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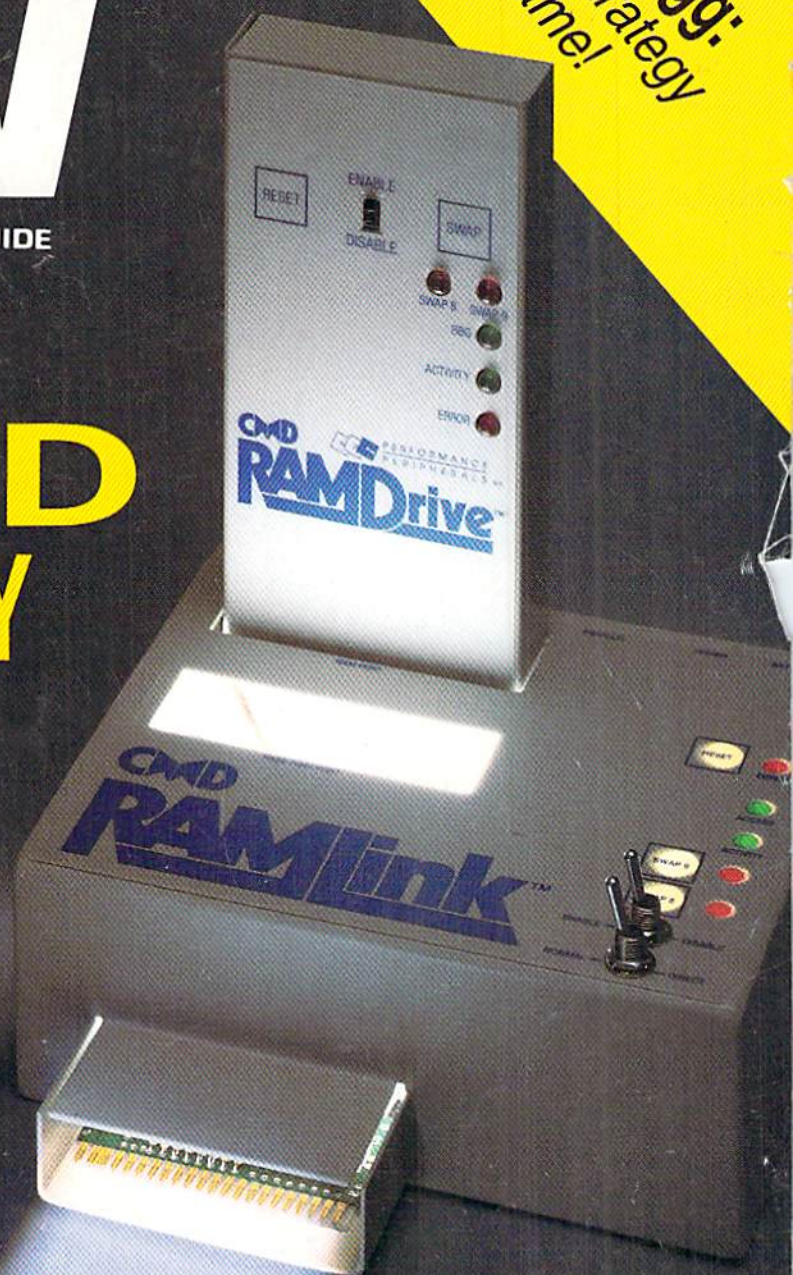
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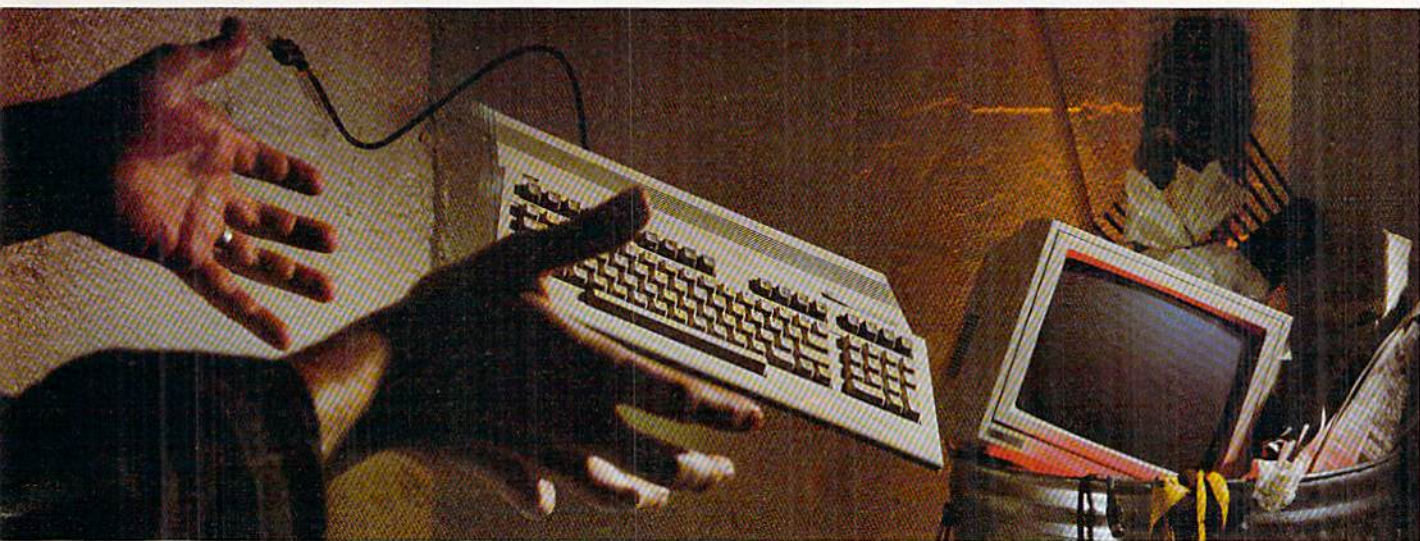
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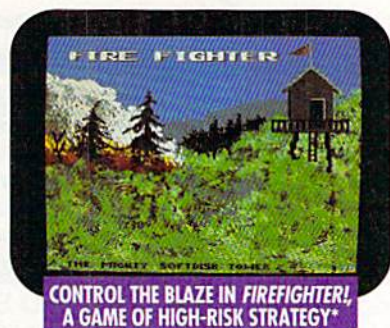
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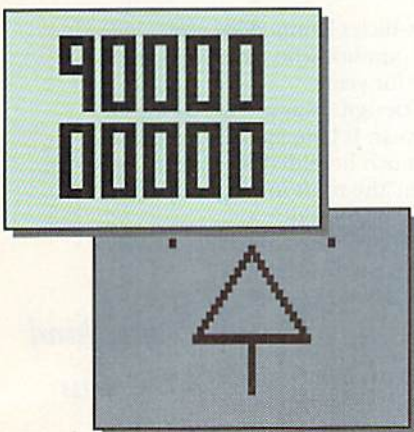
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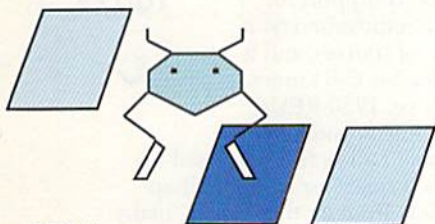
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* If you'd rather hit the slopes than type in these programs, order the January/February ReRUN disk. Just call 800-343-0728. The results are in: ReRUN's new format is a smash hit!

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RUNNING RUMINATIONS

SOME PONDERABLES

1991 will go down as another year in which Commodore users once again defied the predictions of industry pundits, who have been forecasting the demise of the 64/128 market for years.

In fact, one company, Creative Micro Designs, was as busy as the air traffic over the Persian Gulf earlier this year. It launched a stockpile of new products and began to deliver the much heralded RAMDrive and RAMLink. A *RUN* reviewer dubbed them "the most intelligently created third-party Commodore hardware I've ever used."

And who would have thought that your C-64 *manual* would actually increase in value: \$300 (towards the purchase of an Amiga)? Or that the C-64 could be expanded to two megs?

ANOTHER YEAR, ANOTHER CEO

On the eve of America's quincentennial, Columbus bashing was all the rage. Meanwhile, Commodore bashing subsided as users appeared resigned to the company's move away from the eight-bit market to the Amiga and CDTV lines. In contrast, Commodore reintroduced support for the C-64 with a program that promised a refurbished 64 if you sent them your broken one and \$64 (of course), and it reopened its customer service support line for C-64 users.

Still, products such as the 1581 disk drive, 1750 REUs and 128s were as scarce as viable Democratic presidential candidates; and you didn't have to be Anita Hill to feel harrassed in 1991: 64/128 owners watched as their shelf space for software disappeared. Like Baltic republics breaking away from mother Russia, many user groups shifted allegiance to the Amiga or MS-DOS. In *RUN*'s user's group update section, however, new countries were heard from.

While Commodore's fortunes waned in the U.S., they waxed in Europe, where, according to its mid-year report, the company realized 85 percent of its overall sales. And while sales sailed off to Europe, a number of European games made their way to our shores.

Speaking of fortunes, Commodore settled with ousted leader Harry Copperman for millions, and installed Jim Dionne as its U.S. head.

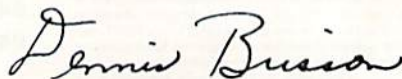
REPEATS & HERESAY

While George Foreman made a comeback in the ring, and Liz Taylor tied the knot—again—two software companies revived their long-running successes: Timeworks introduced version 6 of its venerable Word Writer, and Origin released *Ultima VI*. Even game cartridges reappeared as Commodore dusted off some oldies and ReadySoft readied *Wrath of the Demon*.

In the rumor category, the Commodore world buzzed with talk about a grassroots effort to sell a new accelerator chip for the C-128.

In response to readers' beefed-up telecommunications activity, *RUN* upgraded its BBS to a multiuser system. And the Re*RUN* disk took on a new look with an easy-to-use interface and new features.

Before they close the book on eight-bit computing, the C-64/128 will write a few more chapters. *RUN* will be here—in its bimonthly format—covering those events and helping users get more out of their systems. As we enter our ninth year, we have an amazing group of writers, reviewers and editors who look forward to bringing you the best articles and programs. So join us in '92!



Dennis Brisson
Editor-in-Chief

*What kind
of year
was
1991?*



MAGIC

Learn how to speak like an executive, hide files in GEOS and reset your 64 without losing the Basic program that's loaded into memory.

Compiled by TIM WALSH

\$5DD BUZZWORDS 64/128

Listen carefully to government and business officials when they're interviewed on television or radio, and you'll soon notice they communicate in what is known as "empty rhetoric." Generally at a loss for meaningful words, elected officials often use words and phrases not for their meaning, but rather for their impressive sound.

Just type in the listing using *RUN*'s Checksum in either 64 or 128 mode. When run, Buzzwords 64/128 lets your C-64 or C-128 generate a steady stream of such phrases. They won't make a lot of sense, but they'll provide you with an executive's vocabulary.

```
Ø REM BUZZWORDS 64/128 - RON PRESCOTT
1Ø DIM X$(5):DIM Y$(5):DIM Z$(5) :REM*19Ø
2Ø B$="BUZZWORD PHRASES" :REM*2Ø9
3Ø PRINT,B$ :REM*2Ø1
4Ø PRINT:PRINTCHR$(14) :REM*1Ø3
5Ø LET X=INT(RND(1)*5)+1 :REM*18Ø
6Ø X$(1)="INTEGRATED" :REM*239
7Ø X$(2)="TOTAL" :REM*9Ø
8Ø X$(3)="SYSTEMATIC" :REM*2Ø1
9Ø X$(4)="SELF-CONTAINED" :REM*155
1ØØ X$(5)="QUASI-FUNCTIONAL" :REM*179
11Ø LET Y=INT(RND(1)*5)+1 :REM*126
12Ø Y$(1)="MANAGERIAL" :REM*46
13Ø Y$(2)="ORGANIZATIONAL" :REM*241
14Ø Y$(3)="MONITORED" :REM*188
15Ø Y$(4)="RECIPROCAL" :REM*152
16Ø Y$(5)="HALF-LIFE" :REM*227
17Ø LET Z=INT(RND(1)*5)+1 :REM*19Ø
18Ø Z$(1)="BUDGETARY OPTIONS." :REM*96
19Ø Z$(2)="FLEXIBILITY." :REM*56
2ØØ Z$(3)="CAPABILITY." :REM*18Ø
21Ø Z$(4)="STABILITY." :REM*59
22Ø Z$(5)="TRANSPARENT LAYERS." :REM*237
23Ø EN$=CHR$(14):A$=" " :B$="{SHT L)ET'S
IMPLEMENT":C$=" " :REM*63
24Ø PRINT{2 SPACES}B$;A$; X$(X);C$;Y$(Y);C
$;Z$(Z) :REM*29
25Ø FORT=1 TO 12ØØ:NEXT:GOTO4Ø :REM*73
:REM*49
```

—RON PRESCOTT, MODESTO, CA

\$5DE IMITATION RESET 64

Imitation Reset 64 is just that—an imitation of a "real" system reset. After the program is typed in and run, entering a SYS 49152 from either Direct or Program mode causes the screen to briefly freeze, shrink a few pixels in size on all four sides, then reset itself. The all-too-familiar Commodore 64 startup screen appears in a few seconds.

Unlike a "real" reset, however, this program leaves Basic programs undisturbed in memory after the reset! By placing

this routine in your own programs, all but the most experienced programmers will be baffled by your programming prowess.

```
Ø REM IMITATION RESET 64 - MICHAEL GRIMM
1Ø FORT= 49152 TO 4932Ø :REM*8Ø
2Ø READD:POKET,D:CK=CK+D:NEXT:IFCK<>14997T :REM*55
HENPRINT"ERROR IN DATA!" :END :REM*249
3Ø SYS 49152 :REM*2Ø4
4Ø DATA 169,196,32,16Ø,192,16Ø,9,162,255,3 :REM*148
2,179,238,2Ø2,2Ø8,25Ø,136,2Ø8 :REM*148
5Ø DATA 245,169,2ØØ,141,22,2Ø8,169,14,141, :REM*3
32,2Ø8,169,6,141,33,2Ø8,169 :REM*3
6Ø DATA 147,32,21Ø,255,162,Ø,189,52,192,32 :REM*17
,21Ø,255,232,224,78,2Ø8,245 :REM*17
7Ø DATA 96,13,32,32,32,32,42,42,42,42,32,6 :REM*Ø
7,79,77,77,79,68,79,82,69,32 :REM*Ø
8Ø DATA 54,52,32,66,65,83,73,67,32,86,5Ø,3 :REM*66
2,42,42,42,42,13,13,32,54,52 :REM*66
9Ø DATA 75,32,82,65,77,32,83,89,83,84,69,7 :REM*161
7,32,32,51,56,57,49,49,32,66 :REM*161
1ØØ DATA 65,83,73,67,32,66,89,84,69,83,32, :REM*5
7Ø,82,69,69,13,13,13,83,84,69 :REM*5
11Ø DATA 77,32,32,51,56,57,49,49,32,66,65, :REM*231
83,73,67,32,66,89,84,69,83,32 :REM*231
12Ø DATA 7Ø,82,69,69,141,22,2Ø8,169,14,141 :REM*95
,134,2,96
```

—MICHAEL GRIMM, SANDWICH, IL

\$5DF HIDING FILES USING GEOS

If you're a GEOS user, you have access to a top-notch method of file security for all of your non-GEOS disks. Here's how: After activating either GEOS 64 or 128, place a non-GEOS disk into the drive and click on the drive's icon. Answer yes at the prompt to convert the non-GEOS disk to GEOS format.

All of the files on the disk will appear on the deskTop screen as Commodore files. To hide any files, just drag them to the bottom border and deposit them. When done, use the GEOS Close option to close the disk.

After resetting the computer, powering up in either 64 or 128 mode, then listing the directory, you'll notice that the files dragged to the border are no longer visible. To access them, run GEOS, place that disk in the drive, and drag those border files back into the deskTop.

—LEE MACDONALD, LANSING, MI

\$5EØ IBM-PC KEYPAD ON C-128

Computerists who use MS/DOS-compatibles and C-128s often find themselves accidentally typing numbers on the screen. That's because they're used to using the PC's numeric

keypad to control cursor movement.

As any C-128 user knows, pressing numbers on the keypad will print just that—numbers. To make the C-128 more user-friendly to PC users, Cursor Keypad 128 redefines the keypad's numbers as follows:

8 = Cursor up
4 = Cursor left
6 = Cursor right
2 = Cursor down
7 = Home
1 = Insert
3 = Delete

You can toggle between Cursor and Keypad mode by pressing the SHIFT-LOCK key. The 5 and 9 keys are disabled in Keypad mode.

```
Ø REM CURSOR/NUMERIC 128 KEYPAD - JOHN CAM
PION :REM*64
1Ø FOR T=Ø TO 88:POKE 6912+T,PEEK(64128+T)
: NEXT :REM*211
2Ø POKE 83Ø,Ø:POKE 831,27 :REM*115
3Ø S=6977:POKE S+4,157:POKE S+3,17:POKE S+
12,29:POKE S,145:POKE S+6,148 :REM*36
4Ø POKE S+14,2Ø:POKE S+5,19:POKE S+1,Ø:POK
E S+13,Ø :REM*36
```

—JOHN CAMPION, RANDALLSTOWN, MD

S5E1 SCREEN EDIT 64

Here's a short machine language routine that every C-64 owner can put to use. Screen Edit 64 lets you place text anywhere on the screen and perform some fancy moves with screen characters as well.

The syntax for Screen Edit 64 is as follows:

```
SYS EDIT, COLUMN, ROW, "{text}"
```

The syntax is self-explanatory; just enter the SYS number, row and column, then the text enclosed within quotation marks. A sample program is included at the end of the routine to show how messages can be moved at lightning speed using Screen Edit.

```
Ø REM SCREEN EDIT 64 - HENRY SHOTWELL :REM*29
1Ø SYS 58692:FOR T=7ØØ TO 726:READ D:CK=CK
+D:POKE T,D:NEXT :REM*177
2Ø IF CK<>3566 THEN PRINT"ERROR IN DATA ST
ATEMENTS..." :END :REM*114
3Ø EDIT=7ØØ :REM*16Ø
4Ø PRINTCHR$(147)"SYNTAX:SYS EDIT,COL,ROW,
"CHR$(34)"TEXT"CHR$(34) :REM*22
5Ø DATA 32,253,174,32,158,183,138,72 :REM*197
6Ø DATA 32,253,174,32,158,183,1Ø4,168 :REM*24
7Ø DATA 24,32,24Ø,255,32,253,174 :REM*174
8Ø DATA 76,164,17Ø,Ø :REM*21
9Ø REM DEMO OF SCREEN EDIT 64 :REM*149
1ØØ SYS EDIT,1,1,CHR$(147) :REM*25Ø
11Ø SYS EDIT,Ø,1,"TOP OF SCREEN" :REM*228
12Ø SYS EDIT,Ø,24,"BOTTOM OF SCREEN" :REM*73
13Ø FOR I=1TO25 :REM*72
14Ø SYS EDIT,I,12," FORWARD ":FORT=1TO1Ø:N
EXT:NEXT :REM*131
```

```
15Ø FOR I=25TO1 STEP -1 :REM*227
16Ø SYS EDIT,I,12,"BACKWARDS ":FORT=1TO1Ø:
NEXT:NEXT :REM*219
```

—HENRY E. SHOTWELL, BERWICK, PA

S5E2 DUAL-SCREEN 64

If you're a C-64 programmer needing a second instruction screen, Dual Screen 64 is for you. Incorporate this routine in your own programs to create a 1000-byte second screen that's independent of your primary screen.

After Dual Screen 64 is activated, you can toggle between screens by pressing the F1 key. If you want to access the second screen from within a program, use the command POKE 788,0:POKE 789,192.

```
Ø REM DUAL SCREEN 64 - GREG HAVENER :REM*146
1Ø PRINTCHR$(147)"PRESS F1 TO TOGGLE BETWE
EN TWO SCREENS" :REM*222
2Ø FOR T=Ø TO 134:READ D:CK=CK+D:POKE 4915
2+T,D:NEXT :REM*158
3Ø IF CK <> 15217 THENPRINT"ERROR IN DATA"
:END :REM*176
4Ø POKE 788,Ø:POKE 789,192:PRINT"PRESS F1
TO TOGGLE" :REM*17
5Ø DATA 173,1,197,2Ø1,1,2Ø8,12,238,2,197,7
6,112,192,95,234,234,234,234 :REM*81
6Ø DATA 234,165,197,2Ø1,4,2Ø8,84,16Ø,Ø,185
,Ø,4,141,Ø,198,185,Ø,193,153 :REM*251
7Ø DATA Ø,4,173,Ø,198,153,Ø,193,185,Ø,5,14
1,Ø,198,185,Ø,194,153,Ø,5,173 :REM*29
8Ø DATA Ø,198,153,Ø,194,185,Ø,6,141,Ø,198,
185,Ø,195,153,Ø,6,173,Ø,198 :REM*236
9Ø DATA 153,Ø,195,185,Ø,7,141,Ø,198,185,Ø,
196,153,Ø,7,173,Ø,198,153,Ø :REM*27
1ØØ DATA 196,2ØØ,192,Ø,2Ø8,179,169,1,141,1
,197,76,49,234,173,2,197,2Ø1 :REM*43
11Ø DATA 32,2Ø8,246,169,Ø,141,1,197,169,Ø,
141,2,197,76,19,192,Ø,169,Ø :REM*59
12Ø DATA 141,Ø,Ø,Ø :REM*211
```

—GREG HAVENER, BIGFORK, MT

S5E3 C-128 VIDEO SWITCHEROO

Here's how C-128 owners can watch video on their monitors in 40-column mode, while at the same time going about computing chores in 80-columns.

First, collect your trusty old 1902 or 2002 monitor (or newer 1084); your C-128; a 2-into-1, Y-type cable with RCA-type connectors; and a VCR or camcorder. Plug the single-end RCA plug of the 2-into-1 cable into the Video Out connector on the video source and the dual ends of the cable into the Chroma and Luma inputs on the back of the monitor. (You can also run a single audio cable from the video source to the Video In on the monitor.) Plug the RGB Out connector on the computer into the RGB In of the monitor. Turn on your video source.

Now, you can watch either video or cable television (sent through your VCR) in 40-column mode, and during the commercials (or scary parts) switch back to the 80-column word processor you're using to write that letter to Magic.

—TIM WALSH, PETERBOROUGH, NH ■

NEWS AND NEW PRODUCTS

With headliners like *Dr. Evil*, *Elvira* and *The Hangman*, you might think it was Halloween. But we know it's just another day in Commodoreville.

By JANICE GREAVES

NEW AD&D SERIES JUST RELEASED BY SSI

SUNNYVALE, CA—It takes a lot to get Dennis to stop the presses here at *RUN*. But when I got the mail this morning, I knew it was one of those moments: SSI has just started shipping the first title in an all-new series of Gold Box AD&D fantasy role-playing games: **Gateway to the Savage Frontier**.

Gateway takes place in previously unexplored territory within TSR's *Forgotten Realms* game world. Starting in the town of Yarter, you trek over a vast wilderness, gathering items of mystical power so you can save the frontier from dark invaders. Characters begin at the second level and advance to the eighth.

Gateway is based on an enhanced version of the award-winning game system used in *Pool of Radiance*, *Curse of the Azure Bonds* and *Secret of the Silver Blades* AD&D computer games. It offers 40-100 hours of playing time.

Unfortunately, this is probably SSI's last title for the C-64. They may not even publish the C-64 *Savage Frontier* sequel. That would truly be a tragedy.

In the words of former *Software Gallery* columnist Walt Latocha, "It's not so much that SSI produces so many role-playing games or that they're so large. No, the truly amazing accomplishment of this prolific software publisher is the consistently high quality of its products."

The game is being released at \$49.95; the clue book is \$12.95. To order, contact Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404; 800-245-4525.

ELVIRA VAMPS THE 64 MARKET

ROCKVILLE, MD—In the spring of '91, Accolade launched *Elvira: Mistress of the Dark* on the MS-DOS and Amiga markets. The game made a big splash, winning *Computer Gaming World's* coveted "Role Playing Game of the Year" award for 1991. Now it dives into the most dedicated computer gaming market in the world: C-64 adventure gamers.

The story goes something like this: Elvira had a great-great grandmother named



The Halloween queen on your 64 screen: *Elvira's* Commodore debut.

Lady Emelda who killed her husband. Her lover died in a hunting accident, and soon thereafter she killed herself. Needless to say, the castle is simply teeming with spirits. Your task is to rid Killbragant Castle of these spooks.

The game offers a point-and-click interface instead of keyboard commands. The developer boasts that the graphics and sound of the C-64 version will rival those of its Amiga counterpart.

