1985 issue of *RUN*, I changed the directory back to what it was supposed to be and recovered my stamp files. This process took a while, but not nearly as long as reentering all the data on my collection. I hope others who've suffered similar disasters will benefit from my experience.

—C. P. MATURIN
NEW IBERIA, LA

MAIL ORDER IN ALASKA—A UNIQUE EXPERIENCE

I read "Mail Order Maxims," by Christine Adamec, in last May's issue and was amused. The author neglected to add a tutorial on the special mail order needs of Alaskans. Some of the pitfalls I've encountered could easily be avoided if the mail order houses were aware of a few facts:

Alaska is part of the United States. I've had my credit cards (even American Express) refused, because they don't take cards from foreign countries!

It costs no more to mail to Alaska than to California. I've been charged as much as three times the actual postage.

The abbreviation for Alaska is AK, not AL. More than once my merchandise has gone to Alabama.

UPS does not serve Alaska. Much time has been wasted in attempting to ship here via UPS. I, for one, gladly pay a little extra for air parcel post.

Alaska is huge and varied, with many remote places. Advertisers need to treat Alaskans individually, because our circumstances are so varied. We appreciate businesses that listen and try to understand our needs; we order from them again, and we recommend them to our friends. Several *RUN* advertisers have given us good service, and we've spent hundreds of dollars giving them repeat business.

—ANITA F. HALES
KETCHIKAN, AK

A CALL TO READERS

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

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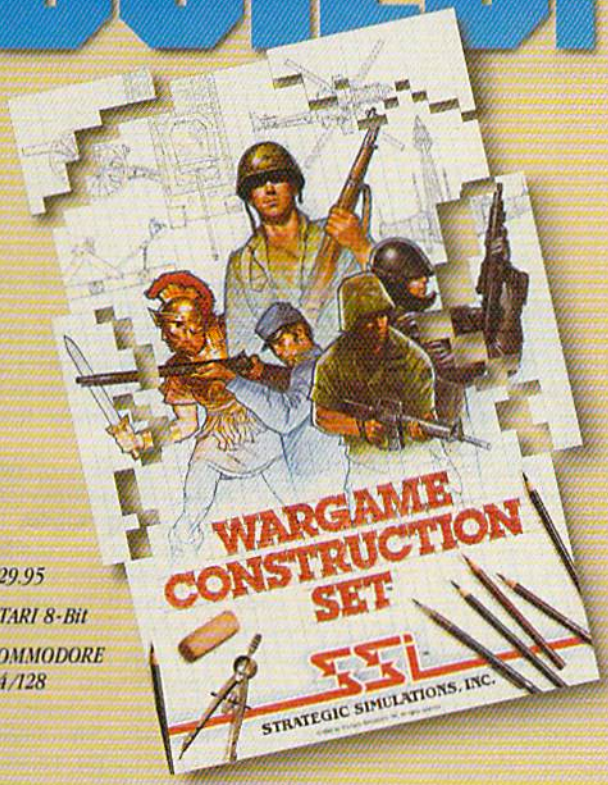

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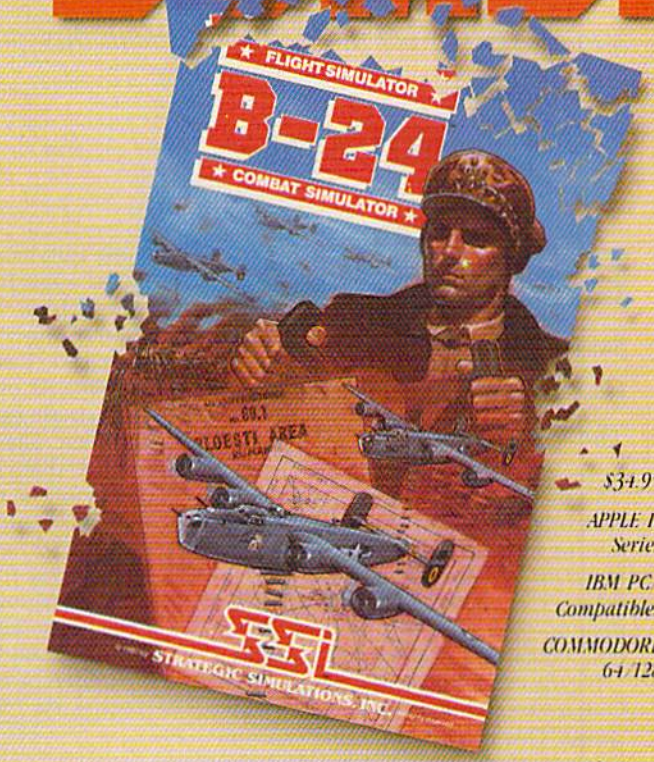

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You can create scenarios from any period of military history, from Ancient wars with spears and catapults to modern conflicts using state-of-the-art missiles and tanks. Or you can forget about reality and create sword-and-sorcery fantasy adventures and science-fiction battles.

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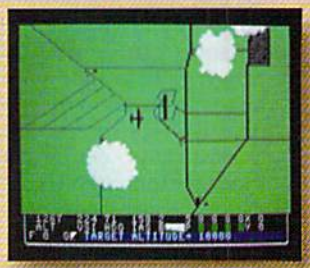
Ready to shift from construction to destruction? Try *B-24*.™

As a flight simulator, it lets you fly a World War II B-24 bomber. As a combat simulator, it lets you try to bomb Hitler's oil refineries in Ploesti, Rumania. Or get blown up trying.

You command the lead B-24 Liberator which will determine the course of action for the 460th Bomber Group. But first, you must learn to fly this cantankerous plane. Two simpler scenarios let you hone your flying skills before you go on to the real thing: 19 harrowing missions over the flak- and fighter-filled skies of Ploesti.



Once you're in the air, your first goal is to form up with your bomber group and race to the fighter rendezvous points. Your escort fighters can only stay up for a limited time, so don't be late.

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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SOFTWARE GALLERY

Explore the deep seas, reach for the upper atmosphere, venture into the past or balance your books with this month's winning combinations.

Compiled by BETH S. JALA

CASH IN— CASH OUT ..... B+

Small Businesses Can Now Go with the Flow . . . The Cash Flow, That Is!

Cash In—Cash Out is a unique accounting system for the small-business person who is not an accountant. The program is based on cash entries of sales, expenditures and payroll, rather than on the traditional method of general ledger and transactions journals.

Nearly every aspect of Cash In—Cash Out is streamlined for simplicity and speed. This is a program that can summarize information quickly and provide you with easily understandable reports.

From an accountant's point of view, this isn't a true accounting program, because it lacks a general ledger, trial balance and traditional financial reports. Yet, the information that it does furnish to the small-business owner is amazing! It graphs monthly disbursements and sales to the screen or printer, provides reports that tell you how much a certain customer purchased for a specified period and tracks expenses by dates and accounts.

Cash In—Cash Out is completely menu-driven, with examples and on-screen explanations of requirements. The program allows you up to nine sales categories with individual tax options.

Entering information into Cash In—Cash Out is a breeze. When posting to your checkbook, the current bank balance is displayed after each check. If you've written a check that must be charged to various accounts, the total remaining check balance is displayed until you equal out. Checks are saved to the disk after all the entries are made, thus preventing a delay between entries.

The Payroll module, unfortunately, doesn't contain a selection of state tax tables, but uses a percentage withholding method instead. This can be a problem if wages change frequently, and your state tax isn't based on a percentage of the gross wage. It does provide for federal tax tables, various special deductions and printing of payroll checks.

At $69.95, Cash In—Cash Out is a great value. It uses all the C-128's features, including graphics and an 80-column screen. There is a bonus Financial Tool Box that includes formulas for depreciation, amortization, break-even analysis, a pop-up calculator, and more.

Paragon Software deserves credit for breaking away from the traditional reporting methods of accounting and turning out something that can be used and understood by small-business owners. *(Paragon Software, 521 Plymouth St., Greensburg, PA 15601; C-128/$69.95.)*

—SANDRA C. JEROME
PHOENIX, AZ

UP PERISCOPE! ..... A+

As Submarine Commander, You'll Soon Be Shouting, "Yeoman, Up Periscope!"

Up Periscope! has finally appeared on the shelves. That it was a long time coming is the result of perfectionism at the head of ActionSoft. That it is finally here is cause for joy among those of us who like sea simulations, because the perfectionism has paid off.

One of the selling points of Up Periscope! is that it uses 3-D graphics licensed from SubLogic. It does this well, but the simulator has even more than that going for it.

The documentation consists of two booklets. The first is an operations manual that is both clear and concise in introducing you to the various modes and missions of the game. The second is a very good capsulized history of WWII submarine warfare. Written by a former Navy officer, this booklet will instill in you a deep respect for the missions you are about to recreate.

Unlike other submarine simulators that use separate screens for various stations, Up Periscope! uses split-screen techniques to give you all the information you need. Your view from the bridge or through the periscope can occupy the entire upper half of the screen, but when you need radar, a chart or the Torpedo Data Computer, the screen splits so that your view occupies the left half of the screen and the particular instrument occupies the right. This arrangement makes it easier to react quickly.

The lower half of the screen is always occupied by an instrument cluster that shows fore and aft torpedos ready; fuel, ►

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!

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battery and oxygen levels; time scale, compass, helm and speed display; and an indicator that shows the position of your sub in the water, including depth, periscope up or down, and so on.

Missions in Up Periscope! include historical simulations where you find yourself in the position of a famous submarine such as Wahoo or Thrasher during its glory days. Regardless of how they fared in the past, the outcome of the scenario will be up to you.

Both your view from the bridge and a glance at your instrument indicators serve to keep you on path and target in Up Periscope!

Pacific Patrol activities are also based on history and lead to longer games. Here you set out from your base and enter enemy waters on a search-and-destroy task. Long missions can be saved to a data disk for continuing play at a later time. All missions have difficulty and reality levels, with parameters like visibility, torpedo type, enemy expertise, and so forth.

To speed up a game, Up Periscope! makes use of a time-compression device. I suggest that you use this to find and approach the enemy, then drop back to normal speed for the battle.

The Torpedo Data Computer is another interesting device in that it identifies the target, displays its course and distance and, in the Automatic mode, locks on to it. In manual control, you feed in information by taking bearings and providing "marks."

After a torpedo is fired, a legend atop the screen tells you whether it's a hit or a miss—even though hits are accompanied by a satisfying explosion. If you're close enough, you'll have an opportunity to watch the ship turn one end up and sink below the waves. A good way to watch this is to invoke the Zoom feature. For other actions, like sonar ranging by the enemy, the legend bar turns red to catch your attention.

Up Periscope! is a welcome addition to the growing category of sea simulations and a worthwhile addition to any software library. The play action is both satisfying and rewarding, the graphics are very well done, and the sound, though sparse, is what you might hear in a submarine: the pinging of destroyers, the whoosh of a torpedo leaving the tube and the sound of the explosion. Only a few keys are needed, and these are used in a logical manner.

After a few missions, you probably won't even need the quick-reference card. I give Up Periscope! high marks in all departments. [Editor's note: There's an interesting aspect to this product that all C-128 owners will surely enjoy. Even though documentation states that it's not compatible with C-64 fast load cartridges, it automatically boots in 128 mode. Using a C-128 and 1571 combination, it loads quite quickly and seems to take advantage of the 1571's faster disk access.] *(ActionSoft, 122-4 Race St., Urbana, IL 61801; C-64/ $29.95.)*

—ERVIN BOBO
ST. PETERS, MO

ACCOLADE'S COMICS ..... A *Now Playing On Screen, The Latest Adventures of Steve Keene, Private Spy*

If you like your comic books and your computing, Accolade Software has come up with a dandy way for you to enjoy both at the same time. This program is billed as the world's first living comic book. Not only does it display amazing full-color cartoon panels, but some of them include animation, too.

Throughout one of the two basic stories, some cartoon panels give you the chance to change captions. The ensuing action is determined by your choices. If you choose correctly, you'll be rewarded by finding your way to one of the eight arcade-style games starring private spy Steve Keene. While none of the games are extremely challenging, figuring out how to get to them is a big part of the fun.

Steve has been given five lives. He can lose a life during one of the arcade games, or when you create a story that doesn't lead to an arcade game at the end. When his five lives are gone, the game is over.

The program consists of three disks. It's designed to work with either joystick or keyboard controls. The instructions warn that everything except one disk drive should be disconnected before loading the game. That's apparently just a precaution, because I successfully ran my regular system, two disk drives and a printer without any problems.

While disk loads with some software can be time-consuming, I found this program relatively quick. It is limited to using one disk drive, so you are occasionally prompted to insert a different disk. A watch icon appears on the screen during a disk load: This means that the computer is thinking.

If you tire of the comics, all of the games are directly accessible. It will take some time for you to try all the possible story combinations. I can almost guarantee continuous chuckles as you go through the pages of this electronic comic book.

I'm particularly impressed with the original sound track that accompanies this program. It sets the mood perfectly and has just the right mix of arcade sound and serious music.

Should you be interrupted mid-game, a save feature lets you resume exactly where you left off, and high scores are listed on a Heroes page.

Some very creative use of sprites results in characters with moving heads, lips or hands. It's not Disney studio quality, but still quite notable.

While the program works well on the 64, the 64C and the 128 in 64 mode, no auto-boot track is included. Would you

Move over, Mike Hammer—here comes Steve Keene, private spy and star of Accolade's Comics.

believe that that's about the only criticism I have concerning this package?

The accompanying instructions are simple but adequate. I found it more enjoyable to use the joystick than to rely on keyboard operation.

Try to imagine your favorite comic book hero coming alive on your Commodore computer screen, and you'll ►

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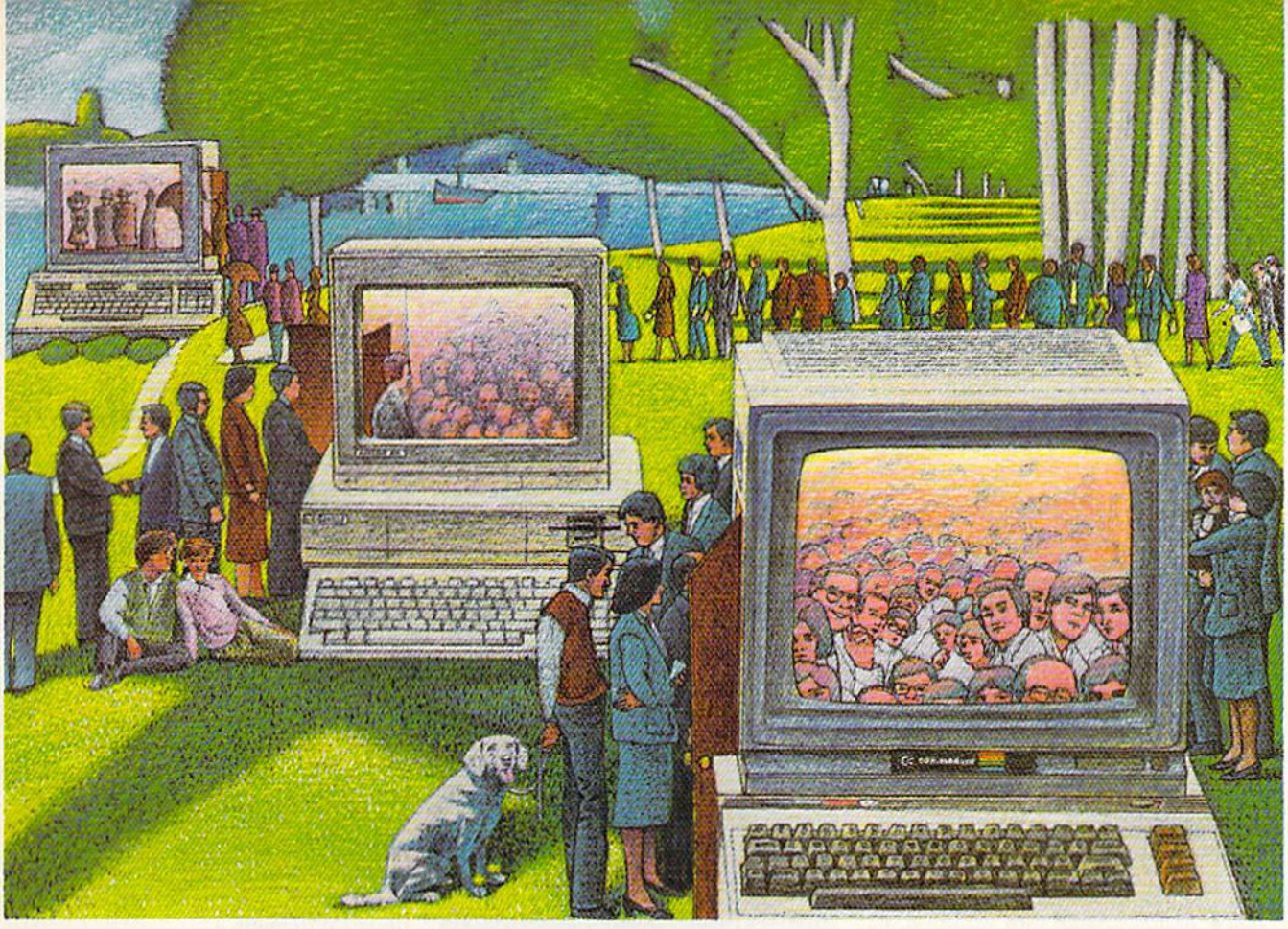

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come pretty close to the look and feel of Accolade's Comics. I highly recommend it for those looking for some good, clean fun. *(Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. C-64/$39.95.)*

—JIM GRUBBS
SPRINGFIELD, IL

LEGACY OF THE ANCIENTS ..... B+

Let Neither Dungeons Nor Monsters Defeat Your Quest for the Scroll

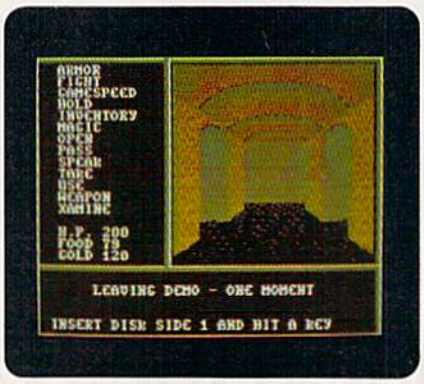
Legacy of the Ancients is a fantasy/adventure game much in the tradition of The Bard's Tale or the Ultima series. Like those other games, Legacy provides you with a magical world (Tarmalon) to explore, complete with towns, castles, dungeons, wilderness and enough monsters to keep even the most experienced dragon-slayer on his toes. As with most fantasies, the goal here is to build up your character's personal attributes and gold supply so he can survive the rigors of adventuring and, ultimately, complete his quest. In this case, the objective is to render harmless the evil Wizard's Compendium—a leather scroll containing the compiled spells of twelve powerful magicians.

Your adventure begins in, and revolves around, the Galactic Museum. As you travel through this torch-lit, 3-D maze of corridors and doorways, you discover many intriguing exhibits. Some provide clues to solving the quest, while others are actually gateways to the outside world. You can only view most exhibits after first depositing a jeweled coin, and, since you begin the game with only two of these, your initial choices are limited. However, as you explore Tarmalon's castles, 12 towns and 24 dungeon levels, you'll find additional coins to use in unlocking more of the museum's secrets.

Each town has several shops where you can pick up such necessities of adventuring as weapons, armor, food and water, boats and climbing gear. In addition, towns are great places to acquire additional gold. You can win big playing blackjack or a game of skill called "flip flop," visit the neighborhood loan shar... I mean lending institution, or make a withdrawal at the local bank.

Legacy is well suited to the novice player. First, from the time you enter your character's name, you can play the game almost entirely with a joystick. Your options throughout are presented as menus and you need only select and click to enter your choice. Second, unlike some role-playing games that make you responsible for half a dozen characters, each with its own powers, strengths and weaknesses, Legacy gives you a single character to develop. Moreover, instead of dozens of spells to master, Legacy offers only six.

Whatever Legacy of the Ancients lacks in complexity, however, it makes up for in richness of detail. As you walk through the museum, for example, torchlights flicker against the textured walls, and with each move your footsteps echo faintly down the hallway. As you make your way across the wilderness, you hear a watery "squish" as you



Who knows what may be lurking in the dark, damp doorways of the cold and cruel corridors in the mazes of Legacy of the Ancients?

slosh through the swamp, and the thrashing of dry underbrush as you push your way through the thicket. In the towns, bold, solid colors are interspersed with intricate patterns representing shingled roofs and brick walk-ways. The blending of this extraordinary color and sound with traditional role-playing settings results in a fantasy with a familiar look and feel that still manages to set itself apart in a genre full of imitations. *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404; C-64/$29.95.)*

—BOB GUERRA
CHARLESTOWN, MA

VIDEO VEGAS ..... A

Break the Bank At Your Computerized Caesar's Palace

Who hasn't thought about cleaning out every casino on the strip in Las Vegas? In Baudville's Video Vegas, there's no limit to your possible winnings in blackjack, poker, keno and the ubiquitous one-armed bandit.

Greeting you with a lively nighttime view of downtown Vegas, this simulation achieves remarkable realism by employing crisp displays, animation and sound effects. In poker and blackjack, the cards are richly detailed—almost as if someone pasted them onto your screen. Similarly, when you take on the three-reel Lucky 7 slot machine, your coins slide into a slot, the arm pulls back with a "ka-chunk," and the icons spin by before clicking into place. Winnings "clank" into a receiving tray.

Keno plays on an 80-place grid, like those available on cards throughout the gambling mecca. You mark one or more numbers as you cursor through the grid. There's an air of suspense as the 20 winners are subsequently flashed one by one. Each game boasts such interest-boosting touches. Add to that the explicit, yet unobtrusive, prompts and simple keyboard controls, and it's easy to get into the rhythm of big-time gambling excitement.

Recognizing that most would-be high rollers want to test their luck and skill against the real thing, Baudville offers authenticity as well as atmosphere. Money odds and winning chances appear to be about the same as you would find in Las Vegas. Lucky 7 pays back most (98 percent) of the money wagered, although you might find that hard to believe when you hit a bad streak. Typically, Keno offers fantastic payoffs but terrible winning odds.

Poker looks and plays very much like the casino Draw Poker video game. A fine route to getting a handle on poker odds, the game pays off on everything from a high pair through a royal flush. However, since you bet only before the deal, and the payoff on strong hands is far below the odds, winning big is still mainly a pure-luck proposition. Blackjack, on the other hand, offers very good money-making opportunities to the skilled gambler. Besides all the usual options, typing a question mark provides a running point count and a report on the cards played—perfect for serious card-counting practice.

A smooth-running, attractive package, Video Vegas does just about everything short of paying your airfare to the nearest casino. A keypress calls up odds and winning combination displays, and your current bankroll is updated on each play and maintained from game to game. Unfortunately, it is not saved to disk.

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Reasonable betting limits and accurate outcome simulations mean each game works and feels like the genuine article. Supplied with an informative booklet, Video Vegas is about as close as you'll come to a sure thing without losing your shirt. *(Baudville, 1001 Medical Park Drive SE, Grand Rapids, MI 49506; C-64/$29.95.)*

—JEFF HURLBURT
HOUSTON, TX

WORLD TOUR GOLF ..... B+

Get Out Your Clubs
And Conquer Those
Fairways and Greens

"Golf," said Sir Winston Churchill, "is a game whose aim is to hit a very small ball into an even smaller hole, with weapons singularly ill-designed for the purpose."

That quotation opens the instruction booklet for World Tour Golf, a slightly different approach to the computerized green. For a fun round of golf in a not-so-demanding situation, this game does an admirable job of doing just what Churchill described.

What other golf simulation offers a course with cows standing in the rough or a dragon lurking over the back of a green? What other game opens up with the player designated as that great comeback golfer, Jack Snicklaus? Jack, incidentally, can be customized, renamed and saved to disk so you can develop your own Arnie's army of golfers. Each golfer can have a different average drive distance and accuracy, which will affect consistency and the likelihood of whiffing the ball.

If you can't seem to master the EA Champion course of golf's greatest holes, then design your own! You get an ample supply of water, sand, grass, rough, trees, hills, cows and pins for creating one hole or a complete course. The construction section can come in handy for relocating pesky water hazards or other troublemakers on the 25 courses that are contained on the game disk.

Some courses are expected—the obligatory Pebble Beach; the venerable St. Andrews; the inspiring Augusta. Then, there is the unexpected Goofy, with oddly shaped fairways; Fantasy, where fairways carve out bears, unicorns or bikini-clad woman; and Davy Jones, where oars are handier than irons.

Before beginning each course, players are told whether there has been sun or rain. The dampness of the greens affects the speed of the ball.

The screen is divided, with overhead views on the left, and the right sides showing the golfer and the fairway. Press the space bar, and an arc on the left side of the screen shows the approximate range of the selected club. Status lines on the top of the right screen show everything from par for the hole to wind direction and speed, the distance remaining to the green and the club in use. You are also told how the ball lies.

Lies—where the ball sits, not what you do about your score—determine the maximum safe club. Using more than that risks flubbing, at which point a bubble will emerge above the golfer's head with "$#%!&" or "Drat!" in it. Lies range from perfect to rotten on fairways, roughs and traps, depending on whether the ball rolled to rest or buried itself on the fly. Nice touches.

A power meter, located in the bottom-right corner, resembles a one-handed clock pointing to the six. Press the fire- ►

Introducing
BASIC 8

By Lou Wallace & David Darus

At last, you can unleash the graphics potential of your Commodore 128 to achieve performance which rivals that of 16-bit micros! Imagine your 128 (or 128-D) producing resolution of 640 x 200 in monochrome and 640 x 192 in 16 colors without any additional hardware. Sound impossible? Not with **Basic 8**, the new graphics language extension.

Basic 8 adds over 50 new graphics commands to standard C-128 Basic. Just select one of many graphics modes and draw 3-D lines, boxes, circles and a multitude of solid shapes with a single command. We've even added commands for windows, fonts, patterns and brushes.

To demonstrate the power and versatility of this new graphics language, we have created **Basic Paint**, a flexible icon-based drawing application. Written in **Basic 8**, **Basic Paint** supports an expanded Video RAM (64K), RAM Expanders, Joystick and the New 1351 Proportional Mouse.

Also included is an icon-based desk-top utility which provides quick and convenient access to each of your very own **Basic 8** creations.

All this graphics potential is yours at the special introductory price of $39.95. The package includes **Basic 8**, **Basic Paint**, the desk-top utility, a 180-page manual and a run time module. (80-Column RGB Monitor Required)

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button, and it begins its clockwise swing toward the maximum power marker at one o'clock. Pressing the button a second time sets the power and reverses the swing of the pointer. Pressing the pointer at the bottom of the clock determines whether the ball will hook, slice or sail straight down the fairway.

The player in World Tour Golf aims the ball by repositioning the golfer. Each movement changes the direction by 22.5 degrees. Move the golfer 16 times in the same direction and you'll get a panoramic view of the hole.

The ball's flight can be followed on either screen. It grows larger on the overhead view as the ball gains altitude and nearly vanishes from view on the right screen as it sails away.

Balls can bounce off trees or lodge under low branches. In addition, some fairways have hills that cause the ball to ricochet in odd directions, especially if the player selects a club with too little loft to clear them.

Putting is the most awkward part of World Tour Golf. Once you're on the green, the overhead view shows the location of the pin and ball. The V-shaped symbols indicate the severity of the slope and its direction. Sometimes, in order to play the break correctly, the hole winds up out of sight behind the golfer. The keyboard can be used to assist with putting.

The game contains three practice modes: A driving range, a putting green and a feature that lets you repeatedly play the same hole on any course until you're satisfied with your strategy.

World Tour Golf lets holes be constructed in every detail, down to the shape of the green. That will be a big drawing card for computerists who want to design their own nightmarish courses.

As pro golfer Harry Toscano said: "I'm hitting the woods just great, but I'm having a terrible time getting out of them." *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404; C-64/$34.95.)*

—LONNIE BROWN
LAKELAND, FL

STAR TREK: THE PROMETHEAN PROPHECY ..... B

Beam Yourself Into This Final Frontier

"To boldly go where no man has gone before." Star Trek is a phenomenon that has transcended its initial medium to become wholly ingrained in American culture. Freed from video, the Trek experience has been translated into virtually all media forms.

While The Promethean Prophecy isn't the first Star Trek-computerized incarnation, it's perhaps the slickest. Simon and Schuster deserves praise for its work in putting this first-rate package together.

The three parts to the accompanying instruction book are the Captain's Log, the Captain's Manual and a series of supplements. The supplements contain recommendations for a new captain, troubleshooting tips, a sample transcript, and memos for speeches on "effective crew management."

The most notable section, however, is the Captain's Log. Designed to appear dog-eared and worn, the Log walks you through all phases of the game; it also contains snapshots of various characters and scenes from the TV series.

The textual game revolves around an incident that occurs near the Great Transtellar Rift when the Enterprise comes under attack from a Romulan Bird of Prey. After sustaining massive damage to all decks, the ship's food supply becomes contaminated. You, as Captain Kirk, must beam down to Prometheus Four to secure food for the 430 crewmen aboard the Enterprise. Once on the surface, you come across a Jumper, a legendary and near-mythical creature that's reputed to have passed through that sector of the galaxy centuries ago.

Gameplay consists of typing in commands and exploring Gene Roddenberry's private world. Like all good text games, it's very straightforward in that time will pass and actions will occur, some of them game-motivated and others that you must anticipate. I admit I'm discouraged when an event is unavoidable for the continuation of the game.

I do have one serious complaint about Star Trek: The command line permits only one line of text to be typed in at a time, and you can't really do much in the space of a single line. This seems to be poor planning, and I'm sure that it's frustrating to serious gamers. This single, yet unfortunate, flaw prevents an otherwise good game from being a great one. *(Simon & Schuster, One Gulf + Western Plaza, New York, NY 10023; C-64/$32.95.)*

—ROBERT J. SODARO
FAIRFIELD, CT ■

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AIDS/LANGUAGES
Assembler/Monitor (Abacus) $29
Basic 8 (Patech) 34
Big Blue Reader (Sogwap) 28
Big Blue Reader CP/M 38
Cobol 128 (Abacus) 49
1541/1571 Drive Align (Free Sp)32
Gnome Kit 64/128 (Kira) 29
Gnome MAE 128 10
Gnome Speed (Kira) 49
Kracker Jax series call
Kyan Pascal 128 or 64 (Kyan) 60
How To Get Most GEOS Book 13
Physical Exam (Cardinal) 34
Power Assembler 64/128 (Spin)34
Power C 64/128 (Spinnaker) 34
Programmers Toolbox (Spin) 17
Superkit 1541 (Prism) 25
Turbo Load/Save Cart. (Spinn) 19

TELECOMPUTING
Bobsterm Pro 128 (Progressive) 59
Bobsterm Pro 64 (Progressive) 43
Prototerm 128 (B-Ware) 12
Syntech BBS Const Set (Kira) 43

GRAPHICS & CAD
BASIC 8 (Patech) 34
Billboard Maker (Sol Unlmtd) 34
CAD 3D (IHT) 43
Cadpak 128 (Abacus) 49
Colorez 128 (B-Ware) 12
Cybervideo (Touchstone) 30
Doodle (Omni) 30
Flexidraw (Inkwell) ** 5.5 ** 29
Lightpen Model 170C 79
Lightpen Model 184C 49
Flexifont 26
Galleria-Borders, Clip Art Holiday, Maps, Animals, or Clip Art II EACH
Grafix Link (Solut Unlmtd) 22
Graphic Integrator 2 (Inkwell) 17
Graphics Transformer (CDA) 26
Home Designer 128 (Kendall) 29
Icon Factory (Sol Unlmtd) 45
Moving Pictures (Aha!) 34
3D Perspectives II (Kira) 26
Photo Finish (Sol Unlmtd) 43
Printmaster (Brown-Wagh) Art Gallery I or II 26

HOME & BUSINESS
Accountant 128 (KFS) 128
Industry Add-on Modules 59
Business Form Shop (Spinn) 30
CMS Accounting 128 (CMS) 139
Inventory 128 65
GEOS 64 (Berkeley) 42
DeskPack1 or FontPack1 22
Geofile, Geocalc or Workshop 39
GEODEX 29
GEOS 128 (Berkeley) 49
Easy Working Series (Spinn) 79
Writer, Planner OR Filer 49
Flexfile 128 or 64 (Cardinal) 10
Fontmaster 128 (Xetec) 43
Superbase 128 (Precision) 45
Superpack 64 (Digital Solu) 69
Superpack 2 (Digital Solu) 49
Thoughtform 64 (Gollery) 75
26

PERSONAL
Bodylink Products (Bodylog) 29
Muscle Development 45
Cardio Exercise 34
Stress Reduction 26
Family Tree 64 or 128 (Geneo) 43
Maps Europe (Radarsoft) 26
Maps USA or World (Radarsoft) 29
The Sexual Edge (Merrill) 20
The Dream Machine (Merrill) 26
Computer Classics (Strider) 9

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Online Services

O V E R V I E W

Whether you want to chat with other computerists, access information databases, get free software or purchase consumer goods, online is the place to be.

You've probably read some of the advertisements for various computerized information services that claim to open up new vistas for you and your family: CompuServe gives your computer the brains it never had; QuantumLink lets you meet people from every city in the country; GEnie broadens your horizons; and so forth.

Although they do it in different ways, all these telecommunications services, or networks, enable their users to access huge amounts of information, get free software to run on their computers, "chat" with other computerists and even purchase consumer goods. The promise of telecommunications lies in uniting millions of computers into one shared environment. No longer is your computer an isolated machine; it's an umbilical cord to the world.

For seasoned telecommunicators, online access is second nature. They just plug in their modem, dial the phone and "log on." It isn't so easy for newcomers, though. First you need to get acquainted with the tools and procedures you must use in accessing those vast new worlds of information, and your first ►

By MARGARET MORABITO

ILLUSTRATED BY JAMES ENDICOTT

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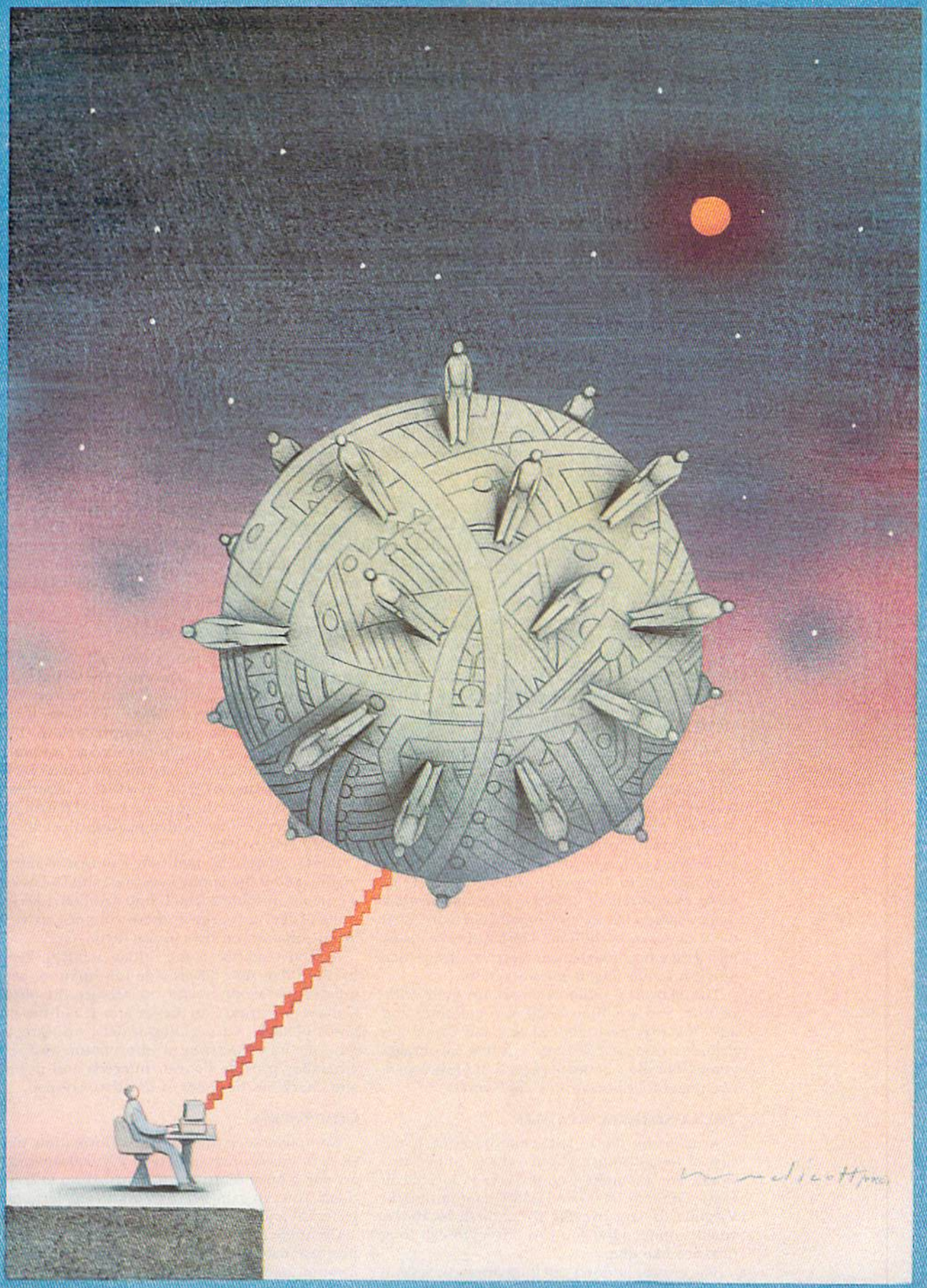

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Rural computerists have a big problem when it comes to accessing the online networks.

successful log will have an almost magical element to it.

The Hardware

The only hardware beyond your computer that you need for getting online is a modem and a telephone with a removable cable. The modem is essentially an interface that connects your computer to your telephone via the cable that plugs into the back of the phone.

Modems compatible with Commodore computers are quite inexpensive ($19 and up), and you can purchase them from various sources, including the online services themselves. They come in two speeds: 300 and 1200 baud, which refers to the speed of data transmission between your computer and the online service. Many Commodore owners are opting for one of the faster 1200-baud modems—Commodore's 1670, for example. At about $100, the 1670 costs more than a 300-baud modem, but it'll save you online time and, in the long run, money.

The Software

You'll also need a terminal program—software that enables your computer to send information through the modem and the phone line, out the door to your local network node and finally to the network itself, and then to receive information back again. You must load and run the terminal program prior to logging on. Most of these programs will let you access various networks. However, some, such as QuantumLink, require their own special terminal software.

Other Requirements

All national networks charge a subscription fee—varying from $10 to $50 or so—to join. For this sign-up fee, which is usually paid only once, you receive a user identification number and password for identifying yourself when you knock at the network's door, so to speak. If you don't identify yourself properly, you won't be let in.

In addition to the sign-up fee, the national networks charge you for accessing their information. Some charge a flat fee each month, but more often they charge you by the hour. The hourly rate varies, with prime time (day) much more expensive than non-prime time (nights and weekends).

The networks' online charges are quite competitive, and are often listed in promotions and ads. You may have noticed that the GEnie ads include a comparative cost chart that encourages you to join their network because it's less expensive than CompuServe and The Source.

The Long-Distance Calls

A major hurdle to telecommunicating is the cost of long-distance phone calls to online networks. For example, CompuServe is located in Ohio, GEnie in Maryland and QuantumLink in Virginia. If you live far from these locations, you'll wonder how you can afford to call long distance like that.

The answer is, don't call long distance. Several companies, such as Telenet, Tymnet and Uninet, provide local nodes for accessing the online networks. These nodes, established in major cities throughout the country, act as call-forwarding services. If you live in or near a city that has a node, you just place a call to that local number, then you're automatically connected to the online network—without a long-distance charge.

What about folks who live in the sticks? Rural computerists have a big problem when it comes to accessing the online networks. For instance, my "local" node is about 60 miles away. When I want to go online, it's the best I can do, so I grit my teeth and pay the phone bill—at least it's less expensive than making a call directly to the network.

Another Way: Local BBSs

While the national information services provide massive amounts of information and the opportunity to meet people from around the world, they aren't the only centers of online activity. There's plenty of local (literally) action online. Bulletin boards (BBSs) operated out of individuals' homes have sprung up throughout the country. They provide an opportunity for computerists—only one caller at a time—to share information, get software and communicate with others through electronic mail, all for free. You don't have to pay a long-distance phone bill or any subscription fee.

The National Networks

If you do want to join a national online network, there are many available. The features of some of the more popular general interest networks are highlighted below. Because these descriptions are far from comprehensive, I've included addresses and phone numbers for more information in Table 1. Also mentioned in Table 1 are back issues of *RUN* in which I described the networks more thoroughly. Just keep in mind that the services have added features since those articles were written.

Books provide an additional source of information about the online networks, and I've listed a number in Table 2. You'll find detailed descriptions of the networks in these volumes, as well as information on how to use them.

As you read about the online services, keep in mind that they all provide information, programs and the opportunity to interact with other Commodore users, but they're aimed at different kinds of users. In deciding which you want to join, see how the types of information and services they provide fit your interests and needs, and check on the times of day they're open.

CompuServe

CompuServe is the largest information network in this country, with over 200,000 subscribers and a huge reservoir of information to serve them. You can gain access to it with any terminal program and any computer.

CompuServe provides home computerists, professionals and businesses with news, sports, aviation and weather reports; newsletters from manufacturers; forums and clubs for interacting

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with folks from around the world; electronic mail; games; and a CB simulator for live chatting with others. It also publishes its own monthly magazine, *Online Today*, which is available online and in hard copy. The network is continually adding new services.

As a Commodore user, when you log onto CompuServe, you can type GO CBM to access clubs and databases for your computer and to post computer questions to be answered by personnel from Commodore.

It costs $39 to join CompuServe, then $12.50 an hour for 1200-baud access and $6 for 300-baud access.

DELPHI

If you're involved in research, you'll want to check out Delphi. It not only has its own encyclopedia, but is a gateway to DIALOG, the most sophisticated of online research libraries. Delphi also lets you send electronic and U.S. mail, and enables you to communicate with subscribers to other online services, such as The Source and CompuServe.

Delphi's GlobaLink offers a translation service where you can get text files you upload translated by professionals into foreign languages, such as German, Italian and French. The translated files can then be sent anywhere in the world.

For Commodore owners, this network offers Flagship Commodore and Starship Amiga, clubs where you can get programs for your Commodore computer and correspond with other owners of Commodore machines.

It costs $49 to subscribe to Delphi, then $17 per hour during the day and $7 per hour evenings and weekends. You can access the network with any computer and terminal software.

PLAYNET AND AMERICAN PEOPLELINK

These networks are both devoted to socializing and game playing, but they differ in mode of access and presentation. PlayNet was developed for Commodore owners and uses Commodore-specific terminal software, whereas you can access PeopleLink with any computer and terminal program. PlayNet uses color-graphics screen displays; PeopleLink is text-based. PlayNet is open only at night and on weekends; PeopleLink is open during both prime and non-prime time, although its subscribers tend to log on during the evening, since it's primariiy a socializing network. Both networks offer Commodore forums you can join.

It costs $15 to join PeopleLink, then $4.95 per hour for non-prime-time access and $11.95 (300-baud) or $12.95 (1200-baud) for prime-time access. To join PlayNet, you pay $19.95, and then it costs a flat $12 per month for up to four hours online. Beyond the four hours, you pay $2.75 per hour.

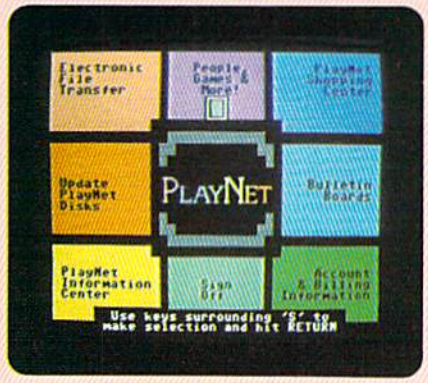
GENIE

General Electric started GEnie last year, and the network has caught on rapidly. GEnie is the site of lots of Commodore activity, including one of the largest databases of Commodore public domain software available on any network. The network claims to add over 1000 new Commodore programs to its downloading databases each month. GEnie's Flagship Commodore Round-Table draws many experienced users of the C-64, C-128 and other Commodore computers.

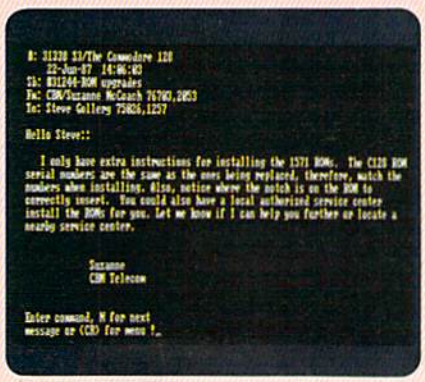
You can upload to this network for free, and there's no extra charge for 1200-baud transmission. (Most other networks charge more for the faster speed.)

Other GEnie offerings include a CB simulator for live chatting with friends; electronic mail; a travel service; home shopping; the Grolier's ency- ►

News, business, travel, shopping. The Source offers you a variety of services to choose from.



Socialize with other Commodore users when you're online with PlayNet.



Leave a message on the Commodore Service Forum when you're hooked up to CompuServe.

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The Online ARCADE

By LOUIS WALLACE

While you may be only recently aware of online games, they've actually been around for quite a while. Classics such as Adventure and Zork accounted for a lot of mainframe computer time back in the sixties—so much time, in fact, that games were banned on many university and industrial computer systems.

However, when the personal computer revolution came along, telegaming dropped off sharply. After all, why play text games online when you can play arcade-quality games on your C-64?

More recently, as the number of computers equipped with modems has increased, and as the programmers who design online systems have become more familiar with home computers, a new type of telegame has appeared. These games come with high-resolution graphics, sprite animation and sound, and in many cases they offer a feature missing from home arcade and adventure games: they're multiplayer, so opponents can be anywhere reachable by phone.

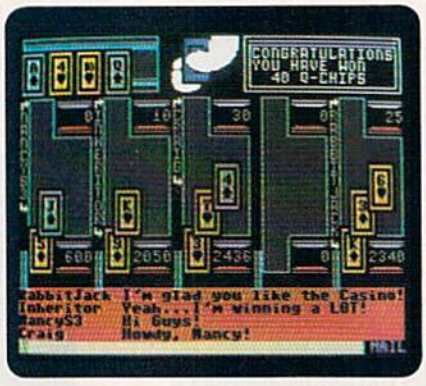
QUANTUMLINK AND PLAYNET

The major online services that offer graphics gaming for the Commodore user are QuantumLink and PlayNet. Q-Link is the larger in number of games offered and number of users.

Some games appear on both Q-Link and PlayNet. For example, there's Hangman, Reversi, Checkers, Chess, Bridge, Backgammon and Sea Strike, a naval battle you wage against another online sailor. All these games use the C-64's full-color graphics capability and have some degree of animation. Even if you don't want to play, you'll have fun watching the screen as others make their moves.

Q-Link has also carried telegaming into the realm of computer gambling (for fun only) with the introduction of Rabbit Jack's Casino. When you enter the Casino, you get 250 Q Chips to use at various games, such as poker, blackjack, the slot machines and even bingo. The poker area is occupied by a number of tables that accommodate up to five players each, plus the dealer—the Quantum computer.

Rabbit Jack's Casino differs from other gambling simulations in that you play against other people, not the computer. When you play poker in the Casino, you'll feel like you're playing with your Friday night beer buddies. The excitement is especially high when you play on the high stakes table, where pots of hundreds, or even thousands, of chips may be at risk.



Online with QuantumLink: Computer gambling in Rabbit Jack's Casino.

Although they don't pit you against other gamblers, the Casino's slot machines have their own appeal. The graphics are good, and you can play up to three chips at once in the triple-level slot.

COMPUSERVE

CompuServe also offers advanced multiplayer online games, although their graphics aren't arcade quality. However, what they lack in visuals is made up for in complexity and strategy. For example, MegaWars I and III are games of galactic exploration and conquest where you find yourself fighting with or against any number of other online players.

A relatively new game on CompuServe is Island of Kesmai, an advanced multiplayer role-playing adventure where you explore castles and islands and fight magicians and warriors. Island of Kesmai is very popular, and there's an entire book (available from the CompuStore) devoted to it. CompuServe also offers the traditional single-player text adventure games, as well as games of chance like poker and blackjack.

Other online services, such as GEnie, Delphi and The Source, offer games, but they're the traditional ones and not particulary noteworthy.

On the horizon is a new world of multiplayer online games, with graphics you'd expect from disk-based commercial games. One such game that's under development (by the software division of LucasFilms) is QuantumLink's Habitat, which will offer advanced graphics and animation, multiplayer capability and an involved plot. Unfortunately, its announced release date has long passed. Q-Link tells me they're updating the story to make it more futuristic. One thing for sure: when it is released, it should be impressive. ■

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clopedia; financial services; and multiplayer games.

Initial registration for GEnie costs $18. Then you pay $5 per hour for non-prime-time access or $35 per hour for prime-time. The network is accessible with any computer and terminal software.

The Source

The strength of The Source lies in its services to businesses and professionals. In fact, businesses make up about 60 percent of its membership. It provides up-to-the-minute commodity prices, news and commentary via satellite from the *Commodity World News* in Chicago. Members can also receive continuous updates on prices from six domestic and three overseas exchanges; 200 news items per day, covering the weather, the White House and worldwide developments affecting commodities; and correspondent commentaries on happenings on the floor of the commodities exchange. Investext, an investment service, provides access to 38 international investment banking firms.

The Source offers services to the general user, too, and it has been adding more. One such service is MicroSearch, providing access to thousands of article abstracts from over 100 computer-industry publications. These abstracts are quick sources of information on software, hardware, peripherals and new products from over 3000 manufacturers, and anything else dealing with personal computing. The Source also has computer clubs, including one for Commodore users.

It costs $49 to subscribe to The Source. For access at 300 baud, the rates are $8 per hour during non-prime hours and $21 during daytime hours. For 1200-baud, the rates are $10 during non-prime hours and $25 during the day. All computers can access this network.

QuantumLink

QuantumLink is designed specifically for Commodore users, and has become a leader in providing them with information and services. One reason for Q-Link's value to Commodore users is its attraction for all the experts on Commodore computing in Canada and the U.S. Dozens of names in the Commodore world log onto Q-Link—people like Jim Butterfield; Steve Punter; *RUN*'s Telecomputing Workshop author, David Bradley; and *RUN*'s technical manager, Louis Wallace. I'm on Q-Link a lot, too, formerly as *RUN*'s technical manager and now as director of Q-Link's Tutoring Center and Quantum Community College. I also continue to operate the Q-Link extension of my Resource Center column in *RUN*.

QuantumLink has worked on expanding its services to both programmers and nonprogrammers. It offers dozens of programming clubs and thousands of public domain programs for downloading, as well as news and information services, weather updates, online shopping, multiplayer games and educational services. You can also download and preview commercial software from Q-Link.

QuantumLink requires its own terminal software, but you get it free from the network with a four-month subscription, and it is also included with the purchase of a C-64 or a 128. The charge for access is $9.95 per month, plus $3.60 per hour for certain "Plus" services. If you don't have a modem, the network will give you one with a four-month subscription. Q-Link is open evenings and weekends only. ■

Margaret Morabito, a freelance writer on computer topics and an avid telecommunicator, is an associate editor of RUN *and the author of its Resource Center column.*

Table 1. Online networks mentioned in this article.

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Suite 1505
Arlington Heights, IL 60004
See *RUN*, August 1985

CompuServe Information Services
PO Box 20212
5000 Arlington Centre Blvd.
Columbus, OH 43220
800-848-8199
See *RUN*, May 1985

Delphi
General Videotex Corporation
3 Blackstone St.
Cambridge, MA 02139
800-544-4005
See *RUN*, July 1985

GEnie
General Electric Information Services Company
401 North Washington St.
Rockville, MD 20850
800-638-9636
Not in the previous *RUN* series.

PlayNet, Inc.
PO Box 587
Wynantskill, NY 12198
1-800-PLAYNET
See *RUN*, August 1985

QuantumLink
Quantum Computer Services
8620 Westwood Center Drive
Vienna, VA 22180
800-392-8200
See *RUN*, November 1985

Table 2. Books about online services.

Infomania; Elizabeth Ferrarini; Houghton Mifflin

The Computer Data and Database Source Book; Matthew Lesco; Avon

Information Sources: Annual Directory; Information Industry Association, 316 Pennsylvania Ave. SE, Suite 400, Washington, DC 20003

How To Look It Up Online; Alfred Glossbrenner; St. Martin's Press

Inside Information; John Helliwell; New American Library

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Plug Into Telecommunications

The world of online communication is yours with just a modem, a terminal program and your telephone. **By DAVID BRADLEY**

If you have a Commodore computer system but no modem, it's like owning a jet that can't quite break the sound barrier. You can fly, but getting a modem would be like adding afterburners.

A modem opens up new worlds. With it, you can call up a friend's computer to "chat" or exchange files, or swap ideas with people in your area on a local BBS. If you call one of the big online networks like PeopleLink, QuantumLink, Delphi, CompuServe or GEnie, you can meet others from all over North America in the comfort of your own home—and never have to worry about having enough cheese balls to go around.

Modems

But what is a modem, and what does it do? The word "modem" is short for *mo*dulator/*dem*odulator. The device is an interface of sorts that lets computers talk to one another over standard phone lines. Notice, I didn't say anything about brands. With a modem, a Commodore can talk to another Commodore, an Apple, an IBM, a Wang or virtually any other computer. This is possible because all modems speak the same language—ASCII (American Standard Code for Information Interchange).

Modems made specifically for the C-64 and C-128 plug directly into the computer via the user port. (As you look at the back of your computer, the user port is on the right.) Non-computer-specific modems require an interface to connect to a Commodore. The modem connects to a phone line with a cable that has male jacks on both ends. One jack goes into the modem, the other into a standard phone receptacle.