MicroValue, the English company responsible for the *Elvira* series, tells me that there are already plans for a sequel and for an arcade version.

To find out more, contact Bethesda Softworks, 15235 Shady Grove Road, Suite 100, Rockville, MD 20850.

DR. EVIL MEETS CMD

EAST LONGMEADOW, MA—Big doin's at Dr. Evil and Creative Micro Designs. First, Dr. Evil Laboratories of Redmond, Washington, announced that, effective January 1, 1992, the company would "cease all operations." Former General Manager Kent Sullivan has personally taken over distribution of the PD telecommunications program *Kermit v2.2*, as well as the Replacement Character ROM for the BI-80 80-column card (VT-100 graphics). For information about those products, contact Kent at 16611 N.E. 26th St., Bellevue, WA 98008.

Never fear, SID Symphony fans! Creative Micro Designs will provide service

and technical support for your SID Symphony Stereo Cartridges and Swift-Link-232 Serial Interfaces, even those initially purchased from Dr. Evil. (CMD began selling those products a year ago, and will continue producing and selling them.) CMD will also continue marketing an entire line of SID-related products.

Dr. Evil's support services offered on the CompuServe, GEnie and Quantum-Link networks will cease at the end of 1991. CMD offers technical support on QuantumLink.

One final bit of news: Holz Computer Supply has begun exclusive Canadian distribution of CMD's entire line and welcomes inquiries from distributors and user's groups. Contact Holz at 403-262-6896. For more information about Creative Micro Designs or their products, write to 15 Benton Drive, PO Box 646, East Longmeadow, MA 01028.

HANG 'EM HIGH

PALM BEACH GARDENS, FL—Available exclusively for the C-64, *Hangman's Hazard* is an animated version of the classic word game. As captives in the three-dimensional dungeon of the black-hearted Hangman, two to four players compete fiercely to advance along the path to freedom. Progress depends on each player's ability to score points by solving word puzzles. Losers either remain in prison or visit the Hangman.

The word game is challenging, with a healthy blend of skill and luck, over 3000 puzzles, and a large timer with individually selectable time limits to equalize the competition. *Hangman's Hazard* can be played in groups or one-on-one. Computer opponents can play at three difficulty levels. Darkside Software is selling *Hangman's Hazard* for \$19.95. Write to them at 5501 Miramar Lane, Palm Beach Gardens, FL 33410.

TENNIS ANYONE?

WESLEY CHAPEL, FL—Have you always dreamed of playing at Wimbledon or the U.S. Open? **Tie Break Tennis**

from DigiTek gives you the chance. Play singles or doubles in any of the major tournaments, including the French Open, the Australian Open, The Masters and the Davis Cup. You choose the court surface and the racket type.

Acquaint yourself with the game in Training mode, then go on to full tour-



Always wanted to play at Wimbledon? Tie Break Tennis can take you there.

namment play. The game automatically keeps track of individual tournament rankings, which can be saved and improved in later matches. In singles play, up to 16 players can participate; in doubles, up to 8. The game also offers a variety of computer opponents with differing skills and strengths.

This DigiTek simulation is being sold for \$29.95. For more information, write to DigiTek, 1916 Twisting Lane, Wesley Chapel, FL 33543.

MAKING MUSIC

REISTERSTOWN, MD—Triangle Audio has developed **M1 Librarian**, a voice data/sequence librarian package for the Korg M1 or MIR and C-64/128 with a Passport, Sequential or compatible MIDI interface.

The voice data librarian will send and receive single programs, combinations or entire banks in either memory mode, from either the M1's internal memory or a RAM card. Separate program/combinations and sequence librarians are provided on the same disk.

In addition, with M1 you can:

- Rearrange and copy programs and combinations between banks singly or in 20-voice blocks.
- Save banks of programs and combinations separately or together.
- Convert files automatically between 100-voice and 50-voice formats.
- Send voices to the M1 and try them out immediately, without repatching cables.

- Easily move around the program via pop-up disk directories.

The M1 Librarian is now selling for \$40 plus shipping. Ordering information is available from Triangle Audio, 604 Shirley Manor Road, Reisterstown, MD 21136-2319.

C-64 SPREADSHEET

MONTREAL, QUEBEC—Pankhurst Programming continues its Calc spreadsheet series for the C-64 with **Calc II**, featuring enhancements such as windowing, sorting and virtual printing.

Calc II offers the speed of machine language with the ease of Basic. It includes over a dozen functions from Basic, plus special spreadsheet functions for working on tables.

Calc II allows up to 240 rows and columns with four display windows on the screen, and either row or column locking. With fast, smooth scrolling and a GOTO command, data throughout the spreadsheet can be viewed quickly. Cells can be configured with settings such as flush left and flush right, 0-14 decimal places, and variable column. Cells can be displayed in bar-graph format using 16 optional colors.

When printing a spreadsheet wider than the printing area, Calc II automatically splits the spreadsheet, printing the right-most sections on later pages.

Additional features include row and column sort (ascending or descending); full support of either disk or tape; and editing commands such as Copy, Insert Column or Row, Delete Column or Row, and Erase Cell.

The Calc II program is selling for \$34 from Pankhurst Programming, PO Box 49135, Montreal, Quebec H1N 3T6; 514-727-3596.

CYBERVIDEO

NEW YORK, NY—Since the 1982 publication of William Gibson's sci-fi novel *Neuromancer*, self-styled "cyberpunks" in the U.S. and Europe have dedicated themselves to realizing Gibson's fictional world. Cyberpunks are typically associated with computer hacking and piracy.

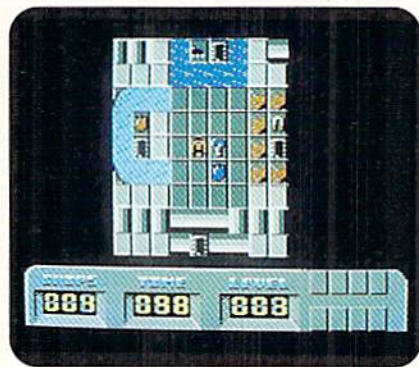
Cyberpunk, an "edutainment" video, tells how this phenomenon began and explores its implications. Included are interviews with Gibson, Jaron Lanier, Timothy Leary and Michael Synergy, in a futuristic mix of animation, live action and image processing.

Cyberpunk (VHS, hi-fi stereo, 60 minutes, \$29.95) was directed by Marianne

Tranch and produced by Peter Von Brandenburg. It's available from Mystic Fire Video. To order, call 800-727-8433.

CHALLENGING CHIPS

REDWOOD CITY, CA—Epyx has come out with a new C-64 action/strategy



Chip's Challenge by Epyx, with 144 levels of play, is a puzzle-solvers delight.

game, **Chip's Challenge**, offering 144 puzzle-solving levels. Because success in Chip's Challenge requires astute logic and deft eye-hand coordination, the game has distinctive appeal.

Solving a level usually involves collecting microchips with available tools such as keys, magnets, shields and cleats. Doors, traps, monsters and other mischievous devices pose barriers, tempt you into danger, and generally complicate your progress. The first eight levels are teaching puzzles, which introduce you to the game's basic concepts.

Because Chip's Challenge has so many levels, you can begin a game on any level you wish, and you get an unlimited number of "lives." The levels are progressively more difficult.

Chip's Challenge is being released at \$33.95, and is distributed by Epyx, PO Box 8020, Redwood City, CA 94063; 415-368-3200.

COMMODORE GAMERS ARE #3

WASHINGTON, DC—According to a recent study by the Software Publishers of America, Commodore computers are the third largest platform for computer gamers, following IBM and Amiga. The report showed that simulation games are the most popular, representing 36 percent of sales, followed by role-playing (26 percent) and arcade/action (22 percent) games, leaving sports and family entertainment far behind with 9 and 7 percent of the market, respectively. ■

MAIL RUN

This issue we have feedback on cartridges, will kits, productivity software and the future of Commodore. Plus: a list of peripheral-supporting software!

PRODUCT SOURCES

I own a C-64 and I'm having trouble finding software and hardware for it. Can you help?

—JASON TURNER
FOSTER CITY, CA

Well, Jason, there are a number of national retail stores that still carry C-64 products, including Walden Books, Babbage's, Electronic Boutique, Software Etc. and American Software. There are also several mail-order distributors that advertise in our pages and carry Commodore products. If you don't live near a store that carries C-64 products, the mail-order companies you see in RUN are a good source. Don't forget to compare prices.

There are still many companies developing high-quality hardware and software for our computers, so don't give up hope! It just takes some patience to find them.

—EDITORS

CARTRIDGE CRAZY

I would like to thank Ron Hoffman ("Put Software on Cartridge!", September/October Mail RUN). I have looked for over a year for a word processing program on a cartridge. When I called Bröderbund, the manufacturer of the word processor I use (Bank Street Writer), to see if it was available on cartridge, they replied that it wasn't and they had no plans to offer it.

I have an expansion cartridge port, as I am sure many other users do, and it would be a great convenience to be able to throw a switch and have a word processing program available on power-up. (Besides, I hate the rattling sound of the disk drive.)

I have not written before, because I assumed that I was the only person among millions that was interested in a cartridge-based word processor. If there are others like me, speak up and let the software suppliers know there is a market waiting for such a product.

—ROBERT WILSON
TIPTON, MI

A cartridge product called the Quick Brown Box (Brown Boxes, Inc., 26 Concord Road,

Bedford, MA 01730; 617-275-0090) comes with a word processor named The Write Stuff resident on it. However, the Quick Brown Box is much more than a designated word processor; it's actually a RAM expansion device that has its own battery and can store programs and data even when the computer is shut off. Of course, you must pay for this flexibility; the QBB starts at \$89. For more details about this product, see "The ABCs of REUs" in our November/December '91 issue.

—EDITORS

CONVERSION PROGRAM UPGRADE

Thank you for mentioning my program RLE/DOODLE.SDA in the article "Converting Graphic Files" (September/October 1991 RUN).

Since uploading that program to Q-Link under the name WendelUrth, I have greatly improved it. I rewrote the compatibility with JJ and RUNPaint files. Although I am no longer on Q-Link, the upgrade can be ordered for \$2 from the address listed on the title screen of the original program.

—CURTIS KAYLOR
AKRON, OH

THE FUTURE OF COMMODORE

A bit more than a year ago I bought my first computer, a second-hand C-128 with a 1571 drive, an 803 printer and a 1701 monitor. (What does 80-column mode look like?). At 32 years of age, I felt the same as I did when I got my first "Hot Wheels" race set. I loved my computer then, and I still run my old graphics-and-sound program to wake me up occasionally. Yes, shining LEDs and a glowing monitor are often my nightlights.

Although an amateur programmer and relentless late-night hacker, my purpose in life has finally found me. (Or should I say I've finally found myself?) This "computer thing" is what I hope to make my living with. There is no doubt in my mind as I read the documentation of those developers fortunate enough to be published, that this field is for me.

But during the last six hours I spent

debugging my first adventure game, a certain thought kept tugging at me: How many Commodore owners are there in the U.S.? Will the market fold up on me (and everyone else)?

Finding RUN was a gold mine to me (with all due respect to Lou Sander), and I haven't even finished reading my first issue yet. But, the magazine is quite thin compared to the other computer magazines stacked all over my office, and I notice there are no ads in there from Commodore.

So, should I expand my C-128? Or should I upgrade to an Amiga, or maybe to a... (I won't even mention it)?

—ANONYMOUS

You've raised several issues that RUN editorials have addressed over the past few years, questions that continue to dominate the Commodore market. These few facts are the only answer we can give you: The C-64 is the best-selling home computer EVER, with total sales topping six million units. And even though our numbers have dwindled over the past few years because of competition from Apple/Mac, IBM/clones and Amiga computers, the C-64 and 128 are still profitable formats for development. And our humble magazine still has over 65,000 readers! Not bad for a "dying" market. Rest assured, the Commodore user is not on the endangered species list just yet.

We certainly can't tell you what to do, but it makes sense to start any business in a field that you know and enjoy. Keep us posted!

—EDITORS

IN PRAISE OF PRODUCTIVITY

I would like to compliment you on the September/October issue of RUN. Instead of seeing the usual consolidation of game reviews and game programs, you concentrated on useful subjects, such as conversion programs, video utilities, ▶

Check out page 64 for an update
of the RUN user's group list.



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NX-2410	\$219.95

Epson	
LX-810	\$159.95
FX-850	\$297.95
FX-1050	\$416.95
LQ-860	\$565.95

ACCESSORIES

Diskettes:		Printer Interfaces:	
5 1/4 Disk Notcher	\$5.95	Xetec Jr.	\$38.95
Xidex 5 1/4 DSDD	\$4.95	Xetec Supergraphics	\$55.95
Xidex 3 1/2 DSDD	\$9.95	Xetec Gold	\$74.95
Surge Protectors:		Printer Paper:	
QVS PP-102	\$15.95	1000 sheet laser	\$19.95
QVS PP-112	\$15.95	Banner Paper 45' Roll	\$10.95
QVS PP-104	\$22.95	Drive Maintenance:	
		5 1/4 Drive Cleaner	\$4.95
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Citizen	
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200GX Color	\$201.95
HSP-500	\$315.95
GSX-140	\$299.95

Brother	
M1809	\$309.95
M1824L	\$399.95
M1909	\$409.95
M1324L	\$225.95*
M1309	\$155.95

Okidata	
182 Turbo	\$219.95
320	\$317.95
321	\$445.95

COMMODORE UPGRADES

MAGNAVOX



1CM135

- Analog RGB input
- Easy access front controls
- Built-in tilt stand
- 640 H x 200 V

\$229⁹⁵

GoldStar



2105 A

- 12" Amber display
- 640 Hx200 V
- IBM and Commodore compatible

\$74⁹⁵

MONITORS

Magnavox:
1CM135 RGB Analog \$229.95

GoldStar
2105 A Composite \$74.95

MODEMS

Cardinal:
MB2400EX EXT 2400 Baud \$94.95
MB1200EX EXT 1200 Baud \$CALL

Everex:
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Evercom 24 (INT) \$104.95
Evercom 24+ (INT) MNP level 5 \$139.95
Evercom 24E+ MNP level 5 \$189.95

HARDWARE

64C Computer \$CALL
C 128 D Computer Drive \$CALL
1541 II Disk Drive \$CALL
Colt PC \$CALL
1670 Modem \$CALL

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Case, Power Supply, Motherboard
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MAIL RUN

C-128 paint programs and GEOS software. I actively use productivity software, and I learned a great deal more about it from that issue.

The article on sharing ASCII and graphics files between different computers was outstanding. I have access to an IBM PC and an Apple Macintosh at work. I also belong to Q-Link and was unaware of many of these graphics conversion programs. Now, using the C-128 and the Mac, I have been able to exchange and laserprint GEOS and Basic 8 graphics. Sharing files with other computers will give my C-128 an unlimited lifespan.

I hope you plan on printing more productivity and conversion articles in the future and waste less space on games.

—WILLIAM LECOMTE
BURLINGTON, MA

I was recently asked to give a talk on how to construct a newsletter using geoPublish. On the day of my presentation, someone showed me a copy of your August 1991 issue with the headline "Publishing With GEOS." I had no idea that you were coming out with an edition that was almost entirely devoted to geoPublish.

After my presentation I had a chance to read the issue, and I must say I really enjoyed all three articles about using geoPublish.

I commend all three authors, Gerry Descoteaux, Robert Austin and Larry McCoy. Each provided a different angle and insight on what you need to do to produce a newsletter. As the founder and editor of a semi-annual newsletter called MAZAH (Sideral Astrology and your Macrobiotic Health), I can appreciate the time, effort and skill necessary to put together a newsletter, brochure or advertisement using a program like geoPublish.

More issues devoted to the capabilities of GEOS would be welcome.

—SHEMU-AIL BEN-MOSHE
PHILADELPHIA, PA

DO-IT-YOURSELF WILL KITS

I want to offer some help to Sharon Jayska (September/October Mail RUN). I have a shareware program called Simple Will Kit that is a fill-in-the-blank sequential file. I've used it myself, and will make it available through The Mailbag BBS (205-835-3807; 1200 baud).

—NORMAN MORRISON
OXFORD, AL

Thanks, Norman! We also had a number of letters about a program called WillMaker,

by Nolo Press. Unfortunately, a call to Nolo Press revealed that the program is no longer being published. Copies might still be available through software distributors.

—EDITORS

1541/1571 DRIVE ALIGNMENT

In the ProTips section of the September/October RUN, there was a paragraph on 1541/1571 drive-alignment problems. It did not, however, give the exact name of the program or say where to purchase it. I would appreciate any information you can give me about this program.

—ANDRE BERUBE
PROVIDENCE, RI

Believe it or not, the name of the program you're interested in is "1541/1571 Drive Alignment." It's from Free Spirit Software and is available through many distributors of Commodore products, including Software Support International and The Grapevine Group (check our ads).

—EDITORS

I PAINT AUTHOR PICKS NITS

I want to commend you and John Ryan for the review of 128 Paint programs ("Paint Versus Paint," September/October '91). It concisely covered the main concerns of those buying a graphics package. However, as the author of I Paint, please humor me while I nit-pick on a couple of points.

First, I Paint offers virtually unlimited fonts, not seven as reported. There are eight font slots: seven permanent, one disk-loaded. Thus, you are limited only by the number of fonts on disk(s). In addition, I Paint comes with a condensed file that automatically expands into 11 more font files and several printer drivers; and more are available through such sources as Q-Link. I believe Masterpaint is similarly unlimited.

Second, on large REUs, I Paint allows both a RAMdisk and full-screen clip and safe areas, not just an either/or choice. This is a luxurious combination, offering something of Mr. Ryan's spare-screen merge wish.

—RICK KANE
MINNEAPOLIS, MN

That's not such a nit-pick! Thank-you, Rick, for clearing up the misunderstanding. While we're on the subject, we have some information about I Paint's publisher, Voyager Mindtools.

It seems that the company is no longer in business. SSI is currently distributing I Paint (800-356-1179), and Dialogue 128 is being

distributed by Triple Point Software (Box 369, 253 Collete St., Toronto, ONT, Canada, M5T 1R5). Unfortunately, we do not have information regarding Voyager Mindtools' other products.

—EDITORS ■

Got something to say? Here's your place to say it. We always enjoy hearing from our readers (even if they're mad at us!). Send your letters to Mail RUN, c/o RUN Magazine, 80 Elm St., Peterborough, NH 03458.

PERIPHERAL VISION

We have had several requests for a list of software that supports the 1351 mouse, the 1581 disk drive and the 17xx series of REUs. Here is a list of our favorite software that supports these peripherals. If you have a favorite program that you would like to add to the list, please write to Mail RUN, RUN Magazine, 80 Elm St., Peterborough, NH 03458. Periodically we will publish an updated list.

—EDITORS

PRODUCT	MOUSE	1581	REU
1581 Toolkit		•	
Adv. OCP Art Studio	•		
Basic 8	•		•
BB Writer v2.0			•
Bible Search		•	
Big Blue Reader	•		
Cadpak			•
Dialogue 128			•
Fleet System 4			•
Fontmaster 128		•	•
GEOS v2.0*	•	•	•
I Paint	•	•	•
JiffyDOS			•
Maidstone Quest	•		
Master Paint	•		•
Maverick v5		•	•
News Maker 128	•		•
PaperClip III			•
Pocket 2 Series	•		•
PocketWriter 2/3			•
Sketchpad 128	•		
Spectrum 128	•		•
Super 81 Utilities		•	
Super Snapshot 5		•	•
Superbase 3.0		•	
Tax Command			•
The Write Stuff		•	•
Ultraterm III		•	
VizaWrite v1.5 & up			•
Word Writer		•	

* Includes deskTop, gateWay and related GEOS applications.

SOFTWARE GALLERY

Dirt, dribbles, death and dough: Reviews of Super Off-Road, Dream Team, Iron Lord, SEC Check Register and Golden Axe.

By JOHN RYAN

IRON LORDB+

An arcade-fantasy-strategy-role-playing game from Europe.

With American software production for the C-64 in a tailspin, it's reassuring that the Europeans are beginning to pick up the slack. If Iron Lord is indicative of what we can expect from our European cousins, then reports of the demise of the C-64 software market may very well be premature. Iron Lord is a medieval fantasy game that sports a little bit of everything. It is not a fantasy role-playing game, yet there are elements of FRP throughout. It is not an arcade game, nor is it wholly a strategy game, though certainly there are arcade sequences, and strategy comes into play as well. Iron Lord effectively combines all these genres into one package.

As the forgotten son of a dethroned king, you have returned home after five years of fighting the Holy Wars. While you were away, your uncle seized power and the land fell, abject. Your task: to take the kingdom back from the thieves, assassins and spies who now rule.

But it will not be easy. The people's mistrust is so deep that even you, the rightful prince, must prove your mettle to the kingdom's jaded subjects. In order to fight and win the war against the Army of Chaos (thereby restoring your throne) you must persuade the inhabitants to follow you into battle.

Much of the action takes place on a high-resolution map of the countryside, showing an overhead view of several towns, castles and interesting areas that you can visit. You need only direct your knight to a particular area and he'll quickly gallop on horseback to that destination. Once in a town, the view switches to show the local area, again with an overhead view. As you guide your knight around a town, you'll find places to visit such as inns, pubs and herb shops.

Since your first job is to convince the people that you're a prince with whom to reckon (true royalty always uses proper grammar), you'll probably want to spend much of your time initially at the archery



European imports like Iron Lord bode well for the future of C-64 gaming.

range and the gambling house. At the archery range, you'll vie for respect with displays of marksmanship. Even though the archery competition is one of the more entertaining aspects of the game, you'll find that becoming proficient enough to qualify through the three rounds of competition will take a lot of practice. At the gambling house, arm wrestling and dice games will further your reputation as well—if you're good enough.

From time to time you'll find yourself confronted by enemy knights. During battle, the view changes to the first person: The enemy appears directly ahead of you. Fights are usually short and have little influence with the locals. Of course, getting hacked up is not conducive to good health.

At some point during the game you'll finally convince the populace to arm themselves and follow you into battle. This "final" battle occurs over a series of

turns comprised of troop movement then battle, which occurs on an overhead map showing both armies. If your army is successful in battle, you'll move on to the final phase of the game: The Labyrinth. You must maneuver (and fight) your way through all six levels to win the game.

There's a lot to Iron Lord, and many players may find one aspect more fun than the others. The graphics are particularly good, as is the sound, with high-resolution screens and a superb musical soundtrack. The game comes on a double-sided disk and the loading time between scenes is tolerable.

Whether you like arcade, strategy or FRP games, I think you'll enjoy Iron Lord. It deftly combines them all into a single story. To the programmer's credit, Iron Lord is one of the few all-in-one games that actually delivers.

(UBI Soft/Electronic Arts, PO Box 7578, San Mateo, CA 94404; 800-245-4525. C-64/\$29.95)

GOLDEN AXEA

Solid gold arcade excitement for iron-clad gamers.

Ready for some unabashed, slashing, cymbal-crashing arcade action? Tired of FRPs, RPGs and colorless CRTs? Are you the type who's gone through five tempered-steel joysticks in the past three months? If so, Sega's great coin-op Golden Axe has been translated to the C-64 just for you. An amazing thing about this translation: It looks and plays great—no small feat in this age of mass antiseptic translations.

The Death Adder and his minions have invaded the land, imprisoned the king and his daughter, and pilfered the legendary Golden Axe. You must defeat the Adder and regain the throne. In the great tradition of arcade-game reality, being a hero means nothing less than hacking your way to victory.

The vivid graphics and stirring soundtrack of the opening sequence really set the mood. Golden Axe offers you the ▶

SOFTWARE REPORT CARD

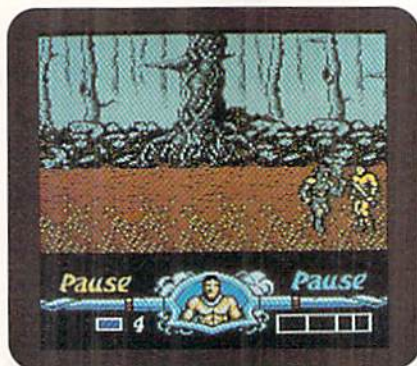
Outstanding	A
Good	B
Average	C
Below Average	D
Crummy	F

chance to play one of three heroes, each with different strengths and weaknesses. From there, you are off to save the land. The game offers full-screen scrolling graphics as your character moves from left to right. During your travels, monsters will advance from either side of the screen and attack. With your fingers firmly clenched to your joystick, you can jump, kick, leap, head-butt or otherwise slash your way through each screen.

Successful strikes against a monster slowly sap its strength until it dies. Successful strikes against you will do the same. If you manage to beat off each series of attacks, you advance to the next screen and, eventually, the next board. Occasionally, small thieves scurry to and fro across the screen. Kicking them will dislodge little goodies that you should pick up. These urchins often carry magic potions or food packets that can increase your strength or stamina.