Some modems are faster than others. The speed is gauged in bits per second (bps), with a bit being one binary digit. Bits per second is also known as baud rate. The two most common rates of data transmission for Commodores are 300 and 1200 baud, the former transmitting approximately 30 keyboard characters per second, and the latter about 120. Even faster modems (2400-baud) are becoming more popular, but few Commodore users have so far moved up to that speed, because there aren't any Commodore-specific 2400-baud modems available. Every 1200-baud modem I've ever seen also supports 300 baud.

Terminal Programs

Before you can call another computer with a modem, you need a terminal program. There are many available for the C-64 and the C-128, from commercial, public domain and shareware sources, and they run the gamut from simple to highly complex.

A basic feature of all terminal programs is a terminal mode that sends and receives text and control characters at one or more baud rates. The control characters are needed to perform various functions. For example, on Punter BBSs, control/P aborts just about any operation, and on Delphi, control/Z signals that you've finished entering a message and want to send it along. Control/G is the control character used by most terminal programs to ring a bell. With some terminal programs, the control key and accompanying key are held down simultaneously; with others, they're pressed sequentially.

Most terminal programs let you capture text in a buffer, so you can view it on your screen later, output it to your printer for a permanent record of your online escapades or save it to disk as a word processor file to examine at some other time. Usually there's also provision for creating individual files on disk from important sections of online sessions.

If your terminal program has a buffer, be sure you save its contents before you turn your computer off or clear the buffer to load another program. Once the terminal program is gone, so is the buffer's contents. *RUN* reader Bill Bullock has told me how he always lost information by forgetting to save it before he quit—until he found a terminal program that warned him of the danger.

Most terminal programs let you upload and

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download programs or other files. Uploading is sending a file to another computer, and downloading is receiving a file from another computer.

To download a typical file from a network or BBS, first you must let the service or person at the other end know you want that particular file. When the file has been found and is ready to be sent, you'll be notified. Then you instruct your terminal program to download the file to your disk drive, using the protocol supported by the service you're connected with. Most programs sound a bell when the file transfer is done, to say you can go ahead with other things.

Error-Checking Transmissions

As a rule, online systems apply some sort of error-checking scheme (usually known as a transfer protocol) to up- and downloading to ensure that a file arrives in the same form as it was sent. If a transmission error occurs, the bunch, or block, of data in which the error occurred is sent again and again until it's received error-free. The two most common protocols in the world of Commodore telecommunications are Xmodem and Punter. Xmodem is supported by most of the larger networks and BBSs, while Punter is popular on smaller BBSs.

If you find you're getting a lot of bad blocks with Punter, you can probably eliminate them by adjusting the size of the block being sent between error checks. The logic here is that you have a better chance of getting 40 characters through error-free than you do 255 characters. If you do get a noisy phone connection, the best remedy is to hang up and call right back. The noise will usually be gone.

Using Punter protocol at 300 baud, you can transfer six Commodore disk blocks of information in a minute. You might expect to move 24 blocks in a minute at 1200 baud, but the speed is actually only 21 blocks a minute. Xmodem transfers information at about the same rate as Punter, but on large networks, such as Delphi or CompuServe, the speed may drop when there are a lot of people on the system at the same time. I've found that the best time to call such a network for downloading files is shortly after 6 in the evening or early in the morning.

Commodore's 1670 modem plugged into the C-128's user port. The other end of the cable connects to the phone receptacle.

To use and enjoy telecommunications with your Commodore, you really don't need to know how these protocols work. Just be sure you have a terminal program that supports the protocols used by the online services you're calling.

Two other features of terminal programs you'll probably come across are autodialing, which instructs your modem to dial a phone number automatically, and a telephone directory, where you can store BBS and network numbers you use often. These features work together to get you online quickly. Some of the better terminal programs automatically dial some or all of the numbers you've stored in the telephone directory, then ring a bell when one of them answers.

Note that if your modem doesn't support autodialing, or at least the type of autodialing your terminal program performs, no matter how many times the terminal program says it's dialing, it's never going to connect. Just as it's im- ►

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portant to have a terminal program that supports the same protocols as the online services you call, you must have a modem that dials the same way as your terminal program.

Many terminal programs offer a programmable function key feature that lets you assign a word or group of words to a function key. Then, any time you press that key, that word or group of words will be transmitted. Most people assign their name, their passwords, a favorite salutation and some commonly used commands to these keys, and a lot of programs let you save the key assignments, so you don't have to reenter them each time you go online.

Choosing a Modem

There are many modems available that will work with the C-64 and C-128, and I have yet to find one that doesn't transmit and receive data the way it's supposed to. However, some are more popular than others, because they're compatible with more terminal programs. Remember, you can have the best modem in the world, but if you can't find software to make it work with your computer, what good is it?

The most popular modems for the C-64 and C-128 are the Commodore 1650 AutoModem and others that dial in the same way. The 1650 was the first Commodore-specific autodialing 300-baud modem on the market, and all of the first Commodore-compatible terminal programs were written for it. Other modems of the 1650 type include the Total Telecommunications, the Westridge 6420, the TeleLearning and the Pocket Modem, plus some lesser-known brands. These modems all use pulse dialing.

The Pocket Modem is the only 1650-type that answers (as well as dials) just like the 1650, which can be important if you want to run a BBS, and it's the only one that's available in a 300/1200-baud version. The 1650 itself is no longer being made, but the compatibles are in production, and most sell for under $60.

The next most popular type of modem for the C-64 and C-128 is the 1200-baud Commodore 1670. It uses a different dialing method than the 1650, and it can do both tone and pulse dialing. The 1670 uses the same kind of commands Hayes modems use—commands that are the standard outside the Commodore world.

To dial a number with the 1670 using tone, all you have to do is access the terminal mode of your program and enter ATDT, followed by the number you want to dial. To dial using pulse, enter ATDP followed by the number. The AT gets the modem's attention, the D means dial and the T or P means tone or pulse. Please note that these commands must be entered in *capital* letters.

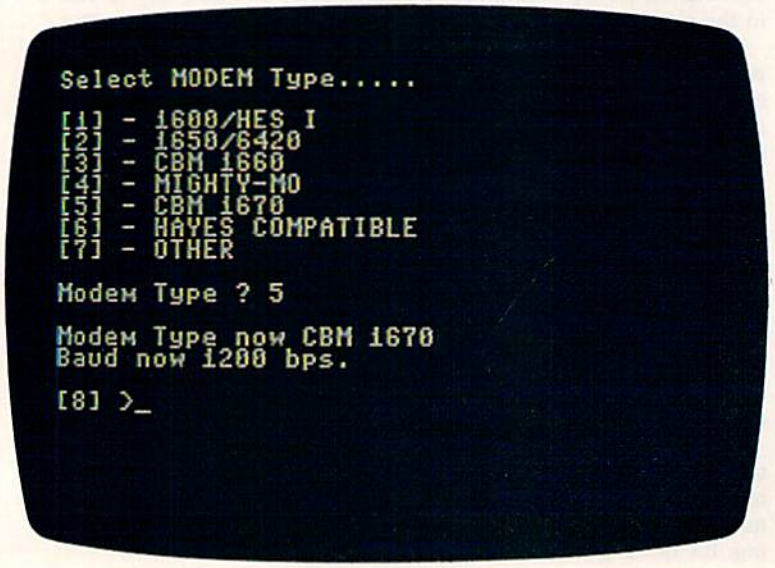
If you think you might move up to an Amiga, a PC-10 or any other computer, it would be wise to get a modem that will work with your C-64 and C-128 now and then with your new computer later. This approach will cost more initially, because you'll need a special RS-232 interface for your C-64 or C-128, but you'll come out ahead later when you don't have to buy another modem. One reader, Jo-Anne Park of Toronto, has made an interface that lets her Amiga use her 1670, but I haven't seen anything like it on the market yet.

If you take this route, make sure you get a Hayes or Hayes-compatible modem, since it's the standard. A Hayes itself would be best, but they're rather expensive, and many good Hayes-compatibles are available. Most C-64 and C-128 programs designed for the 1670 modem will work perfectly with a Hayes-type.

Regardless of whether you plan to get another computer in the future, I'd recommend getting a modem that works like the 1650 or the 1670. It'll save you a lot of aggravation, because most terminal programs, both public domain and commercial, adhere to those standards. You might pay less for something like a Volks 6480, but you'll find that few programs are compatible with it. The 6480 does come with a terminal program that's okay, but it lacks features found in many other programs, and it's not as easy to use.

As when adding any component to your computer system, when you shop for a modem, figure out what your needs are beforehand, so you end up with a unit that solves more problems than it creates, and one that keeps as many doors open as possible. You may never want to go through those doors, but it's best to have them ajar just in case.

For more information about telecommunications, be sure to read my monthly Telecomputing Workshop column in *RUN*, and if you have any questions, please write to me. For more information about the commercial online networks, read Margaret Morabito's article, "Online Services Overview," elsewhere in this issue of *RUN*. ■



Abacus' SpeedTerm, an example of a terminal program, asks you to input the type of modem you are using.

David Bradley, RUN*'s Telecomputing Workshop columnist and a Commodore user since the days of the 8K Pet, is on the Board of Directors of the Toronto PET Users Group. He's been involved in telecommunications for over five years, including running his own bulletin board.*

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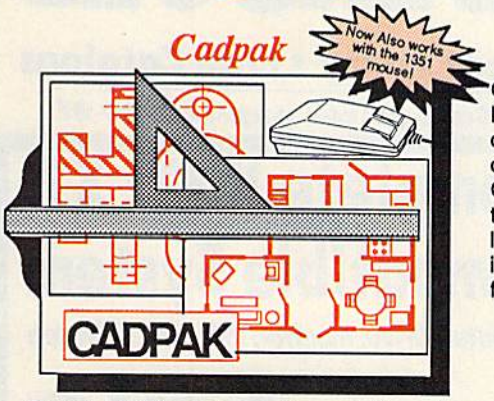

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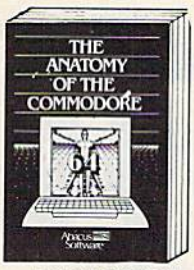

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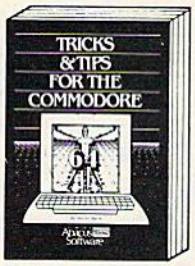

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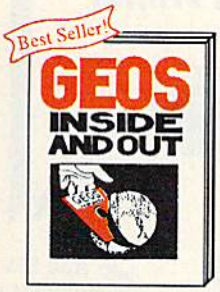

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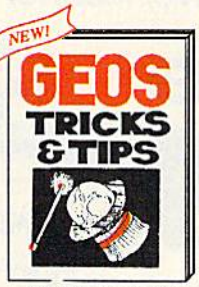

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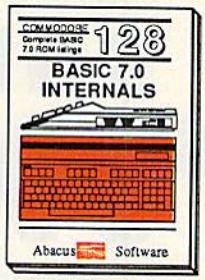

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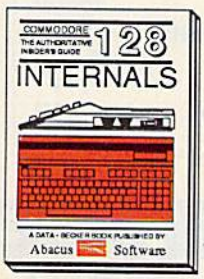

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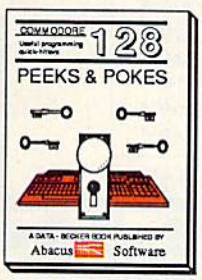

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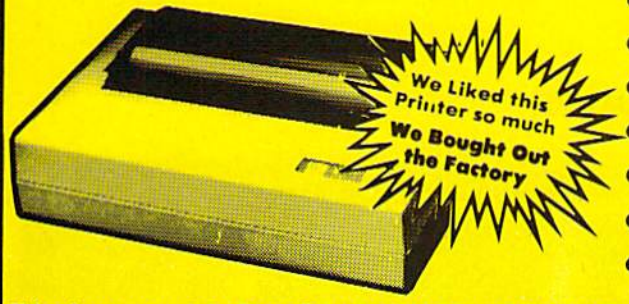

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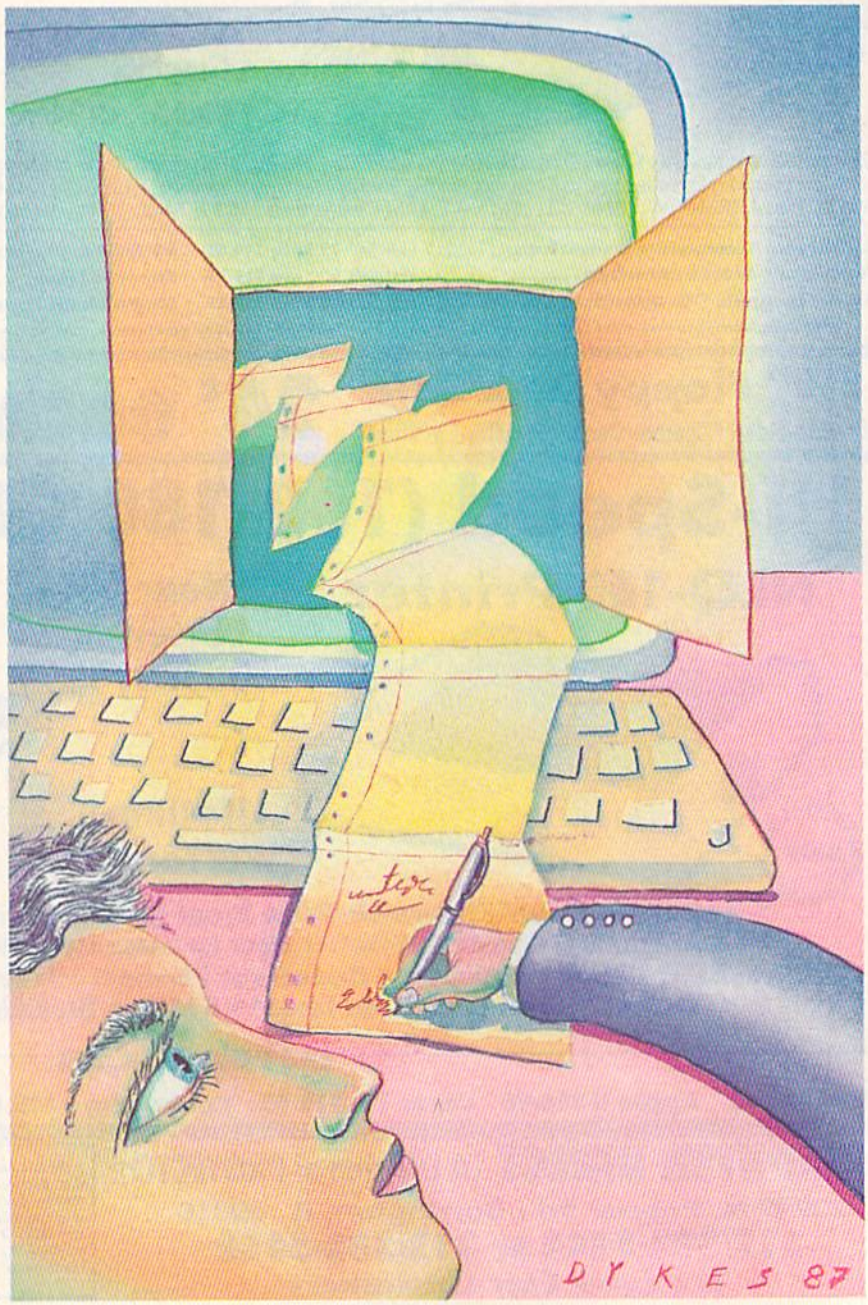
By BOB KODADEK



The 128 Notepad program is a commercial-quality desktop accessory for your C-128 that provides many functions. Above all, it offers a text window for recording and recalling programming and other notes, but it also includes a digital time display; a menu for viewing the disk directory and for saving, loading and printing your Notepad notes; and a DOS command center for file maintenance and other disk operations.

Once 128 Notepad is activated, you can interrupt the program you're running, open the window and enter the text editor by pressing control/W. In turn, control/V exits 128 Notepad and returns you to the original program, where the screen display will be exactly the same as you left it, right down to the cursor location.

Files produced with the 64 Notepad Update from last January's issue of *RUN* are compatible with 128 Notepad in the C-128's 80-Column mode.

The 128 Notepad program is written entirely in machine language, resides completely in RAM and remains transparent to most other programs. You can use it in Direct mode as a stand-alone application, with the C-128's machine language monitor or with any Basic or machine language program, including RUN Script 128 Version 2.40 (*RUN*, December 1986, and ReRUN Productivity Pak II) and the Time-DOS 64/128 date-and-time-stamp utility from Family Software. When 128 Notepad is operating with Time-DOS 128 and a Basic program, you'll have three programs interfacing at once on your C-128!

The disk drive's error channel is continually monitored while 128 Notepad is running, and its status is displayed after every operation.

Typing and Loading

The 128 Notepad program actually consists of two listings: Boot 128 Note-►

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ILLUSTRATED BY JOHN S. DYKES

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pad (Listing 1) and ML File Generator (Listing 2). Type them in, using 128 Perfect Typist, and save them on one disk. Then run ML File Generator to create a fast-loading binary file of the 128 Notepad object code on this same disk. If you type the listings correctly, the binary file will appear in the disk directory as 128 NOTEPAD.OBJ, and the error channel will report out as 00,OK,00,00.

Now 128 Notepad is ready to use. To activate it, you must run 128 Notepad Boot. The boot program loads the object file and then asks you to enter the current time in hours and minutes. If you press the return key without a numeric entry at these two prompts, the TOD (time-of-day) clock will be set to zero, so it functions as a timer.

If you have Time-DOS 128 in memory, the time is set automatically, and all you need to do is activate the object file. If you own a 1571 disk drive, type BOOT "128 NOTEPAD.OBJ" and press return; if your drive is a 1541 or compatible, type BLOAD"128 NOTEPAD.OBJ", press return, type SYS 7181 and press return again.

Owners of a CCSZ clock/calendar card from the Jason-Ranheim Company must permanently set the TOD master to CIA #2 and disable the time tick, in addition to inputting the Boot or BLoad command above. In most instances, I've found it best to turn off the CCSZ when powering up by typing in POKE 165,30:SYS 999. The TOD clock will continue to keep the correct time, even after you disable the card.

Since 128 Notepad relocates the start of Basic to memory address $4000, you must always input the New command before loading a Basic program when Notepad is in use. New resets all the Basic pointers.

Using the Notepad

Once you've activated 128 Notepad, press control/W to open the window and access the text editor. As the window opens, it will display a Help screen. To clear the window and go on to typing in your notes, press the shifted clear-home key.

All of the C-128's screen-editing features, including the Escape command sequences, function within the window. Insert/delete, the cursor controls and the extended keyboard also operate normally, effectively making 128 Notepad a mini word processor. The program provides 562 bytes of text storage, consisting of 14 lines of 38 spaces each and a 15th line of 30 spaces. The lower-right corner of the window always displays the current time.

When you're done using the window, close it by pressing control/V from the text editor. If you want to leave 128 Notepad altogether, press run-stop/restore. You can reactivate it by inputting SYS 7181.

If you ever want to open the Notepad window while the screen is scrolling, you *must* first stop the scrolling with the no-scroll key or control/S, or the registers in the 128's 8563 80-column video chip will be confused. If it should become necessary to reset the chip, close the Notepad window and press run-stop/restore.

The Option Menu

To access the 128 Notepad option menu, press control/D while the window is open. The menu choices are listed in Table 1.

Pressing D displays the disk directory. While the directory is scrolling, you can pause it with the no-scroll key or halt it altogether with the stop key.

When you press S to save or L to load a Notepad file, the prompt SAVE:N. or LOAD:N. will appear. The N. is a prefix that 128 Notepad automatically adds to the names of its files. The program's custom input routine will accept any filename that's no longer than 14 characters. To abort a save or load, press the return key without entering a filename, or press the stop key.

When you press P to print out a window, only the Notepad border and its text are output, so it's easy to fit several hard copies on a single sheet of paper.

Pressing X accesses disk operations, including copying, renaming and scratching files; initializing and resetting the drive; and validating and formatting disks. When the prompt for the command string appears, respond with the standard format for the command you want. For example, to rename a file, you'd input R0:newname = oldname, and to scratch a file, you'd input S0:filename. Filenames must include the N. prefix.

If you own a 1571 drive, you can try sending User 0 commands from the Notepad window. These commands aren't mentioned in the user's manual for the drive, but they're quite useful. A list of some of the more interesting ones appears in Table 2. The format for User 0 commands is U0>xx, where xx is the operation you want.

The last command listed in Table 2 will keep your drive head from banging. The x is the number of read attempts in the drive's zero page location, $6A. Try U0>R1.

The last choice in the option menu is Q, which exits from the menu and takes you back to the text editor. If you want to go further and close the window, press control/V.

The Notepad and RUN Script

To use 128 Notepad with RUN Script 128, first load and run the Notepad boot program, then load and run the RUN Script 128 boot program. *Never press the restore key* with the window open when you're using the Notepad with RUN Script 128. If you do, the computer will lock up, because RUN Script alters the NMI (nonmaskable interrupt) vector, and you'll have to reset the computer.

After you've activated 128 Notepad, ►

Table 1. Option menu.

D:	Directory
L:	Load
S:	Save
P:	Print
X:	Disk command
Q:	Editor

Table 2. User 0 disk commands to use with a 1571 drive.

Command (input)	Function
U0>M1:	Switches to 1571 mode at 2 MHz
U0>M0:	Switches to 1541 mode at 1 MHz
U0>H0:	Activates read head on side 1
U0>H1:	Activates read head on side 2
U0>Rx:	Changes number of read attempts

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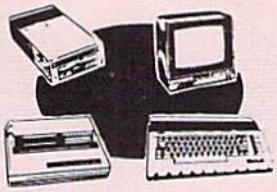

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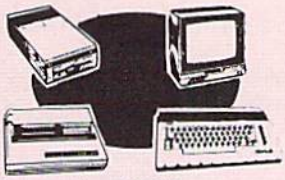

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the interrupt waits for a control/W. When it detects one, a flag diverts all future interrupts, and the current screen display (including attribute memory) is transferred to an alternate location at address $1000 in the 8563 chip's RAM. This chip comes with its own block-move routine, so the process is easy.

Once 128 Notepad has saved the contents of the zero page and the 8563's VDC (video display controller) registers, it switches in an alternate screen that exactly duplicates the original. The Notepad window will appear in this duplicate. When the alternate screen is in place, the program clears the interrupt-disable bit. Specific Notepad subroutines perform all operations on the new screen.

Once you close the window, the program switches back to the original screen by reinstating the contents of the zero page and the VDC registers that were stored. It then clears the flag and jumps to $FF33 to return control to Basic or the program in memory.

The official *Commodore 128 Programmer's Reference Guide* contains almost all the information you'll need to program the 8563 chip. However, it fails to mention that free RAM at $1000–$1FFF can hold an alternate screen and machine language routines for reading and writing to the 8563's VDC registers from Basic.

These ML routines exist in the screen editor ROM and appear in bank 15 at $CDCC and $CDDA, respectively.

To write to a 8563 VDC register from Basic 7.0, use the format SYS DEC("CDCC"),A,X. The X register holds the number of the VDC register to be accessed, while the A register contains the value to be stored in it. For example, to change to the alternate starting address of display RAM, write the value 16 to VDC register 12 by using the code A = 16:X = 12:SYS DEC("CDCC"),A,X.

To read a register, load the X register with the number of the VDC register to be read from and call the routine at $CDDA. The routine will return to Basic with the value in the A register. To change the value into a Basic variable, use the RREG command. For example, to read VDC register 12 in Basic, the code would be X = 12:SYS DEC("CDDA"),A,X:RREG A. The variable A will equal the value found, in this case 16.

RUN readers have been enthusiastic about the 64 Notepad program (September 1986 issue). I think you'll be just as pleased with 128 Notepad. R

Bob Kodadek is a computer programmer and freelance writer.

Listing 1. Boot 128 Notepad program.

```
10 REM BOOT 128 NOTEPAD :REM*34
20 REM (C) 1987 BOB KODADEK
                        :REM*190
30 GRAPHIC1:GRAPHIC0:GRAPHIC5:R
   EM MOVE BASIC TO $4000
                        :REM*70
40 F$="128 NOTEPAD.OBJ":PRINT"B
   OOTING "F$:BOOT (F$):REM*112
50 PRINT:PRINT"{SHFT CLR}OK, NO
   W SET THE TIME:"     :REM*86
60 INPUT"{CRSR DN}{5 SPACEs}HOU
   RS (1-12)";T(1):IFT(1)>12 TH
   EN 60                :REM*206
70 INPUT"{CRSR DN}{3 SPACEs}MIN
   UTES (0-59)";T(2):IFT(2)>59
   THEN 70              :REM*80
80 FORI=1TO3:H=INT(T(I)/10):L=T
   (I)-10*H:T(I)=16*H+L:NEXT
                        :REM*30
90 C=56587:POKEC+4,PEEK(C+4)AND
   127                  :REM*100
100 FORI=0TO3:POKEC-I,T(I+1):NE
    XT                  :REM*102
110 POKE DEC("1C37"),8:REM{2 SP
    ACEs}NOTEPAD DEVICE NUMBER
    (8-12)              :REM*202
120 PRINTCHR$(147)SPC(252) F$
                        :REM*70
130 PRINTSPC(83)"1. PRESS CTRL-
    W TO OPEN WINDOW."  :REM*26
140 PRINTSPC(83)"2. PRESS CTRL-
    V TO CLOSE WINDOW." :REM*56
150 PRINTSPC(83)"3. PRESS RUN/S
    TOP-RESTORE TO DISABLE."
                        :REM*248
160 PRINTSPC(83)"4. TO RE-ENABL
    E, ENTER SYS 7181" :REM*254
170 PRINTSPC(83)"5. IF RESET, E
    NTER SYS 7181:NEW" :REM*212
180 NEW                 :REM*62
```

Listing 2. ML File Generator program.

```
1 REM 128 NOTEPAD 2.0 ML FILE G
  ENERATOR              :REM*163
2 REM (C) 1987 BOB KODADEK
                        :REM*172
3 REM                   :REM*65
4 F$="128 NOTEPAD.OBJ":FAST:PRI
  NT"PLEASE WAIT, READING DATA.
  ..."                  :REM*170
5 GRAPHIC1:GRAPHIC0:GRAPHIC5:DO
   UNTIL I=1606         :REM*241
6 READ BY:POKE DEC("1C0D")+I,BY
  :CK=CK+BY:I=I+1:LOOP  :REM*30
7 IF CK<>172085 THEN SCNCLR5:PR
  INT"CHECKSUM WRONG.":END
                        :REM*97
8 PRINT:PRINT"PUT FORMATTED DIS
  K INTO DRIVE & THEN PRESS RET
  URN":SYS65487         :REM*158
9 SCRATCH (F$):BSAVE (F$),P7181
   TO P8787:PRINT DS$   :REM*7
10 DATA 162,0,142,0,64,232,134,
   45,169,64,133,46,120,173,20,
   3,141,57,28,173      :REM*98
20 DATA 21,3,141,58,28,169,62,1
   41,20,3,169,28,141,21,3,169,
   0,141,56,28,88       :REM*210
30 DATA 96,8,0,0,0,0,0,0,44,17,
   208,48,21,36,215,16,17,165,2
   11,201,4,208,11      :REM*48
40 DATA 165,212,201,9,208,5,173
   ,56,28,240,3,108,57,28,169,2
   55,141,56,28,162     :REM*38
50 DATA 13,32,218,205,240,7,169
   ,0,141,56,28,208,234,160,50,
   162,0,232,208        :REM*82
60 DATA 253,200,208,248,160,0,1
   32,208,185,0,0,153,99,37,200
   ,208,247,162,10      :REM*50
70 DATA 32,218,205,141,59,28,16
   2,14,32,218,205,141,77,34,23
   2,32,218,205,141     :REM*254
80 DATA 78,34,169,0,141,0,255,1
   7,32,104,255,165,241,9,128,
   133,241,169,16       :REM*188
90 DATA 162,18,32,204,205,169,0
   ,232,32,204,205,162,24,32,21
   8,205,9,128,162      :REM*136
100 DATA 24,32,204,205,169,0,16
    2,32,32,204,205,232,32,204,
    205,160,15,169      :REM*212
110 DATA 255,162,30,32,204,205,
    136,16,246,169,186,133,251,
    169,34,133,252      :REM*178
120 DATA 162,0,160,39,169,118,1
    45,251,200,169,117,145,251,
    32,107,32,232       :REM*28
130 DATA 224,16,208,237,162,39,
    169,111,157,186,34,169,119,
    157,58,37,202,16    :REM*194
140 DATA 243,162,14,160,0,185,5
    1,34,157,186,34,232,200,192
    ,13,208,244,169     :REM*46
150 DATA 16,162,12,32,204,205,1
    69,24,162,20,32,204,205,169
    ,16,141,46,10       :REM*244
160 DATA 169,24,141,47,10,160,3
```

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```
,185,65,34,153,228,0,136,16
,247,32,209,32          :REM*32
170 DATA 160,3,185,69,34,153,22
8,0,136,16,247,32,18,32,32,
121,32,169,70,32        :REM*44
180 DATA 30,192,169,128,133,248
,173,74,34,201,203,240,8,16
9,203,141,74,34         :REM*194
190 DATA 32,137,33,32,130,32,32
,228,255,240,248,201,22,208
,76,120,32,41,32        :REM*132
200 DATA 173,59,28,162,10,32,20
4,205,169,0,162,12,32,204,2
05,169,8,162,20         :REM*232
210 DATA 32,204,205,169,0,141,4
6,10,169,8,141,47,10,160,0,
185,99,37,153,0         :REM*70
220 DATA 0,200,208,247,173,77,3
4,162,14,32,204,205,232,173
,78,34,32,204           :REM*72
230 DATA 205,169,0,133,208,133,
211,133,212,141,56,28,76,51
,255,201,19,208         :REM*20
240 DATA 6,32,121,32,76,102,29,
201,4,240,11,32,210,255,169
,79,32,30,192,76        :REM*2
250 DATA 102,29,32,41,32,32,204
,255,32,125,255,147,13,32,3
2,32,32,109,101         :REM*94
260 DATA 110,117,13,13,32,100,5
8,100,73,82,69,67,84,79,82,
89,13,32,108,58         :REM*25
270 DATA 108,79,65,68,13,32,115
,58,115,65,86,69,13,32,112,
58,112,82,73,78         :REM*201
280 DATA 84,13,32,120,58,100,73
,83,75,32,67,79,77,77,65,78
,68,13,32,113,58        :REM*151
290 DATA 101,68,73,84,79,82,13,
13,18,32,115,84,65,84,85,83
,58,146,32,0,169        :REM*59
300 DATA 0,133,144,173,55,28,13
3,186,32,180,255,165,144,20
8,20,169,111,133        :REM*51
310 DATA 185,32,150,255,32,165,
255,201,13,240,6,32,210,255
,76,80,30,32,171        :REM*125
320 DATA 255,32,204,255,32,125,
255,13,13,0,169,0,141,75,34
,169,14,141,76          :REM*57
330 DATA 34,32,130,32,32,228,25
5,240,248,201,68,240,3,76,6
,31,32,209,32           :REM*211
340 DATA 169,0,133,248,169,1,16
2,79,160,34,32,189,255,169,
96,133,185,32           :REM*147
350 DATA 203,240,173,55,28,133,
186,32,180,255,165,185,32,1
50,255,169,0,133        :REM*67
360 DATA 144,160,3,132,183,32,1
65,255,133,195,32,165,255,1
33,196,164,144          :REM*123
370 DATA 208,40,164,183,136,208
,235,166,195,165,196,32,57,
33,32,165,255           :REM*181
380 DATA 166,144,208,21,201,0,2
08,9,169,13,32,210,255,160,
2,208,208,32,210        :REM*37
390 DATA 255,32,225,255,208,228
,32,181,245,32,125,255,13,1
12,82,69,83,83          :REM*71
400 DATA 32,114,69,84,85,82,78,
0,32,228,255,201,13,208,249
,169,128,133,248        :REM*13
410 DATA 76,218,29,201,81,208,9
,32,209,32,32,18,32,76,102,
29,201,76,208,34        :REM*185
420 DATA 32,125,255,108,79,65,6
8,58,32,78,46,0,32,215,32,3
2,36,33,169,0           :REM*195
430 DATA 133,185,162,122,160,34
,169,0,32,213,255,76,218,29
,201,83,208,38          :REM*233
440 DATA 32,125,255,115,65,86,6
9,58,32,78,46,0,32,215,32,3
2,36,33,162,122         :REM*33
450 DATA 160,34,134,253,132,254
,162,98,160,37,169,253,32,2
16,255,76,218,29        :REM*173
460 DATA 201,88,208,60,32,125,2
55,99,79,77,77,65,78,68,58,
0,169,35,141,76         :REM*61
470 DATA 34,32,215,32,172,75,34
,240,29,173,55,28,133,186,3
2,177,255,169           :REM*17
480 DATA 111,133,185,32,147,255
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,200,204,75,34          :REM*83
490 DATA 144,244,32,174,255,76,
218,29,201,80,208,77,32,4,3
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500 DATA 34,169,4,133,186,32,17
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510 DATA 32,32,168,255,136,208,
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44,9,201,64,144         :REM*43
520 DATA 9,201,96,144,3,24,105,
32,105,32,32,168,255,200,19
2,40,208,227,169        :REM*174
530 DATA 13,32,168,255,32,107,3
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255,76,218,29           :REM*50
540 DATA 169,18,162,18,32,204,2
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550 DATA 133,251,134,252,160,0,
140,64,34,96,32,247,31,177,
251,162,31,32           :REM*174
560 DATA 204,205,200,192,40,208
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7,96,32,247,31          :REM*222
570 DATA 162,31,32,218,205,145,
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4,32,201,17,208         :REM*242
580 DATA 237,96,162,18,32,218,2
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,40,141,73,34           :REM*112
590 DATA 104,105,0,162,18,32,20
4,205,173,73,34,232,32,204,
205,32,107,32           :REM*80
600 DATA 160,0,238,64,34,173,64
,34,96,165,251,24,105,40,13
3,251,165,252           :REM*70
610 DATA 105,0,133,252,96,24,16
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,169,23,162,18          :REM*216
620 DATA 32,204,205,169,113,232
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0,72,41,16,160,2        :REM*102
630 DATA 208,12,169,186,32,197,
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74,74,74,74,24          :REM*96
640 DATA 105,176,32,197,32,232,
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,32,232,136,16          :REM*186
650 DATA 220,173,8,221,88,96,14
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800 DATA 79,80,69,78,32,78,79,8
4,69,80,65,68,13,32,32,32,3
2,32,32,32,99,79        :REM*187
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820 DATA 79,87,13,32,32,32,32,3
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,32,49,50,56,32         :REM*137
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,24,8,33,74,23,9,35,72,0,0,
0,0,0,0,0,36,78,46      :REM*253
850 DATA 75             :REM*113 ■
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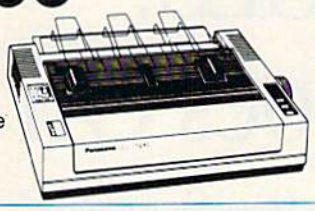

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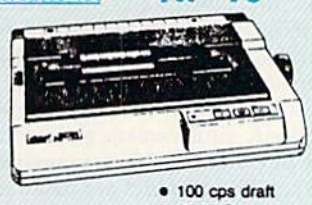

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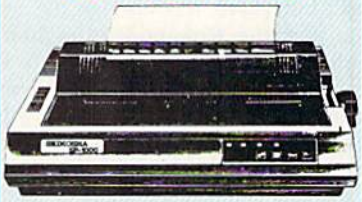

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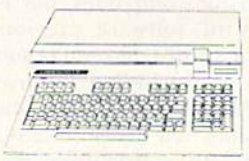

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Summer CES: The Show Goes On

This summer's Consumer Electronics Show was a beehive of activity, but where was Commodore?

By LOUIS WALLACE

In most ways, the summer months are a slow time for the computer industry. Hardware sales are down, software sales lag and the page counts of computer-specific magazines diminish. However, one scene of bustling activity is Chicago's McCormick Place, where the Summer Consumer Electronics Show parades new hardware and software before editors, writers, distributors and dealers.

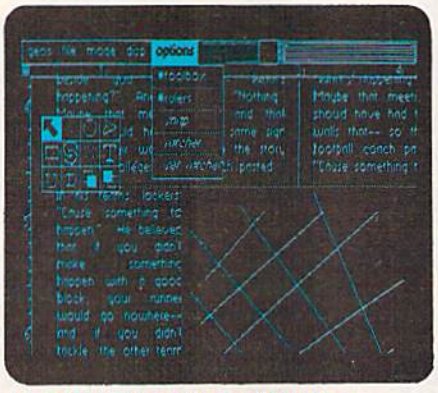
At CES in June of this year, the new Amiga A500 and A2000 were highly visible, but there was also ample evidence that the Commodore eight-bit machines have plenty of life left in them. A lot of innovative software for the C-64 and C-128 was on display, with the trend toward low-cost "budget" software still apparent. Also, in line with the general computer market rush, there were announcements and demonstrations of C-64 desktop publishing programs. Software for the C-128 was sparse, but I did see indications that this machine is beginning to get serious support from major companies.

Inexpensive Software

Some of the low-cost software packages on display are newly programmed from major companies, but many are imports of software previously published in Europe. Several reputable U.S. companies, including Electronic Arts, Epyx, Mindscape and Accolade, have established new divisions that will specialize in budget-line titles. The bottom line seems to be that some low-cost programs are of high quality, representing an exceptional value, while others, even at $9.95 or less, aren't worth even that. As always, you should be careful when you're offered a so-called "bargain."

Desktop Publishing

Berkeley Softworks' geoPublish was one of the new desktop publishing programs introduced at CES. It supports all GEOS printer drivers, as well as Postscript (used with the Apple LaserWriter printer). No firm release date was available from Berkeley.



A screen dump from Berkeley Softworks' geoPublish illustrates a zoom-in on a page with tool box and menu showing.

Timeworks also announced a desktop publishing program for the C-64, but details were sketchy as to its final name and release date. Gold Disk of Canada announced that PageSetter—originally designed for the Amiga—would be available for the C-64 by fall. Both PageSetter and the Timeworks desktop program will be aimed at users of dot matrix printers.

GEOS 128

Berkley demonstrated their long-awaited GEOS 128 package. It supports both the 40- and 80-Column bitmap modes, and the 80-column display is especially impressive, letting you view the full-page width of a geoPaint or geoWrite document. The monochrome display is sharp, and the mouse control is smooth and fluid. GEOS 128 should be available by the time you read this. For more information on new GEOS products, keep an eye on *RUN*'s News and New Products section and the geoWatch column.

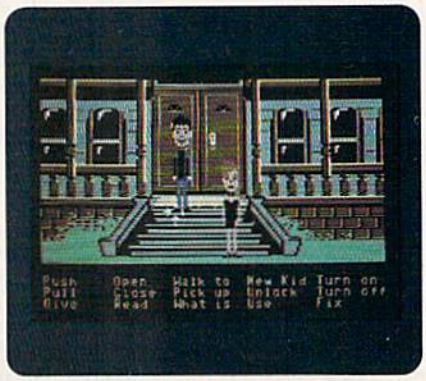
Games

All the major companies showed an impressive lineup of new entertainment software, most having spectacular graphics and the promise of hours of fun.

Activision: From Activision and Lucasfilm comes an animated comic adventure called Maniac Mansion. In this game, you control three characters as they explore an old house and try to rescue their girlfriend. She's been kidnapped by Dr. Fred, who wants to perform an interesting, although fatal, experiment on her.

The Last Ninja is a beautifully animated adventure/arcade game that has some of the best fighting sequences I've seen yet. The graphics are detailed, and the animation is very well executed.

Epyx: California Games is the new sequel to Epyx's Summer, Winter and World Games. Instead of the usual athletic events, in this competition you test your skill at rollerskating, skateboarding, surfing and hackey-sack.



By selecting verbs and pointing to objects, you can direct characters like Dave and Razor in Maniac Mansion, the latest from Activision/Lucasfilm. © 1987 LFL

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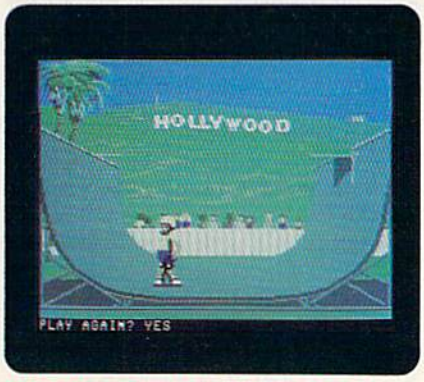


Skateboarding is just one of the, like, totally radical sports you can play in Epyx' California Games.

The folks at Epyx have added a new title, Omnicron Conspiracy, to their advanced gamer Master Series. Their inexpensive software line, Maxx-Out, is replete with arcade, adventure and creative software for the 10- to 14-year-old set.

Electronic Arts: Instant Music, one of several new programs for the C-64, is part of a program originally marketed for the Amiga. It's a simple composition tool that will let you create music, even if you have no musical experience. The Amiga version was well received, and the C-64 version should follow suit.

Electronic Arts continues adding to their Amazing Software line of under-$20 programs, with titles like Sanxion, Delta Patrol and Dragon's Lair, due out this summer. By the time you read this, Mavis Beacon Teaches Typing should be on the shelves, too. This program's jokes, riddles and games will relieve the usual boredom of typing practice.

Accolade: Another program, an arcade space adventure called Sigma 7, has been added to Accolade's low-priced Avantage line. Two other new programs from Accolade, Apollo 18: Mission to the Moon and Test Drive, feature spectacular graphics for the C-64. Apollo 18 includes digitized sound, and Test Drive puts you behind the wheel of cars you've probably only read about in *Car and Driver*.

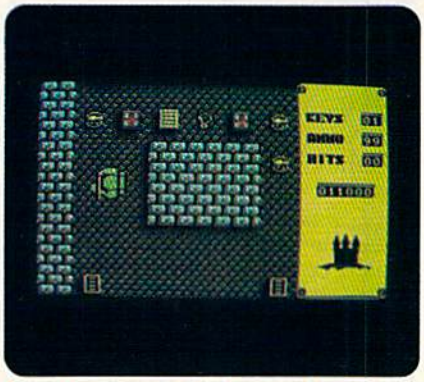
MicroProse: An actual Link Flight Training Simulator hooked up to Gunship highlighted the MicroProse booth. I was at the controls for a while, guiding the computerized helicopter through turns and dives.

After coming in for a crash landing, I noted two new MicroProse packages on display in the booth, both due out in late summer or early fall. Project: Stealth Fighter is a jet-fighter simulation, and Airborne Ranger is an arcade simulation.

Infocom: Plundered Hearts, Nord and Bert Couldn't Make Head or Tail of It and Beyond Zork weren't previewed at CES, but I got the scoop that these outrageous titles should hit the stands in the fall.

Mindscape: Thunder Mountain, Mindscape's budget software line, continues with Rock 'n Roll Trivia, a five-volume set. Their Cinemaware line was out in full force, with titles adopted (and improved in the process) from the Amiga.

One of the new titles in Electronic Arts' Amazing Software line, Sanxion, requires quick reflexes to keep your aircraft flying in a 3-D environment.



Invade, rescue, destroy and save are your missions in Mindscape's Into the Eagle's Nest.

Not about to question success, Mindscape introduced Bop 'n Rumble from the creators of Bop 'n Wrestle, a program that's sold more than 100,000 copies. And you'll probably be descending Into the Eagle's Nest, a WWII combat arcade game, by the time this article is published.

CBM No Show

Conspicuously missing from this CES was Commodore itself. They pulled out of the show and had no presence on the floor at all (in contrast to Atari's two-story booth, complete with airplane!). In fact, one of the questions I heard asked most often was, "Where is Commodore?" They did appear at the Atlanta Comdex show, held at the same time as CES, and reportedly were well received. However, CES is where they usually show all their new consumer computer products.

Does this mean Commodore is pulling back from their mass market approach to selling computers? I don't think so. Their absence was probably mainly due to Comdex occurring in the same week. ■

Lou Wallace is RUN*'s technical manager.*

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Phaser Phire

Command the Starfleet and rout the Klingon hordes, in this Battleship-type game.

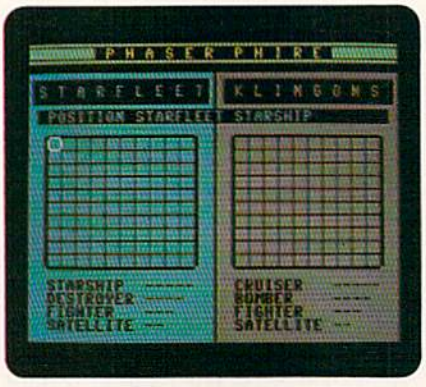
By ROBERT COOK

Those despicable Klingons are attacking again, and you, Commander of the Starfleet, must locate and destroy their spaceships before they destroy yours. The stakes are high: If you fail, the Klingons will invade the Federation of Planets and bring it to its knees. The forces are arrayed on the display screen, and Phaser Phire begins! It's played much like the popular board game, Battleship.

Type in Listing 1, using 64 Perfect Typist, and save it to disk. When you run the program, there'll be a wait while some custom characters and a sprite are read in. If you're using a C-128 in 64 mode, you can speed up initialization by deleting the REMs in lines 106 and 112. This will activate Pokes that will, in turn, disable the screen update and reduce the set-up time considerably.

The game display includes two side-by-side grids, one for the Starfleet and one for the Klingons. Below each grid is a list of the four ships in that fleet. The length of each ship, in grid squares, is represented by a line of dashes after the ship's name—one dash per square.

To begin play, you and the Klingon commander must position your fleets on your respective grids. The locations of



ships must be secret, so, if your opponent is a person, no peeking.

To place a ship, use your joystick or the £, ↑, = and * keys to move the cursor to the square where you want one end of the ship to be and press the fire-button or return key. Then push the joystick to the right or press the ↑ key to place the ship horizontally to the right of that square; or push the joystick down or press the = key to place it vertically down from the square. Phaser Phire won't let you place one ship on top of another or across a border.

Once the battle lines are drawn, you and the Klingons begin firing phasers at each others' fleets. To fire, move your cursor, which is now on the Klingon grid, to where you think one of their ships might be, then hit the joystick fire-button or the return key. If you're lucky, you'll hit a Klingon ship, but the first hit won't destroy it. To do that, you must use subsequent turns to hit every square the ship occupies. To win, you must destroy all the Klingon ships before they destroy yours.

Each time you fire, the square you hit gets filled in with a square dot. Each time you hit a ship, a dash after its name in the list is replaced by an asterisk.

The satellite in each fleet has special significance. If you destroy the Klingons' satellite, all the dots in your grid will disappear, so the Klingons won't know where they've already shot or the locations of your ships they've already discovered. Of course, it works the other way around, too. Strategy hint: If you locate the Klingons' satellite early in the game, note the location and destroy it later, after they've taken more shots.

Ready, aim, phire! R

Robert Cook is a designer of printed circuit boards who has written many programs for Commodore computers.

Listing 1. Phaser Phire program.

```
Ø REM STARSHIP * 1987 * ROBERT
  B. COOK *                :REM*5Ø
1ØØ PRINT"{SHFT CLR}{CRSR DN}{C
    TRL 8}{7 SPACEs}P H A S E R
    {3 SPACEs}P H I R E:REM*146
1Ø2 PRINT"{4 CRSR DNs}{CTRL 2}R
    EADING DATA....          :REM*74
1Ø4 POKE5328Ø,Ø:POKE53281,Ø:POK
    E65Ø,128:IFPEEK(14336)=6ØTH
    EN114                    :REM*186
1Ø6 POKE52,56:POKE56,56:CLR:REM
     POKE53296,3             :REM*25Ø
1Ø8 POKE56334,PEEK(56334)AND254
    :POKE1,PEEK(1)AND251
                             :REM*146
11Ø FORI=ØTO2Ø47:POKEI+14336,PE
    EK(I+53248):NEXT         :REM*232
112 POKE1,PEEK(1)OR4:POKE56334,
    PEEK(56334)OR1:REM POKE5329
    6,252                    :REM*234
114 POKE53272,(PEEK(53272)AND24
    Ø)+14                    :REM*224
116 DIM GC(2,9,9),XC(2),YC(2),X
    D(5),YD(5),SP(2),PR(3)
                             :REM*24
118 DIM XH(5),YH(5),SH(2,5),TH(
    2),PL(2),PL$(2),SS$(2,5)
                             :REM*62
12Ø PL=2:SP(1)=48:SP(2)=2ØØ:R=R
    ND(-TI):VC=53248:SP=53269
                             :REM*18
122 LF=54272:HF=54273:WV=54276:
    AT=54277:SR=54278:POKELF+24
    ,15                      :REM*216
124 GOSUB424:POKE2Ø4Ø,13
                             :REM*24Ø
126 CL$="{HOME}{2 CRSR RTs}{6 C
    RSR DNs}{36 SPACEs}{CRSR UP
    }{5 CRSR RTs}            :REM*138
128 D$="{HOME}{23 CRSR DNs}
                             :REM*164
13Ø PL$(1)="STARFLEET ":PL$(2)=
    "KLINGON "               :REM*238
132 PRINT"{CRSR UP}{COMD 8}NUMB
    ER OF PLAYERS? [1-2]{2 SPAC ►
```

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Circle 35 on Reader Service card.