The boards grow successively more difficult. The monsters get bigger and stronger, more difficult to beat. You'll have to depend on your prowess with the joystick and, admittedly, sheer good luck. Along the way you'll find strange, fire-breathing mounts to aid you. Of course, saving your magic potions for just the right enemy is paramount. You have several lives to work with and, if you die, the game will allow you to continue where you left off. Hey, no one said that being a hero would be easy—and in Golden Axe, it's not.

It's hard to find anything to gripe



Hey, no one said being a hero would be easy—and in Golden Axe, it's not.

about with this game. There are no pretenses here, no grand claims or promises. It's arcade action that plays smoothly and quickly. Graphics and animation? Superb. Here (at last!) is a game that offers mindless entertainment without apology.

(Sega/Electronic Arts, PO Box 7578, San Mateo, CA 94404; 800-245-4525. C-64/\$24.95)

SEC CHECK REGISTER 128.....B+

Extras such as check printing set this bookkeeping package apart.

When I bought my first computer in 1979, I had to come up with some darn good excuses to quell my wife's alarm at

the cost of the machine. Recipe-filing and checkbook balancing to the rescue! Looking back, I can see how ludicrous these justifications must have seemed—even with a \$2000 computer it was much quicker to balance a checkbook by hand.

This stands as true today as it did back then, so I was surprised to see another check-managing program on the market. It's release is somewhat justified, however, because Check Register 128 does more than just balance your checkbook. It offers a complete checking account manager, but also sports features that print checks and track loans and investments.

The program requires a C-128 (with upgrade ROMs) or a 128D. It operates in 80-Column mode only and supports the 1500 family of disk drives.

Obviously, the bulk of Register 128 is designed to aid you in managing your personal or small-business checking accounts. Although it's not revolutionary by any means, the software contains several interesting features for those of you who have an active checking account.

The register can hold up to 750 entries. Once that limit is reached, it can be saved to a history file on your work disk.

In addition, the program supports check printing and envelope addressing, and you can configure Register 128 to fit various check styles and formats. Setting up the printer variables for doing so, however, takes a bit of trial and error. You'll need to save a definition file for each check format, which involves

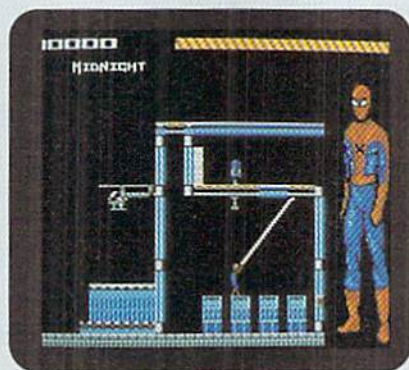
THE AMAZING SPIDER-MANB-

The arachnid hero's a marvel, but he's less than super

Twice before, Paragon Software successfully brought Marvel comic books to the C-64 with Dr. Doom's Revenge and The X-Men. However, The Amazing Spider-Man, Marvel's latest, doesn't quite live up to its predecessors.

This six-level game begins when Spider-Man's wife is kidnapped by Mysterio, a longtime Spidey foe skilled in chemistry, hypnotism and magic. Mysterio has ordered the famed wall-crawler to the old abandoned Rockwell Movie Studios, where he must run an evil gauntlet to rescue his mate.

With a joystick or keyboard, you'll have to guide the brave webslinger past Mysterio's booby-traps. He'll face spikes, electrified ceilings, gas, illusory floors, and robots that can look like Mysterio,



Spider-Man isn't up to its Marvelous predecessors, but it's solid fun anyway.

Mary Jane—even Spider-Man himself. Your main hope for survival lies with Spider-Man's super powers, including his incredible strength and his ability to climb walls. Also important, of course, is his web, which can free him from tight situations.

A key feature of this program is find-

ing and activating switches that change the structure of the room you're currently seeing, and off-screen areas as well. These tricky devices provide a stimulating tactical challenge.

The graphics, animation and control system are good, but there are problems with other elements of the software. The sound leaves much to be desired, with long periods of total silence. The copy protection is excessive (you have to answer three questions), and there's no Save option, a much-appreciated feature of the previous two Paragon programs.

Even though it could be better, The Amazing Spider-Man will appeal to many players. Its mental challenge and world-famous title character should attract a large, enthusiastic audience.

(Paragon Software; distributed by Microprose, 180 Lakefront Drive, Hunt Valley, MD 21030. C-64/\$29.95) ■

—WALT LATOCHA

telling the printer how many columns and lines to advance for each entry and what printer codes, if any, need to be sent to your particular printer or interface. I suggest that you practice the setup using plain printer paper first. Checks (particularly the form-feed variety) are too expensive to waste.

You can set up recurring payee files and addresses. Recurring entries (those items you must pay regularly, including mortgages, payroll, cable TV, etc.) are tracked by reference numbers and handled a bit differently within the register. You can establish as many as 54 payee records with their addresses, and print out the checks and envelopes for the payee. Debits are handled automatically here as well.

Outside the checking program, a financial calculator is available to help you determine the future value of investments and deposits. It will also calculate loan information, including amortization (a record showing how fast you will pay down the principle of your loan).

Register 128 is a solid package and relatively fast. The 12-page, staple-bound documentation is basic, but it is complete enough to help you through some of the more difficult areas of the program. A utility is included to help users of previous versions of this program convert their files to the new format (v1.03).

If you've been looking for a checking manager, then Check Register 128 may be just the program for you. If you're already using a good checkbook program, either public domain or commercial, then SEC Check Register probably won't give you anything new.

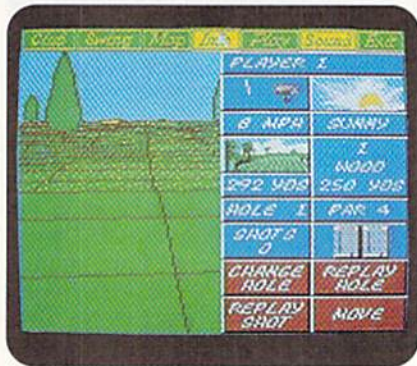
(Sparks Electronics Co., PO Box 4475, St. Joseph, MO 64504. C-128)

GREG NORMAN'S SHARK ATTACK! THE ULTIMATE GOLF SIMULATOR.....C

Golf simulation fans will be teed off by this disappointing game.

If you don't know who Greg Norman is then you'll probably think this game occurs in an ocean somewhere. "Shark Attack" actually refers to the Australian golfer's nickname: The Great White Shark. Be that as it may, this simulation is disappointing in many ways—so many, in fact, that I had the irresistible urge to look up the word "ultimate" in the dictionary to make sure they hadn't redefined the word recently.

It was a harbinger of the disappointments to come when the game would not boot on my 128D in C-64 mode. I removed all of my peripherals, knowing that sometimes games won't load with these extras attached, but to no avail. I even tried booting the game on a friend's 128D; still no luck. Finally, I dug out my old "flat" C-128 and, yes, it boot-



Shark Attack offers a plethora of variables, such as wind speed and ball effects.

ed fine. I also tested the game on a C-64, again without problem. (One editor back at RUN HQ claims that it booted fine there on a 128D in 64 mode. I think she's just bragging.)

Being an avid duffer, I went into this game wondering how it would measure up to earlier golf simulations, such as Leaderboard and Jack Nicklaus's Greatest 18 Holes of Golf. Sadly, Shark Attack falls woefully short of both in both graphics and playability. The simulation is not terrible; it's just not as good as other products currently available, especially if their "ultimate" claim is taken seriously.

Once you get past a rather long loading period and password check, you're presented with a main screen and a plethora of choices: You can set up wind and weather factors, ball effects such as back and side spin, and have a caddy help out with club selection and course play. Shark Attack has several unique features that help make it realistic. You can, for example, design your own swing by altering your swing arc. You can even open and close your club face and adjust the loft.

Although Shark Attack incorporates many features standard in golf simulations (plus a few unique ones), it nonetheless suffers in graphics and realism. The murky, ill-defined graphics look as if they were converted from IBM CGA-type colors, giving everything a yellowish-green cast. The landscapes are rather fractal and don't impart much realism to the simulation. With-

out using the overhead map, it is difficult, at times, to judge your position relative to the pin.

More important, though, game play itself seems disjointed. The swing is not very smooth and the ball moves impossibly fast once it's hit. A 250-yard drive takes about as long as a 50-yard wedge shot. I didn't get the sensation that my ball was soaring up into the heavens and then falling to the fairway with a gentle bounce. The bullet-fast flight really detracts from the simulation.

On the other hand, screen updates are relatively fast as you play through a hole, since disk access occurs only when you move from hole to hole. Shark Attack includes two full courses and a roster of ten predefined computer players, each with their own experience, stance, grip, swing and fitness factors. Plus, the roster can hold up to 40 additional user-defined players. The documentation is straightforward and includes tips from Mr. Norman, along with strategies and handicapping formulas.

If I sound disappointed with Shark Attack, I am. This simulation does little, if anything, to build upon advances made by other golf simulations. In fact, in at least the graphics and realism categories, it falls short of earlier efforts.

(Virgin Mastertronic, 18001 Cowan, Irvine, CA 92714. C-64/\$19.99)

SUPER OFF-ROAD.....B

It's like a demolition derby and a slot car race, all rolled into one.

This cute coin-op translation gives you a taste of what it must be like to drive an off-road race truck.

This is demolition derby on dirt. No sleek formula racers here, only jacked-up race trucks with reinforced cabs, roll bars and super-strong suspension systems. Likewise, the drivers have little regard for safety as they push their vehicles to the limit over hills, gullies, water holes and hordes of other treacherous obstacles.

In Super Off-Road, you always face three competitors. You can either play against friends or pit yourself against the computer. You participate in a series of "stadium" races, complete with hazards. There are a total of 16 track configurations available, though you'll not see all the configurations unless you can take the checkered flag in virtually all of the races.

The stadium takes up the full screen and is viewed from an oblique overhead angle. Each competitor has a different-

SOFTWARE GALLERY

colored truck to guide around the twisting, curving track—over water holes, through mud bogs and over inclined jumps. Needless to say, the other three trucks on the track become as hazardous as the obstacles. More often than not, you'll find yourself in the midst of a demolition derby.

Each race is four laps long. The name of the game here is prize money. You'll be awarded cash according to your finish in the race. Likewise, you'll have the opportunity to pick up stray bags of money and other goodies that pop onto the track from time to time.

At the end of each race, you can stop by the Speed Shop and put your prize money to good use, purchasing nitro units, tires, shocks, accelerators and other speed-enhancing accessories. You start the game with three trucks, and lose one for each race in which you don't place first. Obviously, you'll have to win the majority of the races to see all the races to the end.

Overall, the graphics and sound are very good. The three-dimensional aspect of the stadium track, framed by the white



No sleek formula racers here, only jacked-up super-trucks with turbo suspension!

and red barrier fences, is nicely done, and the trucks, while rather small, move precisely according to your joystick movement. Even though the game doesn't have much staying power when you play by yourself, if you can dig up a couple of friends, Super Off-Road has all the makings of slot car racing without the slots.

(Virgin Mastertronic, 18001 Cowan, Irvine, CA 92714. C-64/\$19.99)

THE DREAM TEAM, 3 ON 3 CHALLENGE.....C

This mediocre basketball simulation made our reviewer cry foul.

Ever since the release of Jordan vs. Bird a few years ago, software publishers have been hocking sports simulations that rely on the name recognition of sports superstars. Although this one is a bit more subtle than some of its predecessors (and successors, I dare say), it is still "yet another pro-endorsed basketball simulation."

A quick glance at the package will tell you that the dream team is Patrick Ewing, Dominique Wilkins and Joe Dumars. Apparently, the creators of The Dream Team 3 on 3 Challenge see this guard-forward-center combination as the best three-man team in the NBA, and I'll not dispute that.

The Dream Team permits one or two human players to face off in a game of one-on-one, two-on-two or three-on-three half-court basketball. The game can be played on an outside court, gym-

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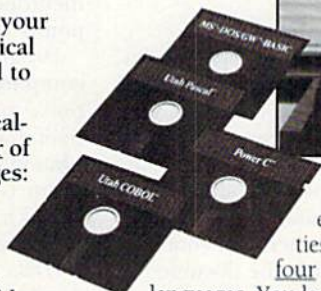
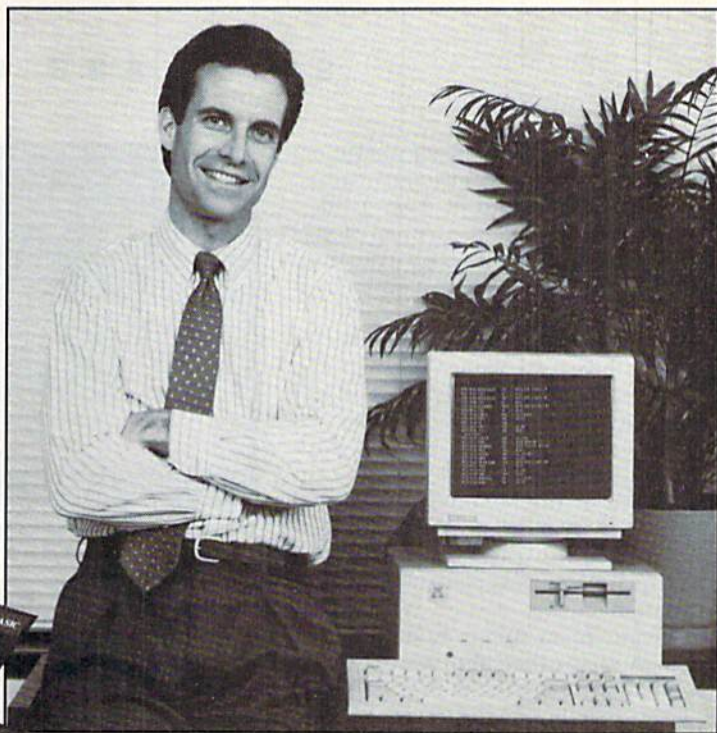
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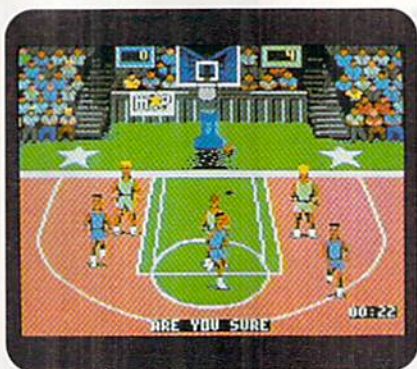
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SOFTWARE GALLERY

nasium court or professional auditorium court. Two sets of rules can be invoked: standard game rules or 3-on-3 rules. There is a field of 26 predefined players from which you can select your own dream team, but you can't edit the players' strengths or skills.

The half-court playing field takes up most of the screen, rendered in high-resolution graphics. Dribbling is basically automatic whenever an active player is near the ball. Likewise, shooting, passing, blocking and rebounding occur when the joystick button is pressed, and the action depends on the position of your player. Other features include variable quarter lengths, play-calling and violation handling.

Dream Team suffers from the same malady that other multiplayer sports simulations experience: With so many players together on the screen, keeping track of who's doing what to whom can get confusing. Three-on-three games place six players on the court and, even though the graphics are fairly well defined, the players tend to bunch up, making it difficult to tell which oppos-



Half-court graphics look good, but play is confusing in Dream Team 3 on 3.

ing player has the ball.

The graphics, while not spectacular, lend themselves well to the half-court simulation. I did find, however, that moving the large on-screen players was somewhat incongruous and unrealistic, especially while shooting. You'll have to rely on the score board and "swish" sound to determine whether a shot is in the hoop. Even though the documentation refers to four different plays that can

be called before inbounding a ball, it doesn't go further to explain what each play does.

My real gripe with this program is the misleading packaging. The C-64 game box sports gorgeous IBM VGA graphics, which the C-64 cannot equal. But more than that, the box copy goes on to list features such as 15 play sets, handicapping, tournament play and player-roster editors. But these features *do not exist* in the C-64 version!

I realize that cutting costs often involves using one box for all versions, but if a game lists features on the package, then those features should darn well be included! (They are, after all, selling points for the game, are they not?)

Dream Team is unimpressive when compared to other basketball simulations, and having three superstars lend their names to the game seems somewhat perfunctory. On the whole, Dream Team is like a bowl of noodle soup: It makes a decent meal, but I wouldn't call it dining.

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Are you tired of having the sand on the beach of computer respectability kicked in your face? Have you had it up to here with those uppities that relegate Commodores to the ninety-pound weaklings of the PC set? Friend, maybe you need to go on a hardware RAMpage!

Yes, your humble 64/128 can become a computing force to be reckoned with. Because, while most companies in this market have thrown in the towel, Creative Micro Designs has held fast to the vision that Commodore owners should be able to walk down micro-muscle beach with their chins up. And with RAMLink and RAMDrive, CMD has put their money where their mouth is.

FROM A SQUEAK TO A ROAR

RAM expansion on the C-64 has always been hindered by a limitation of the computer's "brain," the 6510 microprocessor. Its address bus—the part of the microprocessor that identifies which memory location the chip would like to use—is only 16 bits wide, meaning that it can see only 65,536 bytes at a time. In short, the C-64 already has all the memory it can use. The same is true even for the C-128, which is actually limited to 64K (although it finagles a second 64K by juggling different portions of memory around).

The only alternative left to hardware developers has been cheating. RAM expanders such as Commodore's 1700 series don't actually boost the computer's 64 kilobytes, but act more like high-speed disk drives. Programs use the REUs to hoard code or data in a convenient cache until needed; then they load it into the "real" RAM for use. This may sound sluggish, but it's really very fast—so fast that, as far as the user is concerned, the expanded Commodore does have more than 64K.

While these REUs may work like disk drives, they certainly aren't as easy to use from the program's perspective. Programmers must write special routines to "stash" and

"fetch" data to and from the REU. Not surprisingly, few developers have been willing to spend time supporting the minority of REU-equipped Commodores out there.

As a result, REU users have had few software choices, only GEOS (which adds REU support to all of its programs through operating system routines) and a handful of 64/128-mode applications. That is, *until now*.

With the introduction of the RAMLink and RAMDrive REUs, the "software issue" is no longer an issue. Like Commodore's REUs, these products are essentially extra-fast disk drives (there's no clearing that initial 64K hurdle), but, unlike the Commodore REUs, they're accessed *as any other drive*. They hold files that can be loaded, saved, scratched and renamed with the same DOS commands the 1541 and 1571 use.

In theory, any program that can use a disk drive can use RAMLink and RAMDrive instead. Even software written for a specific drive can function with these REUs, using 1541, 1571 or 1581 emulation modes.

Plus, there's another twist: The contents of these RAM devices doesn't disappear when the computer is shut off. Power failures won't dent their armor, and you can install your main software library in RAM for near-instant use. RAMDrive is battery-backed and can keep its memory for up to several days. A similar option for RAMLink is available with the purchase of a backup battery.

Both RAMLink and RAMDrive come with a portion of JiffyDOS—CMD's enhanced disk operating system for the C-64/128—that includes a wedge and several new commands. (This won't speed up drive access as much as the complete JiffyDOS does, however; that requires JiffyDOS drive ROMs, available separately.)

RAMDRIVE

RAMDrive bears CMD's label along with that of its developer, Performance Peripherals. It comes in capacities of 512K, 1 megabyte and 2 megabytes. The whole ▶

By **STÉPHANE DIRSCHAUER**



*RAMLink and RAMDrive transform
the Commodore into a force
to be reckoned with.*



RAMDrive is fast and looks like a regular disk drive to your programs.

unit is slightly larger than a deluxe TV remote control, and fits snugly into the C-64/128's expansion/cartridge port. The control panel has 1541-like activity and error indicator lights, plus several unfamiliar features: a reset switch and a light that indicates when the device is properly set up.

The handy Swap button lets you temporarily change RAMDrive's device number. Pushing Swap the first time assigns RAMDrive to device 8 and reassigns the former device 8 to RAMDrive's old number. A second press does the same with device 9, and a third resets all device numbers. Two lights indicate which devices have been swapped. This feature comes into play when a program talks only to device 8. (RAMDrive itself can be assigned a default number between 8 and 29 with a program that comes on the accompanying utilities disk.)

signed a default number between 8 and 29 with a program that comes on the accompanying utilities disk.)

RAMLINK

RAMLink is CMD's solution for those who already have an older REU. It features two slots: the RAM port, which accommodates an REU (including RAMDrive), and a pass-through port, which accepts anything that you've had in your expansion port before, such as a utility cartridge.

RAMLink's control panel sports all the features of RAMDrive's, plus a Normal/Direct switch. Flicking it to Direct lets software use the plugged-in unit as a "vanilla" REU without RAMLink's DOS.

Inside the case is a connector for a RAMCard, a CMD board that adds extra RAM to the REUs—as much as 16 megabytes' worth. A RAMCard holds up to four SIMM memory modules of either 1 megabyte or 4 megabytes each. If your RAMCard comes with less than four SIMMs, you can add more later if needed. The memory in the RAMCard and the REU can work together, or you can have a RAMCard-installed RAMLink with no REU.

INSTALLATION

RAMDrive and RAMLink (I'll refer to them collectively as the RAM drives) slide into the expansion/cartridge port, and often that's all the installation needed. However, some C-64s require a bit more. To correct a timing conflict between those computers and the REU, RAM drive owners must hook up a jumper clip inside the 64.

What's that? You'd sooner operate on your dog than your C-64? Don't worry. The only tool needed is a screw-

driver, and the whole procedure takes minutes. The instructions accompanying the RAM drives are precise and include clear illustrations.

UP AND RUNNING

Once the RAM drives are hooked up, the C-64/128 displays a slightly altered power-up message indicating that JiffyDOS is active. When that appears, you'll want to set up the device's RAM.

The RAM drives organize data into partitions and subdirectories, which are as necessary as they are convenient. A 4-megabyte RAMLink, after all, can hold 16,000 files. (Apart from available memory, there's no limit to the total number of filenames.)

Because partitions must be given a fixed length and emulation type when created, they're most useful for dividing the RAM into large chunks that can be further divided using subdirectories. Native-mode partitions can be of any size, but the emulation modes are limited to the mimicked drive's real disk space. A 1541-mode partition, for example, can contain only 664 blocks. Partitions are selected with a new disk command, CP, or by preceding a filename with the partition number (1-32) and a colon, as in 3:RUNPAINT.

Subdirectories are a more flexible way to organize data in a Native-mode partition. They're created and modified with a set of new DOS commands, and they appear in the directory listing as DIR files. Subdirectories can be placed within subdirectories, *ad infinitum*. Selecting them is a matter of entering the subdirectory name(s) before the filename (e.g., APPLICATIONS/GRAPHICS/RUNPAINT).

USING SOFTWARE

In the best of all worlds, every peripheral would function with every program. In reality this doesn't happen, but RAMLink and RAMDrive come as close to being completely compatible as any peripheral of their type. Thanks to the emulation modes, programs can be fooled into thinking they're dealing with a real disk drive, and a specific model, too.

The main exception, of course, is copy-protected software. Unless you can remove any disk-based copy protection, you will be unable to copy such software to the RAM drives. Several solutions, however, are available:

- In some cases, only one essential file, usually a boot program, is copy-protected. Thus, it's possible to copy the rest of the disk to the RAM drives and load just the boot program from the floppy. The Swap switch can then be used to transfer control to the REU. For instance, you may be able to put your role-playing game's data files in RAM, then switch when the main program has been loaded.
- In other situations you can use a copy program to peel the copy protection off the disk. This, naturally, requires a copier and a special parameter file that tells the program how to circumvent the particular protection. Alternatively, if a program loads entirely into memory, the "snapshot" option of a utility cartridge can be used to save an unprotected file to RAM.
- Another alternative is simply avoiding software with disk-based copy protection. Less restrictive forms of copy protection exist, such as asking you to enter a code word from the manual or a figure from a code wheel, and so on. And, an increasing number of programs, usually utilities, are not copy-protected at all.

Besides copy-protected software, you may experience difficulties using certain very task-specific, disk-intensive software, such as copy programs. My utility cartridge's copier, for example, would not work with the RAM drives. But since the RAM drives' utility disk includes two good copy programs, this is probably a moot point.

GEOS AND CP/M

All that extra RAM cries out for a more ambitious operating system than the C-64's native kernel. GEOS fills the bill, but it's also an example of those disk-intensive programs I just mentioned, so it needs a few patches to use RAMLink and RAMDrive. CMD's alternative desk-Top operating environment, gateWay, includes those patches in addition to all the regular deskTop features. (See Malcolm O'Brien's review of gateWay in *RUN*'s September/October issue, on page 31.)