PHASER PHIRE

```
    Es}{CTRL 2}";          :REM*188
134 GETA$:NP=VAL(A$):IFNP<1ORNP
    >2THEN134              :REM*44
136 PL$="AND":IFNP=1THENPL$="OR
                           :REM*76
138 PRINTA$:PRINT"{COMD 8}{3 CR
    SR DNs}USE JOYSTICK PORT TW
    O "PL$"{2 SPACEs}* {CRSR UP
    }{LB.}{2 CRSR DNs}{CRSR LF}
    ={CRSR UP} {UP ARROW}{2 SPA
    CEs}KEYS               :REM*84
14Ø PRINT"{2 CRSR DNs}PRESS FIR
    E OR RETURN TO PLACE SPACES
    HIP {CRSR DN}AND FIRE PHASE
    RS                     :REM*98
142 PRINT"{4 CRSR DNs}{CTRL 8}P
    RESS ANY KEY TO START":POKE
    198,Ø:WAIT198,1        :REM*64
144 REM START              :REM*148
146 PRINT"{SHFT CLR}{COMD 8} {3
    8 SHFT Rs}             :REM*178
148 PRINT" {CTRL 9}{7 COMD @s}{
    CTRL Ø}{CTRL 8} P H A S E R
    {2 SPACEs}P H I R E {CTRL 9
    }{COMD 8}{7 COMD @s}
                           :REM*248
15Ø PRINT" {38 COMD Ys}:REM*214
152 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{COMD D}{17 COMD Is}{CO
    MD F}{COMD 3}{COMD H}{17 CO
    MD Is}{COMD F}"        :REM*1Ø4
154 PRINT"{COMD 7}{CRSR RT}{COM
    D K}S T A R F L E E T{CTRL
    9}{COMD K}{COMD 3}{COMD H}{
    CTRL Ø} K L I N G O N S {CT
    RL 9}{COMD K}"         :REM*218
156 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{COMD C}{CTRL Ø}{17 SHF
    T Fs}{SHFT G}{COMD 3}{SHFT
    H}{17 SHFT Fs}{CTRL 9}{COMD
     V}"                   :REM*142
158 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT} {CTRL Ø}{36 SPACEs}{CT
    RL 9}{COMD 3} "        :REM*84
16Ø PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{2 SPACEs}{15 COMD @s}{
    2 SPACEs}{COMD 3}{COMD H} {
    15 COMD @s}{2 SPACEs}"
                           :REM*8
162 FORI=ØTO9:PRINT"{CTRL 9}{CO
    MD 7}{CRSR RT} {COMD N}{CTR
    L Ø}{SHFT A}{SHFT B}{SHFT C
    }{SHFT A}{SHFT B}{SHFT C}{S
    HFT A}{SHFT B}{SHFT C}{SHFT
     A}{SHFT B}{SHFT C}{SHFT A}
    {SHFT B}{SHFT C}{CTRL 9}{CO
    MD J} {COMD 3}{COMD H}{COMD
     N}{CTRL Ø}{SHFT A}{SHFT B}
    {SHFT C}{SHFT A}{SHFT B}{SH
    FT C}{SHFT A}{SHFT B}{SHFT
    C}{SHFT A}{SHFT B}{SHFT C}{
    SHFT A}{SHFT B}{SHFT C}{COM
    D 3}{CTRL 9}{COMD J} ":NEXT
                           :REM*134
164 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{2 SPACEs}{15 COMD Ys}{
    2 SPACEs}{COMD 3}{COMD H} {
    15 COMD Ys}{2 SPACEs}"
                           :REM*198
166 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{2 SPACEs}STARSHIP{2 SP
    ACEs}-----{2 SPACEs}{COMD 3
    }{COMD H} CRUISER{3 SPACEs}
    -----{2 SPACEs}"       :REM*16Ø
168 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{2 SPACEs}DESTROYER ---
    -{3 SPACEs}{COMD 3}{COMD H}
     BOMBER{4 SPACEs}----{3 SPA
    CEs}"                  :REM*17Ø
17Ø PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{2 SPACEs}FIGHTER{3 SPA
    CEs}---{4 SPACEs}{COMD 3}{C
    OMD H} FIGHTER{3 SPACEs}---
    {4 SPACEs}"            :REM*84
172 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{2 SPACEs}SATELLITE --{
    5 SPACEs}{COMD 3}{COMD H} S
    ATELLITE --{5 SPACEs}"
                           :REM*86
174 PRINT"{CTRL 9}{COMD 7}{CRSR
     RT}{19 COMD Ps}{COMD 3}{SH
    FT L}{18 COMD Ps}{HOME}
                           :REM*64
176 REM SPACECRAFT PLACEMENT
                           :REM*232
178 PL=3-PL:M=1:K=5:POKE646,18-
    PL*4                   :REM*25Ø
18Ø FORI=1TO4              :REM*154
182 PRINTCL$"POSITION "+PL$(PL)
    +SS$(PL,K)             :REM*252
184 IFPL=1ORNP=2THENGOSUB32Ø:GO
    TO188                  :REM*98
186 X=INT(RND(1)*1Ø):Y=INT(RND(
    1)*1Ø):ONINT(RND(1)*2+1)GOS
    UB362,37Ø              :REM*56
188 K=K-1:NEXT:POKESP,Ø:REM*154
19Ø PRINTCL$"{CRSR DN} :REM*15Ø
192 FORI=ØTO9:PRINT"{CTRL 9}{CO
    MD 7}{CRSR RT} {COMD N}{CTR
    L Ø}{SHFT A}{SHFT B}{SHFT C
    }{SHFT A}{SHFT B}{SHFT C}{S
    HFT A}{SHFT B}{SHFT C}{SHFT
     A}{SHFT B}{SHFT C}{SHFT A}
    {SHFT B}{SHFT C}{CTRL 9}{CO
    MD J} {COMD 3}{COMD H}{COMD
     N}{CTRL Ø}{SHFT A}{SHFT B}
    {SHFT C}{SHFT A}{SHFT B}{SH
    FT C}{SHFT A}{SHFT B}{SHFT
    C}{SHFT A}{SHFT B}{SHFT C}{
    SHFT A}{SHFT B}{SHFT C}{CTR
    L 9}{COMD J} ":NEXT :REM*58
194 IFPL=1THEN178          :REM*44
196 PL=1:XC(1)=Ø:YC(1)=Ø:XC(2)=
    Ø:YC(2)=Ø:SP(2)=2ØØ:POKEVC+
    16,Ø                   :REM*252
198 REM PLAYER ATTACK      :REM*128
2ØØ PL=3-PL:M=2            :REM*192
2Ø2 PRINTCL$"{COMD 7}SCAN AND F
    IRE PHASERS            :REM*84
2Ø4 GOSUB32Ø:GOSUB28Ø:FORI=1TO2
    ØØØ:NEXT:POKESP,Ø:IFTH(PL)=
    14THEN41Ø              :REM*66
2Ø6 IFNP=2THEN2ØØ          :REM*124
2Ø8 REM COMPUTER ATTACK:REM*196
21Ø PL=3-PL:M=2            :REM*2Ø2
212 PRINTCL$"{COMD 3}SCANNING P
    HASERS                 :REM*16
214 IFSH(PL,2)=1THENIFTH(3-PL)>
    INT(RND(1)*2+4)THENX=SX:Y=S
    Y:TS=2:GOTO22Ø         :REM*232
216 FORI=3TO5:IFSH(PL,I)=ØORSH(
    PL,I)=ITHENNEXT:GOTO248
                           :REM*132
218 TS=I:X=XH(TS):Y=YH(TS):IFSH
    (PL,TS)>1THEN236       :REM*184
22Ø FORI=ØTO3:PR(I)=Ø:NEXT:GOSU
    B264                   :REM*146
222 RD=INT(RND(1)*4):IFPR(RD)=1
    THEN222                :REM*16Ø
224 XD(TS)=Ø:YD(TS)=Ø:PR(RD)=1
                           :REM*54
226 IFRD=ØTHENXD(TS)=+1:IFTX<TS
    ORXP=1THEN222          :REM*23Ø
228 IFRD=1THENXD(TS)=-1:IFTX<TS
    ORXM=1THEN222          :REM*156
23Ø IFRD=2THENYD(TS)=+1:IFTY<TS
    ORYP=1THEN222          :REM*126
232 IFRD=3THENYD(TS)=-1:IFTY<TS
    ORYM=1THEN222          :REM*52
234 X=X+XD(TS):Y=Y+YD(TS):GOTO2
    56                     :REM*194
236 TX=X+XD(TS):TY=Y+YD(TS)
                           :REM*54
238 IFTX<ØORTX>9ORTY<ØORTY>9THE
    N244                   :REM*1Ø
24Ø IFGC(PL,TX,TY)=1THEN244
                           :REM*17Ø
242 X=TX:Y=TY:GOTO256      :REM*8Ø
244 TX=SH(PL,TS)*-XD(TS):TY=SH(
    PL,TS)*-YD(TS):XD(TS)=-XD(T
    S):YD(TS)=-YD(TS)      :REM*8
246 X=X+TX:Y=Y+TY:GOTO256
                           :REM*168
248 X=INT(RND(1)*1Ø):Y=INT(RND(
    1)*1Ø)                 :REM*146
25Ø IFGC(PL,X,Y)=1OR(X=SXANDY=S
    Y)THEN248              :REM*192
252 GOSUB264:FORI=2TO5:IFSH(PL,
    I)THENNEXT             :REM*138
254 IFTX<IANDTY<ITHEN248
                           :REM*252
256 GOSUB38Ø               :REM*91
258 GOSUB28Ø:FORI=1TO2ØØØ:NEXT:
    IFTH(PL)=14THEN412     :REM*147
26Ø GOTO2ØØ                :REM*199
262 REM CHECK X/Y DIRECTION
                           :REM*167
264 XP=1:XM=1              :REM*113
266 IFX+XP<=9THENIFGC(PL,X+XP,Y
    )<>1THENXP=XP+1:GOTO266
                           :REM*37
268 IFX-XM=>ØTHENIFGC(PL,X-XM,Y
    )<>1THENXM=XM+1:GOTO268
                           :REM*2Ø1
27Ø TX=XP+XM-1:YP=1:YM=1
                           :REM*245
272 IFY+YP<=9THENIFGC(PL,X,Y+YP
    )<>1THENYP=YP+1:GOTO272
                           :REM*31
274 IFY-YM=>ØTHENIFGC(PL,X,Y-YM
    )<>1THENYM=YM+1:GOTO274
                           :REM*185
276 TY=YP+YM-1:RETURN      :REM*149
278 REM CHECK FOR HIT      :REM*159
28Ø FORI=1TO999:NEXT:PRINTCL$;:
    POKE646,18-PL*4        :REM*253
282 K=GC(PL,X,Y):GC(PL,X,Y)=1
```

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```
                              :REM*85
284 IFK=ØTHENPRINT"MISSED "+PL$
    (PL)+"TARGET":RETURN:REM*23
286 IFK=1ORK=9THENPRINT"PREVIOU
    S "+PL$(PL)+"TARGET":RETURN
                              :REM*139
288 PRINT"DIRECT HIT ON "+PL$(P
    L)+SS$(PL,K)              :REM*247
29Ø M=3:GOSUB398              :REM*19
292 SH(PL,K)=SH(PL,K)+1:TH(PL)=
    TH(PL)+1                  :REM*153
294 IFPL=1THENIFSH(PL,K)<>KTHEN
    XH(K)=X:YH(K)=Y:IFK=2THENSX
    =X:SY=Y                   :REM*3
296 PRINTLEFT$(D$,2Ø+5-K)TAB(CC
    (PL,6)+SH(PL,K))"{CTRL 9}*"
    :IFSH(PL,K)<>KTHEN316
                              :REM*99
298 M=4:GOSUB398:POKE646,7
                              :REM*149
3ØØ PRINTCL$:FORI=1TO5        :REM*49
3Ø2 PRINT"{CRSR UP}{3 CRSR RTs}
    "PL$(PL)SS$(PL,K)"{1Ø SPACE
    s}":FORJ=1TO3ØØ:NEXT
                              :REM*141
3Ø4 PRINT"{CRSR UP}{3 CRSR RTs}
    "PL$(PL)SS$(PL,K)" DESTROYE
    D":FORJ=1TO5ØØ:NEXT:NEXT
                              :REM*55
3Ø6 IFK>2THEN316              :REM*63
3Ø8 T=3-PL:POKE646,18-T*4
                              :REM*223
31Ø FORI=ØTO9:PRINTLEFT$(D$,9+I
    )TAB(CC(T,Ø))"{SHFT A}{SHFT
     B}{SHFT C}{SHFT A}{SHFT B}
    {SHFT C}{SHFT A}{SHFT B}{SH
    FT C}{SHFT A}{SHFT B}{SHFT
    C}{SHFT A}{SHFT B}{SHFT C}"
    :FORJ=ØTO9                :REM*163
312 IFGC(T,I,J)=1THENGC(T,I,J)=
    9                         :REM*169
314 NEXT:NEXT                 :REM*63
316 RETURN                    :REM*119
318 REM POSITION CURSER:REM*125
32Ø POKE198,Ø:X=XC(PL)/12:Y=YC(
    PL)/8                     :REM*1Ø1
322 POKEVC,XC(PL)+SP(PL):POKEVC
    +1,YC(PL)+114:POKEVC+16,-(S
    P(PL)<Ø):POKESP,1         :REM*113
324 GETA$:J$=MID$(STR$(PEEK(563
    2Ø)AND31),2):FORJ=1TO9STEP2
                              :REM*135
326 IFMID$("* {UP ARROW} {LB.}
    = "+CHR$(13),J,1)=A$ORMID$(
    "27233Ø2915",J,2)=J$THEN33Ø
                              :REM*167
328 NEXT:GOTO324              :REM*2Ø1
33Ø ONJ/2+.5GOTO332,334,336,338
    ,346                      :REM*41
332 X=X-1*-(X>Ø):GOTO34Ø
                              :REM*167
334 X=X+1*-(X<9):GOTO34Ø:REM*41
336 Y=Y-1*-(Y>Ø):GOTO34Ø
                              :REM*195
338 Y=Y+1*-(Y<9)              :REM*151
34Ø IFPL=2THENXX=-(X>4):SP(2)=2
    ØØ-XX*256:POKEVC+16,XX
                              :REM*45
342 XC(PL)=X*12:YC(PL)=Y*8
                              :REM*237
344 POKEVC,XC(PL)+SP(PL):POKEVC
    +1,YC(PL)+114:GOTO324
                              :REM*195
346 IFM=1ANDGC(PL,X,Y)THEN324
                              :REM*175
348 ONMGOTO352,38Ø            :REM*1Ø3
35Ø REM POSITION SHIP         :REM*119
352 POKE646,18-PL*4:PRINTCL$"WH
    ICH DIRECTION? HORIZ OR VER
    T                         :REM*21
354 GETA$:J$=MID$(STR$(PEEK(563 ►
```


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HOT SHOT PLUS vs SUPER GRAPHIX SR.	Super Graphics Sr.	Hot Shot PLUS
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POSSIBLE FONTS IN MEMORY	3	42
STANDARD BUFFER PROVIDED	8K	8K
BUFFER USER EXPANDABLE	NO	YES
MAXIMUM BUFFER EXPANSION	n/a	64K
BUILT IN ITALIC & BOLD FONTS	NO	YES
BUILT IN FONT EDITOR	NO	YES
FONT EDITOR PLUS4 COMPATIBLE	NO	YES
GRAPHICS ENHANCEMENT SELECTION	NO	YES
GEOS™ FONT ENHANCEMENT SELECTION	NO	YES
CPM SELECTION	NO	YES

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Circle 60 on Reader Service card.

```
    2Ø)AND31),2):FORJ=1TO3STEP2
                              :REM*141
356 IFMID$("{UP ARROW} = ",J,1)
    =A$ORMID$("2329",J,2)=J$THE
    N36Ø                      :REM*137
358 NEXT:GOTO354              :REM*169
36Ø ONJ/2+.5GOTO362,37Ø:REM*237
362 FORJ=ØTOK-1:IFX+K>1ØORGC(PL
    ,X+J,Y)THENI=I-1:K=K+1:RETU
    RN                        :REM*95
364 NEXT:T=X                  :REM*251
366 FORJ=ØTOK-1:ON(PL=1ORNP=2)+
    2GOSUB38Ø,384:GC(PL,X,Y)=K:
    X=X+1                     :REM*2Ø9
368 NEXT:X=T:RETURN           :REM*235
37Ø FORJ=ØTOK-1:IFY+K>1ØORGC(PL
    ,X,Y+J)THENI=I-1:K=K+1:RETU
    RN                        :REM*251
372 NEXT:T=Y                  :REM*67
374 FORJ=ØTOK-1:ON(PL=1ORNP=2)+
    2GOSUB38Ø,384:GC(PL,X,Y)=K:
    Y=Y+1                     :REM*91
376 NEXT:Y=T:RETURN           :REM*3
378 REM DISPLAY GRID MARKER
                              :REM*87
38Ø IF(XAND1)=ØTHENPRINTLEFT$(D
    $,Y+9)TAB(CC(PL,X))"{SHFT D
    }":GOTO384                :REM*47
382 PRINTLEFT$(D$,Y+9)TAB(CC(PL
    ,X))"{SHFT E}"            :REM*87
384 ONMGOSUB388,392:RETURN
                              :REM*23
386 REM SOUNDS                :REM*3
388 POKESR,24Ø:POKEWV,17:POKEHF
    ,5Ø:POKELF,35             :REM*53
39Ø FORL=1TO15:NEXT:POKEWV,16:R
    ETURN                     :REM*147
392 POKESR,24Ø:FORI=ØTO3Ø:POKEL
    F+24,15-I/2               :REM*23
394 POKELF,11Ø:POKEHF,5Ø:POKEWV
    ,17                       :REM*221
396 FORJ=1TO1Ø:NEXT:POKEWV,16:N
    EXT:GOTO4Ø4               :REM*83
398 POKE5428Ø,8:POKE54284,2Ø:PO
    KE54285,25Ø:POKEWV+7,129
                              :REM*57
4ØØ FORI=1TO16:POKE5328Ø,16-I*-
    (M=4)                     :REM*1
4Ø2 FORJ=1TO99:NEXT:POKELF+24,1
    6-I/2:NEXT:POKEWV+7,128
                              :REM*139
4Ø4 FORL=1TO15:POKELF+24,L:NEXT
                              :REM*155
4Ø6 FORL=ØTO23:POKELF+L,Ø:NEXT:
    RETURN                    :REM*41
4Ø8 REM:::::::::: END GAME :::
    :::::::::                 :REM*211
41Ø PRINTCL$"{COMD 7}{3 SPACEs}
    THE STARFLEET IS VICTORIOUS
    !":GOTO414                :REM*249
412 PRINTCL$"{COMD 3}{3 SPACEs}
    THE FEDERATION IS DESTROYED
    !                         :REM*25
414 FORI=1TO3ØØØ:NEXT:PRINTCL$"
    {CTRL 8}{6 SPACEs}ANOTHER B
    ATTLE?{2 SPACEs}[Y/N]
                              :REM*155
416 GETA$:IFA$<>"Y"ANDA$<>"N"TH
    EN416                     :REM*53
418 IFA$="Y"THENRUN           :REM*67
42Ø PRINTCL$"{COMD 8}{4 SPACEs}
    SPACE,{2 SPACEs}THE FINAL F
    RONTIER{HOME}{CTRL 1}":END
                              :REM*19
422 REM DATA                  :REM*245
424 FORI=1TO2:FORJ=ØTO9:READCC(
    I,J):NEXT:NEXT            :REM*1Ø7
426 FORI=1TO2:FORJ=2TO5:READSS$
    (I,J):NEXT:NEXT           :REM*2Ø9
428 FORA=ØTO63:READB:POKE14856+
    A,B:NEXT                  :REM*163
43Ø FORA=ØTO63:READB:POKE832+A,
    B:NEXT:RETURN             :REM*245
432 REM CURSOR POSITION       :REM*85
434 DATA Ø3,Ø5,Ø6,Ø8,Ø9,11,12,1
    4,15,17                   :REM*153
436 DATA 22,24,25,27,28,3Ø,31,3
    3,34,36                   :REM*153
438 REM::::::::: SPACESHIPS ::
    :::::::::                 :REM*37
44Ø DATA SATELLITE,FIGHTER,DEST
    ROYER,STARSHIP            :REM*255
442 DATA SATELLITE,FIGHTER,BOMB
    ER,CRUISER                :REM*135
444 REM CUSTOM CHARACTERS
                              :REM*19
446 DATA Ø,127,127,127,127,127,
    127,127                   :REM*191
448 DATA Ø,247,247,247,247,247,
    247,247                   :REM*1Ø3
45Ø DATA Ø,255,255,255,255,255,
    255,255                   :REM*61
452 DATA Ø,127,127,12Ø,12Ø,12Ø,
    127,127                   :REM*133
454 DATA Ø,255,255,143,143,143,
    255,255                   :REM*1Ø7
456 DATA Ø,Ø,Ø,Ø,Ø,255,255,255,Ø
                              :REM*51
458 DATA 15,15,15,15,255,255,25
    5,Ø                       :REM*155
46Ø DATA 63,63,63,63,63,63,63,Ø
                              :REM*191
462 REM SPRITE                :REM*185
464 DATA 63,224,Ø,96,48,Ø,192,2
    4                         :REM*73
466 DATA Ø,192,24,Ø,192,24,Ø,19
    2                         :REM*229
468 DATA 24,Ø,192,24,Ø,96,48,Ø
                              :REM*69
47Ø DATA 63,224,Ø,Ø,Ø,Ø,Ø,Ø
                              :REM*255
472 DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                              :REM*139
474 DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                              :REM*141
476 DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                              :REM*143
478 DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
                              :REM*145 ■
```


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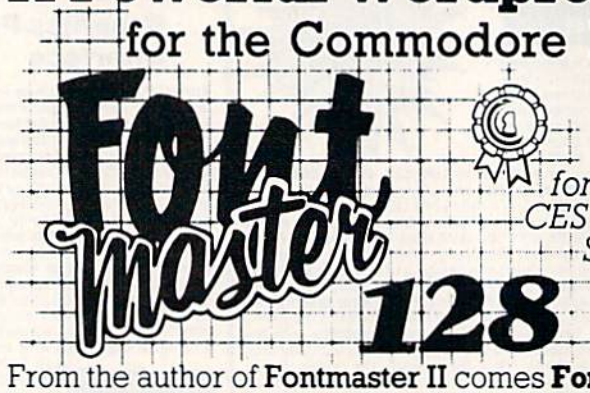

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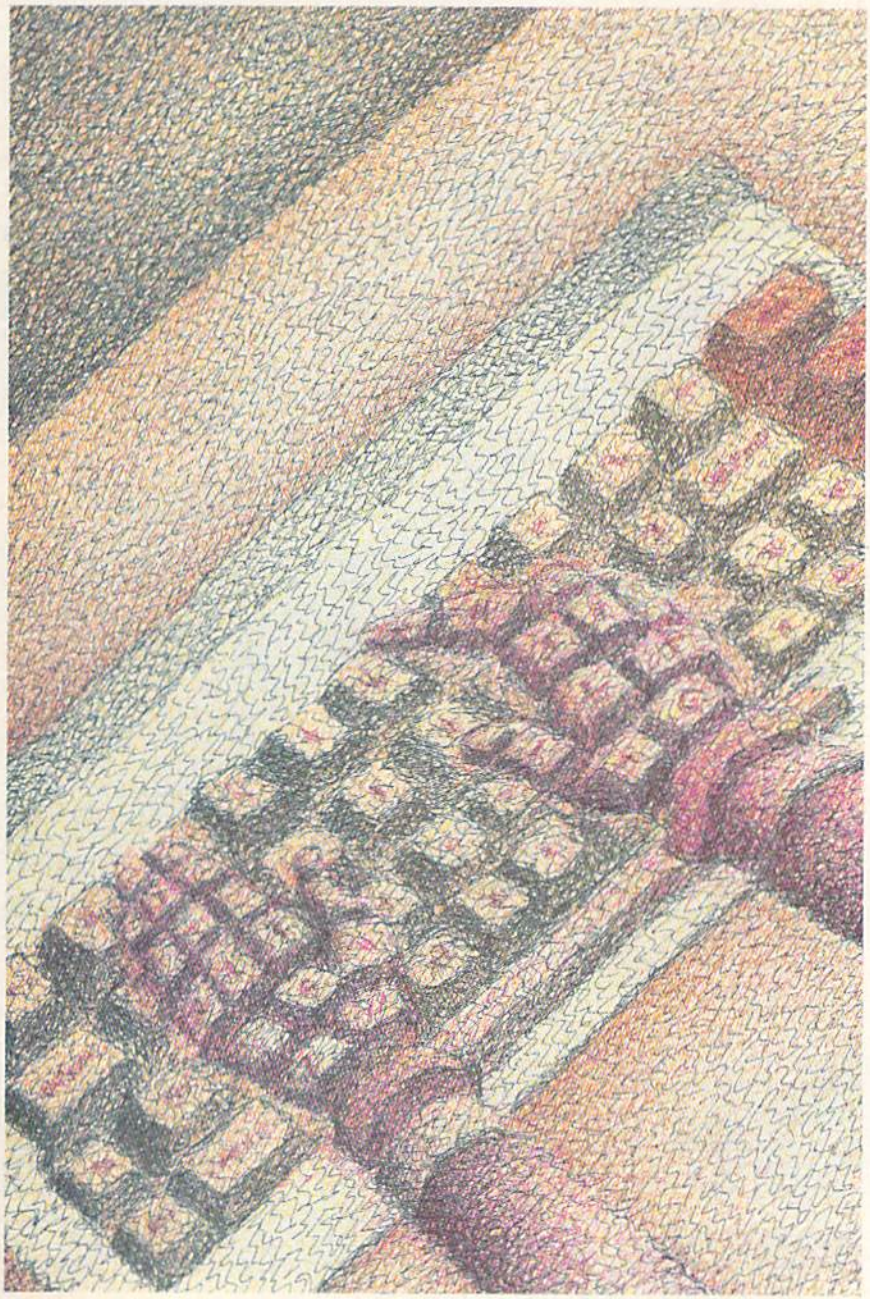
C-64 Function Keys Made Useful

One of the beauties of the C-128 is its preprogrammed function keys. Now you can have these on the C-64 as well.

By KENNY LAWSON



When I upgraded to a C-128 after two years of using a C-64, it was amazing how quickly I came to depend on the 128's preprogrammed function keys. Having single keypresses to input mundane commands like Load and List has really enhanced my creativity in programming, because they interfere very little with my train of thought. Why, I wondered, can't the C-64 have this same feature?

Well, the truth is that it can! My C-64 Function Keys program redefines the 64's function keys to behave much as the C-128's function keys in their default definitions.

When you type in C-64 Function Keys from Listing 1, be sure to save it before you run it, because the program erases itself from memory as it completes execution. During execution, first the Data statements are poked into memory, and then a list of the key functions is displayed on the screen.

The Functions

Here's a brief description of what each key does:

F1: toggles between the normal text screen and a previously defined hi-res bit-mapped screen.

F2: loads a file. First, it displays the word LOAD, followed by a double quotation mark. When you add the name of the file you want, a close quote and a ,8 (or ,8,1 for machine language programs), and then press return, the file loads as usual.

F3: calls up the directory of the disk in the disk drive, without disturbing any program in memory.

F4 and F8: cycle through the 16 available colors for the border and background of the screen display. I chose to implement these screen-color options, because, for one reason, the C-64 lacks a machine language monitor like the one F8 accesses on the C-128. Also, the ►

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ILLUSTRATED BY DAVID RIDLEY

64's hi-res screen is more movable than the 128's, so a function similar to the 128's F4 screen-clear might erase the wrong section of memory on the 64. Of course, it's also much easier to press individual keys than to keep typing POKE 53280,X and POKE 53281,X to find a pleasing color combination.

F5: saves a file with a procedure similar to that for the F2 load above. First, the word SAVE and a double quotation mark appear. Then you add the name you want the file to have, a closing quote and a ,8, and press return to save the file to disk.

F6: runs the program currently in the 64's memory.

F7: lists the program in memory.

Program Particulars

C-64 Function Keys resides in memory locations 52772–53242, leaving 3.5K free starting at 49152 and making the program compatible with many other wedge-type programs. Unfortunately, it isn't compatible with the DOS 5.1 DOS Wedge, because they occupy the same area, and C-64 Function Keys is difficult to relocate.

Pressing run-stop/restore disables the program by restoring the original IRQ vectors. However, a SYS 52800 will enable it again. On the C-128, SYS 52800 even works when you've gone to 128 mode with a reset and returned to 64 mode with a reset or a command.

The C-64 Function Keys program is meant to be used in Immediate mode. If you use it with a program that includes Get loops (especially loops that look for a function key press), you'd be wise to press run-stop/restore before running the other program.

I've identified the beginning of each function-key routine in the listing with a REM statement, so you can study how it works and alter it if you like. Ⓡ

Kenny Lawson uses computer-controlled equipment in his job as set-up man at the RCA-GE plant in Indianapolis.

Listing 1. C-64 Function Keys program.