GateWay not only accesses the RAM devices, but actively supports them with options that use directories and partitions. C-64 and C-128 versions of gateWay are available for \$3 to RAMLink and RAMDrive owners. (If you want both versions, it's \$32.95.)

GEOS with an REU is fast and powerful, and the same applies to GEOS and the RAM drives. A mid-sized RAM drive is more than enough to house the system files, plus applications and data. You can even have GEOS come up as soon as you switch on your computer: A program packaged with the RAM drives lets you set a file to automatically load. Choosing GEOS as that file makes the gateWay notePad appear on your screen a few seconds after the C-64/128 activates.

GEOS applications that have special REU support built in, such as the geoDebugger part of Berkeley Softworks' geoProgrammer package, are also supported.

CP/M, unfortunately, is another story. The only way to use it with the RAM drives is to create a 1541 partition, because CP/M accesses most drives using Burst-mode commands that the RAM devices, being connected to the expansion port, just can't handle. Perhaps the introduction of a new device driver will improve the situation.

OTHER CONSIDERATIONS

Just how fast are RAMLink and RAMDrive? To get an idea, consider that it takes the C-64 little more time to access their RAM than its own, and the RAM devices run rings around any real disk drives. Access times are typically less than a second, regardless of file size. For example, while it takes a 1541 about two minutes to load a 190-block file, a RAM drive can load it in a second. Similarly, saving a 96-block program takes 66 seconds with the 1541, but less than a second with the RAM drive.

As for how much RAM you need, the general rule is: *as much as possible*. The 512K that sounds so large now may seem limiting in a few months. As you know, the hunger for more memory can be insatiable.

RAMLink and RAMDrive come with a superior three-ring-binder manual that offers everything from tips on using copy-protected software to technically detailed appendices showing memory maps and file formats. If a problem develops, telephone support is available. What's more, modem users can access CMD's product-support area on Q-Link, or on CMD's 24-hour BBS.

WHICH TO CHOOSE?

The question you should ask is not "Should I buy a RAMLink or RAMDrive?" but "Which configuration



RAMLink has ports for an REU and other cartridges, as well as space inside for a configurable RAMCard memory-expansion board.

should I get?" A product that's been so carefully and successfully crafted is a rare find. It has the potential to be your most-used peripheral.

Here are a few configuration possibilities:

- Add a RAMDrive to a single 1541 for holding both program and data files. It will reduce disk-flipping to a minimum, as well as take most of the workload off the 1541.
- Install a RAMLink between your computer and REU. The REU will become much more than a device for use with GEOS.
- Install a RAMCard to increase RAMLink's memory.

Virtually any system will benefit from RAMDrive, RAMLink or both. RAMLink is more easily expandable, and therefore makes a better long-term choice, but it's the more expensive of the two. RAMDrive is probably the least expensive way available to make all your computing smoother, easier and more powerful.

So, the next time some computing beach-bully with a fan club of one brushes you off as just another Toys-R-Us wimp, remember: You don't have to take it any more. Now you have all you need to kick up sand with the best of them. ■

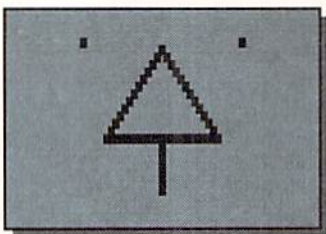
Stéphane Dirschauer lives in Toronto and has been writing articles for RUN for over a year. He loves his Commodore, and refuses to take any guff about it.

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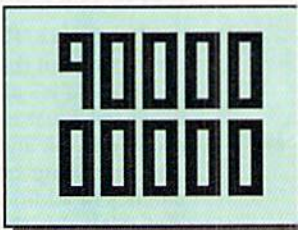
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Mah Jongg

Call for take-out! This ancient Chinese game of skill promises late hours of addictive fun.



By JOHN RYAN

clench my eyes to ease the stinging dryness. After a moment's pause I turn back to my 64, mind racing. With a burning stare I review the board: There was another nine *somewhere*. Did I take it already? There! It's blocked by a three—where's the other three? Got it! Back to the nines and I've opened up the whole row. I know the matches, remember where they are—move quickly for max points—clear the board—record score!

ANCIENT SAYING: "MAYBE WIN, . . ."

Mah Jongg's a simple game really. At least the concept is fairly basic: You just remove 132 tiles from the playing field in matched pairs. The tiles are stacked in four layers, like a pyramid. From the bottom, the layers are dark gray, lighter gray, white and green. Using a joystick you move the cursor over the tile you want and press the fire-button. Pick one

tile, then pick its match; they will automatically be removed from the board. If it is not a legal match, an error message will appear.

You can pick a tile from any level, as long as its right or left edge is free. For instance, if there's a green tile between two other green tiles, you can't take it, because it doesn't have a side free. (The top and bottom edges don't matter.) As you play, remember that these are solid layers, so underneath that green tile is a white, a light gray and a dark gray tile.

With only 60 seconds to find a pair, it's easy to become frantic. The number of points you receive for making a pair equals the number of seconds left on the timer, so the faster you are, the higher your score. If the timer runs out, you won't get any points for the pair.

When you're absolutely stumped, press H for help. The Help function flashes a pair very briefly, so be sure

you're watching. Of course, there's a penalty for help: 255 points. You can press H as often as you like, but it may not show you the best moves—and you could easily end up with a zero score! If there are no more pairs available, the Help function will tell you so.

Type in and save Listings 1 and 2 using the Checksum on page 57. To play Mah Jongg, simply load and run the boot program.

This game takes luck as well as skill. That's what keeps me coming back. I've just started my twelfth game of the night. This one's going to be tough. I should quit right now. Maybe start again. Maybe go to bed. I just can't put my joystick down—it's gonna be a long night! **R**

John Ryan is an air traffic control instructor. He claims that handling a sky full of planes can be just as challenging as Mah Jongg. We aren't sure we believe him.

Listing 1. Mah Jongg boot program. (Also available on the January/February ReRUN disk. To order, call 800-343-0728.)

```

Ø REM BOOT MAJJONG - JOHN RYAN      1Ø IF A=Ø THEN A=1:LOAD"MAJJONG    2Ø SYS 32768                        :REM*236
      :REM*227                          .ML",8,1                          :REM*138

```

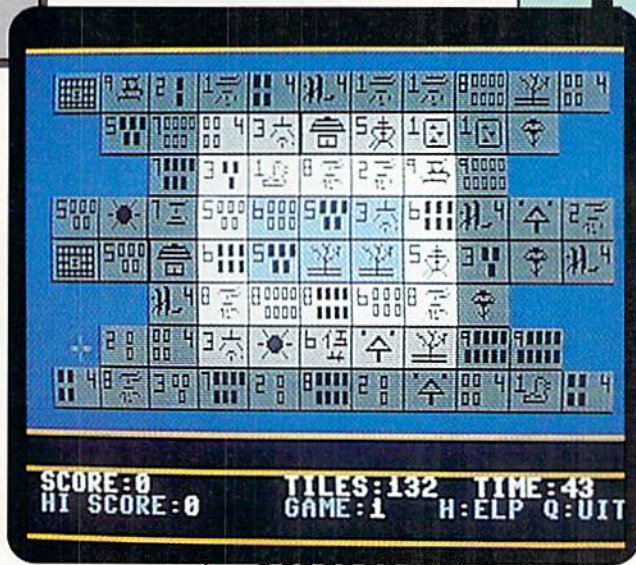
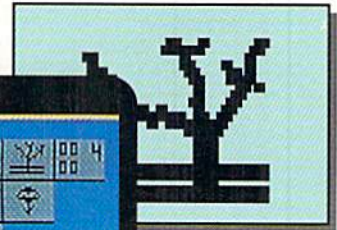
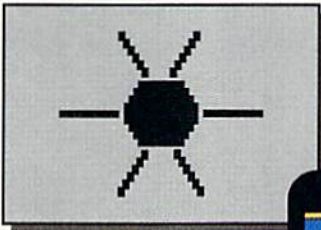
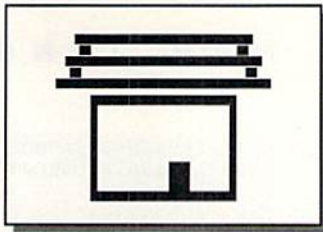
Listing 2. Mah Jongg program. (Also available on the January/February ReRUN disk. To order, call 800-343-0728.)

```

Ø REM LISTING 2 CREATES (AND SH      SC(H$)-55                          :REM*85
OULD NOT BE CALLED) MAJJONG.M      4Ø L=VAL(L$):IF L$>"9" THEN L=A    :REM*84
L                                     SC(L$)-55                          :REM*136
5 OPEN 8,8,8,"MAJJONG.ML,P,W"      45 BY=H*16+L:PRINT#8,CHR$(BY);    :REM*148
      :REM*126
6 CT=Ø:PRINT"{SHFT CLR}":REM*56    5Ø NEXT:GOTO 1Ø                     :REM*115
1Ø READ A$:IF A$="-1" THEN CLOS    55 IF LEN(A$)<21 THEN B$=A$:GOT    :REM*184
E8:PRINT:PRINT"ALL DONE!":EN      O 7Ø
D                                     6Ø IF LEN(A$)<42 THEN B$=LEFT$(    :REM*176
      :REM*129
12 PRINT"{HOME}READING LINE "+S    A$,2Ø)+RIGHT$(A$, (LEN(A$)-2    :REM*14Ø
TR$(CT):CT=CT+1                   ):GOTO 7Ø
15 IF LEN(A$)<62 THEN 55            65 B$=LEFT$(A$,2Ø)+MID$(A$,22,2    :REM*14Ø
      :REM*254
2Ø B$=MID$(A$,1,2Ø)+MID$(A$,22,    Ø)+RIGHT$(A$,LEN(A$)-42)        :REM*14Ø
2Ø)+MID$(A$,43,2Ø) :REM*242
25 FOR I=1 TO 3Ø                   7Ø FOR I=1 TO LEN(B$)/2:REM*221
      :REM*181
3Ø C$=MID$(B$, (I*2)-1,2):H$=LEF    75 C$=MID$(B$, (I*2)-1,2):H$=LEF    :REM*14Ø
T$(C$,1):L$=RIGHT$(C$,1)         TS(C$,1):L$=RIGHT$(C$,1)
      :REM*2Ø9
35 H=VAL(H$):IF H$>"9" THEN H=A    8Ø H=VAL(H$):IF H$>"9" THEN H=A    :REM*56
      SC(H$)-55

```

RUN it right: C-64; joystick in port 2



Layer by layer,
Mah Jongg's
mysterious tiles
will enchant you.



```

4D4A9208D0BD48D04D4*60A90F8
D18D4A90D8D13      :REM*104
106 DATA D4A9BB8D14D4A9438D0E*D
4A9038D0FD4A9818D12*D4A9808
D12D460A217A9      :REM*163
107 DATA 009D00D4CA10FA6020AF*8
0A9058D18D4A9008D05*D4A9BB8
D06D4A9648D00      :REM*227
108 DATA D4A9F48D01D4A9218D04*D
4A9208D04D46018A217*A00A20F
0FFA200BDF880      :REM*250
109 DATA F00720D2FFE84CEB8060*5
44841542054494C4520*4953204
24C4F434B4544      :REM*36
110 DATA 0018A217A00B20F0FFA2*0
0BD2481F00720D2FFE8*4C17816
054494C455320      :REM*236
111 DATA 444F204E4F54204D4154*4
3480018A217A0041820*F0FFA22
0A92020D2FFCA      :REM*185
112 DATA D0F86018A5B6690185B6*1
8A5A4690185A460A221*A000A90
4993C03C8CAD0      :REM*246
113 DATA F9A90085A7A96085A8A9*8
885A9A97385AAA9E0A0*00A6A8E
4AA9008D010A6      :REM*251
114 DATA A7E4A9B00A91A7E6A7D0*E
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2D48D18D460AE      :REM*251
115 DATA DC96BD9096859EBD9596*8
59FBD9A968DB196A900*85A785A
9A90485A81869      :REM*147
116 DATA D485AA204A000B1A929*0
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1A7919EC8D0E9      :REM*75
117 DATA E6A8E6AAE69FCAD0DE60*A
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200A000B1FA8D      :REM*209
118 DATA D196A900859EA938859F*A
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F6900859FCED1      :REM*3
119 DATA 96D0EEE6FAD002E6FBA0*0
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90885FAA5FB69      :REM*234
120 DATA 0085FBCED096D0B76018*A
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8A5A96DD39685      :REM*96
121 DATA A9A5AA690085AA60A993*2
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122 DATA A9089901D899F9DAA9DE*9
9F906C8CAD0EAA92885*A7A9048
5A8A92885A9A9      :REM*197
123 DATA D885AAA9128DD096A000*A
9DD91A7A90891A9C8A9*DC91A7A
90991A9A026A9      :REM*225
124 DATA DD91A7A90891A9C8A9DC*9
1A7A90991A9A9288DD3*9620418

```

```

2CED096D0CDA9      :REM*123
125 DATA 2A85A7A90485A8A92A85*A
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396A000A9E091      :REM*80
126 DATA A7A90691A9C8C024D0F3*2
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0A181A94885A7      :REM*29
127 DATA 85A9A90785A81869D485*A
AA9288DD396A203A000*A9DD91A
7A90891A9A909      :REM*191
128 DATA C891A9A9DC91A7882041*8
2CAD0E6A92185A785A9*A90785A
81869D485AAA0      :REM*58
129 DATA 00A9DF91A7A90891A9C8*C
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130 DATA 03A000A9DD91A7A90891*A
9C8A9DC91A7A90991A9*8820418
2CAD0E6A9C185      :REM*91
131 DATA A785A9A90785A81869D4*8
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026D0F34C2886      :REM*90
132 DATA A96885FAA98D85FBCAF0*1
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90085FBCED096      :REM*253
133 DATA D0EEA9068DD096A900AA*A
8B1FA9DD49618A5FA69*0985FAA
5FB690085FBEB8      :REM*147
134 DATA CED096D0E8A900AA8BD*D
49691A7ADD29691A9E8*C8C003D
0F0A028BDD496      :REM*149
135 DATA 91A7ADD29691A9C8E8C0*2
BD0F060A98285A7A994*85A8A90
085A9A93085AA      :REM*40

```

```

136 DATA A9408DD396A208A000B1*A
791A9C8C03FD0F72041*82CAD0E
FA9FF8D15D0A9      :REM*208
137 DATA 00A8AA8B9DE9699F807A9*0
19927D0C8C008D0F0A0*00A2088
ED096A200B9C8      :REM*203
138 DATA 969D00D0A9DC9D01D0C8*E
8E8CED096D0ED60205A*81A9088
DDA96A900A8AA      :REM*24
139 DATA 8DDB96ACDB96B9B3968D*C
796EEDB96BD3A9785A7*85A9E8B
D3A9785A81869      :REM*112
140 DATA D485AAE88EDD96A90B8D*D
296206585AEDD96CEDA*96D0CE6
0A9068DDA96A9      :REM*137
141 DATA 00A8AA8DDB96ACDB96B9*B
B968DC796EEDB96BD4A*9785A78
5A9E8BD4A9785      :REM*132
142 DATA A81869D485AAE88EDD96*A
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6D0CE60A9048D      :REM*250
143 DATA DA96A900A8AA8DDB96AC*D
B96B9C1968DC796EEDB*96BD569
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144 DATA 569785A81869D485AAE8*8
EDD96A9018DD2962065*85AEDD9
6CEDA96D0CE60      :REM*1
145 DATA A9028DDA96A900A8AA8D*D
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6BD7C9785A785      :REM*187
146 DATA A9E8BD7C9785A81869D4*8
5AAE8EDD96A9038DD2*9620658
5AEDD96CEDA96      :REM*25
147 DATA D0CE6020888520A083CE*C

```

MAH JONGG

796F01718A5A7690385*A785A9A 5A8690085A818 :REM*157	162 DATA 10D0EEAD96A9008D00D0*4 C4087AEB09618AD00D0*69188D0 0D0EEAD96A903 :REM*43	00218ADB1026D :REM*73
148 DATA 69D485AA4C6585602099*8 5A8AACABD3C03F0F5DE*3C0398A A60AD1BD4AAC :REM*61	163 DATA 8DD3962041824C05894A*B 0FA203781AEAF96A0000*B1A9290 F9DA196AEAF96 :REM*216	177 DATA 36978DB102ADB026900*8 DB20220DE89A93C8D36*97A90A8 D7B97A9028D37 :REM*180
149 DATA 0DFDAD1BD4C90190F2C9*2 2B0EE60A9C78DF807A9*048D27D 0A9A28D00D0A9 :REM*236	164 DATA A5A99DA996A5AA9DAB96*A 000B99A96DDA196F004*C84C6C8 78C9F96C904D0 :REM*134	178 DATA 97A055A2FFCAD0FD88D0*F 8CE7B97D010A90A8D7B*97AD369 7F006CE369720 :REM*188
150 DATA 768D01D0A9018D15D060*3 8A5A7EDD39685A785A9*A5A8E90 085A81869D485 :REM*47	165 DATA 034C7088C906D0034C70*8 8AC9F96B99096859EB9*9596859 FA5A748A5A848 :REM*58	179 DATA 3F8AA5CBC93EF00AC91D*D 003205B8A4C908620BA*8C38ADB 102EDB3028DD0 :REM*42
151 DATA AA60AD11D029EF8D11D0*A 9048DAD968DAE968D9F*96A9008 DAF96A9018DDC :REM*20	166 DATA 38A5A7E9008DB196A5A8*E 9048DB29618A59E6DB1*96859EA 59F6DB296859F :REM*28	180 DATA 96ADB202EDB4020DD096*9 00CADB1028DB302ADB2*028DB40 218ADA7026901 :REM*102
152 DATA 9620668420A181EEDC96*2 0A88420A181EEDC9620*E78420A 181EEDC962026 :REM*138	167 DATA ACAF9638A59EE9E8992A*9 7A59FE903992C97A5A7*993097A 5A8993297AE9F :REM*48	181 DATA 8DA702A9008DB2028DB1*0 260A200BDA996859EBD*AB96859 FA000BDA19691 :REM*246
153 DATA 8520A181A9848DB002AD*1 1D009108D11D060A210*A000A90 099A702C8CAD0 :REM*94	168 DATA 96CABD9A96992E97A000*A EAF96B1A79D349738A5*9EE9038 59EA59FE90085 :REM*210	182 DATA 9EC8C003D0F9A028919E*C 8C02BD0F9E8E002D0DC*6020CB8 9A9018D860218 :REM*183
154 DATA F9A9018DA70220DC8520*0 88420E4FFFF0FB209189*20DE89A 9008D15D020AC :REM*198	169 DATA 9FA000B19EC9E0F02EA0*0 6B19EC9E0F02620BA80*20E180A DAF96D0034C1D :REM*229	183 DATA A215A00320F0FFA200BD*E 696F00720D2FFE84CA3*89A9038 D860218A216A0 :REM*45
155 DATA 85A95085A785A9A90585*A 81869D485AAA900AAA8*20DBFFA 93C8D3697A90A :REM*136	170 DATA 88206A89A9008DAF9668*8 5A81869D485AA6885A7*85A94C0 589ADAF96F015 :REM*254	184 DATA 0320F0FFA200BD0697F0*0 720D2FFE84CBE8960A2*00A9209 D4B079D73079D :REM*121
156 DATA 8D7B97203F8A20908620*D C8520918920DE89A9008D10D08 DB1028DB2024C :REM*190	171 DATA A201A000B93497DD3497*F 00920BA80200D814C0D*886885A 81869D485AA68 :REM*63	185 DATA 9B07E8E022D0F260A215*A 0181820F0FFA9018D86*02AEB00 2A90020CDBDA9 :REM*224
157 DATA 5086AD00DC4AB021ADAE*9 6C901F073CEAE96AEB0*9638AD0 1D0E9109D01D0 :REM*17	172 DATA 85A785A9A904A00091A9*C 8C003D0F9A02891A9C8*C02BD0F 9ADAF96D006EE :REM*164	186 DATA 202D2FFA215A0091820*F 0FFAEB102ADB20220CD*BDA9202 0D2FFA92020D2 :REM*252
158 DATA A9508DD39620C6854C05*8 94AB021ADAE96C908F0*4FEEAE9 6AEB09618AD01 :REM*36	173 DATA AF964C0589A9008DAF96*2 05880A200BD2E978DD0*96BD2A9 7859E1869E885 :REM*215	187 DATA FFA216A00C1820F0FFAE*B 302ADB40220CDBDA920*20D2FFA 216A0171820F0 :REM*221
159 DATA D069108D01D0A9508DD3*9 62041824C05894AB035*ADAD96C 900F02BC908D0 :REM*215	174 DATA B5BD2C97859F690385B6*B D309785A385BEBD3297*85A4186 9D485BFA000B1 :REM*55	188 DATA FFAE702A900200CDBDA9*2 020D2FF6018A215A022*1820F0F FAE3697A90020 :REM*40
160 DATA 10A9008D10D0CEAD96A9*E 78D00D04C0887CEAD96*AEB0963 8AD00D0E9188D :REM*47	175 DATA 9E91A3A9E091B5ADD096*9 1BEC8003D0EEA028B1*9E91A3A 9E091B5ADD096 :REM*97	189 DATA CDBDA92020D2FFA92020*D 2FF60A9008D3997A908*8D8896A 954859E85B5A9 :REM*81
161 DATA 00D0A9038DD39620C685*4 C05894AB035ADAD96C9*0BF0F3C 907D010A9018D :REM*144	176 DATA 91BEC8002BD0EEE8E002*D 0A9ADB002C902F05938*E9028DB	190 DATA 04859F18A59F69D485B6*A 000B1B5290F8D84968D*8E96B19 EC9E0D05DC8C8 :REM*203
		191 DATA C8C021D0E9CE8896F01B*1

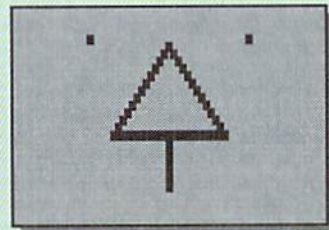
Strategy & Advice from a Mah Jongg Junkie

I couldn't help it. The next thing I knew I was playing Mah Jongg all the time—even when I was supposed to be working. I would lie awake at night picturing a giant Mah Jongg board on the ceiling. I would forget to feed my rabbit, Nigel. Because of my experience, I think I can help others. I've been there.

- There are two pairs of each tile.
- Spend a minute reviewing the screen before starting a game. You might lose a few points initially, but learning the board and planning your first few moves will get you off to a good start and you will quickly recover any lost points.
- Keep as many tiles active as possible. An active tile has either its left or right side free. Long lines of tiles are traps that keep large sections of your board inactive. At the beginning

of each game, I pick matches from the long rows at the top, bottom and center of the screen to reduce the number of trapped tiles.

- Keep the board balanced. Having tiles trapped in stacks is as damaging as having them trapped in rows, so as you pull in the long rows, also work on shortening the stacks. Start with the green tiles. By mid-game, you should have the top, bottom and center rows pulled in even with the central square of the pyramid, and have several of the green and white tiles removed.
- Maximize the layers. Don't make the mistake of removing all of one layer. To keep as many active tiles as possible, keep a variety of levels.
- If you have a choice, remove the tiles that will leave you with one or two new open tiles.
- When you make a pair, there's a good



chance that the newly uncovered tiles will lead straight to another match. Check them out before looking over the rest of the board.

- Removing one pair of tiles may prevent accessing others later in the game; look for other matching tiles before you make the pick.
- Toward the end of the game, keep the rows and stacks short.
- Don't ask for help until you think the game is over. It's better to stare at the board for ten minutes than to ask for help and lose an additional 255 points.

—Janice Greaves

MAH JONGG

Table with 3 columns: Line number, Data string, and Line number. Contains alphanumeric strings and codes such as '8A59E6950859E85B5A5*9F69008', '192 DATA 85B6A0004C788A203781*A', '218 DATA 7F7F7F7FEFF24707F7F7F*7', '244 DATA 31313131FFFFF00887F*4', etc.

MAH JONGG

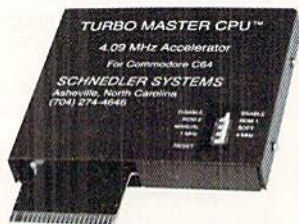
```

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2FFF00DFDFD      :REM*80      0600180600180      :REM*213      00C00000C000      :REM*113
270 DATA FFF0E3FFEF1FF70FFFF*7      281 DATA 6001806001806001FFE0*0      292 DATA 00000000000000000000*0
FE47F7F7F7F7F7F7F7F7F0*E5FFE5D      1806001806001806001*8060018      00000000000000000000*0000000
5F7F4FFFF00E6      :REM*181      0600980600783      :REM*19      0000000000000000      :REM*136
271 DATA FF1FEFFFFF00E73F*3      282 DATA E0000000000000000000*0      293 DATA 00000000000000000000*0
F3F3E3C3D383FE8FFF1*00FF00F      00000000000000000000*0000000      000000000000000000E8*D0B8A06
F00FFE9FFFF1F      :REM*241      007FC000C6000      :REM*140      063676B6F060B      :REM*246
272 DATA EF07F703FFEA3F3F3F*3      283 DATA 00000000000000000000*6      294 DATA 0F010300000000000000*0
F3F3F00EB80BFBBBB80*FFFF00E      0000060000060000060*0100600      0000000000000000000*0000000
C3FBFBFB3FFF      :REM*56      1C06000C06000      :REM*123      B09070B0B0709      :REM*192
273 DATA FF00ED7F435B437B7B*7      284 DATA C06000FFF00000000000*0      295 DATA 0B50505050505050505*0
FEFFFE0FBFBF9E0F7*EFFF00E      0000000000000000000*0000000      503030066788AA4B6C8*DAEC000
FBFDF9F07F3F0      :REM*229      00000000FFE0      :REM*126      000000000000000      :REM*221
274 DATA 7F7F7F7F7F7F7F7F00F17B*8      285 DATA 01806001806001806001*8      296 DATA 0000000000000000C0C1C2C3*C
0BFFFFFFFFFF00F2F0F*EFFFFF      FF00DCC0C0C0      :REM*204      4C5C6C653434F52453A*2020202
0000000000000000      :REM*197      02202020202054      :REM*228
275 DATA C0C0C0C0DD03030303*0      286 DATA 01806001806000FFC000*0      297 DATA 494C45533A2020202020*5
3030303DEFFFF000000*000000D      0000000000000000000*0000000      4494D453A0048492053*43F524
F000000000000000      :REM*197      0000000000000000      :REM*129      53A2020202020      :REM*240
276 DATA FFFF0000000000000000*0      287 DATA 001C01E0060600700600*0      298 DATA 2047414D453A20202020*4
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6C36006666006      :REM*247      860060C600606      :REM*20      000000000000000      :REM*35
277 DATA 3C600618600606060606*6      288 DATA 600603606061E02600E0*1      299 DATA 000000000000000005404*A
0060060606060260260*3E03E00      E006000000000000000*0000000      704FA0444059405EA05*3706840
0000000000000000      :REM*17      000000000000000      :REM*44      6AD04FD044D05      :REM*65
278 DATA 00000000000000000000*0      289 DATA 000000000000FF800018C*0      300 DATA 9D05ED053D06FD044D05*9
000000000003F000040*8001806      0018000018000018000*0180000      D05ED0500000000004D*4148204
0018060018060      :REM*142      184000187E001      :REM*8      A4F4E47472056      :REM*159
279 DATA 01806001FFE001806001*8      290 DATA 84600180600180600180*6      301 DATA 2E30004A4F484E205259*4
00600180600180600180*6009806      001806003FFE0000000*0000000      14E00005005A0059D05*ED0500
00783E0000000      :REM*207      0000000000000      :REM*230      :REM*68
280 DATA 00000000000000000000*0      291 DATA 0C00000C0000000000C*0      302 DATA -1      :REM*156

```

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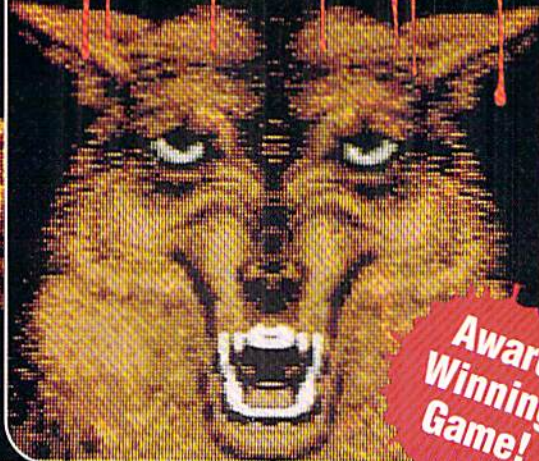
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RUN &

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#RPA9 \$14.95 (was \$19.95)

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Productivity software with a creative advantage. Balance your checkbook and prepare monthly and yearly financial plans. Maintain a database from which you can print mailing labels and a personalized telephone directory. Go on-line with a user-friendly terminal program. Create multi-purpose forms. Plus a DOS shell, paint program and bar graph maker. Fully C-64 and C-128 compatible. Includes 50-page booklet. 7 Programs.

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BARG

* Denotes program runs in C-128 mode.

**Denotes both C-64 and C-128 modes.

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#RRK86 **The Loan Arranger. 64 Notepad. Sign Maker. 64 Personal Ledger.

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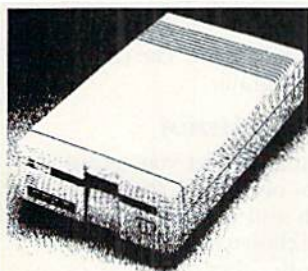
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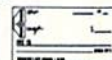
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Past, Present & Future

This point-and-click calendar covers the first to the 21st century (and beyond), and lets you keep full-page daily memos along the way.

◆
By JAY TAPLIN

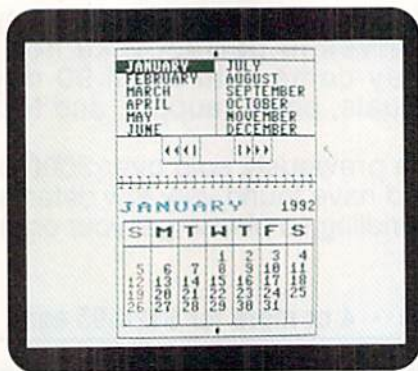
You've heard of traveling back to the future? Well, now you can also fly forward to the past! With Graphic Calendar 64 and a 1351 mouse, you can access accurate, visual calendars from the year 1 A.D. to the year 10,000 with the same ease you would expect only from GEOS. If you don't have a mouse, you can just as easily use the cursor keys to span the ages. And, while the time flies by, you can stop along the way and post daily memos that can be read later.

Type in Listing 1 using the Checksum program on page 57 to catch typing errors, and save it to disk as CALENDAR. Next, run it to create the machine language file Calendar.ML. Then, type in Listing 2, and save it as CAL.

To run Graphic Calendar, load and run CAL. A green arrow pointer and a bit-mapped image of a traditional monthly calendar will appear on the screen.

TRAVELING BY MOUSE

To use a 1351 mouse with the program, also type in Listing 3. (This is a slightly modified version of Commodore's driver program that comes with the 1351.) Once you have it typed in and saved to disk, load and run the



Calendar could be a point-and-click daily planner, a journal, even a historical record.

driver each time before running CAL, making sure you have the mouse already plugged into port 1.

To make a selection, press either the left mouse button or the RETURN key. To change the month appearing on the screen, move the pointer to the month you want and select it in the same way.

Beneath the list of months are four arrow icons that control the year. The outermost arrows change the year by ten, while the innermost change the year by one. As you might expect, the arrows on the left decrease the year, whereas the ar-

rows on the right increase it. The center button exits the program.

FULL-SCREEN DAILY MEMOS

Graphic Calendar will let you record memos for any day of any year. To do this, select the month and year, then move your cursor to the chosen date. When you select the date (with either the mouse or the RETURN key), you enter a screen editor. If a memo for that day already exists, it instantly appears on the screen, with the cursor at the end of the memo.

Your input is limited to one full screen, but you can scroll past the bottom. Be forewarned, however: Whenever you scroll past the bottom, anything you have on the top line is erased. After typing the memo, press the BACK-ARROW key to exit. The memo will be saved to the current storage device.

Using Graphic Calendar, you'll never miss another business meeting, dinner engagement, baseball game . . . or dentist's appointment. Have a Happy New Year—for centuries to come! **R**

Jay Taplin has punctually contributed timesaving tricks to our Magic column. Although he previously has been published in ReRUN, this is his first program for RUN.

Listing 1. Calendar program. (Available on the January/February ReRUN disk. To order, call 800-343-0728.)

```

0 REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) CALENDAR.ML
  R.ML :REM*176
5 OPEN 8,8,8,"CALENDAR.ML,P,W"
  :REM*134
6 CT=0:PRINT"(SHFT CLR)":REM*56
10 READ A$:IF A$="-1" THEN CLOSE:PRINT:PRINT"ALL DONE!":END
  :REM*129
12 PRINT"(HOME)READING LINE "+STR$(CT):CT=CT+1 :REM*141
15 IF LEN(A$)<62 THEN 55 :REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22,20)+MID$(A$,43,20) :REM*242
25 FOR I=1 TO 30 :REM*181
30 C$=MID$(B$, (I*2)-1, 2):H$=LEFT$(C$,1):L$=RIGHT$(C$,1) :REM*209
35 H=VAL(H$):IF H$>"9" THEN H=A :REM*85
40 L=VAL(L$):IF L$>"9" THEN L=A :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY); :REM*67
50 NEXT:GOTO 10 :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOTO 70 :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(A$,20)+RIGHT$(A$, (LEN(A$)-21)):GOTO 70 :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,20)+RIGHT$(A$, LEN(A$)-42) :REM*140
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$, (I*2)-1, 2):H$=LEFT$(C$,1):L$=RIGHT$(C$,1) :REM*140
80 H=VAL(H$):IF H$>"9" THEN H=A :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A :REM*84
90 BY=H*16+L:PRINT#8,CHR$(BY); :REM*148
95 NEXT:GOTO 10 :REM*160
  
```

RUN it right: C-64; 1351 mouse optional


```

100 REM HEX DATA FOR CALENDAR.M          :REM*65
L                                          :REM*84
101 DATA 00804CA088A9188D18D0*A      123 DATA 02A497B91089A8204C81*2
93B8D11D0A9C88D16D0*60A9158          :REM*70
D18D0A91B8D11                          :REM*218
102 DATA D0A9C88D16D0A99320D2*F      124 DATA C8C008D0F418A5A36908*8
F60A000A90199000499*FA0499F        :REM*149
40599EE06C8C0                          :REM*69
103 DATA FAD0EFA000A961991106*C      125 DATA 89A820A98118A5A36910*8
8C012D0F8A000A92199*620699B        :REM*11
20699DA069902                          :REM*189
104 DATA 07992A07995207997A07*C      126 DATA A93085A4ACBF02B96789*8
8C002D0E66020E4FC9*00F0F96        :REM*233
0A90085FBA920                          :REM*197
105 DATA 85FCA900A000A9091FB*C      127 DATA 02A9D08DB102A9228DB2*0
8D0F9E6FCA5FCC940D0*EF60A9F        :REM*197
F91FB18A5FB69                          :REM*243
106 DATA 0885FBA5FC690085FCCA*D      128 DATA B95A89A8ADB10285A3AD*B
0EC6086FB84FCA216A0*0760A24        :REM*209
8A02020A18020                          :REM*166
107 DATA 8C80A288A02120A18020*8      129 DATA ADB40285A3ADB50285A4*2
C80A208A02920A18020*8C80A20      :REM*191
8A03D20A18020                          :REM*184
108 DATA 8C80060B1FB05FD91FBC8*C      130 DATA 18ADB10269408DB102AD*B
008D0F5A00018A5FB69*4085FBA        :REM*7
5FC690185FCCA                          :REM*134
109 DATA D0E360A90185FDA94085*F      131 DATA 60A000B9738999D92199*5
BA92085FCA007A21820*D380A98        :REM*219
085FDA9F885FB                          :REM*133
110 DATA A92085FCA007A21820D3*8      132 DATA FBA92185FCADBF02C906*3
0A90185FDA91885FBA9*2385FCA        :REM*10
206A000020D380                          :REM*160
111 DATA 60A216A90885FBA92E85*F      133 DATA 06A8C18A5FB694085FB*A
CA000B9F88891FBC8C0*08D0F61        :REM*228
8A5FB690885FB                          :REM*49
112 DATA CAD0EA60AD00048DA802*8      134 DATA D0F560A228A000C8D0FD*C
CAB02A200A0001820F0*FFADAB0        :REM*194
220D2FFAD0004                          :REM*86
113 DATA 84FCAEA8028E00040A26*F      135 DATA B97D89A820A98118A5A3*6
C0A26FC0A26FC85FB18*A5FC69D        :REM*194
085FCAD0EDC29                          :REM*128
114 DATA FE8D0EDCA50129FB8501*A      136 DATA 60A9018DB902ACBF02AD*C
000B1FB990089C8C008*00F6A50        :REM*112
109048501AD0E                          :REM*41
115 DATA DC09018D0EDC60204C81*A      137 DATA 07D008A9008DC302EEC4*0
0008CA9028CA002A200*A9808DA        :REM*191
702B900892CA7                          :REM*201
116 DATA 02D0154EA702E8E004D0*1      138 DATA 02D0D5A9008DC3028DC4*0
9ADA9028DA002A9008D*A902F0E        :REM*223
3ADA9021D0889                          :REM*113
117 DATA 8DA9024CC381E008D0D3*9      139 DATA 8488D0F6ACC302C8A918*A
8EAA8ADA00291A39818*6908A8A        :REM*210
DA90291A39838                          :REM*209
118 DATA E908EAA8C8C008F00AA9*0      140 DATA D002A920A8204C8120A7*8
08DA9028DA002F0A560*A90485F        :REM*21
DA9008DAC02A9                          :REM*111
119 DATA C885A3A93185A4A90485*F      141 DATA 85A38A65A485A460A918*8
DA5A385FBA5A485FCA0*04A2002        :REM*57
0D38018A5A369                          :REM*140
120 DATA 1885A3A5A4690085A4EE*A      142 DATA BA024A4A4A4A20EC84A8*2
C02ADAC02C908D0D660*A2D0A03        :REM*94
1208082A250A0                          :REM*245
121 DATA 34208082A2D086FBA03B*8      143 DATA 826018693060A9008DAD*0
4FCA007A214208C80A9*078D4C3        :REM*6
48DCC318DCCF3B                          :REM*166
122 DATA A9FC8DF4348D74328D77*3      144 DATA FDC8A0228CAD02A00020*D
C6086FB84FCA004A214*208C806        :REM*215
9F085FBA92C85

```

RUN it right: C-64; 1351 mouse optional

PAST, PRESENT & FUTURE

```

78985FBB9C88985FC18*A5FB694      991A3C8C01D0D      :REM*116  180 DATA 4245524F43544F424552*4
085FDA5FC6901      :REM*241  174 DATA F618A5A3691885A3A5A4*6
168 DATA 85FEA000B1FB49FF91FB*B  90085A4E8E007D0E060*A9038DC
1FD49FF91FDC8C010D0*EF6048A      :REM*116  181 DATA 191C20242A333A424A07*0
9008DAD028EBD      :REM*88  175 DATA A91F8DC002A9008DBF02*A
9198DC102A9928DC202*2003802      :REM*129  182 DATA 80534D54575446533229*3
0CDBE02900160A9018D*AD02602      :REM*113  176 DATA AA8020F180202B812010*8
01D8820B68420      :REM*113  176 DATA AA8020F180202B812010*8
2204C8220018320E882*2083832      :REM*245  183 DATA 2A01B82A01D02A80020*3
0A900998830C8C0B0D0*F860A99      :REM*40  177 DATA 198420B684202B852078*8
085FBA93585FC      :REM*40  177 DATA 198420B684202B852078*8
54CB085201380603810*0808FF0      :REM*233  184 DATA 1818F0E0F0980C060301*8
090B0C0D0702A802A90*2AB02AC      :REM*203  184 DATA 1818F0E0F0980C060301*8
02A1001000110      :REM*203  184 DATA 1818F0E0F0980C060301*8
090B0C0D0702A802A90*2AB02AC      :REM*203  184 DATA 1818F0E0F0980C060301*8
00000000FF00FF00FF00FF00FF00F      :REM*54  185 DATA 00000000000000FF0000*0
F00FF00FF00FF      :REM*54  185 DATA 00000000000000FF0000*0
085A3A93B85A4A000A9*00B9D68      :REM*205  179 DATA 4348415052494C4D4159*4
A554E454A554C594155*4755535      :REM*205  179 DATA 4348415052494C4D4159*4
453455054454D      :REM*205  186 DATA -1      :REM*40
    
```

Listing 2. CAL Calendar boot program. (Available on the January/February ReRUN disk.)

```

0 REM LISTING 2 FOR CALENDAR PR      52ANDM=2THEN OT=OT+1      OKE646,0:POKE53280,1:POKE53
OGRAM - JAY TAPLIN      :REM*43  281,1:PRINT"(SHFT CLR)"      :REM*47
10 CLR:DIM N(200),MA(50),MD(12)      180 IF((Y/4)=INT((Y/4)ANDM<3T      HENS=SD-1      :REM*205
,MO$(12),NO(12):FORJ=1TO12:R      190 IF((Y/4)=INT((Y/4)ANDM=2T      HENOT=OT+1      :REM*60
EADM(J),NO(J):NEXT J      :REM*153  200 VD=SD-((INT(SD/7))*7):IFVD=
20 DATA 1,31,32,28,60,31,91,30,1      0THEENV=7      :REM*243  210 POKE708,0:POKE707,VD-1:POKE
21,31,152,30,182,31,213,31,2      704,OT:RETURN      :REM*100  360 IFLEFT$(MID$(STR$((X-80)/3
44,30,274,31      :REM*76  220 GOSUB230:GOSUB410:GOSUB260:      )-(INT((X-80)/3)),3,1)="3
30 DATA305,30,335,31      :REM*154  220 SYS34324:GOSUB410:GOSUB240:      "THENSYS34583:GOTO70
40 SN(1)=34556:SN(2)=34702:Z=70      SYS34583:GOTO70      :REM*147  370 GOSUB110:FORJ=0TO50:MA(J)=0
5:D=28:Y=174:M=12:POKE53280,      :REM*147  370 GOSUB110:FORJ=0TO50:MA(J)=0
1      :REM*75  230 FIS=MID$(STR$(M,2)+"-"+MID      ):NEXT:FORJ=VDTOVD+OT-1:MA(J
50 IFPEEK(32768)<>76THENGOSUB41      $(STR$(D,2)+"-"+MID$(STR$(      )=J-VD+1:NEXT      :REM*93
0:LOAD"CALENDAR.ML",8,1      Y),2):N=32:RETURN      :REM*129  380 X=INT((VX-80)/24):VY=INT((V
60 SYS32768      :REM*21  240 GOSUB310:OPEN15,8,15,"S0:"+      Y-136)/8):VA=VY*7+X+1:D=MA(
70 IFPEEK(780)=0THENEND      :REM*92  240 FIS:CLOSE15:SYS57812FIS,8:P      VA)      :REM*231
80 IFPEEK(780)=4THENGOTO330      OKE173,4:POKE172,0      :REM*198  390 IFD=0THENSYS34583:GOTO70
:REM*80  250 POKE780,172:POKE781,EAND255      :REM*13
90 RV=SN(PEEK(780)):GOSUB110      :POKE782,E/256:SYS65496:RET      :REM*208
:REM*35  URN      :REM*11  400 GOTO220
100 SYSRV:GOTO70      :REM*223  260 OPEN2,8,2,FIS:CLOSE2:OPEN15      :REM*208
110 M=PEEK(703)+1:Y=((PEEK(Z)A      ,8,15:INPUT#15,A:CLOSE15:IF      410 OPEN2,8,2,"S":CLOSE2:OPEN1
ND240)/16)*1000+((PEEK(Z)A      A=62THENRETURN      :REM*194  420 FORQ=1024 TO 1143:N(Q-1024)
ND15)*100)      :REM*134  270 SI$=FI$+"P,R":OPEN1,8,1,SI      =PEEK(Q):POKEQ,42:NEXT:PRIN
120 Y=Y+((PEEK(Z+1)AND240)/16)      $:POKE185,0:POKE780,0:POKE7      TCHR$(19)CHR$(17);      :REM*51
*100)+((PEEK(Z+1)AND15)      81,0:POKE782,4      :REM*71  430 PRINTSPC(40)+CHR$(145)+"*(8
:REM*223  280 SYS65493:CLOSE1:SYS34408:GO      SPACES)DISK ERROR - CHECK
130 OT=NO(M):SD=(((Y)*365)+INT      SUB290:RETURN      :REM*88  440 GOSUB460:FORJ=1024 TO 1143:
((Y/4)+MD(M))-((Y)*364)+3      290 GOSUB310:J=E-1024:Y=INT(J/4      DISK{7 SPACES}*";      :REM*5
:REM*129  0):X=J-Y*40:POKE163,24:POKE      PRINTSPC(40)+CHR$(145)+"*(8
140 IF Y=1752 AND M=1 THEN OT=O      164,96:SYS163      :REM*107  450 END:GOTO220
T-11:SD=SD+11      :REM*86  300 POKE781,Y:POKE782,X:SYS6552      :REM*245
150 IF Y>1751 THEN SD=SD-11      0:PRINT:RETURN      :REM*210  460 GETA$:IFAS$=""THEN460:RETURN
:REM*85  310 E=PEEK(252)*256+PEEK(251):R      :REM*255
160 IF (Y-(INT(Y/100)*100))=0 A      ETURN      :REM*18  470 RETURN
ND Y>1752 AND M=2 THEN OT=O      :REM*18  320 OPEN15,8,15,"S0:12-28-1974"
T-1      :REM*181  330 CLOSE15      :REM*18
170 IF (Y-(INT(Y/100)*100))=0 A      :POKE53272,21:POKE53265,27:P
ND(Y/400)=INT(Y/400)ANDY>17
    
```

Listing 3. Mouse driver program. (Available on the January/February ReRUN disk.)

```

0 REM COMMODORE 1351 MOUSE DRIV      TO20      :REM*27  70 DATA C1,8C,03,C0,38,49,FF,6D
ER - RUN ONCE BEFORE RUNNING      40 DATA AD,15,03,C9,C1,F0,19,08      ,01,D0,8D,01,D0,6C,00,C0,8C,
CALENDAR PRG.      :REM*87  80 DATA 38,ED,05,C0,29,7F,C9,40      05,C0,8D,04,C0,A2,00:REM*221
10 DIMV(100):FORJ=0TO9:V(J+48)=      03,8D,01,C0,A9,21,8D      :REM*88  80 DATA 38,ED,05,C0,29,7F,C9,40
J:V(J+65)=J+10:NEXT J=49407      50 DATA 14,03,A9,C1,8D,15,03,28      ,B0,07,4A,FF,12,AC,04,C0,60,
:REM*83  60,D8,AD,19,D4,AC,02,C0,20,      09,C0,C9,FF,08,38:REM*113
20 J=J+1:READA$:IFAS$="-1"THENSY      58,C1,8C,02,C0,18,6D      :REM*24  90 DATA 6A,A2,FF,AC,04,C0,60,A9
S49408:END      :REM*162  60 DATA 00,D0,8D,00,D0,8A,69,00      ,00,60,-1      :REM*244
30 Z=V(ASC(LEFT$(A$,1)))*16+V(A      ,29,01,4D,10,D0,8D,10,D0,AD,
SC(RIGHT$(A$,1))):POKEJ,Z:GO      1A,D4,AC,03,C0,20,58:REM*162
    
```

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Hip Hop

This electrifying game may become your "current" favorite.



By TONY BRANTNER

Life's not easy for Hoppin' Clyde. He used to really enjoy hopping around an electronic grid, lighting up the tiles as he went. But now a short circuit in the wiring sends raw electricity pulsing across the grid, and has turned this once harmless form of entertainment into a real shocker. Keep Clyde off the flashing tiles, or ZAP! He's toast.

Clyde starts each game at a random spot on the grid. You simply move the joystick to make him jump from tile to tile in any of the four primary directions. When he lands on a dark tile, it lights up and you earn ten points multiplied by the present game level. Backtracking


over a tile turns it off again, and your score is reduced by the same amount. You have to light all of the tiles to advance to the next level.

Watch out, though, because the deadly current pulses back and forth along each row of the grid, pausing only briefly at the end of the row before moving back again. Clyde can avoid the electric tiles by either jumping away from them or jumping over them. Jumping over the hot tiles takes precise timing, so be careful.

At the start of each game Clyde has three lives, and the timer counts down from 100. With each succeeding level, he gets an extra life and the timer loses

two seconds. Clyde loses a life each time he gets zapped or the timer runs out.

Press the SHIFT-LOCK key to pause the game and the RUN-STOP key to resume it. The colorful screen always shows Clyde's current life, the timer, your current score and your high score for the session.

Type in Hip Hop from Listing 1, using RUN's Checksum program on page 57 to catch any typing errors. Then, the next time you're feeling bouncy—or need a good jolt—load up, and Hip Hop to victory! 