```
10 REM C-64 FUNCTION KEYS
                          :REM*204
20 REM REDEFINE 64 KEYS SIMILIA
   R TO 128 KEYS          :REM*140
70 PRINT"{SHFT CLR}":FORX=52772
   TO53242:READA:POKEX,A:CT=CT+
   A:PRINT"{HOME}POKING..."X:NE
   XT                     :REM*110
80 IFCT<>57587THENPRINT"{SHFT C
   LR}{2 CRSR DNs}{3 CRSR RTs}E
   RROR SOMEWHERE IN DATA STATE
   MENTS!":STOP           :REM*74
90 PRINT"{SHFT CLR}{CTRL 9}C64
   FUNCTION KEYS REDEFINITION I
   NSTALLED{CRSR DN}":A$="{7 CR
   SR RTs}"               :REM*112
100 PRINT"SYS 52800 TO RE-ENABL
   E KEYS AT ANY TIME.{CRSR DN
   }":SYS52800            :REM*34
110 PRINTA$"F1=TEXT OR HI-RES S
   CREEN{CRSR DN}":PRINTA$"F2=
   LOAD A PROGRAM{CRSR DN}""
                          :REM*52
120 PRINTA$"F3=VIEW DISK DIRECT
   ORY{CRSR DN}":PRINTA$"F4=CH
   ANGE BORDER COLOR{CRSR DN}"
                          :REM*154
130 PRINTA$"F5=SAVE A PROGRAM{C
   RSR DN}":PRINTA$"F6=RUN CUR
   RENT PROGRAM{CRSR DN}"
                          :REM*14
140 PRINTA$"F7=LIST CURRENT PRO
   GRAM{CRSR DN}":PRINTA$"F8=C
   HANGE BACKGROUND COLOR{CRSR
    DN}":NEW              :REM*248
150 DATA 82,69,65,68,32,69,82,8
   2,79,82,33,0           :REM*190
160 DATA 32,66,76,79,67,75,83,3
   2,70,82,69,69,46,13,13,0
                          :REM*32
170 DATA 120,169,77,141,20,3,16
   9,206,141,21,3,88,96:REM*84
180 DATA 165,203,201,4,208,11,1
   73,141,2,208,3,76,154,206,7
   6,186,206              :REM*252
190 DATA 201,5,208,11,173,141,2
   ,208,3,76,68,207,76,208,206
                          :REM*24
200 DATA 201,6,208,11,173,141,2
   ,208,3,76,234,206,76,0,207
                          :REM*230
210 DATA 201,3,208,11,173,141,2
   ,208,3,76,22,207,76,44,207,
   76,49,234              :REM*78
220 REM DELAY LOOP         :REM*192
230 DATA 120,32,159,255,165,203
   ,201,64,208,247,88,96
                          :REM*28
240 REM F1 GRAPHIC         :REM*176
250 DATA 32,142,206,173,17,208,
   41,32,208,11,173,17,208
                          :REM*130
260 DATA 9,32,141,17,208,76,49,
   234,173,17,208,41,223,141,1
   7,208,76,49,234        :REM*51
270 REM F2 LOAD            :REM*229
280 DATA 32,142,206,169,241,160
   ,207,32,30,171,169,34,141,1
   19,2                   :REM*43
290 DATA 169,1,133,198,76,49,23
   4                      :REM*51
300 REM F4 BORDER          :REM*63
310 DATA 32,142,206,173,32,208,
   41,15,201,15,240,6,238,32,2
   08                     :REM*235
320 DATA 76,49,234,169,0,141,32
   ,208,76,49,234         :REM*189
330 REM F5 SAVE            :REM*59
340 DATA 32,142,206,169,236,160
   ,207,32,30,171,169,34,141,1
   19,2                   :REM*175
350 DATA 169,1,133,198,76,49,23
   4                      :REM*111
360 REM F6 RUN              :REM*5
370 DATA 32,142,206,169,232,160
   ,207,32,30,171,169,13,141,1
   19,2                   :REM*77
380 DATA 169,1,133,198,76,49,23
   4                      :REM*141
390 REM F7 LIST            :REM*69
400 DATA 32,142,206,169,246,160
   ,207,32,30,171,169,13,141,1
   19,2                   :REM*179
410 DATA 169,1,133,198,76,49,23
   4                      :REM*171
420 REM F8 BACKGROUND      :REM*163
430 DATA 32,142,206,173,33,208,
   41,15,240,6,238,33,208,76,4
   9,234                  :REM*39
440 DATA 169,0,141,33,208,76,49
   ,234                   :REM*95
450 REM F3 DIRECTORY       :REM*85
460 DATA 32,142,206,169,2,162,2
   30,160,207,32,189,255,169,1
   ,162,8,160,0           :REM*231
470 DATA 32,186,255,32,192,255,
   162,1,32,198,255,32,228,255
                          :REM*189
480 DATA 201,1,240,3,24,144,102
   ,32,228,255,32,228,255,32,2
   28,255                 :REM*225
490 DATA 32,228,255,170,32,228,
   255,32,205,189,169,32,32,21
   0,255,162,25           :REM*193
500 DATA 32,228,255,32,210,255,
   202,208,247,169,13,32,210,2
   55,32,228,255          :REM*205
510 DATA 32,228,255,32,228,255,
   32,228,255,170,32,228,255,3
   2,205,189              :REM*7
520 DATA 32,228,255,201,32,240,
   3,24,144,26,32,210,255
                          :REM*58
530 DATA 162,26,32,228,255,32,2
   10,255,202,208,247,169,13,3
   2,210,255              :REM*242
540 DATA 32,225,255,240,9,208,2
   01                     :REM*8
550 DATA 169,48,160,206,32,30,1
   71,32,204,255,169,1,32,195,
   255,76,49,234          :REM*216
560 DATA 169,36,160,206,32,30,1
   71,24,144,235          :REM*48
570 REM ASCII CODES        :REM*108
580 DATA 36,48,82,85,78,0,83,65
   ,86,69,0,76,79,65,68,0,76,7
   3,83,84,0              :REM*252
```

■

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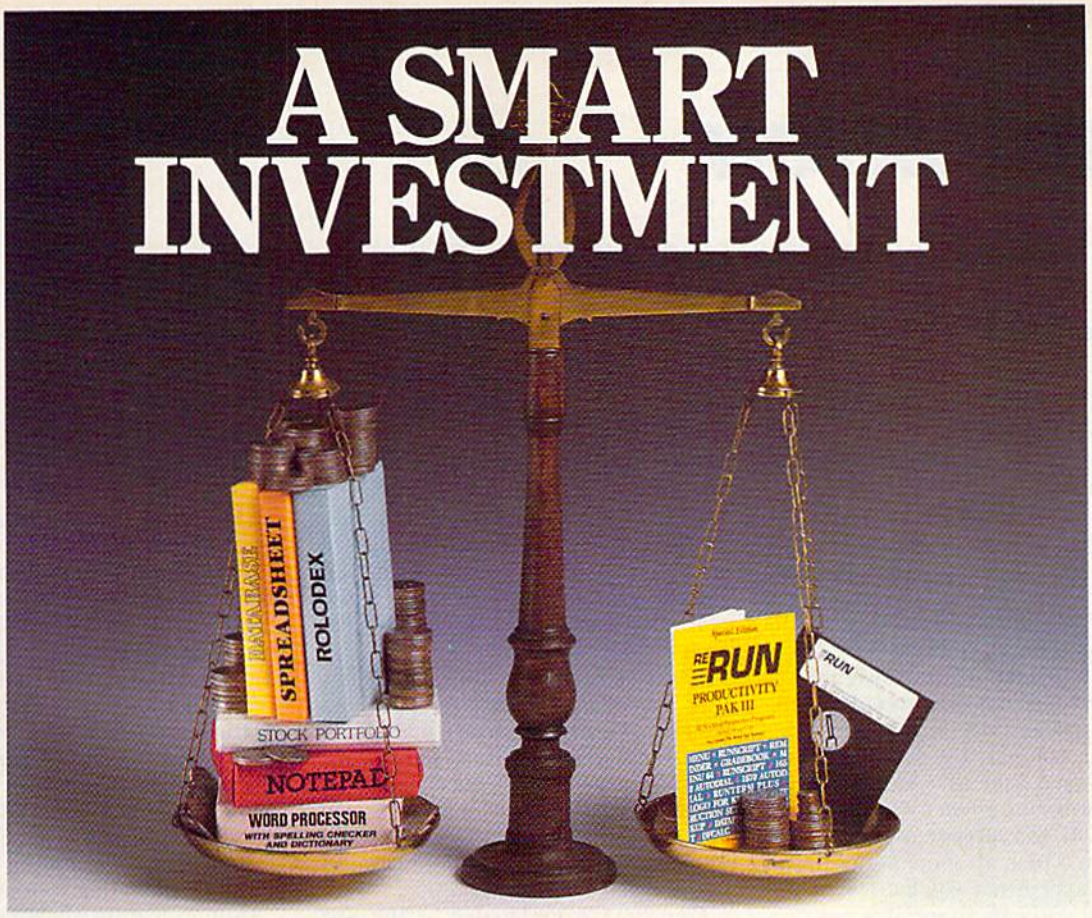

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GEOWATCH

Setting up a geoFile database is as easy as drawing a picture.

By MATTHEW STERN

The world of GEOS expanded significantly with the introduction of geoFile. Previously, GEOS was primarily a creative tool for generating text and graphics and combining the two. Now, you can also use GEOS to manage information, with the same easy point-and-click controls you use to create pictures and documents.

In this column, I'll describe how I recently used geoFile to store and analyze information when I was apartment hunting. If you already own geoFile, I hope you'll pick up some useful tips; if you don't yet own it, you'll discover how powerful and easy to use it is.

Creating a Database

Shopping for an apartment is no fun. It's bad enough chasing around town with circled classifieds and spending afternoons getting lost, but when I get home, I can never remember which place offered a free microwave for signing a six-month lease and which one had the day-glo green wallpaper.

I got geoFile just as I was about to start apartment hunting again. It was the perfect opportunity to put the program through its paces and see how much it would help me in my search.

Setting up a geoFile database is as easy as drawing a picture. In fact, that's exactly what you do. Each record appears on an 8½ × 11-inch form, and you design your database by drawing fields as boxes on the form. The screen scrolls as you move around the form.

The number of fields in a form is unlimited—you can create as many as will fit in the space. Unlike most databases, geoFile fields can occupy more than one line, and they can go all the way across the page.

GeoFile fields are of three types: text, for storing numbers and characters; number, for storing numbers; and comment, for adding titles. The text itself can be plain, bold or italic, but there's only one font—BSW (Berkeley Softworks' own font).

A field can be easily copied, moved and resized, using the two small boxes in the corners. To change the size, you drag the lower-right corner to a new location. To move the field, you click once on the shaded box in the upper-left corner, then move the field wherever you want. A double-click on the same shaded box copies the field.

Copying fields is a time-saving feature. For example, for my apartment database, I created a standard text field with boldface titles and plain data. Then, rather than set these attributes every time I made a new field, I kept making copies of the first one. If I wanted to make the new field larger, I just dragged the resizing box.

One field is designated as the sort field. When you sort the file, all the records are sorted by the field you select. I chose City as my sort field.

GeoFile lets you add something you never could achieve in any previous Commodore database—pictures. When you paste a piece of a geoPaint graphic into a comment field, it appears in all your records. I used this feature to include a map of Orange County, where I live, in all my records. Then, when a leasing agent told me, "We're located in Irvine near the 405 freeway," I could see exactly where it was.

Entering Data

Entering data into geoFile is just like typing text with a word processor. If your field has more than one line, words wrap at the end of each. All you have to do is hit return when you're done. With the BSW font, you can fit a lot of information in a small space. GeoFile accepts up to 256 characters in a field.

I don't like taking my hands off the keyboard as I type, so I like the fact that geoFile has keyboard equivalents for most commands. For instance, by pressing the Commodore key and a cursor key, I could move to another field in the key's direction, and by pressing Commodore/N, I could bring up a new record.

If you use only the visible geoFile workspace for your fields, you won't have to touch your mouse during data entry. If you want to use the entire form, you move around in one of three ways:

1. Move the mouse, and the form scrolls in that direction.

2. Use the position indicator. This outlined box with the black tab shows where you are in the form. By moving the small box inside the indicator, you can move immediately to another part of the form.

3. The easiest way to move is by using the form-preview display. Select the Preview option from the File menu to display a reduced view of your form on the right side of the screen. The fields will appear as outlined boxes. Click the preview area at your desired destination, and you'll go to that spot in the form.

Another feature of geoFile is pasting in text scraps—text that's been cut or copied. For example, I copied the city name Costa Mesa from one record and pasted it into another, and I pasted in notes I wrote with geoWrite.

Searching the Data

To look up information in your database, you select the Create Search Form option in the Form menu. This brings up a blank record form exactly like the one into which you entered your data. GeoFile recognizes the usual search conditions and wild cards: less than (<), greater than (>), equal to (=). It also uses and (&) and or (%) for searching multiple conditions.

During my apartment search, I wanted to locate records for one-bedroom apartments in Santa Ana. In the search form's Bedroom field, I entered = 1, and in the City field, I entered =San*. The asterisk (*) matches all the characters after the ones typed, so, if I'd had records for apartments in Santa Monica and San Clemente, geoFile would have found them also.

To execute a search after inputting the parameters, you click on one of the two "face" icons at the top of the screen. They take you either ahead or back to the next record that matches your specifications.

Modifying the Database

GeoFile lets you change your database after you create it—a flexibility I found very useful. After looking at a

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number of apartments, I wanted to add a Consider field for places I was seriously interested in renting. To add the field, I just went into Form Editing mode and drew it in.

GeoFile has a search-and-replace feature similar to that of a word processor. For example, I wanted to consider only places that cost $600 or less per month (a steal in Orange County!). I set up a search form to locate records for apartments with rents less than or equal to 600.00, and inserted Yes in the Consider field. Then I selected the In All Forms, Replace option in the Form menu.

Another powerful geoFile feature is its provision for creating multiple layouts, so you can generate alternative views of your data. The information is the same, but you change the field configuration.

PRINTING

Once I located the records for the apartments I wanted to consider, I printed out the form for each. With geoFile, what you see on the screen is what gets printed, including any pictures. Forms can be printed one or more per sheet, with the number set by clicking a plus or minus icon. In addition to standard paper, geoFile will print out on labels and index cards.

I printed my forms in full-page format, so they'd fit in a three-ring binder, and the blank space left on each sheet was handy for sketching floor plans and jotting down notes.

One of geoFile's most powerful features, and one that I haven't touched on here, is its ability to exchange information with other GEOS programs. In my next column, I'll show you how to send data between geoFile and Berkeley's new spreadsheet, geoCalc. ■

The geoWatch column addresses readers who use GEOS, Berkeley Softworks' alternative operating system for the C-64 and the C-128. Send your questions and comments to: Matthew Stern, geoWatch, c/o 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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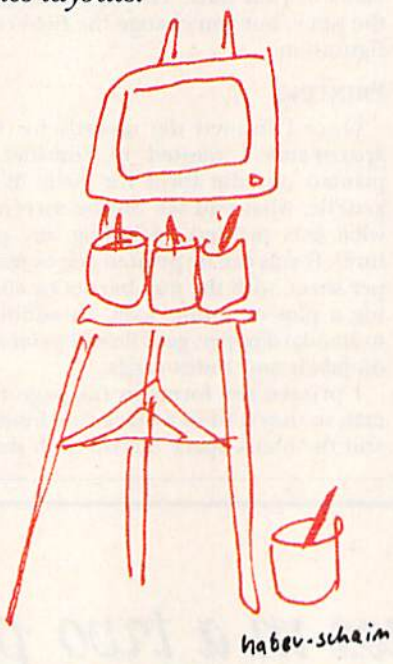
EASY APPLICATIONS

SCREEN GENIE: Let your computer calculate the screen and color addresses for your character-graphics layouts.

By JOHN RYAN



You've just finished writing the last line of your all-time greatest graphics game, and it's time to add some character graphics. Let's see... The playfield begins at locations 1104 and 1134. How many rows apart is that? One, two, three... Wait. Hmmm. That's not right... Maybe it's one, two, three, four across.

Sound familiar? Well, the cure is Screen Genie, a utility I wrote to eliminate the tedious pencil and graph paper calculations that are traditionally needed to determine screen and color addresses for graphics layouts. It'll be especially valuable to those who want to use X and Y coordinates for "homing" movable characters to a desired location.

Screen Genie superimposes a solid cursor on your screen display, then reports information about the graphics character under the cursor, including its screen-RAM and color-RAM addresses and its row and column positions. Screen Genie won't disrupt your display in any way, and you can move the cursor wherever you want.

UNCORKING THE BOTTLE

Load and run Screen Genie to install it in memory, where it'll be ready when you need it. It can be activated from Direct mode by typing in the SYS 49152 command, or from Program mode by including the SYS 49152 command in your program listing. Either way, an information line containing the following labels will appear at the top of your screen display:

SCN= CLR= X= Y= CHAR=

SCN= is the current screen-RAM address of the cursor, and CLR= is its corresponding color-RAM address; X= and Y= are the cursor's row and column positions, ranging from 0 to 24 and 0 to 39, respectively; and CHAR= is the screen-display code of the graphics character under the cursor.

The colors in the information line will be the same as the colors in your screen display, and if your display is done in reverse characters, the characters in the information line will be in reverse, also.

Only the cursor and return keys are active while Screen Genie is in use. As you move the cursor around with the cursor keys, the information line will be updated continually. Keep a sheet of paper and a pencil handy, so you can copy down the addresses you need for your screen layout.

To exit Screen Genie and return to the mode you were in before, tap the return key. The screen will revert to its former state, and then, if Screen Genie was activated from Program mode, execution will continue with the statement following the SYS command. R

John Ryan is an air traffic controller and is in charge of computer-based instruction for his section. He's also an advanced machine language programmer.

Listing 1. Screen Genie program.

```
1Ø X=Ø:T=Ø:AD=49152      :REM*188
2Ø READ A:IF A=-1 THEN 4Ø
                         :REM*78
3Ø POKE AD+X,A:X=X+1:T=T+A:GOTO
   2Ø                    :REM*17Ø
4Ø IF T<>76588THEN PRINT"ERROR
   IN DATA STATEMENTS"   :REM*2
5Ø END                   :REM*52
1ØØ DATA 165,2Ø6,141,54,3,173,1
    35,2,141,55,3,32,94,193,32,
    82,193,32,187        :REM*154
11Ø DATA 193,32,238,193,32,175,
    192,169,Ø,141,169,2,141,17Ø
    ,2,141,168,2,32      :REM*116
12Ø DATA 228,255,24Ø,251,2Ø1,17
    ,2Ø8,3,76,151,192,2Ø1,29,2Ø
    8,3,76,1Ø5,192       :REM*232
13Ø DATA 2Ø1,145,2Ø8,3,76,129,1
    92,2Ø1,157,24Ø,8,2Ø1,13,2Ø8
    ,222,32,124,193      :REM*216
14Ø DATA 96,173,17Ø,2,2Ø1,Ø,24Ø
    ,211,2Ø6,17Ø,2,32,188,192,1
    69,1,141,167,2       :REM*56
15Ø DATA 32,28,194,32,175,192,3
    2,2Ø1,192,76,37,192,173,17Ø
    ,2,2Ø1,39,24Ø        :REM*94
16Ø DATA 246,238,17Ø,2,32,188,1
    92,169,1,141,167,2,32,253,1
    93,76,96,192,173     :REM*5Ø
17Ø DATA 169,2,24Ø,224,2Ø6,169,
    2,32,188,192,169,4Ø,141,167
    ,2,32,28,194,76      :REM*2Ø2
18Ø DATA 96,192,173,169,2,2Ø1,2
    4,24Ø,2ØØ,238,169,2,32,188,
    192,169,4Ø,141       :REM*172
19Ø DATA 167,2,32,253,193,76,9C ►
```

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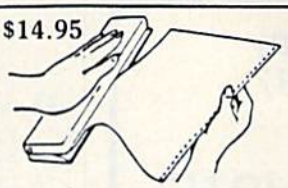

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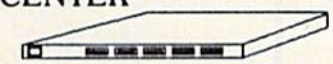

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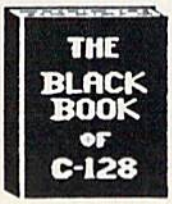

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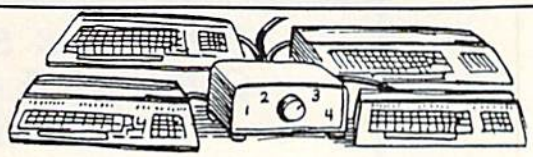

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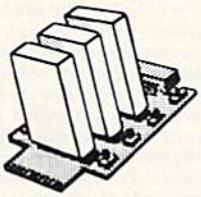

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SCREEN GENIE

```
    ,192,16Ø,Ø,177,251,141,52,3
    ,177,253,141,53     :REM*122
2ØØ DATA 3,96,16Ø,Ø,173,52,3,14
    5,251,173,53,3,145,253,96,1
    6Ø,Ø,169,16Ø,145     :REM*48
21Ø DATA 251,173,134,2,145,253,
    16Ø,5,32,75,193,166,251,165
    ,252,32,2Ø5,189      :REM*1Ø8
22Ø DATA 16Ø,14,32,75,193,166,2
    53,165,254,32,2Ø5,189,16Ø,2
    3,32,75,193,173      :REM*52
23Ø DATA 169,2,2Ø1,1Ø,176,13,16
    9,32,32,21Ø,255,32,21Ø,255,
    16Ø,23,32,75,193     :REM*74
24Ø DATA 174,169,2,169,Ø,32,2Ø5
    ,189,16Ø,28,32,75,193,173,1
    7Ø,2,2Ø1,1Ø,176      :REM*6
25Ø DATA 13,169,32,32,21Ø,255,3
    2,21Ø,255,16Ø,28,32,75,193,
    174,17Ø,2,169,Ø      :REM*23Ø
26Ø DATA 32,2Ø5,189,16Ø,36,32,7
    5,193,169,32,32,21Ø,255,32,
    21Ø,255,32,21Ø       :REM*79
27Ø DATA 255,16Ø,36,32,75,193,1
    74,52,3,169,Ø,76,2Ø5,189,16
    2,Ø,24,32,24Ø        :REM*239
28Ø DATA 255,96,24,162,Ø,16Ø,Ø,
    32,24Ø,255,32,255,233,96,56
    ,32,24Ø,255,142      :REM*127
29Ø DATA 173,2,14Ø,174,2,162,Ø,
    189,Ø,4,157,8Ø,195,189,Ø,21
    6,157,12Ø,195        :REM*195
3ØØ DATA 232,224,4Ø,2Ø8,239,96,
    32,188,192,162,Ø,189,8Ø,195
    ,157,Ø,4,189,12Ø     :REM*199
31Ø DATA 195,157,Ø,216,232,224,
    4Ø,2Ø8,239,24,174,173,2,172
    ,174,2,32,24Ø        :REM*191
32Ø DATA 255,173,134,2,72,173,5
    5,3,141,134,2,173,54,3,32,2
    1Ø,255,24,174        :REM*125
33Ø DATA 173,2,172,174,2,32,24Ø
    ,255,1Ø4,141,134,2,96,169,Ø
    ,141,171,2,141       :REM*213
34Ø DATA 172,2,172,171,2,185,81
    ,194,168,162,Ø,24,32,24Ø,25
    5,238,171,2,172      :REM*47
35Ø DATA 172,2,185,59,194,24Ø,1
    8,2Ø1,255,24Ø,7,32,21Ø,255,
    2ØØ,76,214,193       :REM*111
36Ø DATA 2ØØ,14Ø,172,2,76,195,1
    93,96,169,Ø,133,251,133,253
    ,169,4,133,252       :REM*69
37Ø DATA 169,216,133,254,96,24,
    165,251,1Ø9,167,2,133,251,1
    65,252,1Ø9,168,2     :REM*61
38Ø DATA 133,252,24,165,253,1Ø9
    ,167,2,133,253,165,254,1Ø9,
    168,2,133,254,96     :REM*153
39Ø DATA 56,165,251,237,167,2,1
    33,251,165,252,237,168,2,13
    3,252,56,165,253     :REM*223
4ØØ DATA 237,167,2,133,253,165,
    254,237,168,2,133,254,96,83
    ,67,78,61,255,67     :REM*55
41Ø DATA 76,82,61,255,88,61,255
    ,89,61,255,67,72,65,82,61,Ø
    ,1,1Ø,21,26,31       :REM*251
42Ø DATA 145,-1          :REM*251■
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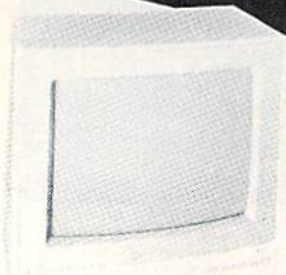

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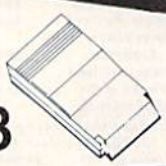

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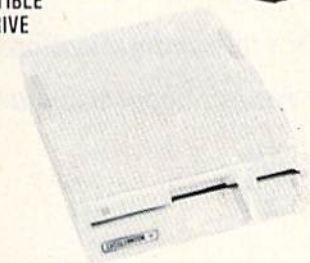

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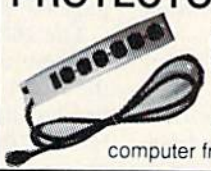

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TELECOMPUTING WORKSHOP

Every month, RUN*'s telecommunications column answers questions from our readers about using a Commodore computer for telecommunications.*

By DAVID BRADLEY

LAST MONTH, when I told you about the Lynx, Arc and Library file-combining programs, I forgot to give credit to the people who create and maintain them. Lynx is a shareware program written by Will Corley, 7551 Twilight Drive, Sacramento, CA 95822. If you use Lynx, send $5 to Will and support the shareware concept. The latest version of his program that I've seen is Lynx XI.

Arc, written by Chris Smeets, is also a shareware program. I don't have an address yet for sending contributions, so watch this column for more information. The latest version of Arc I know of is 230. Library was written by David Bold and Greg Pfountz. It's in the public domain, and the latest version is 9.

George S. Cruppi of Petaluma, California, has written to say that new software for the Volks 6480 modem—CommTerm 64/128, by Scott Garnick—is available for $6 from Anchor Automation, 20675 Bahama St., Chatsworth, CA 91311.

Dave Grabowski wrote to correct the answer I gave Kevin Brown in the May 1987 issue. The Avatex 1200 modem isn't fully Hayes compatible, but it's enough like the Hayes that it should work with the Hayes/ProModem/1670 option of the C-Net BBS.

I'm now a member of the PeopleLink (PLink) online network. My user name is DAVBRADLEY.

QuantumLink users who'd like to talk with me online should check the schedule of classes in the Learning Center. In late May, I began conducting a class on telecommunications one night a week. My name during the classes is QTUTOR db. You're welcome to drop by and participate.

Now to this month's questions.

Q *I recently purchased a VicModem 1600 and its TeleTerm 64 terminal software. So far, I haven't been able to get the modem to work at all. I load the terminal program, and when the screen says TERMINAL READY, I dial CompuServe's number and listen for the high-pitched tone. When I hear it, I disconnect my handset and plug the cord into the modem. I wait and wait, but the red light never comes on and no data appears.*

I've tried other modems with my computer, and they work fine. I don't have anything plugged into the cartridge port or any other strange devices connected to my computer.

—JAKE STACK
BATAVIA, NY

A It sounds as though you have a defective modem. Try it on one or two other computers. If it still won't work, return it to the dealer.

Q *I have a C-128, a Commodore 1670 modem and the Common Sense terminal program. I've been using this system in 64 mode to download 128-mode BBS programs via the Xmodem transfer protocol. Sometimes when I attempt to run a program I've downloaded, all I get is a Break message on the screen, followed by something like this:*

PC SR AC XR YR SP
FBD9D 32 00 00 FF F6

What's going on?

—BILL ROBERTS
REDMOND, WA

A What you describe usually happens when you try to run a program that needs to be loaded and run by another program. However, to be sure Common Sense isn't scrambling your files, get another terminal program that supports Xmodem and try again to download one of the files you've had difficulty with. A good shareware terminal program that's compatible with the 1670 and the C-64 (as well as the C-128 in 128 mode) and supports Xmodem protocol is MultiTerm128 3.6 by Steve Thomas. It's available in the public domain.

Q *I have a problem with my Plus/4 that's giving me fits. Neither of my modems—a Commodore 1660 and a 1670—will work with it. My Higgyterm + 4 terminal program loads and runs, but the moment I touch any key the program locks up. I took the computer to be fixed, but was told there's nothing wrong with it.*

—LEON ANDERSON
AKRON, OH

A I have a Plus/4 that I use all the time with a 1670 modem and Higgyterm. For the 1670 to work with a Plus/4, you must flip switch 1 on the back of the modem to the *up* position. This is mentioned only briefly in the manual—in the first two sentences on page 69. Are you aware of this?

The 1660 is a different matter. Some of these modems will work as is with the Plus/4; others (those in white boxes) need a slight modification. When I attended the weekly Plus/4 discussion group on PLink, I was told you should turn the 1660 upside down and look for a small speck of solder, then scrape away part of it to sever the connection. Then the modem should work fine with the Plus/4.

Q *I need a terminal program to use with my C-64 and Volks 6470 modem in order to access the GEnie online network. GEnie requires various control codes to activate online functions, and the terminal program I'm using now (HomePak's HomeTerm) can send only control/B. I'd especially like to have control/S and control/Q as well.*

The program I'm looking for must also have a medium-sized buffer and user-defined macro capability. It must do non-Xmodem uploads, Xmodem transfers and automatic PETSCII to ASCII translation and support both half- and full-duplex and 1200 baud. Some disk-operation commands (directory, save, scratch, and so forth) would be nice, too.

If a program exists that has all these features, but it isn't 6470-compatible, I'd be more than willing to change modems. I may do so anyway, since I'm dissatisfied with the 6470. Do you know where I can get such a program?

—KEN PEHL
FREDERICKSBURG, TX

A CommTerm III + should do the trick. It's in the public domain and compatible with the Volks 6470 and 6240, the Commodore 1650 and 1660,

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the Westridge, the Hayes, the Mitey Mo and the HesModem.

Q *I just read in your April 1987 column that you run PunterNet node 13. I joined PunterNet on the Washington, DC, node (63), and my brother belongs to node 62 in Cleveland, Ohio.*

I'd like to know more about this network. How did it start? Where are all the nodes? How can I send mail to someone on another node? What are the mechanics of the message transfer? What are the expenses involved in this kind of operation? When I call my node, the line is usually busy. Does this mean that only one person can access the node at a time?

—JOYCE KONIGMACHER
SILVER SPRING, MD

A PunterNet started about two years ago, when Steve Punter decided to add networking capabilities to his BBS program. There are nodes all over Canada and the United States, and the number is increasing. At this writing, there are 56 active nodes—25 in Canada, 31 in the U.S. To get a listing of the PunterNet nodes, access the bulletin section and read the Nodes bulletin.

Sending a message to someone on another node is just like sending a message to someone on your node, with one exception: You must include the node number and a slash before the name of the recipient. For instance, if you want to send a message to Blarney Stone, a user on node 2, you enter E and press return at the Command> prompt, then input the text of the message. When the BBS asks you who the message is for, you enter 2/BLARNEY STONE. After you send the message and log off the BBS, the message goes to the Outfile, and late at night is forwarded to node 2.

When one node calls another, a special set of codes is exchanged, and then the file of messages is sent, using Punter protocol. As soon as the node sending the messages is finished, it hangs up, and the receiving node deciphers the contents of the files and posts the messages for the recipients.

As far as expenses go, running a PunterNet node costs the same as running any BBS: There are electricity bills, repair bills and telephone bills. Of course, the phone bills will be higher if your node calls other nodes long-distance.

Users who want to use PunterNet must open an account with their local SYSOP. Then, each time they send a long-distance message, an appropriate amount will be subtracted from their balance.

All BBSs that run on 64s and 128s are one-user systems. If you get a busy signal, try later, or crank up your autodialing program and wait.

For more information about PunterNet, write to Steve Punter at 4342 Forest Fire Lane, Mississauga, Ontario, Canada L4W 3P4, or call his BBS (evenings only!) at 416-896-1446.

Q *While communicating with other computers through my Commodore 1650 modem, about 50 percent of the characters I receive are incorrect. Some are added; others are substituted for correct ones. No incorrect characters are sent by my computer.*

The modem used to work fine with my C-64, and it worked well recently with another computer. My 64, including the user port, has been pronounced healthy by a repairman. What are your recommendations?

—THOMAS MYLER
ARLINGTON, TX

A Since you've tried the modem with another computer (I assume on another phone line) and it worked fine, the modem isn't the problem. Perhaps you have a noisy phone line. To test this theory, try another modem with your computer on your phone line. If you get incorrect characters, call your phone company and say you're having trouble hearing others on the line. ■

We invite you to submit your questions or comments to:

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RESOURCE CENTER

Telecommunications in education, from elementary school through college, is no longer just a dream.

By MARGARET MORABITO

Online technology is opening up new educational opportunities for students who can't physically attend a school or reach a teacher because of work responsibility, distance, disability, cost or timing. Students can log onto a network any time of day or night and access libraries of research material, as well as communicate with teachers from all levels of education.

I started investigating how educators were using telecommunications several years ago and have followed their gradual acceptance of this medium. The application of telecommunications to education has gone through an experimental stage, and the technology is now being used productively on the local, state and national levels. The electronic schoolhouse, from elementary through graduate school, is no longer just a dream of a few visionaries; it's a proven concept for teaching, research and student interaction.

Teaching Networks

Telecommunications can be used for direct teaching, and several national networks have been working on development in this area. They're discovering a number of approaches to using the online medium.

Perhaps the best-known of these teaching networks is the Electronic University (see the Resource Center, *RUN*, March 1987). The Electronic University's students are working adults who are studying for college degrees offered by various educational institutions that use the network to deliver courses. EUN uses its telecommunications network as a communication vehicle. Students get their assignments through electronic mail and do their studying offline, then mail the assignments and any questions they may have to their teachers electronically. The study materials are traditional textbooks and workbooks.

Another teaching network, Control Data's PLATO, focuses on training and education in business and industry. PLATO's approach to teaching is totally different from EUN's. Computer-based educational programs have been specifically developed for the network. Students log onto the network whenever it's convenient and proceed at their own pace through the course lessons. Support personnel are available for answering questions through electronic mail, and students can post questions on public message boards.

Nova University, in Fort Lauderdale, Florida, runs another teaching network from its campus. Among other things, this network offers doctoral degree programs to professional educators. Students use the network primarily for electronic correspondence with their professors; traditional hard-copy study materials remain the basis of their work. They also communicate through message conferencing and real-time conferencing, although the latter isn't widely used.

Educational online networks aren't aimed just at college and professional students. I started the Tutoring Center on QuantumLink last year to help secondary and elementary school students with their schoolwork. One of the unique features of this online school is the live classroom sessions in which students receive lessons and one-on-one tutoring from teachers in real time. Many students come to the Center only when they need extra help with their schoolwork; others attend classes regularly to pick up new skills.

Tutoring Center teachers meet with students for hour-long classes and provide supplemental study materials for students to download and use at home. The Tutoring Center offers message boards, databases for text files and computer programs, and online computer-based quizzes.

My most recent project with online education is the Q-Link Community College (QCC), which just opened this past summer. It grew out of a demand from Tutoring Center students for structured courses. The courses last eight weeks and are taught in live conference rooms. Some of them require students to use a hard-copy textbook; others provide all course materials online for students to download. The college is based on the model of a real college, with courses carrying credits and transcripts kept for all students.

These networks are just a sampling of what's going on in the national arena. There are also dozens of local educational BBSs being set up inside schools to supplement normal instruction. I reported on one of these in my August 1986 Resource Center column. Now I'm compiling a list of educational BBSs, and you can help. If you're running an educational BBS, please send me a letter detailing your activities.

Research Opportunities

The most widespread application of telecommunications to education is probably bibliographic research. Students can log onto a network to access millions of articles and other sources that can be used for school research projects. Gone are the days when you were limited to your small high school and town libraries. If your school has just one computer with a modem, its students can access some of the largest libraries in the world.

Teachers are discovering that online libraries encourage involvement in the research process. Students like to work with computers, plus they can get many more citations much faster this way than from manually searching through hard-copy indexes. They can also find references from journals and reports that have just been released, rather than having to rely on printed sources that are often outdated. The speed and currency of electronic research is freeing up time for students to be more analytical and imaginative in their writing.

Several networks are tailoring their materials and fees to schools. BRS, for example, offers two discount educational packages. BRS/Instructor is available at special low rates to schools (elementary through graduate school) that want to teach students how to telecommunicate and perform online data searches. It provides access to 70 databases that cover subjects such as education, business, finance, science, medicine, the social sciences, the hu-

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manities and general reference.

The second package, BRS/Educator, is offered to professional educators, such as teachers, school librarians, administrators and media center coordinators, in the K–12 grade range. It provides access to about 100 databases, with 12 specifically in the field of education.

DIALOG is also cultivating the educational market with its bibliographic research capabilities. DIALOG's Classroom Instruction Program (CIP) gives schools access to 220 databases at a discount rate of $15 per hour. Included in the package are a lab workbook and reference manual, a list of accessible databases, copies of documentation for the network's online training, up to ten passwords and two free training sessions for faculty members.

Classmate is an extension of CIP that's specifically designed for elementary and high school students. It offers schools access to 50 of DIALOG's databases through the Knowledge Index, an easier-to-use version of DIALOG. The Knowledge Index can be accessed 24 hours a day for $15 per hour.

DIALOG has created curriculum materials for this package that are a big attraction to schools. All Classmate users get a student workbook that teaches how to log onto the Knowledge Index and how to use various search techniques. Other materials accompanying Classmate include a user's manual, a demonstration disk to run offline and a subscription to the Knowledge Index newsletter.

Recently, Addison-Wesley came out with an online research package aimed specifically at schools. Called Einstein, it's composed of 90 online databases from six database services: BRS, DataSolve, DataTimes, DIALOG, Wilsonline and VU/TEXT. The Einstein databases are tailored to both faculty and student research and are searched with an easy-to-use procedure that's uniform among all of Einstein's services. A user's manual, a database directory and passwords come with the subscription. This system charges by the search, rather than by the minute.

I've just touched on the educational opportunities currently available online. There are literally dozens of other networks and services, on both the national and local level, that you can tap into if you're a student, teacher, administrator or interested parent. The whole area of communication among students and professionals is exciting.

If you'd like more information about the services I've mentioned in this article, see Table 1 for a list of their names and addresses. ■

Table 1. A sampling of educational online services.

BRS Information Technologies
1200 Route 7
Latham, NY 12110

DIALOG Information Retrieval Service
3460 Hillview Ave.
Palo Alto, CA 94304

Einstein, The Information Access Tool
Addison-Wesley Publishing Company
2725 Sand Hill Rd.
Menlo Park, CA 94025

Electric Chalkboard BBS
Ken Blystone, SYSOP
El Paso, TX
BBS phone no. 915-593-3862

Electronic University
TeleLearning, Inc.
1150 Sansome St.
San Francisco, CA 94111

Nova University
Center for Computer-Based Learning
Computer Education
3301 College Ave.
Fort Lauderdale, FL 33314

PLATO
Control Data Corporation
PO Box O
Minneapolis, MN 55440

QuantumLink
Tutoring Center and Community College
8620 Westwood Center Drive
Vienna, VA 22180

If you're using Commodore computers for educational purposes (at home or in school) and would like to share your experiences through the Resource Center, write me a letter detailing the equipment you're using, subject areas you teach, grade level or age of your students, software you're using and any other information you feel like including.

Also, if you'd like to donate public domain educational programs to the Resource Center for sharing with other educators or parents, please send along a disk with a brief description of the program. Send correspondence and disks to:

Margaret Morabito
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c/o RUN Magazine
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You can also leave mail in my online mail boxes: CompuServe (70616,714) or QuantumLink (MARGM).

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HARDWARE GALLERY

Meet The Final Cartridge, a fun-packed peripheral, and log temperatures with Comp-U-Temp 2.0.

Compiled by BETH S. JALA

THE FINAL CARTRIDGE ..... B

No Need for all Those Extras When You Have This C-64 Assistant

Originally hailing from Holland, The Final Cartridge is a peripheral that adds fun to your C-64 computing. If a computer cartridge's contents reflect the state of its designers' minds, then The Final Cartridge's designers must possess lively imaginations, because it is anything but boring.

The highlights of The Final Cartridge are an enhanced Basic, ML monitor, screen freezer, the ability to print a frozen screen, and faster disk and Datassette loading enhancements.

The Final Cartridge's documentation and design indicate a target audience of game players. One of the two buttons on the unit is a reset button, and the other is a program freezer.

The reset button works in much the same way as does the command SYS 64738: It resets the computer's memory.

The program freezer button lets you load in and freeze a program, then save it to disk or tape, or print it. When printing, you can also have a non-Commodore-compatible parallel printer interface connected to the RS-232 port—the modem port—and not use the serial port. When I did use the serial port for printing, I didn't encounter any incompatibility problems with Commodore and Star printers as I activated The Final Cartridge's many print options.

As far as freezing and copying a frozen program is concerned, our company policy forbids employees from copying commercial programs; so I limited my testing to non-commerical software. When copying Basic and ML programs, I found this option to work very well.

With The Final Cartridge plugged into the computer and activated, I noticed that the beginning address of each file appears as it loads from the disk drive. Once the loading process finishes, the ending address appears. Whether loading the file from within the ML monitor or from Basic, The Final Cartridge displays the addresses that the file occupies in memory.

The accompanying manual refers to a Tape Turbo, provided by The Final Cartridge, that entails a speed-up routine for the Datassette. When using a device number of 7, the Tape Turbo converts the Datassette into an ersatz disk drive, saving and loading compressed files almost ten times faster than normally. My timing of these rapid saving and loading feats proved the manufacturer's claim to hold true. Unfortunately, the data compression enhancements used for the Tape Turbo are, for the most part, unreliable.

Simple Basic 2.0 programs that I saved using the fast-tape method required a number of file saves before an error-free file was completed. Substituting different Datassettes, computers and cassette tapes proved to be of little avail. My recommendation: Forget using tape enhancements and enjoy the cartridge's other options.

Complementing the C-64 with a resident ML monitor is a plus, but The Final Cartridge's ML monitor goes one better than most, because it doesn't use any of the computer's precious memory. While The Final Cartridge's ML monitor is an improvement, it lacks a debugger, or Walk, command. The Walk command lets the ML program be executed one instruction at a time, thus detecting errors in the code that you write.

On the positive side, the ML monitor lets you load a disk sector into memory, alter it and re-write it to disk. Also, the ML monitor allows for continuous scrolling through the entire contents in memory ($0000 to $FFFF) in the same way that you scroll through a word processor document—with the up and down cursor keys.

The cartridge's enhanced Basic provides about 20 new commands, including Find, Help, Auto and Delete, an Old command for retrieving programs after issuing the New command, a Renumber command for renumbering program lines, and a variety of DOS commands.

Although The Final Cartridge's manual states that it loads files six times faster, I found disk-loading times to be reduced by only one-half to two-thirds when loading Basic programs with the cartridge in use. Also, load times of commercial C-64 programs, such as Easy Script and GEOS, loaded at their usual slow pace.

Software incompatibility posed no problems with The Final Cartridge, but GEOS deactivated the program-freeze option. Easy Script worked well, as did all the other commercial programs I tried with The Final Cartridge activated. ►

REPORT CARD

A Superb!
An exceptional product that outshines all others.

B Good.
One of the better products available in its category. A worthy addition to your hardware collection.

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

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

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

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Commodore 128 owners will be happy to hear that the cartridge works with the C-128, but not so happy to hear that it locks the C-128 into C-64 mode. Unless you require the C-128 mode for software or programming, The Final Cartridge

The Final Cartridge provides you with the enhancements of at least four other products.

offers enough features in C-64 mode to lessen the impact of losing C-128 mode.

A conventional review doesn't do The Final Cartridge justice because it isn't a typical product, at least outside of the European market. After all, you get a good ML monitor, extended Basic, program freezer and fast-load cartridge all in one neat little package. Fun at this price is a rarity. *(H & P Computers, 154 Valley St., South Orange, NJ 07079. $44.95.)*

—TIM WALSH
RUN STAFF

COMP-U-TEMP, VERSION 2.0 ..... A

If You Log Data and Monitor Temperatures, Here's Your Tool

If you want to know the temperature, get a thermometer. If you want to know the temperature in several different places, get several thermometers. And if you want to simultaneously keep track of temperatures in various locations, you'd better oil up your roller skates—or get Comp-U-Temp.

The Comp-U-Temp temperature-logging system adapts the 6510 microprocessor heart of a C-64 to perform the single-minded task of monitoring temperatures. Utilizing inexpensive electronic sensors, Comp-U-Temp Version 2.0 can keep track of temperatures in as many as eight different locations.

Each sensor, a weatherproof thermistor that changes its electrical characteristics as temperatures rise and fall, is connected to a terminal strip on a small interface module. The interface plugs into the C-64's joystick port. Comp-U-Temp measures temperatures between −15 and +180 degrees Fahrenheit, with a precision of one degree.

The software allows each sensor to be assigned a name, which is displayed on the screen to eliminate any chance of confusion when multiple locations are monitored. Each sensor can also be assigned high and low limits. Any time the limits are exceeded, an alarm sounds and the corresponding data is displayed in red.

There are many varied applications for this system. A security guard, alerted by Comp-U-Temp's alarm, could prevent the loss of perishable goods in a warehouse. Storage conditions of medical or scientific specimens could be documented by the automatic data logger.

In addition to a real-time display of all sensor locations and temperatures on the monitor screen, Comp-U-Temp will log data to a floppy disk at regular intervals. The period between disk writes—data points—can be as short as 15 seconds or as long as four hours. As many as 150 data points can be recorded in a single run.

My one complaint about the program is that it identifies data points only by number. While the printout includes the beginning time and the interval between measurements, there is no simple way to determine the instant a particular temperature was logged.

Comp-U-Temp will send data directly to an online printer (PETSCII only) at specified intervals; or, you can recall and print or display previously recorded data, which eliminates the need to dedicate a printer to this specific application.

Not every Commodore owner will have use for this low-priced temperature monitoring system, but those who do will be pleased with its simplicity and ease of operation. *(Applied Technologies, Inc., Lyndon Way, Kittery, ME 03904. C-64/$119.95.)*

—JOHN PREMACK
LEXINGTON, MA ■

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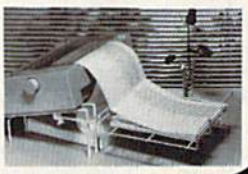

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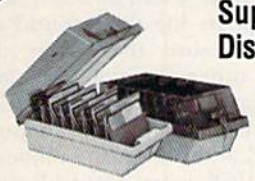

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Circle 155 on Reader Service card.

COMMODORE CLINIC

Find out how to minimize joystick port wear and where to get game paddles. Also, can you legally use others' listings in your programs?

By JIM STRASMA

UPDATES

I've found a solution to Fred Tirrassine's problem with DRAW in RUN*'s third annual Special Issue. In place of DRAW 1, – 10, – 20, you can use DRAW 1,RDOT(0) – 10, RDOT(1) – 20.*

—JON MEILSTRUD
SILVER SPRING, MD

A Thanks for a clever solution to another of the bugs in the original C-128 ROMs. The same basic technique should let you use negative relative values in Locate, Paint, Box, Circle, GShape and SShape commands until Commodore starts distributing their updated ROMs.

Big Blue Reader for the C-128 and 1571 disk drive changes files from MS-DOS to Commodore format, and vice versa. You can create a file with your favorite Commodore word processor, convert it to MS-DOS format with Big Blue Reader and then print it out with a laser printer at work via WordStar or another similar program. Big Blue Reader costs $30, and it's available from Michael Miller, S.O.G.W.A.P. Software, Inc., 611 Boccaccio Ave., Venice, CA 90291. You can also call him at 213-822-1138.

—MACEY TAYLOR
TUCSON, AZ

A As usual, thanks, Macey. For those who don't know her, Macey is the former head of my local Commodore user group, who recently moved too far away for me to easily seek her advice.

HARDWARE

Q *Can you tell me where I can get a cassette cable for my Plus/4?*

—JOHN CHRISTIE
CHAPEL HILL, NC

A The Plus/4 needs a special tape recorder, not just a special cable. Anyone handy with electronics can modify a standard Commodore cassette recorder to use the Plus/4's connector, and some Commodore-compatible cassette units from other vendors used to include both C-64 and Plus/4 connectors. You can probably still get one from an overseas dealer, because the Plus/4 was sold more widely abroad than in the U.S.

However, if you can afford it, you'll be much happier with a disk drive, since it loads and saves programs much faster. The widely available 1541 disk drive plugs right into the Plus/4, with no alterations, and it works with most other recent Commodore computer models.

Q *I have a Prentice P-202T modem and want to use it with my C-128, but I'm not sure if it will work. Where can I get the address of the manufacturer?*

—AMEEN SHAREEF
DETROIT, MI

A The P-202T isn't listed as a current model in the most recent information I have for Prentice, but I expect it can be connected to the C-128 via an RS-232 interface and used at least with other Type 202 modems. The address for Prentice Corp. is PO Box 3544, Sunnyvale, CA 94088, or you can phone them at 408-734-9810.

Q *Where can I buy a game paddle? I can only find joysticks.*

—DOUGLAS CURLER
MILER, WI

A If you can't locate a Commodore paddle, you can use any paddle compatible with the Atari 800 computer or 2600 game machine. Look for one at garage sales, if you can't find one new.

Failing that, you can build your own. Jameco Electronics (phone 415-592-8097) offers a suitable paddle mechanism, and Radio Shack has a suitable cord to connect it.

However, before you try making your own paddle, remember that the reason paddles are scarce is because so few programs for Commodore computers can use them.

Q *My kids are continually switching joysticks, and the plugging and unplugging seems to put a lot of stress on the connectors. Is there a 12-inch cable with suitable connectors that could be left plugged into each port, then the joysticks plugged into that?*

—J. VOGEL
WOBURN, MA

A Radio Shack sells a joystick extender cable somewhat longer than you want, but adequate for your needs. I use it to plug the oversized connector on Flexidraw's light pen into my C-128.

Q *I'm planning to buy a TV converter box for my RGB/composite color monitor. Would it harm the monitor if I connected this box or a VCR to it?*

—RENE DEL VALLE
QUEENS, NY

A No. Adding a tuner to your monitor shouldn't hurt it a bit. Many TV purists actually prefer to buy a tuner separately from the monitor itself, for the same reasons audio fans buy separate components for their sound systems. Just be sure the cables that connect the tuner to the monitor and the computer to the tuner or monitor let you continue using your computer in both RGB and Composite modes.

As for the VCR, most come with audio and composite video outputs that can be directly connected to a monitor. This eliminates the need to buy a TV converter box, because most VCRs already include an excellent TV tuner. My own C-128 is connected this way.

Q *I own a C-64, 1541 disk drive and Gemini 10X printer. My problem is that the drive won't load or run many programs unless the printer is on if it's connected. Since I don't always need the printer, I sometimes disconnect it before turning on the sys-*

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tem. Will this connecting and disconnecting wear out the port prematurely, or will leaving the printer on all the time overheat it and wear it out prematurely?

—MILT WIGSMOEN
SAUK VILLAGE, IL

A The failure of your disk drive to operate with the printer off is probably due to the printer interface you're using. That feature was probably added intentionally to keep you from starting the system without the option of using the printer. The same problem may occur if the printer is turned on, but out of paper or off-line for another reason. Since this bothers you, look in your printer interface manual—there may be a way to disable its check for printer readiness.

Otherwise, just leave your printer on whenever the computer is on. It's in less danger of overheating than your computer and disk drive, and it uses very little power except when actually printing.

SOFTWARE

Q *I have a C-64 and 1541 disk, and I'd like your opinion of the Epyx Fast Load cartridge. It appears to load and save programs five times faster or better. I've always believed you seldom get something for nothing, so is there a trade-off somewhere?*

—JIM BODEAUX
COVINGTON, LA

A Fast Load is a reputable product that for the most part does what it claims, and it's made a lot of friends by healing the 1541's debilitating case of slowness. The trade-off is incompatibility with a small number of copy-protected programs that refuse to run with the cartridge installed. However, chances are you'll never encounter a program that won't work with Fast Load.

If you're mechanically inclined, you can solve this problem by adding an on/off switch to the cartridge. The switch should interrupt the EXROM line on the cartridge port when off. If you aren't mechanically inclined, just turn off your computer and unplug the cartridge when you want to run programs incompatible with Fast Load.

You should also deactivate Fast Load when you're using relative files, because readers have found it unreliable.

PROGRAMMING

Q *I'm trying to write a program for the C-64 with a masked input routine in which I will enter a four-digit code that shouldn't be visible as it's entered. Instead, an X should appear in place of each character. How can I do this?*

—CARLOS ANDERSON
OAK PARK, IL

A Just replace the usual Input statement with a Get loop along the lines of the one below:

```
100 N$=""
110 GET G$
120 IF G$>="0" AND G$<="9" THEN
    N$=N$+G$:PRINT "X";
130 IF LEN(N$)<4 THEN 110
140 N=VAL(N$)
```

The loop includes checks to make sure only digits are accepted, and it waits until you've entered exactly four digits. The last line converts the completed string into the equivalent number.

REPAIRS

Q *My Magic Desk I (Type and File) cartridge from Commodore won't work, so everything I have on file is inaccessible. Can the cartridge be repaired, or do I have to replace it?*

—D. W. HINZ
WORTHINGTON, MN

A If you can still find Magic Desk available new, replacing your cartridge will probably be far cheaper than repairing it. Internally, Magic Desk was one of Commodore's most complex cartridges, containing four different ROM chips, plus logic to select among them, so repair would be difficult.

With so many cartridges and accessories now available at low close-out prices, it would be a good idea to pick up a spare of any important item that might eventually need repair.

OTHER

Q *It's clear that I can't copy the listings from a magazine program and then sell the program. However, can I take, say, a magazine program that spruces up my menus and include it in a program I want to submit for publication? Should the author of the menu-sprucer get credit or a slice of my payment? Or do I just want to stay away from the idea altogether?*

—J. GROVE
CHICAGO, IL

A The safest course is to submit the program to the same magazine that originally published the menu program, and give the original author credit for what you used. The contract the author signed probably already allows for reprints, and if the editors like your program, they'll send any needed additional payment to him or her.■

Do you have a problem or question about your Commodore computer? Commodore Clinic can help. Just send your question on a postcard to:

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Queries are answered only through this column, and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.

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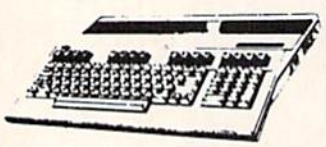

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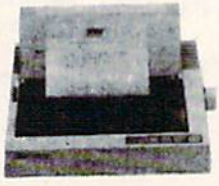

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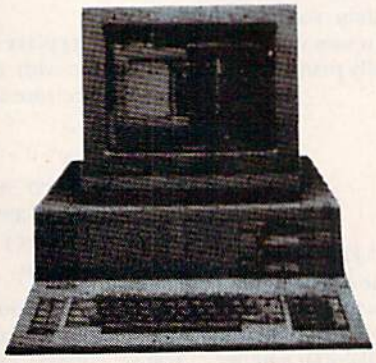

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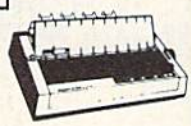

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From p. 14.

```
   ,88,96,16Ø,2,185,255,219,73,255,41
5Ø DATA 31,17Ø,41,16,153,251,Ø,138,41,15,1
   7Ø,189,1Ø7,3,25,251,Ø,153,251,Ø,136
6Ø DATA 2Ø8,227,76,49,234,Ø,1,5,Ø,7,8,6,Ø,
   3,2,4
```

—ROGER MOORE, OAKRIDGE, TN

$41D IMPROVED PLUS/4 PERFECT TYPIST

I was pleased to find a modification of the 128 Perfect Typist program to work with the Plus/4 (trick $3CD, April 1987). However, I tend to forget the Pokes, so I added several more lines to make the computer do them for me, reload the program and run it all automatically. Here are the extra lines:

```
5 IFPEEK(44)=22ANDPEEK(5632)=ØGOTO1Ø
6 PRINT"{SHFT CLR}POKE44,22:POKE5632,Ø:NEW
  "
7 PRINT"{2 CRSR DNs}DLOAD"+CHR$(34)+"+4PER
  FECT TYPIST"
8 PRINT"{4 CRSR DNs}RUN":POKE239,4
9 POKE1319,19:FORX=132ØTO1322:POKEX,13:NEX
  T:END
```

The following are necessary substitutions for the data in lines 140 and 150 of 128 Perfect Typist:

```
14Ø DATA 19,24,1Ø1,2Ø,24,1Ø1,21,141,252,19
    ,169,42,32,241,2Ø,32,188,2Ø,16Ø
15Ø DATA 2,185,185,2Ø,32,241,2Ø,136,16,247
    ,165,115,2Ø8,9,165,116,2Ø8,5,169
```

—EUGENE I. ROTHMAN, BROOKLYN, NY

$41E EXTRA GEOS CHARACTERS

Although they're not mentioned in the manual, several additional characters are available in GEOS by using the Commodore key with the following keys:

[makes a { (curly left bracket)
] makes a } (curly right bracket)
/ makes a \ (backslash)
@ makes an ` (accent mark)
* makes a ~ (tilde mark)
↑ makes a | (vertical bar)

—BARRY SOLOMON, MONTOURSVILLE, PA

$41F GEOS FONT STYLES

If you're having trouble changing GEOS font styles (such as italic to bold), try this trick. Activate the style menu, highlight the Plain Text style and click once. Then repeat the process, but this time highlight the desired style. When you start typing, the new style will be displayed. If you change from italic to bold without plain text between, you'll get bold italic.