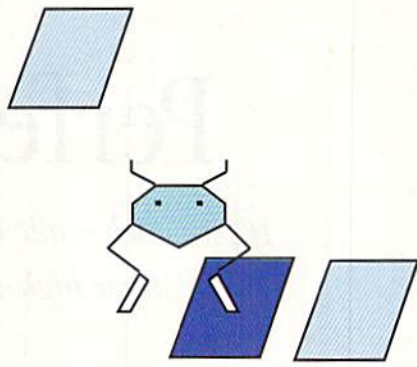
Tony Brantner is plugged in as RUN's most prolific game writer of all time.

Listing 1. Hip Hop program. (Available on the January/February ReRUN disk. To order, call 800-343-0728.)

```

0 REM THIS LIST 1 CREATES (AND
  SHOULD NOT BE CALLED) HIPHOP.
  ML :REM*111
5 OPEN 8,8,8,"HIPHOP.ML,P,W"
  :REM*172
6 CT=0:PRINT"(SHFT CLR)":REM*56
10 READ A$:IF A$="-1" THEN CLOS
  E8:PRINT:PRINT"ALL DONE!":EN
  D :REM*129
12 PRINT"(HOME)READING LINE "+S
  TR$(CT):CT=CT+1 :REM*141
15 IF LEN(A$)<62 THEN 55
  :REM*254
20 B$=MID$(A$,1,20)+MID$(A$,22,
  20)+MID$(A$,43,20) :REM*242
25 FOR I=1 TO 30 :REM*181
30 C$=MID$(B$, (I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
  :REM*209
35 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55 :REM*85
40 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55 :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
  :REM*67
50 NEXT:GOTO 10 :REM*115
55 IF LEN(A$)<21 THEN B$=A$:GOT
  O 70 :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(
  A$,20)+RIGHT$(A$, (LEN(A$)-21
  )):GOTO 70 :REM*176
65 B$=LEFT$(A$,20)+MID$(A$,22,2
  0)+RIGHT$(A$,LEN(A$)-42)
  :REM*140
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$, (I*2)-1,2):H$=LEF
  T$(C$,1):L$=RIGHT$(C$,1)
  :REM*140
80 H=VAL(H$):IF H$>"9" THEN H=A
  SC(H$)-55 :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
  SC(L$)-55 :REM*84
90 BY=H*16+L:PRINT#8,CHR$(BY);
  :REM*148
95 NEXT:GOTO 10 :REM*160
100 REM HEX DATA FOR HIP-HOP
  :REM*88
101 DATA 01080B080A09E323036*3
  1000000A90C8D20D0A9*0F8D21D
  0A95BA0E201E :REM*201
102 DATA ABA027A945991805A90C*9
  918D98810F3A9018D25*D08D1CD
  0A07A9019927 :REM*144
103 DATA D0A9FD99F80788D0F3A9*0
  38D27D0A908D17D08D*1BD08D1
  DD08D26D0A901 :REM*165
104 DATA 850520DB0BA00320C30C*A
  9008D0D1020050DA900*A8990F1
  0C8D0FAA000B9 :REM*254
105 DATA 4E0F99403FC8C0BF90F5*2
  06D0CAD1BD429011869*038D271
  0AD1BD429068D :REM*9
106 DATA 2F10A20020630B20DC0A*A
  50520D00C8CFC048DFD*04A5050
  A850238A966E5 :REM*104
107 DATA 028D0E1020B30C20900C*A
  91DA00F20440B20B00A*20360BA
  D00DC290FC90F :REM*73
108 DATA F0EAA20820FFE920E1FF*D
  0034C5708AD8D02C901*F0F9E60
  3A503291FD003 :REM*122
109 DATA 20B00C20360B20000B20*B
  00A20A60920900CA212*A000C8D
  0FDCAD0FAAD3F :REM*153
110 DATA 10D00520C30AB02FAD0D*1
  0C938F008AD0E10F023*4CD808A
  2FFA90D20160C :REM*150
111 DATA A406C8C064B00320C30C*A
  405C8C010B002840520*E900C4C6
  308206D0CA906 :REM*140
112 DATA 8D03D4A90C8D05D4A941*8
  D04D4A03FA200A9009D*803F9DC
  03F9848A90220 :REM*227
113 DATA 880C20360B68A88A1869*0
  B293FAA8E01D48810DF*A236A90
  E20160CA40688 :REM*57
114 DATA 20C30CA506F0034C6B08*A
  935A00F20440B20360B*AD00DC2
  910D0EF20E90C :REM*224
115 DATA 4C5708AC3F10D035A203*A
  D00DC290FDDEB0DF004*CA10F86
  08E371018AD2F :REM*60
116 DATA 107DEF0DC907B0F1A181*A
  D27107DF30DC908B0E5*8C2F108
  D271020FD0BA0 :REM*47
117 DATA 00A9FFC0049006C014B0*0
  
```

RUN it right: C-64; joystick in port 2



```

2A9FE8DF807AE3710F0*09CAF00
9CAF0144C030A :REM*238
118 DATA 4C6B0A4C8A0AEE1710D0*1
1EE1F104C190AAD1710*D003CE1
F10CE171018AD :REM*162
119 DATA 0F1079CF0D8D0F10C8C0*1
8903F20C30AB038205C*0DA5052
903AAA000B1FD :REM*158
120 DATA 290FDDF70DD014BDFB0D*2
0430DEE0D10A60520A6*0B20E90
B4C650ABDF70D :REM*159
121 DATA 20430DCE0D10A605208E*0
B20E60BA0008C3F1060*18AD0F1
0799F0D8D0F10 :REM*127
122 DATA 18AD171079B70D8D1710*A
D1F1069008D1F104C23*0A38A91
7ED3F10AA38AD :REM*3
123 DATA 0F10FD9F0D8D0F1038AD*1
710FDB70D8D1710AD1F*10E9008
D1F104C230AAD :REM*25
124 DATA 3F10D00DA5A24A4A4A*2
90109FE8DF80760A007*B92710C
D2710D008B92F :REM*156
125 DATA 10CD2F10F0588D0ED18*6
03860A2078A38E9019D*2F10AD1
BD42903A8B9E7 :REM*66
126 DATA 0D9D2710AD1BD429019D*3
71020630BCAD0DF60EE*4010AD4
010C928B00160 :REM*91
127 DATA A5050A8D4010A207BC37*1
018BD271079F5DC908*B0069D2
7104C2F0BAD1B :REM*221
128 DATA D429019D371020630BCA*D
0B60A055A5A22904D*02A0AB8
C15D06085A784 :REM*232
129 DATA A8A5A24A4A4A4A4A2901*8
D8602A208A0081820F0*FFA5A7A
4A84C1EABBD27 :REM*126
130 DATA 10A0A0A85020A186502*B
C2F101879980D9D1710*A900690
09D1F10BD2F10 :REM*30
131 DATA 0A0A0A0A18697D9D0F10*6
0A00418B9A804E900C9*30B002A
93999A8048810 :REM*79
132 DATA EFCAD0E960A00438B9A8*0
46900C93A9002A93099*A804881
0EFCAD0E9A000 :REM*99
133 DATA B9A804D9C0049013D006*C
8C00690F160A005B9A8*0499C00
48810F760A005 :REM*153
134 DATA A93099A8048810FA60A9*1
02CA91C8D01D4A9298D*05D4A22
08E04D4E88E04 :REM*84
135 DATA D460A9038D08D4A9958D*0
AD4A9098D0CD4A2408E*0BD4E88
E0BD46086A785 :REM*243

```

Keep Clyde hopping from tile to tile to avoid getting zapped by the deadly current.

```

136 DATA A8206D0CA9088D03D4A9*3
08D05D4A9E48D06D4A9*008504A
5040A186504A8 :REM*85
137 DATA B1A7F0328D4110A2408E*0
4D4C8B1A7F00F48C8B1*A78D00D
4688D01D4E88E :REM*33
138 DATA 04D420B00A20360BA5A2*C
5A2F0FCCE4110D0EFE6*044C300
CA017A9009900 :REM*187
139 DATA D48810FA8C0ED48C0FD4*A
9808D12D4A98F8D18D4*601865A
2C5A2D0FC60A2 :REM*66
140 DATA 078A0AA8BD0F109901D0*B
D17109900D0BD1F104A*2602CA1
0E8A5028D10D0 :REM*230
141 DATA 60CE0E10AD0E1020D0C*8
EDE048CDF048DE00460*8406982
0D00C8C11058D :REM*199
142 DATA 120560A230A030C96490*0
5E964E8D0F7C90A9005*E90AC8D
0F7093060A900 :REM*222
143 DATA 8D15D0A9088504A60420*F
FE9A90320880CE604A5*0C9199
0EE60A9068D2F :REM*219
144 DATA 10A9078D2710A5052903*A
8B9F70D20430DA000A9*E991FBC
8A9A091FBC8A9 :REM*15
145 DATA 6991FBA028A97791FBC8*9
1FBC2E271010D7A90320*880CCE2
F1010C8604820 :REM*123
146 DATA 5C0D68A000091FDC891FD*C
891FDA028A90B91FDC8*91FD60A
C2F1018A9C679 :REM*157
147 DATA 8A0D85FBA90579910D85*F
CAD27100A186D271018*65FB85F
B85FDA5FC6900 :REM*144
148 DATA 85FC290309D885FE6000*4
E9CEA3886D4000000000*0101018
8786858483828 :REM*174
149 DATA FCF0CFDFDFDFEFEF00*0
00000000000000010101*0202020
30000000000101 :REM*164
150 DATA 010101010101010101*0
101010100000000FDFD*FEFEFEF
FFFF00FF010806 :REM*180
151 DATA 0000000000010101020202*0
303000106070E0D0B07*FF01000
00000FF010806 :REM*242
152 DATA 0205070E0A0D0F38600C*3
220C2C0C01E38600F32*020C386
00A32200F2C00 :REM*168
153 DATA 1E38600F32200A38600F*3

```

```

2200F2CC00A38600F32*200F2CC
0040000502CC0 :REM*195
154 DATA 00121C300C1910181C30*0
C19100A16600A16600C*19100A1
C300A19100A16 :REM*202
155 DATA 600300000A166000088E*9
30D202020202020202*81BC122
092AF122092BE :REM*133
156 DATA 12BBAC92BC1220C62092*2
0BC122092AF122092BE*1220A22
092BC1220C620 :REM*104
157 DATA 0D202020202020201C*A
C122092B7122092BB12*BEBBC92A
C122092B7B720 :REM*46
158 DATA AC122092B7122092BB12*2
092A2122092AC122092*B7B70D1
120201F53434F :REM*27
159 DATA 52452005303030303030*2
0201195544940455220*0531303
09120209C4849 :REM*129
160 DATA 47482005303030303030*0
D11202020202020814C*4556454
C200530312020 :REM*4
161 DATA 202020202020202020*2
09A4C49564553200530*3400204
D4F5645204A4F :REM*138
162 DATA 59535449434B20544F20*4
2454749400050524553*5320464
9524520544F20 :REM*127
163 DATA 504C415920414741494E*0
00000000000000000000*0000000
000000000000 :REM*190
164 DATA 000000000000000000*0
00000000000000000000*01FFF0
3800E07001C0E :REM*183
165 DATA 00381C00703800E07001*C
0FFFF0260C00303300*CC70FF0
D03AAC00EEB00 :REM*219
166 DATA 0EEB00E69B003AAC003*E
BC0033CC0030C00300*C00300C
00300C0DC370 :REM*81
167 DATA 35C35CD70D73C030C00*0
00000000000000E60C*0030340
01C0C00300C00 :REM*181
168 DATA 300300C000FF0003AAC0*0
EAAB00EEB00EAAB03F*AAF0CF0
B0F3C3C3CF00 :REM*114
169 DATA F00DC37035C35CD700D7*3
C003C0000000000000*0000000
000000000000 :REM*81
170 DATA 000000000000000000*0
00000000000000000000*0000000
000000000000 :REM*14
171 DATA 000000000000000000*0
00000000 :REM*25
172 DATA -1 :REM*30

```

RUN it right: C-64; joystick in port 2

Perfect Companions

It's a match made in computing heaven: your Commodore and one of these high-quality dot-matrix printers from Panasonic.



By TIM WALSH

Printers are the great equalizers of computing, because you can't always tell if the computer used to make a printed page was a \$150 Commodore or a \$25,000 Sun workstation. At the *RUN* editorial offices we appreciate this fact, because, while we have more expensive computers on our desks, we also rely on our 128Ds for getting the words we want to our readers. We know a good printer can make all the difference in the world.

With Panasonic's introduction of two new 24-pin printers,

Commodore owners can generate some of the best characters and graphics possible from any dot-matrix machine. And, thanks to the attractive—if not “clearinghouse”—prices Panasonic has assigned them, they offer an excellent choice even for those Commodore owners on a limited budget.

We'll take a look at both printers and let you decide if they deliver all the goods you want and need. Let's kick things off with an overview of the more conservative and budget-minded of the two, the KX-P1123.

PANASONIC KX-P1123

If you're a Commodore user who wants a 24-pin printer and you're not anxious to spend a lot of money, you'd do well to take a serious look at the versatile KX-P1123. Its long list of print features is really only half the story; its greatest strength lies in its ability to produce some of the darkest, finely detailed characters and graphics seen on any dot-matrix printer.

Unpacking the printer and getting it connected to your Commodore is a snap. Remove the packing, pop the ribbon cartridge in, thread the paper through, and you're almost ready to go. The last step is to plug in a Commodore-compatible printer interface, such as my personal favorite, the Xetec Super Graphix.

When it comes to paper handling, the 1123 has a few tricks up its sleeve. If you're using continuous forms or labels, you can direct them either through the rear of the printer or the bottom feed beneath. Two levers let you control paper-feed selection, paper-bail release, paper parking and head gap. By having the levers on top and easy to access, the 1123 is remarkably label- and envelope-friendly. All too often I classify printing envelopes a challenge at best, but I found the 1123 handles them as easily as continuous-form paper.

EMULATION STATION

The 1123 has two emulation modes: Epson LQ-850 and IBM Proprinter X24.

The Epson emulation surely ranks as the more important of the two, since many Commodore software packages that support bit-mapped graphics also offer Epson printer drivers. Because the 1123 defaults to Epson mode, you just select an Epson printer driver from your software and set your printer interface to either Transparent or Semi-transparent mode. After that, you needn't give it another thought.

Of course, if you're using a non-graphics program, such as the RUN Script word processor, you can still benefit from the Epson mode. I used Epson-specific commands sent through the software to change printer fonts and provide text enhancements such as bold, italics and underlining.

The Operating Instructions booklet that accompanies the printer is packed with commands for selecting print options. Since the printer lacks Commodore-code compatibility, you have to learn to decipher the instructions and convert them to a language that your Commodore can understand.

This process isn't nearly as complicated as it sounds. Although I've explained it in previous printer reviews, the conversion process bears repeating for new readers. For demonstration purposes, on page 6-13 of the manual you'll find the Name, Decimal and Hexadecimal commands needed to turn italic printing on and off.

For the Commodore 64 and 128, you

need only concern yourself with the decimal commands. Since the manual states that 27,52 turns on italics and 27,53 turns it off, you would enter the following command from Basic to turn on the italics mode:

```
OPEN 4,4,7 PRINT#4,CHR$(27);  
CHR$(52) CLOSE 4
```

To turn off italics, just substitute a 53 for the 52 in the above command. When using software packages such as databases and word processors, the process is actually easier, because then you send commands such as 27,52 directly to the printer.

FAST COMPANY

In performance and features, the 1123 won't disappoint even the most discerning customer. In the speed department, it prints up to 240 characters per second in Micron Draft mode, and slows to 63 cps when using the Letter Quality mode with Elite characters. Overall, the 1123 is plenty fast for most home and small business demands.

It has five basic character-per-inch settings: Pica (10 cpi), Elite, Micron, Compressed and Elite Compressed. All of these settings are also available in elongated mode, resulting in a total of ten basic character settings. Fonts offered by the 1123 include Program, Draft, Courier, Prestige, Bold PS and Script.

When it's operating in the default Ep-



The KX-P1123 would be hard to beat in its price range. It gives high-quality output and is an excellent choice for the upgrade-minded.



The KX-P1124i produces near-laser-quality output. It's more money, but has many more features, including a selection display window.

son mode, the printer has six print densities in 8-pin mode, ranging from a standard of 60 dots per inch to a remarkably dark 360 dpi. In 24-pin mode, it has five print densities, again ranging from 60 to 360 dpi.

At a glance, the 1123 appears to have one of the most complex control panels found on any consumer printer: No fewer than twelve LED lights and five function buttons adorn the front panel. Some of these, such as the Quiet button, are straightforward in their meaning. Other

options, however, require deciphering a matrix of lines and lights.

While some newcomers might be slightly befuddled by this initially, don't let the sight fool you—this printer is actually quite simple to use in its day-to-day operation. Owners of other Panasonic printers with a similar panel, such as the KX-P1080, can testify to this. And, as I mentioned before, there is an alternative that will allow you to bypass the control panel: You can send commands to the printer via software or through Direct

mode on your Commodore.

In summary, it's tough to be objective when reviewing a printer as good as the 1123. There's a lot to rave about, not the least of which being the features you get for the price. Perhaps one of the most compelling reasons for buying the 1123 isn't the price, though; rather, it's that should you get a laptop or more powerful PC in the future, this printer would make it a perfect companion also, even if you bought one of the most powerful computers out there.

PANASONIC KX-P1124i

One of the best-selling printers of all time was Panasonic's KX-P1124, introduced several years ago to rave reviews. The KX-P1124i is an improved version of that wildly successful printer. As good as the 1123 is, the 1124i is better.

BIGGER PRICE=BETTER OPTIONS

If it's options you're after and you're willing to spend a little more, the option-laden 24-pin 1124i simply has more features than any other dot-matrix printer you'll find anywhere at any price. Even the 1123 is no match for the 1124i. It has a fast print speed (300 cps draft/80 cps LQ), 360 x 360 dpi graphics resolution, a more sophisticated paper-handling system and a display window for sending and monitoring printer commands.

Setting up and connecting this printer to your Commodore differs little from the 1123. And, if the 1123's control panel seems complex, the 1124i's panel looks, and is, simple. Its panel has two more function buttons, for a total of seven, but it offers something rarely seen outside of laser printers—the previously-mentioned display window that explains all user-selectable settings.

As with the 1123, you can send commands to the 1124i through either the control panel or software. Even to the

user well-versed in deciphering the 1123's matrix of lines and LED lights, the 1124i's display window is a welcome relief for quickly selecting print options. You just press the Function Enter/Exit button, the Menu button, the Item button, then the Selection button. When you have the proper setting in the display window, you press the Set button to set it. All of the buttons are multifunctional, with the Set button doubling as the Online/Offline button, the Selection button doubling as the Load/Park button, and so on.

UPWARDLY MOBILE PRINTER

When it comes to paper handling, the 1124i is in a class by itself. It'll do everything that the 1123 does, only more easily and conveniently. Need to print on stationery or envelopes? Just pop open the front of the printer, park the continuous form-feed paper and put the envelopes in the front opening. Need to print labels? Just feed them into one of the two tractor feeds and you're ready.

What do I like most about this printer? The fine print quality notwithstanding, perhaps it's the printer's remarkable mechanical quality. And the statement I made concerning the 1123's high potential for "upward mobility" can be made with even greater emphasis regarding the

1124i. This printer will stand up to your requirements, no matter what platform you might later use it with.

The 1124i provides some benefits not mentioned in the manual. With lower operating costs than any laser printer, it is an excellent alternative to going that route. And with a character resolution of 48 dots tall by 30 dots wide, its text approaches laser quality. With its fast speed and long ribbon life, it would make a great addition to any busy small business office.

Unfortunately, this model probably won't attract many followers among Commodore users; its price is just a bit too high. But, if you demand only the best for your Commodore, you needn't look any further. ■

Among other things, Tim Walsh is RUN's hardware hard guy. He writes for RUN and its sister publication, AmigaWorld.

Panasonic

Two Panasonic Way
Secaucus, NJ 07094

KX-P1123 Printer, \$399.95

KX-P1124i Printer, \$499.95

File Packer 64

When you're sending or storing files, this program will pack them efficiently and keep them safe.



By STEVE EMSLEY

One of the disadvantages of ordinary file compression programs is that they create one big file, which you must load and run to uncompress. Not File Packer 64—it's not just another ordinary file compression program.

File Packer 64 not only lets you shorten and combine disk files, but it also lets you compress individual files, or any combination of files. In addition, it lets you encode each compressed file with a different byte, or code, for protection from unauthorized decompressing.

LOADING INSTRUCTIONS

Type in Listing 1, File Packer 64, and save it to disk. Then, type in and save Listing 2. Use the Checksum program on page 57 to catch any typing errors you might make. Run Listing 2 to create Packer.ML, the machine language file that is loaded by File Packer.

Next, type in and save Listing 3, which is an unpacking routine used to write files to disk as File A, File B, and so on. Finally, type in and save Listing 4, then run it to create Unpacker.ML, the machine language file used by Listing 3.

THE MENU

File Packer's menu offers four options: Save Unpacker, Pack File(s), Append File(s) and End.

Option 1 saves to disk a file called Unpacker. When selected, it asks for a memory location. Try to choose a location that isn't needed for other things. Locations 32768 and 49152 seem to work best.

After entering the memory location, place a disk in the destination drive and press any key to initiate the save. The routine is saved as a 1-block file.

Option 2 compacts the individual files. Enter the current filename and the new filename at this point. Pressing RETURN without an entry for either prompt



aborts to the menu. Be certain that you enter the Basic program files first, since the program won't work if the last file packed into a compressed file is a Basic program.

Next, enter a number from 0 to 255 as an XOR byte. File Packer encrypts the file (including the load address) by exclusive "ORing" with this number. A blank here leaves the file unencoded.

Because the encoding byte is stored in the file and not the unpacking routine, each file can have a different encoding number. The files are secure from tampering because they must then be loaded with the unpacking routine.

After the file is found, File Packer displays the original load address for you to change or keep. Pressing the LEFT-ARROW key at this point aborts to the menu (as will a disk error).

Depending on the size of the file, the encoding and crunching takes from one to several minutes. When it's done, you'll have a chance to compact another file. Unlike other file compactors that require

loading three or four files, then compressing them, File Packer requires loading just one. Also, because the load address of each file is separate, the files can be packed in any order.

Option 3 is for adding, or appending, a file to an existing packed file. It asks for the name of the file to be added and the name of the packed file.

Option 4 quits the program.

SPECIAL KEYS

File Packer defines the following keys to serve special functions:

S changes the source device, should you want to use a second drive. Drives 8-11 are supported.

F1 and **F3** toggle the source (read) and destination (write) drives.

F5 and **F7** display directories of the source and destination disks, respectively.

These special keys are listed on the same screen as the menu.

LOADING FILES

You have two choices for unpacking any of the compacted files. First, you can use the Unpacker routine created by Listing 1, which unpacks the files only in the computer's RAM. Use the statement LOAD"UNPACKER",8,1 to load the unpacking file. To load a compacted file from Basic, use:

```
OPEN 8,D,2,"0:FILENAME":SYS  
LOCATION
```

where D is the device number (usually 8), and LOCATION is the location of the unpacker routine.

The screen border flickers to let you know when the file is loading and stops when it's done. The packed files then reside in memory at the locations specified when packed.

The second, and easier, way to use the program is to run Listing 3, then enter the name of the packed file at the ▶

RUN it right: C-64

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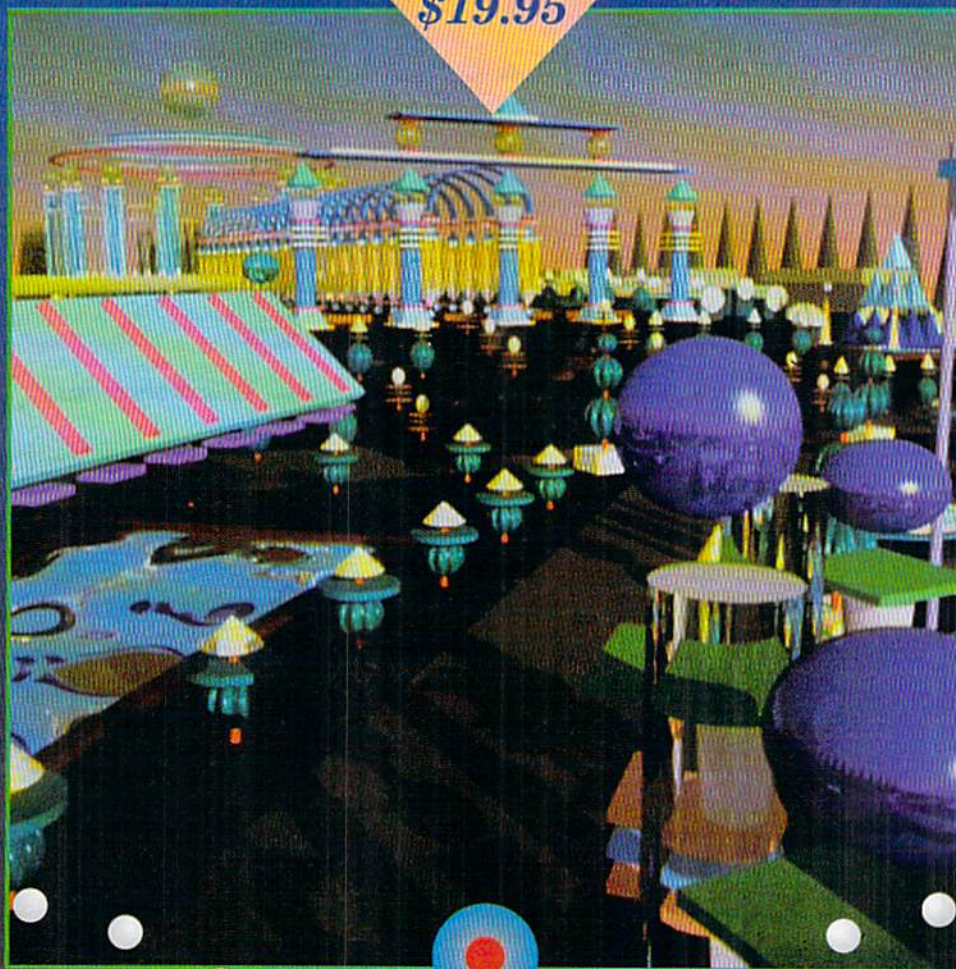


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6C2AP1

FILE PACKER 64

prompt. The unpacked files are written to disk as File A, File B, and so on.

Regardless of which unpacking method you choose, the packing routine is based on repetition, so it works best with sprite files, picture files and program-format word processing files, such

as those created by RUN's word processor, RUN Script.

Basic programs can't be the last ones packed. That is, you must make either a machine language or text file last. If you experience problems unpacking files, repack them using different addresses or

simply in a different order.

File Packer 64 is sure to come in handy any time you need to compact and protect your files. **R**

Steve Emsley is from Philadelphia and has been writing C-64 programs since 1984.

Listing 1. File Packer 64 program. (Available on the January/February ReRUN disk. To order, call 800-343-0728.)

```

10 IFPEEK(49171)<>207THENX=PEEK      280 RL=. :INPUT" {SHFT CLR}{2 CRS
(186):LOAD"PACKER.ML",X,1          R DNS}{2 CRSR RTs}{CTRL 2}S
:REM*61                             TORE WHERE IN MEMORY";RL:IF
20 POKE53280,.:POKE53281,.:DR=8     RL<828ORRL>53248THENRL=5229
:DW=8:UP$="UNPACKER":TY$(.)=      2 :REM*184
"NEW":REM*221
30 TY$="PACKED":REM*142
40 PRINTCHR$(142)" {SHFT CLR}{5
CRSR DNS}{CTRL 8}{CTRL 9}"SP
C(7)" {27 SPACES}":REM*166
50 PRINTSPC(7)" {CTRL 9}{8 SPACE
s}FILE PACKER{8 SPACES}{CTRL
3}":REM*160
60 PRINTSPC(7)" {CTRL 8}{CTRL 9}
{27 SPACES}{CTRL 3}":REM*56
70 PRINTSPC(7)" {CTRL 8}{CTRL 9}
{6 SPACES}BY STEVE EMSLEY{6
SPACES}{CTRL 3}":REM*64
80 PRINTSPC(7)" {CTRL 8}{CTRL 9}
{27 SPACES}{CTRL 3}":REM*36
90 PRINTSPC(8)" {CTRL 3}{CTRL 9}
{27 SPACES}":REM*177
100 PRINT" {2 CRSR DNS}{2 CRSR R
Ts}{CTRL 2}1. {2 SPACES}SAVE
UNPACKER{CRSR DN}":PRINT" {
2 CRSR RTs}2. {2 SPACES}PACK
FILE(S){CRSR DN}":REM*92
110 PRINT" {2 CRSR RTs}3. {2 SPAC
Es}APPEND";REM*101
120 PRINT" FILE(S){CRSR DN}":PR
INT" {2 CRSR RTs}4. {2 SPACES
}END{CRSR DN}":PRINT" {8 CRS
R RTs}{CTRL 4}S -SOFTWARE D
RIVE CHANGE":REM*230
130 PRINT" {2 CRSR DNS}{8 CRSR R
Ts}{COMD 7}DIRECTORY{4 SPAC
Es}S/D{4 SPACES}F5/F7";
:REM*87
140 PRINT" {HOME}{2 CRSR DNS}{2
CRSR RTs}{COMD 1}READING -"
DR"{CRSR LF}":REM*210
150 PRINT" {CRSR UP}{25 CRSR RTs
}WRITING -"DW"{CRSR LF}":
:REM*236
160 PRINT" {CRSR UP}{17 CRSR RTs
}F1/F3":REM*48
170 GETA$:IFA$=""THEN170:REM*75
180 IFA$="1"THENSYS49396:GOTO28
0:REM*204
190 IFA$="2"THENFF=.:GOTO500
:REM*153
200 IFA$="3"THENFF=1:GOTO500
:REM*197
210 IFA$="4"THENPRINT" {SHFT CLR
}":END:REM*142
220 IFA$=CHR$(135)THEN910
:REM*83
230 IFA$=CHR$(136)THEN950
:REM*140
240 IFA$=CHR$(133)THEN970
:REM*131
250 IFA$=CHR$(134)THEN990
:REM*214
260 IFA$="S"THEN1010:REM*238
270 GOTO170:REM*93
280 RL=. :INPUT" {SHFT CLR}{2 CRS
R DNS}{2 CRSR RTs}{CTRL 2}S
TORE WHERE IN MEMORY";RL:IF
RL<828ORRL>53248THENRL=5229
2 :REM*184
290 PRINT" {2 CRSR DNS}{2 CRSR R
Ts}{CTRL 8}RELOCATING{CTRL
4}":I=49920:REM*235
300 J=RL+64:GOSUB1090:POKEI+107
,L:POKEI+108,H:POKEI+217,L:
POKEI+218,H:REM*241
310 J=RL+219:GOSUB1090:POKEI+10
4,L:POKEI+105,H:POKEI+206,L
:POKEI+207,H:REM*77
320 J=RL+238:GOSUB1090:POKEI+75
,L:POKEI+76,H:POKEI+96,L:PO
KEI+97,H:REM*250
330 POKEI+212,L:POKEI+213,H:J=J
+1:GOSUB1090:POKEI+22,L:POK
EI+23,H:REM*120
340 POKEI+34,L:POKEI+35,H:POKEI
+42,L:POKEI+43,H:POKEI+82,L
:POKEI+83,H:REM*164
350 POKEI+196,L:POKEI+197,H:POK
EI+203,L:POKEI+204,H
:REM*129
360 J=J+1:GOSUB1090:POKEI+93,L:
POKEI+94,H:POKEI+101,L:POK
E+102,H:REM*112
370 J=J+1:GOSUB1090:POKEI+11,L:
POKEI+12,H:POKEI+137,L:POK
E+138,H:REM*200
380 J=J+1:GOSUB1090:POKEI+28,L:
POKEI+29,H:POKEI+47,L:POKEI
+48,H:POKEI+110,L:REM*33
390 POKEI+111,H:J=J+1:GOSUB1090
:POKEI+52,L:POKEI+53,H:POK
E+147,L:POKEI+148,H:REM*101
400 J=J+1:GOSUB1090:POKEI+57,L:
POKEI+58,H:POKEI+154,L:POK
E+155,H:REM*132
410 J=J+1:GOSUB1090:POKEI+62,L:
POKEI+63,H:POKEI+163,L:POK
E+164,H:REM*90
420 J=J+1:GOSUB1090:POKEI+117,L
:POKEI+118,H:POKEI+173,L:PO
KEI+174,H:REM*86
430 J=J+1:GOSUB1090:POKEI+122,L
:POKEI+123,H:POKEI+180,L:PO
KEI+181,H:REM*224
440 PRINT" {2 CRSR DNS}"SPC(9)"I
NSERT DISK, HIT A KEY":POK
E+198,.:J=RL:GOSUB1090:REM*81
450 GETA$:IFA$=""THEN450:REM*86
460 IFA$="(LEFT ARROW)"THENE1=1
:GOTO400:REM*241
470 OPEN1,DW,15,"I":CLOSE1
:REM*113
480 OPEN9,DW,1,UP$:PRINT#9,CHR$(
L);CHR$(H);:FORK=49920TO50
170:REM*154
490 PRINT#9,CHR$(PEEK(K));:NEXT
:CLOSE9:GOTO400:REM*49
500 OF$="" :INPUT" {SHFT CLR}{COM
D 3}{2 CRSR DNS}{2 CRSR RTs
}NAME OF FILE";OF$:IFLEN(OF
$)>16THEN500:REM*14
510 IFOF$=""THEN400:REM*187
520 NF$="" :PRINT" {CRSR DN}{2 CRS
R RTs}{COMD 6}NAME OF "TY$(
FF)" FILE";:INPUTNF$
:REM*48
530 IFLEN(NF$)>16THENPRINT" {3 C
RSR UPs}":GOTO520:REM*172
540 IFNF$=""THEN400:REM*215
550 IFFFFTHEN580:REM*94
560 XB=.:INPUT" {CRSR DN}{2 CRSR
RTs}{CTRL 8}XOR BYTE";XB:I
FXB<.ORXB>255THENXB=.
:REM*241
570 POKE49391,XB:REM*52
580 PRINT" {5 CRSR DNS}"SPC(8)" {
COMD 7}INSERT DISK(S), HIT
A KEY":POKE198,.:WAIT198,1
:REM*0
590 E1=. :OPEN1,DR,15,"I":INPUT#
1,E1:CLOSE1:IFDR=DWTHEN610
:REM*219
600 E2=. :OPEN1,DW,15,"I":INPUT#
1,E2:CLOSE1:REM*84
610 IFE1<>.ORE2<>.THEN400
:REM*207
620 GOSUB720:IFE1THEN400:REM*149
630 IFFFFTHENGOSUB830:GOTO710
:REM*114
640 OPEN8,DR,2,OF$:OPEN9,DW,1,N
F$:SYS49152:REM*62
650 PRINT" {CRSR DN}{CRSR RT}ANO
THER FILE? {2 SPACES} (Y/N)":
POKE198,.:REM*71
660 GETA$:IFA$="N"THEN400
:REM*130
670 IFA$<>"Y"THEN660:REM*43
680 OF$="" :INPUT" {SHFT CLR}{COM
D 3}{2 CRSR DNS}{2 CRSR RTs
}NAME OF FILE";OF$:IFLEN(OF
$)>16THEN680:REM*219
690 IFOF$=""THEN400:REM*78
700 GOSUB720:IFE1THEN400:REM*197
710 OPEN8,DR,2,OF$:OPEN9,DW,3,N
F$+" ,P,A":SYS49342:GOTO650
:REM*150
720 E1=. :REM*67
730 OPEN1,DR,15:OPEN8,DR,2,OF$:
GET#8,L$,H$:INPUT#1,E1:CLOS
E8:CLOSE1:L=.:H=. :REM*161
740 IFE1THENRETURN:REM*231
750 NL=. :L$=L$+CHR$(.) :H$=H$+CH
R$(.) :L=ASC(L$):H=ASC(H$):N
L=L+256*H:REM*129
760 PRINT" {CRSR DN}{2 CRSR RTs}
{CTRL 2}LOAD ADDRESS IS"NL"
{CRSR LF}." {2 SPACES}CHANGE
IT?":POKE198,.:REM*38
770 GETA$:IFA$="N"THEN810:REM*6
780 IFA$="(LEFT ARROW)"THENE1=1
:RETURN:REM*127
790 IFA$<>"Y"THEN770:REM*166
800 INPUT" {CRSR DN}{2 CRSR RTs}
NEW LOAD ADDRESS";NL:IFNL<.

```

FILE PACKER 64

```

ORNL>65535THEN800 :REM*49
810 J=NL:GOSUB1090 :REM*8
820 POKE49393,L:POKE49394,H :REM*134
830 PRINT"{CRSR DN}{2 CRSR RTs}
{COMD 3}IS THIS A BASIC PRO
GRAM?(2 SPACES){(CTRL 9)Y{C
TRL 0}/(CTRL 9)N(CTRL 0)}":
POKE198,. :REM*19
840 GETAS:IFA$="Y"THENPOKE49395
,1:GOTO880 :REM*254
850 IFA$="(LEFT ARROW)"THENE1=1
:RETURN :REM*181
860 IFA$<>"N"THEN840 :REM*132
870 POKE49395,. :REM*209
880 IFFF=.THEN900 :REM*161
890 OPEN8,DW,2,NF$:GET#8,AS:AS=
A$+CHR$(.):XB=ASC(AS):CLOSE
8:POKE49391,XB :REM*101
900 RETURN :REM*22
910 POKE49778,DR:OPEN1,DR,15,"I
:INPUT#1,E1:CLOSE1:IFE1THE
N40 :REM*148
920 PRINT"{SHFT CLR}{2 CRSR DN
s}{CTRL 4}"SPC(5)"SHFT KEY
PAUSES, C= KEY STOPS(CRSR D
N)":PRINTSPC(15)"HIT A KEY"
:REM*156
930 POKE198,.:WAIT198,1:SYS4966
4 :REM*65
940 PRINT"{CRSR DN}"SPC(14)"(CO
MD 6)HIT A KEY...":POKE198,
.:WAIT198,1:GOTO40 :REM*97
950 POKE49778,DW:OPEN1,DW,15,"I
:INPUT#1,E1:CLOSE1:IFE1THE
N40 :REM*52
960 GOTO920 :REM*23
970 DR=DR+1:IFDR=12THENDR=8
:REM*19
980 GOTO140 :REM*29
990 DW=DW+1:IFDW=12THENDW=8
:REM*111
1000 GOTO140 :REM*41
1010 PRINT"{SHFT CLR}{CTRL 5}{2
CRSR DN}s}{2 CRSR RTs}CHAN
GE DRIVE FROM";INPUTD1:IF
D1<8THEND1=8 :REM*84
1020 IFD1>11THEND1=11 :REM*88
1030 PRINTSPC(17)"TO";:INPUTD2:
IFD2=D1THEN40 :REM*50
1040 IFD2<8THEND2=8 :REM*124
1050 IFD2>11THEND2=11 :REM*110
1060 PRINT"{2 CRSR DN}s}{2 CRSR
RTs}CHANGING DRIVE...":OP
EN1,D1,15 :REM*189
1070 PRINT#1,"M-W"CHR$(119)CHR$(
.)CHR$(2)CHR$(32+D2)CHR$(
64+D2):CLOSE1 :REM*39
1080 FORI=.TO499:NEXT:GOTO40
:REM*13
1090 H=INT(J/256):L=J-256*H:RET
URN :REM*248

```

Listing 2. Creates Packer.ML program. (Available on the January/February ReRUN disk.)

```

0 REM THIS LIST 1 CREATES (AND
SHOULD NOT BE CALLED) PACKER.
ML :REM*89
5 OPEN 8,8,8,"PACKER.ML,P,W"
:REM*132
6 CT=0:PRINT"{SHFT CLR}":REM*56
10 READ AS:IF AS$="-1" THEN CLOS
E8:PRINT:PRINT"ALL DONE!":EN
D :REM*129
12 PRINT"{HOME}READING LINE "+S
TR$(CT):CT=CT+1 :REM*141
15 IF LEN(AS$)<62 THEN 55
:REM*254
20 B$=MID$(AS$,1,20)+MID$(AS$,22,
20)+MID$(AS$,43,20) :REM*242
25 FOR I=1 TO 30 :REM*181
30 C$=MID$(B$, (I*2)-1,2):H$=LEF
T$(C$,1):L$=RIGHT$(C$,1)
:REM*209
35 H=VAL(H$):IF H$>"9" THEN H=A
SC(H$)-55 :REM*85
40 L=VAL(L$):IF L$>"9" THEN L=A
SC(L$)-55 :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);
:REM*67
50 NEXT:GOTO 10 :REM*115
55 IF LEN(AS$)<21 THEN B$=A$:GOT
O 70 :REM*184
60 IF LEN(AS$)<42 THEN B$=LEFT$(
AS$,20)+RIGHT$(AS$, (LEN(AS$)-21
)):GOTO 70 :REM*176
65 B$=LEFT$(AS$,20)+MID$(AS$,22,2
0)+RIGHT$(AS$,LEN(AS$)-42)
:REM*140
70 FOR I=1 TO LEN(B$)/2:REM*221
75 C$=MID$(B$, (I*2)-1,2):H$=LEF
T$(C$,1):L$=RIGHT$(C$,1)
:REM*140
80 H=VAL(H$):IF H$>"9" THEN H=A
SC(H$)-55 :REM*56
85 L=VAL(L$):IF L$>"9" THEN L=A
SC(L$)-55 :REM*84
90 BY=H*16+L:PRINT#8,CHR$(BY);
:REM*148
95 NEXT:GOTO 10 :REM*160
100 REM HEX DATA FOR PACKER ML
:REM*233
101 DATA 00C020DFC020D7C0ADEF*C
020D2FFADF3C020D2FF*20CFC02
0CFFF20CFFF20 :REM*159
102 DATA D7C0ADF1C04DEFC020D2*F
FADF2C04DEFC020D2FF*20CFC02
0CFFF8DEDC020 :REM*156
103 DATA CFC020CFFFAA20B7FF8D*E
EC08A8DECC0CDEDC0F0*44ADF0C
0C904901E20A1 :REM*255
104 DATA C020E5C020DFC0ADEF0*F
0D520A1C020CCFFFA908*20C3FFA
9094CC3FFAED :REM*255
105 DATA C0C984F0DBC987F0D720*D
7C0AEDC04DEFC020D2*FFCEF0C
0DF84C59C0EE :REM*153
106 DATA F0CF0F034C5FC0CF0C0*4
C56C020D7C0A9874DEF*C020D2F
FADF0C04DEFC0 :REM*205
107 DATA 20D2FFAEDC04DEFC04C*D
2FF20DFC020D7C0A984*4DEFC02
0D2FF4C0CC020 :REM*178
108 DATA CCFFA2084CC6FF20CCFF*A
2094CC9FFA9018DF0C0*60ADECC
08DEDC0600000 :REM*200
109 DATA 000000000000A200BD00*C
19D00C3E8D0F76020C0*FFA9008
D0EDCA5018DF1 :REM*167
110 DATA C1A20820C6FF20CFFF8D*E
FC120CFFF8DF2C120CF*F4DEF0C
1850320CFFF4D :REM*55
111 DATA EFC18504ADF2C1F00D8D*F
3C1A5038DF4C1A5048D*F5C120C
FFFAACE20D020 :REM*106
112 DATA B7FF8DEEC1EE20D08A4D*E
FC1C987F068C984F011*8DF0C1A
DEEC1D01CADF0 :REM*95
113 DATA C120DBC14C40C1ADF2C1*F
0A6A5038DF6C1A5048D*F7C1A90
0F09820CCFFA9 :REM*69
114 DATA 0820C3FFADF1C18501A9*0
18D0EDCADF3C1D00160*38ADF4C
1852BE901857A :REM*179
115 DATA ADF5C1852CE900857B18*A
DF6C16903852DADF7C1*6900852
E2060A64CEAA7 :REM*167
116 DATA 20CFFF4DEFC1AA20CFFF*4
DEFC120DBC1CAD0FAAD*EEC1D0A
84C40C1A03484 :REM*249
117 DATA 01A0009103B603D002E6*0
4A0378401600000000*00000000
000000000000 :REM*218
118 DATA 00000000A99320D2FFA9*0
8A72C2A000020BAFFA9*01A270A
0C220BDFF20C0 :REM*166
119 DATA FFA20820C6FF20E4FF20*E
4FF20E1FFF03C20E4FF*20E4FFA
590D032AD8D02 :REM*107
120 DATA C902F02BC901F0F520E4*F
F8D71C220E4FFAE71C2*20CDBDA
9202D2FF20E4 :REM*4
121 DATA FFF0620D2FF4C54C2A9*0
D20D2FF4C26C2D0C9FF*A9084CC
3FF02240008 :REM*222
122 DATA -1 :REM*235

```

Listing 3. File Unpacker program. (Available on the January/February ReRUN disk.)

```

10 REM LISTING 3 - FILE UNPACKE
R :REM*52
20 SYS57812"DECOMP.ML",8:POKE78
0,.:POKE781,.:POKE782,192:SY
S65493 :REM*100
30 POKE53280,.:POKE53281,.:PRIN
T"{SHFT CLR}":REM*19
40 S1=49152:NN=49160:AF=49184:W
R=49206:EO=49310:LL=EO+1:LH=
EO+2:LB=EO+3 :REM*140
50 NS=4 :REM*140
60 PRINT"{6 CRSR DN}s"SPC(13)"(
CTRL 2)FILE RETRIEVER"
:REM*191
70 FR$="" :INPUT"{3 CRSR DN}s}{2
CRSR RTs}INPUT PACKED FILE N
AME ":FR$ :REM*251
80 IFFR$=""THENPRINT"{SHFT CLR}
":END :REM*204
90 OPEN1,8,15,"I0":OPEN8,8,2,FR
$:INPUT#1,E,E$:CLOSE8:CLOSE1
:REM*19
100 IFETHENPRINT"{2 CRSR DN}s}{2
CRSR RTs}DISK ERROR -"E;E$
:FORI=.TO1499:NEXT:PRINT"{S
HFT CLR}":END :REM*155
110 OPEN8,8,2,FR$ :REM*155
120 PRINT"{SHFT CLR}":SYSS1:FC=
65 :REM*253
130 PRINT"{CTRL 2}{2 CRSR DN}s}{
2 CRSR RTs}{CTRL 2}EOR BYTE
-{COMD 3}"PEEK(EO):REM*248

```

FILE PACKER 64

```

140 POKE781,3:SYS65481:REM*244      {CTRL 2}FILE NUMBER -(COMD 190 SYSNN:OPEN9,8,1,F$:SYSWR
150 PRINT"(HOME){5 CRSR DNs}{2      3)"FC-64      :REM*40      :REM*217
    CRSR RTs}{CTRL 2}START ADDR 170 PRINT"{CRSR DN}{2 CRSR RTs} 200 CLOSE9:IFPEEK(LB)THENCLOSE8
    ESS -(COMD 3)"PEEK(LL)+(25      {CTRL 2}BASIC FILE? -(COMD :PRINT" {SHFT CLR)":END
    6*PEEK(LH))"{CRSR LF}{3 SPA      3)"N$(PEEK(LB))      :REM*18      :REM*24
    CEs)"      :REM*82 180 F$="FILE "+CHR$(FC):FC=FC+1 210 SYSAF:GOTO140      :REM*97
160 PRINT"{CRSR DN}{2 CRSR RTs}      :REM*193
    
```

Listing 4. Creates Unpacker.ML program. (Available on the January/February ReRUN disk.)

```

0 REM THIS LIST 4 CREATES (AND      SC(L$)-55      :REM*136 95 NEXT:GOTO 10      :REM*160
  SHOULD NOT BE CALLED) DECOMP. 45 BY=H*16+L:PRINT#8,CHR$(BY); 100 REM HEX DATA FOR LISTING 4
  ML      :REM*245 50 NEXT:GOTO 10      :REM*115 101 DATA 00C04C14C0A2084CC6FF*A
5 OPEN 8,8,8,"DECOMP.ML,P,W"      :REM*204 55 IF LEN(A$)<21 THEN B$=A$:GOT 2094CC9FF20CFFF4D9E*C06020C
      :REM*204 0 70      :REM*184 0FF2003C020CF      :REM*138
6 CT=0:PRINT" {SHFT CLR}":REM*56 60 IF LEN(A$)<42 THEN B$=LEFT$( 102 DATA FF8D9EC02003C020CFFF*8
10 READ A$:IF A$="-1" THEN CLOS  A$,20)+RIGHT$(A$,LEN(A$)-21  DA1C0200DC08D9FC020*0DC08DA
  E8:PRINT:PRINT"ALL DONE!":EN  ):GOTO 70      :REM*176 0C0602008C0AD      :REM*163
  D      :REM*129 65 B$=LEFT$(A$,20)+MID$(A$,22,2 103 DATA 9FC020D2FFADA0C020D2*F
12 PRINT"(HOME)READING LINE "+S  0)+RIGHT$(A$,LEN(A$)-42)      :REM*140 F2003C0200DC08DA2C0*20B7FF8
  TR$(CT):CT=CT+1      :REM*141 70 FOR I=1 TO LEN(B$)/2:REM*221 DA5C0ADA2C0C9      :REM*184
15 IF LEN(A$)<62 THEN 55      :REM*254 75 C$=MID$(B$, (I*2)-1,2):H$=LEF 104 DATA 87F015C984F0D62008C0*A
      :REM*242 20 B$=MID$(A$,1,20)+MID$(A$,22,  T$(C$,1):L$=RIGHT$(C$,1)      :REM*140 DA2C020D2FFADA5C0D0*C84C45C
      :REM*242 20)+MID$(A$,43,20)      :REM*140 02003C0200DC0      :REM*38
25 FOR I=1 TO 30      :REM*181 80 H=VAL(H$):IF H$>"9" THEN H=A 105 DATA 8DA4C02003C0200DC08D*A
30 C$=MID$(B$, (I*2)-1,2):H$=LEF  SC(H$)-55      :REM*56 3C020B7FF8DA5C02008*C0ADA3C
  T$(C$,1):L$=RIGHT$(C$,1)      :REM*209 85 L=VAL(L$):IF L$>"9" THEN L=A 020D2FFCEA4C0      :REM*69
      :REM*209 35 H=VAL(H$):IF H$>"9" THEN H=A  SC(L$)-55      :REM*84 106 DATA D0F2ADA5C0D09A4C45C0*0
  SC(H$)-55      :REM*85 90 BY=H*16+L:PRINT#8,CHR$(BY); 0000000000000000      :REM*191
40 L=VAL(L$):IF L$>"9" THEN L=A  :REM*148 107 DATA -1      :REM*218
    
```

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GEOWATCH

AutoExecs aren't just found in mahogany-lined Detroit offices; they live in your GEOS environment, too.