—WILLIAM LEES, SAN FRANCISCO, CA

$420 NEW FIRST FILE

After you have a number of files on a disk, you might find that you want to place the file you use the most first in the directory. When it's in that position, you can load the file after turning on your computer by entering LOAD"*",8—

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without having to type the filename. The program below will let you swap the first file in a directory with any other file on the disk. Try this program on a back-up disk first, to be sure it's typed in correctly. Otherwise, you could lose everything on the disk.

```
10 REM 1ST FILE-ANTHONY AGUIRRE
20 INPUT" NAME OF CURRENT FIRST PROGRAM ";
   F$
30 INPUT"NAME OF PROGRAM TO BE FIRST";P$
40 PRINT"VALIDATING DISK":OPEN15,8,15,"V0"
50 PRINT"SWAPPING FILES":F1$=F$+".":P1$=P$
   +"."
60 PRINT#15,"C0:"+F1$+"=0:"+F$:PRINT#15,"S
   0:"+F$
70 PRINT#15,"C0:"+P1$+"=0:"+P$:PRINT#15,"S
   0:"+P$
80 PRINT#15,"R0:"+P$+"=0:"+P1$:PRINT#15,"R
   0:"+F$+"=0:"F1$
90 CLOSE15:PRINT"{2 CRSR DNs}ALL DONE!"
```

—ANTHONY AGUIRRE, HAVERTOWN, PA

$421 C-64 INSTR FUNCTION

The C-128 has a handy INSTR function for finding the position of one string within another. The following subroutine will give the same results on the C-64:

```
10 REM 64 INSTR-DON JARVIS
1000 XA=LEN(A$):XB=LEN(B$):XX=0:SP=1:REM S
     TART POS OPTIONAL
1010 FORXE=SP TO XA-XB+1:IF MID$(A$,XE,XB)
     =B$ THEN XX=XE:XE=XA
1020 NEXT:RETURN
```

Variables A$ and B$ are the long string and the substring you want to find, respectively. The position of the first letter match is returned in variable XX. A value of 0 means that no match was found. Be sure not to use the variables in the subroutine—XA, XB, XE, XX and SP—in other parts of your program. You might get strange results.

—DON JARVIS, MIAMI, FL

$422 PRIME NUMBERS

This short and relatively fast program determines if a number is prime. Numbers up to 10000 will take only a few seconds; larger numbers will take up to a minute (9999973 takes about 40 seconds on a C-64). The program should work on any Commodore computer.

```
10 REM PRIME BRIAN DUCHESNEAU
20 PRINT"{SHFT CLR}"
30 INPUT"{CRSR DN}";X:Z=SQR(X):Y=1:IFX=0TH
   EN END
40 IF X/2=INT(X/2)THENPRINT"{CRSR DN}COMPO
   SITE":GOTO30
50 FORY=3TOZSTEP2:D=X/Y:I=INT(D):S=D-I
60 IF S>0THEN NEXT
70 IF S=0THENPRINT"{CRSR DN} COMPOSITE":GO
   TO30
80 PRINT"{CRSR DN} PRIME":GOTO30
```

—BRIAN DUCHESNEAU, ST. ALBANS, VT ►

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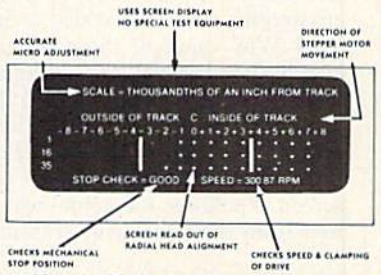

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$423 Simple C-64 Sprite Editor

I've written a very simple sprite editor for the C-64:

```
Ø REM SPRITE DESIGNER-CHRIS BUTLER
1Ø PRINT"{SHFT CLR}";:POKE65Ø,128
2Ø FOR T=1TO21:FORQ=1TO24:PRINT".";:NEXT:P
   RINT:NEXT
3Ø V=53248:POKEV+21,4:POKEV+41,1
4Ø POKEV+4,255:POKEV+5,2ØØ
5Ø POKE2Ø42,13:END
1ØØ Q=Ø:C=8:FORY=ØTO21:FORX=1TO24
11Ø P=PEEK(1Ø23+X+4Ø*Y)
12Ø C=C-1:IFP=42THENQ=Q+2{UP ARROW}C
13Ø IFC=ØTHENC=8:G=G+1:POKE831+G,Q:Q=Ø
14Ø NEXTX:NEXTY:END
2ØØ PRINT"{SHFT CLR}{2 CRSR DNs}":K=Ø:FORT
    =ØTO63:IFK=ØTHENPRINT"{5 SPACEs}DATA "
    ;
21Ø PRINTRIGHT$(STR$(1ØØØ+PEEK(832+T)),3)"
    ,";
22Ø K=K+1:IFK=8THENK=Ø:PRINT"{CRSR LF} "
23Ø NEXT:POKE53248+21,Ø:END
```

To use the program, run it, and the blank sprite will be printed on the screen. Now fill in the sprite, using the * character for dots you want on, and any other for dots off.

When the sprite is finished, move the cursor to the blank line above the Ready prompt and type in RUN 100. The program will scan the screen and print the sprite in actual size to the right of the grid. Then you can change it if necessary.

When your sprite is the way you like it, move the cursor above the word READY again and type in RUN 200. This will create Data statements for the sprite. After they're printed to the screen, just add line numbers and press return for each line.

—Chris Butler, Nova Scotia, Canada

$424 Compact C-64 Menus

Here's an alternative to vertically oriented menus. My routine uses two lines at the top of the screen to display a professional-looking menu with eight options. To make your choice, press the cursor-right key until the desired option is highlighted and then press return. If you use other titles for the menu, be sure they're eight characters long.

```
1Ø REM C-64 MENU LINES-J.R.CHARNETSKI
2Ø POKE5328Ø,2:POKE53281,Ø
3Ø S=8:DIMM$(S):SP$=" ":HL$="{CTRL 2}"
4Ø MC$="{CTRL 5}":PRINT"{SHFT CLR}"MC$
5Ø FOR I=1TOS:M$(I)="OPTION "+CHR$(64+I):N
   EXT:GOTO9Ø
6Ø GET A$:IFA$="{CRSR RT}"GOTO9Ø
7Ø IFA$<>CHR$(13)GOTO6Ø
```


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Circle 91 on Reader Service card.

```
8Ø PRINT"{CTRL 2}";:ONXGOTO13Ø,13Ø,13Ø,13Ø
   ,13Ø,13Ø,13Ø,13Ø
9Ø PRINT"{HOME}{CTRL 9}";:X=X+1:IFX>STHENX
   =1
1ØØ FORI=1TOS:IFI<>XTHENPRINT SP$M$(I)SP$;
    :GOTO12Ø
11Ø PRINT SP$HL$M$(I)MC$SP$;
12Ø NEXT:PRINT:GOTO6Ø
13Ø PRINT "YOUR CHOICE: "M$(X)
```

—JOSEPH R. CHARNETSKI, DALLAS, PA

$425 WATCHING IRA GROW

This short program shows you how your IRA account can grow. It's only an estimate, because interest rates vary over the years. Also, the program uses simple interest added once a year, rather than compound interest, so your IRA will probably earn more than the program indicates.

```
1Ø REM IRA ESTIMATE-DAVID ADAMS
2Ø PRINT"HOW MUCH WOULD YOU LIKE TO"
3Ø INPUT"INVEST YEARLY";A:PRINT
4Ø PRINT"HOW MANY YEARS WOULD YOU"
5Ø INPUT"LIKE TO INVEST YOUR MONEY";X:PRIN
   T
6Ø PRINT"WHAT PERCENT INTEREST WILL"
7Ø INPUT"YOU BE RECEIVING (DECIMAL)";C
8Ø PRINT:PRINT:PRINT"YEAR","BALANCE","INTE
   REST","TOTAL"
9Ø FORZ=1TO39:PRINT"*";:NEXT:PRINT
1ØØ FORY=1TOX:B=A+T:I=C*B:T=B+I:Z=T+Z:L=L+
   I
11Ø PRINTY,B,I,T:NEXT Y
12Ø FORZ=1TO39:PRINT"*";:NEXT:PRINT
13Ø PRINT:PRINT:PRINT"THE TOTAL RECEIVED W
   AS"T
14Ø PRINT"THE TOTAL INTEREST WAS"L
```

—DAVID ADAMS, PORTAGE, IN

$426 C-128 CHECKSUM LIST

If you submit your Magic trick program listings to *RUN* in hard copy only, it'll help the staff type in the listings if you use the following program to print out checksums:

```
1Ø REM 128 CHECKSUM LIST-LARRY PANKEY
2Ø KEY1,CHR$(147)+"L=VAL(L$):L=L+1Ø:L$=STR
   $(L)"+CHR$(13)+"KEY3,"+CHR$(34)+"LIST"+
   CHR$(34)+"+L$+CHR$(13)"+CHR$(13)
3Ø KEY5,"{4 CRSR UPs}"+CHR$(13)
4Ø KEY7,"{15 SHFT INSTs}PRINT#4,L$"+CHR$(3
   4)+":REM*"+CHR$(13)
```

►

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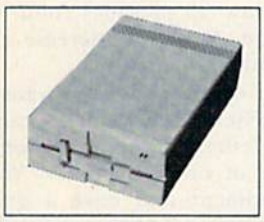

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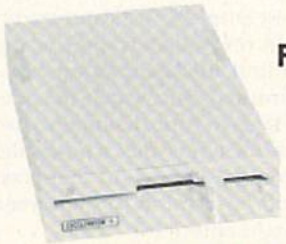

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Circle 156 on Reader Service card.

```
5Ø KEY4,"CLOSE4:OPEN4,4:L$="+CHR$(34)+CHR$
   (34)+CHR$(13)+"63999 :"+CHR$(13)+CHR$(1
   47)
6Ø KEY8,"L$="+CHR$(34)+CHR$(34)+":CLOSE4"+
   CHR$(13)+"63999"+CHR$(13)+CHR$(147)
7Ø PRINTCHR$(147):END
```

My program generates checksums for lines starting with 10 and incremented by 10.

Once you have your trick debugged, renumber it. To use the checksum generator, first load and run the 128 Perfect Typist program. Then load and run the checksum generator program, and finally load your trick. Turn your printer on and align the paper, then press F4 to open a file to the printer. Now press F1, F3, F5 and F7 in that order. This will send the first line and the checksum to the printer.

Repeat the sequence until you get an error. This will indicate that all lines are done. Then, press the F8 key to close the printer file. Finally, add the checksums to the trick.

—LARRY PANKEY, DANA POINT, CA ■

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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RUN *pays $10 to $40 for each trick published in the column. A payment of $50 and a Magic Contributor T-shirt is awarded for the Trick of the Month. To be eligible, the Trick of the Month must be for the C-64 or the C-64 and C-128, not for the C-128 alone.*

If you'd like a copy of the latest edition of RUN*'s Magic Trick Writer's Guide, send your request with a self-addressed, stamped, business-size envelope; you'll receive a copy in two or three weeks.*

RUN it right: **C-64**

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Then, when you're ready to save your document, press the run-stop key and give QuickDoc a new descriptive filename. When your friend or relative loads and runs that version of QuickDoc, your message will be printed to the screen, one character at a time, just as you entered it.

Be careful when making changes to QuickDoc, though. If you make the program too long, there'll be interference to the text you enter. Safe changes include the screen color Poke in line 50, the border color Pokes in lines 10 and 25, the cursor character (C$) in line 50 and the printing speed (currently 52) in line 20.

The Dimension statement in line 25 provides room for 10,000 characters of information. You can increase this amount if you need to write a longer document.

In addition to leaving notes for others, you might want to use QuickDoc for on-disk documentation of your programs, lo-res graphics art, tutorials, disk letters, an on-screen home-message board, or any number of other purposes. Your imagination is the limit! Experiment and have a good time—that's what home computers are all about, right? R

—MARK JOERGER, SPRINGFIELD, OR

Listing 1. QuickDoc program.

```
1Ø POKE5328Ø,11:GOSUB5Ø                :REM*96
15 B$=CHR$(PEEK(I)):IFB$="{FUNCT 7}"THENPR
   INTA$;"{CTRL 1}";:END               :REM*85
2Ø PRINTA$B$C$;:I=I+1:FORJ=1TO52:NEXT:GOTO
   15                                  :REM*9Ø
25 POKE5328Ø,12:POKE45,16Ø:POKE46,9:CLR:GO
   SUB5Ø:DIMA(2ØØØ)                    :REM*159
3Ø GETB$:IFB$=""THEN3Ø                 :REM*84
35 PRINTA$B$C$;:POKEI,ASC(B$):I=I+1
                                       :REM*171
4Ø IFB$="{FUNCT 7}"THEN55              :REM*188
45 GOTO3Ø                              :REM*241
5Ø POKE53281,11:A$="{CRSR LF}{SHFT SPACE}{
   CRSR LF}":C$="*":PRINT"{SHFT CLR}{CTRL
   N}{CTRL 4}{CRSR DN}{CRSR RT}"C$;:I=256Ø
   :RETURN                             :REM*148
55 POKE252,(I/256):POKE251,(I-(PEEK(252)*2
   56))                                :REM*237
6Ø POKE46,PEEK(252):POKE45,PEEK(251):RUN
                                       :REM*38
65 REM CURSOR COMMOTION BY MARK JOERGER. R
   UN 25 TO INPUT TEXT, PRESS F7 TO END.
                                       :REM*191
```

■

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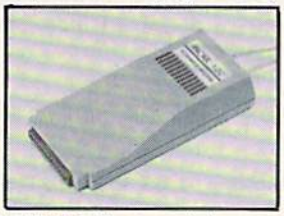

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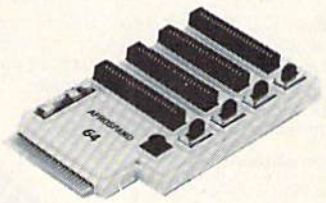

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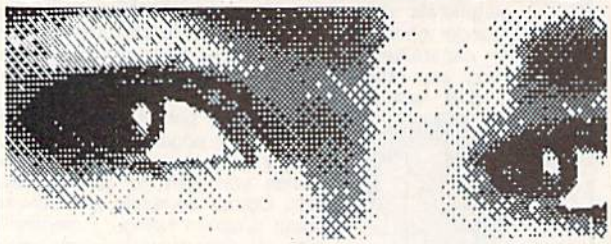

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How To Type RUN Listings

To simplify typing *RUN*'s C-64 and C-128 program listings, we include checksum numbers. These follow a REM statement at the end of each line (e.g., :REM*123) and necessitate your using *RUN*'s Perfect Typist programs, listed below.

Type in 64 Perfect Typist (Listing 1) for 64 programs, or 128 Perfect Typist (Listing 2) for 128-mode programs, and save it to either tape or disk before running. When you want to type in a 64- or a 128-mode program, first load and run the appropriate Perfect Typist listing. Jot down the two SYS numbers that appear on your screen. They are the SYS numbers that you type in for deactivating and reactivating the checksum program.

After Perfect Typist has been loaded and run, start typing in the program listing from *RUN*. After you press the return key to log in each line, a 1-, 2- or 3-digit number will appear below the line at the left margin. This is the checksum number, ranging from 0 to 255.

If this matches the checksum printed in the listing after the :REM*, you have typed that line correctly. Then type the next program line over the previous line's checksum value. If the checksum numbers do *not* agree, analyze the line on screen for errors or omissions. Make the needed changes and press the return key again to log them in. A new checksum will appear in place of the old one. Compare this to the magazine's number and then proceed to the next line.

When you've finished typing in your program, disable Perfect Typist by typing in the appropriate SYS number for either 64 or 128 mode, and press the return key. Now you can save your program as usual, but before attempting to run it, turn the computer off and back on to completely clear out the Perfect Typist program.

You may save an incomplete program any time and continue it later. To do so, reload and run the Perfect Typist program, then load the program you were working on, list it, and continue from where you left off.

The 128 Perfect Typist will work in either 40 or 80 columns. Also, it lets you use the C-128's automatic line-numbering. If Auto is on, the checksum will be printed below the line you just entered, and the C-128 will place the next line number below the checksum.

All listings in *RUN* have been translated so that the graphics and control characters are designated as understandable key combinations. Follow instructions inside curly brackets. For example, {SHIFT L} means you should hold down the shift key and press the L key. What you see on your screen will look quite different from what is designated inside the brackets. Another example is {22 SPACEs}, which instructs you to press the space bar 22 times. R

Listing 1. 64 Perfect Typist program.

```
1 REM 64 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
1Ø POKE56,PEEK(56)-1:POKE52,PEEK(56):CLR
2Ø PG=PEEK(56):ML=PG*256+6Ø
3Ø FORX=ML TO ML+154:READD:T=T+D:POKEX,D:N
   EXT
4Ø IFT<>16251 THEN PRINT"ERROR IN DATA..."
   :END
6Ø POKEML+4,PG:POKEML+1Ø,PG:POKE ML+16,PG
7Ø POKE ML+2Ø,PG:POKE ML+32,PG:POKE ML+38,
   PG
8Ø POKE ML+141,PG
89 PRINT"{SHFT CLR}{CRSR RT}**************
   ************************"
9Ø SYS ML:PRINT "{CRSR RT}** 64 PERFECT TY
   PIST IS NOW ACTIVE{2 SPACEs}**"
1ØØ PRINT "{CRSR RT}** SYS"ML"=ON{5 SPACEs
    }SYS"ML+3Ø"=OFF **"
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HOW TO TYPE

```
101 PRINT"{CRSR RT}**********************
    ***************":NEW
110 DATA 173,005,003,201,003,208,001,096
120 DATA 141,105,003,173,004,003,141,104
130 DATA 003,162,103,160,003,142,004,003
140 DATA 140,005,003,096,234,234,173,104
150 DATA 003,141,004,003,173,105,003,141
160 DATA 005,003,096,032,124,165,132,011
170 DATA 162,000,142,240,003,142,241,003
180 DATA 189,000,002,240,051,201,032,208
190 DATA 004,164,212,240,040,201,034,208
200 DATA 008,072,165,212,073,001,133,212
210 DATA 104,072,238,241,003,173,241,003
220 DATA 041,007,168,104,024,072,024,104
230 DATA 016,001,056,042,136,016,246,109
240 DATA 240,003,141,240,003,232,208,200
250 DATA 173,240,003,024,101,020,024,101
260 DATA 021,141,240,003,169,042,032,210
270 DATA 255,169,000,174,240,003,032,205
280 DATA 189,162,003,189,211,003,032,210
290 DATA 255,202,016,247,164,011,096,145
300 DATA 013,032,032
```

Listing 2. 128 Perfect Typist program.

```
1 REM 40/80 COL C128 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
10 FORX=5120TO5379:READD:T=T+D:POKEX,D
20 NEXT:IFT<>28312 THENPRINT"{2 CRSR DNs}E
   RROR IN DATA...":END
25 A$="":IFPEEK(215) THENA$="{20 SPACEs}"
30 PRINT"{SHFT CLR}"A$" ****************
   ******************"
40 PRINTA$" ** 128 PERFECT TYPIST IS NOW A
   CTIVE **"
50 PRINTA$" **{2 SPACEs}SYS 5120=ON{7 SPAC
   Es}SYS 5150=OFF{2 SPACEs}**"
60 PRINTA$" ****************************
   ********":SYS5120:NEW
70 DATA 173,5,3,201,20,208,1,96,141,45,20,
   173,4,3,141,44,20,162,43,160,20
80 DATA 142,4,3,140,5,3,96,234,234,173,44,
   20,141,4,3,173,45,20,141,5,3,96
90 DATA 32,13,67,140,255,19,162,0,142,252,
   19,142,253,19,142,254,19,189,0,2
100 DATA 201,32,240,8,201,48,144,7,201,58,
    176,3,232,208,238,189,0,2,240,54
110 DATA 201,32,208,5,172,254,19,240,42,20
    1,34,208,10,72,173,254,19,73,1
120 DATA 141,254,19,104,72,238,253,19,173,
    253,19,41,7,168,104,24,72,24,104
130 DATA 16,1,56,42,136,16,246,109,252,19,
    141,252,19,232,208,197,173,252
140 DATA 19,24,101,22,24,101,23,141,252,19
    ,169,42,32,241,20,32,188,20,160
150 DATA 2,185,185,20,32,241,20,136,16,247
    ,165,116,208,9,165,117,208,5,169
160 DATA 145,32,241,20,172,255,19,96,13,32
    ,32,162,0,173,252,19,232,56,233
170 DATA 100,176,250,105,100,202,240,3,32,
    232,20,201,10,176,5,205,252,19
180 DATA 240,15,162,0,232,56,233,10,16,250
    ,24,105,10,202,32,232,20,170,72
190 DATA 138,9,48,32,241,20,104,96,170,173
    ,0,255,72,169,0,141,0,255,138,32
200 DATA 210,255,104,141,0,255,96
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207	MicroComputer Services	84, 85
91	Microlog Corp.	88
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98	Montgomery Grant	51
55	NAPI	86
60	Omnitronix	61

Reader Service		Page
48	Patech Software	29
93	Professional Software, Inc.	CII
74	Prof. Jones	87
223	Pro-Tech-Tronics	72, 73
220	Quinsept	70
147	RK Productions	70
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	ReRUN Productivity Pak III Ad	65
	ReRUN Subscription Ad	32
	RUN Special Issue Ad	79
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102	Soft-Byte	70
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194	Superior Micro Systems	6
155	Tenex Computer Express	81
146	Timeworks, Inc.	2, 3
209	Tussey Computer	10, 11
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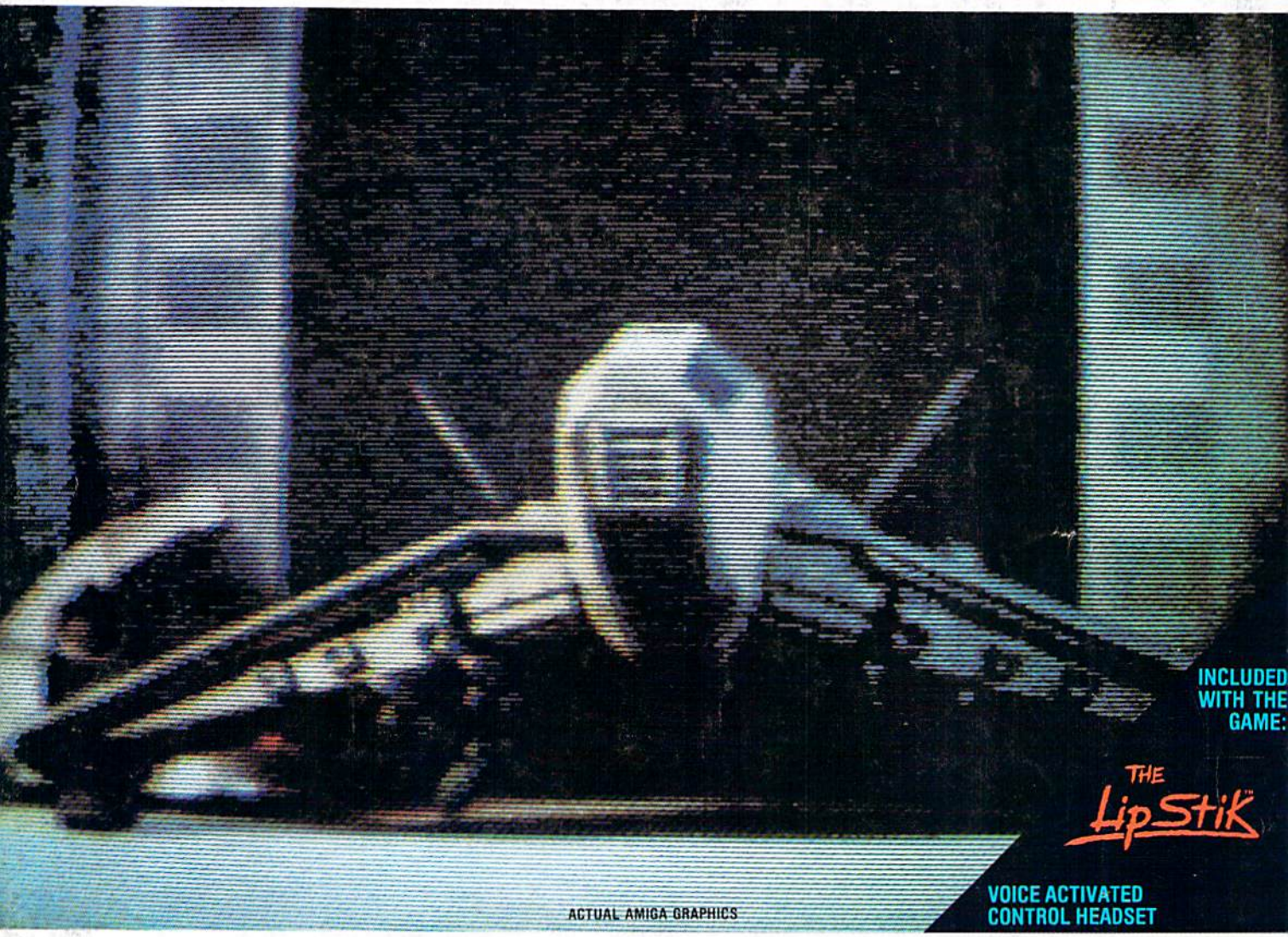

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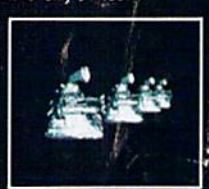

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