By STEVE VANDER ARK

A LOT OF THINGS HAPPEN when you boot GEOS. One simple Boot command sets into motion an elaborate sequence of events that transforms your Commodore into a new machine. By the time you see those icons spread across the deskTop and the pointer perched up in the corner, your computer has executed scads of commands and run several files—without a single prompt from you.

An awful lot of information has to be transferred, digested and interpreted before you can go zipping around the mousepad, so first GEOS supercharges the boot drive with disk turbo code. From then on, the rest of the GEOS operating system can be stuffed into memory pretty darn quickly. In the process, the built-in set of instructions that tell your Commodore how to do everything (from reading the drives to understanding Basic) is replaced with a new set of rules, the GEOS operating system.

After loading the system, your computer still has a few jobs to do before you see the deskTop. Since your hardware setup is unique, with drives, RAM expanders and so on, GEOS must get these details and modify itself accordingly. Configure is the file that knows the number and types of drives, RAM expanders and oth-

er peripherals you have in your system. At some point when you first used GEOS, you ran Configure and told it what peripherals you have on your computer. Now, whenever you boot GEOS, Configure runs automatically, reminding GEOS how your system is set up.

Configure is a special type of file called an autoexec, short for "automatic execute." During the boot routine, GEOS checks the disk files, then opens and runs any autoexecs it finds in the order they appear on the disk, just as if you'd double-clicked on them yourself.

Autoexec programs are perfect for doing those mundane tasks that you have to do each time you boot up (like configuring drives), and those clever GEOS programmers have written autoexecs for many of them. Probably the most common autoexec is the clock. Before the deskTop is drawn, a dialog box appears asking you to enter the time and date, and since there's no other way out of the box, you have to keep your clock updated (which is just great for forgetful people like me). There are a number of time-and-date autoexecs available; I use Rick Koch's AUTOCLOCK.

GEOS programmer Jean Major has come up with a different use for autoexec files. He's created a patch program

that upgrades the GEOS DBGetFile routine, which lets you scroll through available files and select one to open. With the upgrade, the list of available files is no longer limited to 16 filenames. He made his patch an autoexec, so it updates GEOS automatically when you boot up. A text window appears briefly during the start-up sequence to let you know the program has done its job. I have the C-128 version, called DBGetFile128 v2.0.

One tedious job that autoexecs can do for you is load files into RAM. Unless you have a RAM unit that maintains power when your computer is off, such as the Quick Brown Box or RAMLink, you have to reload files every time you boot. While many of the files you choose will depend on your current project, some files are always needed—the deskTop, for instance—and an autoexec can load them for you.

One automatic loader is QWICKSTASH by John Howard. The program's customizing feature adds a little time to the boot procedure, but it requires no user input, making the whole process quite painless. QWICKSTASH works on the C-64 as well as the 128 (in 40-Column mode).

What makes a file an autoexec is not

GEOS File Types

IF YOU'RE FAMILIAR with the Basic disk directory, you're probably aware of up to four types of files: PRG (program), SEQ (sequential), REL (relative) andUSR (user). On a GEOS disk, the Basic directory shows most GEOS files as the user type.

These file-type designations, really indicate only the structure of the file data as saved to disk. GEOS uses some sequential files (they're similar but not identical to the Commodore sequential file), but more often it uses its own unique file structure, called VLIR.

Within these general types, GEOS marks each file as of a specific type—a designation that tells GEOS what that file is used for. This file type is recorded in two places on the disk: in byte 69 of the file's header block

and in byte 22 of the directory block.

The file header is a collection of information about the file, including the icon, the comments you see when using the Info command, the author's name, the time-and-date stamp, and other information GEOS needs. The directory block is similar to the directory of a non-GEOS disk, except it includes a few extra items of information and pointers to the header block.

Non-GEOS files on a GEOS disk do not include this extra information, but their directory listings are compatible with the GEOS operating system. Certain functions cannot be performed on a non-GEOS file, because the information GEOS needs is not available.

The following is a list of GEOS file types:

- 0 Not GEOS
- 1 Basic, with a GEOS header
- 2 Assembly language, with a GEOS header
- 3 Data file
- 4 System file
- 5 Desk accessory
- 6 Application
- 7 Application data
- 8 Font
- 9 Printer driver
- 10 Input-device driver
- 11 Disk device
- 12 System boot file
- 13 Temporary (swap) file
- 14 Autoexec file
- 15 128 Input-device driver

—STA

GEOWATCH

special code or disk-access routines, as with a desk accessory; an autoexec's only distinguishing feature is its file-type indicator in the GEOS header. If you change any GEOS file's type to autoexec, it will run automatically when you boot. While this might suggest the possibility of opening your system directly into an application, in practice the limitations of the available memory get in the way.

The code for an autoexec is placed in memory before the entire boot sequence runs, which means that if the code is larger than a few kilobytes, it's going to overwrite essential operating system code and crash the system. Also, the printer and input drivers won't have loaded yet, so those functions will be left in Default mode (i.e., no printer and joystick input only).

A program called AutoLoader by Jim Collette provides a way around some of these difficulties. When this handy autoexec runs, it in turn loads and runs any other GEOS file you specify, even an application, as if that file were an autoexec itself. AutoLoader manipulates the

memory so you can boot directly into an application. When used to run Batch Copier, a file copier routine also by Jim Collette, it will load predesignated files into your REU on boot-up.

As you combine various autoexecs on your disk, it's a good idea to test the boot routine frequently to make sure your system will still boot properly. If possible, always work from a backup copy of your system disk. Using the original disk is more than a little risky! Another problem cropped up when I used Maverick to create a double-sided boot

disk. I found that autoexecs failed to work if parts of them were stored on the back of the disk.

With these cautions in mind, you'll find that autoexecs are remarkably handy tools for setting up your GEOS environment. Whether you're a geopainter, publisher, gamer or author, autoexecs can handle the chores, letting you jump right into the real fun! ■

Steve Vander Ark is from Grand Rapids, Michigan, and is a GEOS columnist for Compute's Gazette.

Program Sources

AUTOCLOCK

By Rick Koch
Crycket on Q-Link

AutoLoader

Batch Copier
By Jim Collette
GEOS Companion Disk
Available in the RUN area of Q-Link
or by calling 800-373-0728.

DBGetFile

By Jean Major
JeanF.Major on Q-Link

QWICKSTASH (with QWIKPIK)

By John Howard
ILLINI70 on Q-Link
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Shareware fee: \$5

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128 MODE

Pull your 1351 mouse out of its hole and put it to work moving your cursor in 40-column mode.

By MARK JORDAN

UNLESS YOU USE GEOS, the 1351 mouse is probably a forgotten member of your Commodore family. Mine was. While the mouse on my Amiga has logged many miles, my 1351 has hibernated in the back of a desk drawer.

Sure, the 1351's driver is easy enough to load and use, but all it does is move a pointer the C-128 doesn't recognize. You may point, you may click, and if your 128 is in a good mood, it will ignore you; if it's not, off you go to Monitorland.

I've changed all that by rewriting the 1351's driver program. Now you can use your mouse to move your cursor. The new driver operates in 40-column mode and, like the original, it runs on interrupts, so it functions invisibly while you go about your normal business.

Type in the MouseCursor program in Listing 1, using the Checksum program on page 57 to catch any typing mistakes, and save it to disk. MouseCursor is a Basic program that pokes the machine language driver into place; saves the driver to disk with the name MouseCur.Bin; prepares a sprite pointer; and, finally, starts the driver.

If you want to install the machine language on other disks, simply load and run MouseCursor again. To use the mouse cursor, make sure your 1351 is plugged into port 1, then just enter BLOAD "MOUSECUR.BIN" followed by SYS 6144.

Moving the mouse moves a pointer around the screen, and pressing the mouse button places the cursor at the pointer's current location. If you hold the left button down while moving the mouse, the cursor dances along with you.

The pointer is the I-beam type (made famous by the Macintosh) that fits nicely between letters. The Mac's cursor also fits nicely between letters, but the C-128's does not. It lands on them. Thus, you'll find that the cursor and I-beam don't always line up precisely. Fortunately, this discrepancy serves more to show the difference between graphics- and text-based interfaces than to cause any practical difficulty.

So, what are the mouse cursor's applications? I've started using it while programming. Sometimes it's faster to grab Mr. Mouse and zip over the screen than it is to use the cursor keys. You can easily use the mouse cursor in a program. Just install it with the BLOAD and SYS mentioned above.

Here's an idea to work on. The computer sees the left mouse button as function key 8. My program blanks out F8 so you don't get the Monitor command Commodore assigned to F8 every time you click. How about redefining F8 so that a click initiates a whole sequence of characters?

A nifty definition I've used clears a program line from the cursor forward.

The ESCAPE key sequence to do that is CHR\$(27)+"Q". Now, when I move my mouse pointer to a particular location in an erroneous line and click, the rest of the line is deleted. Very handy!

You could define F8 to place a pair of quotes on the screen, move the cursor to the latter one, and kick the editor into Insert mode. Then, whatever you typed would appear between quotes—great for Data and Print statements.

In short, anything you can do with a function key you can do with a mouse, with the added convenience of fast cursor placement.

One caveat: The C-128 (like the C-64) has a quirk in the way it reads joysticks, mouse clicks and keyboards. Rapid clicking may print an unwanted character on the screen. The hi-tech way to deal with this is to access the system software, study memory maps, interpret arcane machine language code, and rewrite some routines in machine language. The lo-tech way around the problem is to click more slowly. I'm a low-tech kind of a guy; how about you? I thought so.

I hope you try MouseCursor. You may find that Mr. Mouse is also happier at your house plugged into your 128 than living in the back of a drawer. ☐

Mark Jordan keeps busy as a high school English teacher. After homework, he's a Commodore programmer and RUN columnist.

Listing 1. MouseCursor program. (Also available on the January/February ReRUN disk. To order, call 800-343-0728.)

```
0 REM MOUSE CURSOR 128 - MARK J 130 DATA 138,105,0,41,1,77,230, 0,202,202,202 :REM*225
ORDAN :REM*48 17,141,230,17,173,26,212,17 190 DATA 202,224,0,16,2,162,0,2
10 FORT=6144TO6410:READA:POKET, 2,19,25,32,93,24 :REM*53 4,32,240,255,96,234,173,1,2
A:NEXT :REM*84 140 DATA 140,19,25,56,73,255,10 200,41,16,208,9 :REM*111
20 BSAVE"MOUSECUR.BIN",B0,P6144 9,215,17,141,215,17,76,187, 200 DATA 32,159,205,32,136,24,3
TO P6411 :REM*171 24,140,21,25,141 :REM*161 2,111,205,108,16,25,234,162
30 SYS6144 :REM*140 150 DATA 20,25,162,0,56,237,21, 63,169,0,157,0 :REM*44
40 END :REM*168 25,41,127,201,64,176,7,74,2 210 DATA 14,202,16,250,169,27,1
100 DATA 32,207,24,201,24,240,2 40,18,172,20,25 :REM*145 41,41,14,141,62,14,169,4,14
5,8,120,173,20,3,141,16,25, 160 DATA 96,9,192,201,255,240,8 :REM*204 1,44,14,141,47
173,21,3,141,17 :REM*79 56,106,162,255,172,20,25,9 220 DATA 14,141,50,14,141,53,14
110 DATA 25,169,33,141,20,3,169 6,169,0,96,234 :REM*4 141,56,14,141,59,14,173,21
,24,141,21,3,40,96,216,173, 170 DATA 24,173,230,17,41,1,240 :REM*52 208,9,1,141,21
126,17,208,51 :REM*3 1,56,173,214,17,106,74,74, 230 DATA 208,169,1,141,39,208,1
120 DATA 173,25,212,172,18,25,3 201,43,144,2,169 :REM*140 69,0,141,7,16,173,21,3,96
2,93,24,140,18,25,24,109,21 180 DATA 42,168,173,215,17,74,7 :REM*250
4,17,141,214,17 :REM*179 4,74,201,28,144,2,169,27,17
```

RUN it right: C-128; 1351 mouse in port 1

COMMODORE CLINIC

Getting the right peripherals can be a challenge. This issue, learn about printers, modems and CP/M cartridges.

By ELLEN RULE



Q I recently purchased a Star NX-1000C printer for my Commodore 64. Whenever I print out a document with GEOS 2.0, I lose the entire right side of the document. I am using the Star 1000C driver included with GEOS. I have looked through the printer manual and found that the Star 1000C can print 80-dpi graphics, which is what I assume I need. Why isn't my printer printing 80 dpi? I have tried all manner of combinations of dip switches and all kinds of settings, but nothing seems to help. Do I need to buy an interface so I can use the 80 dpi? Is there any way to get around having to buy an interface without sacrificing the right side of the document?

—CAMERON GOBLE
ALBUQUERQUE, NM

A Your NX-1000C is performing the way it was designed to when it is plugged directly into the computer: It is emulating Commodore's direct-connect printers. These are 60-dot-per-inch printers and will produce the same results as your printer using the same software. A printed line on a 60-dpi printer will have up to 480 dots (60 dots × 8 inches), while an 80-dpi printer will have up to 640 dots (80 dots × 8 inches).

When a program such as GEOS sends a line of information to be printed, a 60-dpi printer will attempt to print the total number of dots it has been instructed to print (i.e., up to 640 dots), but it runs out of room on the 8-inch page at 480 dots. This is why the right side of the document is "lost."

To print the document, GeoWorks customer service advises the following:

- In geoWrite, set the margins to 1.2 inches and 6-7.2 inches.
- In geoPaint, fill only the left 3/4 of the page.
- In geoPublish, set the right-hand guideline at 6 inches.

To get 80-dpi output, I'm afraid you'll have to purchase a printer interface and run your printer in the Epson-Compatible mode. This will give you a denser printed image and a slight difference in the width-to-height ratio, called the "aspect ratio." An image printed at 80 dpi will appear narrower because the dots are closer together, and you may find

that regular geometric shapes, such as circles and squares, appear more true than those printed at 60 dpi.

Your printer manual will direct you regarding the proper DIP switch settings on your printer for Epson mode.

Q My Commodore 1526 printer works perfectly, but I cannot find any graphics software to use with it. Why will it print letters with my word processor but not graphics with programs such as Print Shop, GEOS and the OCP Art Studio? I was told that I could replace the ROM chip to print graphics. Is there a way to make this printer work like the MPS 801 or 803?

—DAVID KORNFEIND
GERMAN VALLEY, IL

A Different printers use different internal codes to produce the printed page. While Commodore gave the 1526 and MPS 802 printers the same text codes as the 1525 and MPS 801 printers, they did not give them the same graphics codes. Unfortunately, Commodore reverted back to their original system for subsequent printers. With an eye to maximizing profit, software developers naturally aligned their products to suit the greatest installed base, that is, the 801/1525-compatible printers.

However, many software companies have recognized the needs of users like you. On the back side of the graphics disks, Print Shop has a separate set of 2-block graphics that are made specifically for use with the 802/1526 printers. In addition, check your software manuals for an "install printer" option, which is how you tell your software to use the 802/1526 graphics codes.

Unfortunately, I do not know of a chip upgrade that will make your printer 801/1525 compatible.

Q I have heard that there was a CP/M cartridge for the C-64. Is it any good? Are there any disk-based CP/M operating systems for the 64?

—KEVIN GALAZEN
DULUTH, MN

A Commodore developed the CP/M cartridge for the 64 to attract people using CP/M in business. Even with the portable SX-64, however, the C-64 system failed to break into the business world sufficiently to make the cartridges profitable. They are no longer being manufactured, but you might find one through a user's group, a computer flea market or the used section at a Commodore dealer.

Many 128 owners have enjoyed using CP/M. If CP/M compatibility would be useful to you, you might want to investigate that option. Most user's groups have public domain CP/M libraries and CP/M users there could give you specific details.

Q I have a C-128 and an AT&T 4000 modem. Can I use this modem if I purchase an Aprotek RS-232 interface, or is the AT&T incompatible with my computer?

—PAUL GROSINGER
NEWFOUNDLAND, NJ

A There are two compatibility issues here: hardware and software. In general, an RS-232 interface can connect most any RS-232-type device (including modems) to your C-64. Check the AT&T 4000's manual to find out whether it is an RS-232 device; many modems are.

However, the modem could be physically compatible with the interface and still not understand your software's command set. Different modems understand different command sets. Your telecommunications software might use a command set that is compatible with Commodore's 1600, 1650 and 1670 modems, or perhaps the Hayes brand of modems, which follow the Commodore 64/128 standards. Check your modem's manual to see if it is compatible with any of these.

For your AT&T 4000 to work with your Commodore and that interface, the modem has to: 1) be an RS-232 device; 2) be able to understand one of the command sets listed above; and 3) have a terminal program that uses the same command set. ■

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GOLD MINE

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By LOUIS F. SANDER

AMAZING SPIDER-MAN: In the paper plates from Mars, you can jump to the platform. To do so, stand on the edge. The platform will be about halfway up. Jump at an angle and shoot a web. With a little practice, you can make the jump each time.

When you are in the bottom of the mission control, you can skip about six levels by doing this: Kneel on the small bump at the bottom. Push and hold to the right. When you get stuck between the switch and the ceiling in the weighing room, jump to the left and shoot a web into the upper-left corner. You'll pass through the ceiling and several levels as well!

—RYAN RUEL
BARRINGTON, NH

BAAL: Here are useful access codes: level 2, FWFJVVIE; level 3, HWOLUSIM; level 4, IWPYYSIO. Make sure you have at least four Time Warriors before going into level 4. If you don't have enough, just keep destroying monsters and refueling to gain extra men. To destroy Baal, just move your Time Warriors as close to it as possible and fire at it continuously.

—LIANG YI
BROOKLYN, NY

BACK TO THE FUTURE, PART II: You can pass levels 2 and 4 by waiting until the time runs out and selecting NO when you're asked if you want another game. The computer will load the next level.

—BRIAN SMITH
OMAHA, NE

BEYOND ZORK: To gain dexterity in the 128 version of this game, squeeze the moss in the wine cellar. Once you've done that you can climb the crates to get the wine bottle.

To read the runes on the amulet, read them through the wine bottle. The onion you get from the cook can be used to blind the dornbeast; cutting it causes the beast's 69 eyes to water, allowing you to grab the sea chest.

LIGHTNING is the answer to the riddle near the lighthouse, and **YOUTH** is the solution to the riddle in the forest.

—WENDY CHENG
PLYMOUTH, MN

CARMEN SANDIEGO SERIES: Did you lose the almanac that came with this game? Try using a set of encyclopedias! Use the F volume to look up flags, and so on. It works great!

—JEFF JONSSON
SURREY, BRITISH COLUMBIA

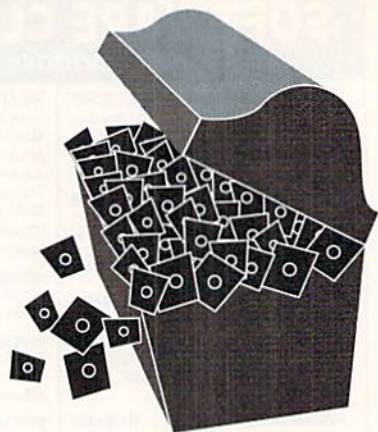
CASTLEVANIA: On level 2, get the boomerang from one of the candles. It is more powerful than the dagger and if you catch it, it gives your heart back. On the first screen of this level, break the two blocks on top of the stairway, then walk in. A crown will appear on the screen. On the second screen, stand on the first raised blocks you come to and wait. A chest will appear, worth about 2000 points.

—STEVEN OCEPEK
AKRON, OH

DRAGON WARS: The party should stay in Purgatory until they have armor and weapons from the Arena. They should also get some scrolls from the Magic Shop. When exploring an area it is usually wise to check every square, because there are many items that can be found this way. In Mystic Wood, Enkidu can be summoned by blowing his horn. A strong character should wrestle him to gain Druid magic.

Magic boots can be earned by stopping a mud flow with a Create Wall spell in the City of Yellow Toad. These boots can get the party onto the island in Mystic Wood. In the Smuggler's Cove, a character must use his or her bureaucracy skill (and some gold) to see the pirates. The party should kill the pirates, because their boat is necessary for travel to the outer islands.

In Freeport, don't bother trying to get the Sword of Freedom, because it isn't



there. Any attempt to take the false sword will kill the character who touches it. If the party has received the Dragon Gem from the dragon in the Lansk Undercity, it should go to the Dragon Valley. While there, the party should get several dragons' teeth and secure the Dragon Queen as an ally.

—TIM MORIARTY
EAST MOLINE, IL

FLIGHT SIMULATOR: Here's an easy way to land on the threshold at the start of the runway. First, line the threshold up on the bottom center of your windscreen. If it appears to move up the windscreen, you are descending too fast; add power slightly until the threshold seems to stay in one place. The plane will practically fly itself onto the runway.

As you enter the last leg of your approach, make sure your landing gear is down. Keep an eye on the altimeter to make sure you have enough altitude. Be sure you are aimed directly at the runway. When you're about 30 feet above the runway, slowly begin pulling back on the joystick. When the plane slows down and its nose drops, pull back slightly on the joystick. You'll have another (or your first) happy landing.

—HALIS SANTANA
BROOKLYN, NY

GARY KITCHEN'S GAMEMAKER: This is a great program for making games, but don't overlook the fact that it's also great for making graphic presentations. You can connect your computer to a VCR and make introductions to your videos or home movies. Since the SceneMaker and all other programs can be accessed from within the editor, you can make your presentations with a minimum of unproductive fumbling.

First, program your presentation to wait for joystick movement before starting. That gives you control over the starting time, so you can get your VCR ready. When assembling the presentation, decide on a basic idea, then experiment. Draw the scene for the background, then ▶

RUN'S CHECKSUM & PROGRAM TYPING HINTS

TYPE IN RUN'S CHECKSUM, which serves for both the C-64 and for the C-128 in either 40- or 80-Column mode, and save it to disk before running it. When typing in a program from RUN, first load and run RUN's latest version of the Checksum program, which contains a new feature explained below. The screen will display a SYS number (49152 for the C-64; 3328 for the C-128) that deactivates and reactivates the Checksum. Always disable RUN's Checksum before attempting to run another program. Note: You can abbreviate Basic keywords; spaces affect the checksum only when within quotes; and the order of characters affects the checksum.

When you press return after typing in a program line, a one-, two-, or three-digit number from 0 to 255 appears in the home position. If this number matches the checksum value in the program listing, the line as you typed it is correct. If the number that appears doesn't match the checksum value, compare the line with the magazine listing to find your error. Then move the cursor back up to the line and make your corrections. Now, after you press return, the correct checksum value should appear. Continue entering the listing until all the lines have been correctly typed. Then deactivate RUN's Checksum, using the appropriate SYS number, and save the finished program.

We sometimes get letters and phone calls from new readers who have typed in the Checksum program for the first time. They are confused by the "Out of Data Error in Line 30" message that appears when they try to run the Checksum program. Understandably, they compare line 30 of the listing with line 30 as they typed it in, and cannot find anything wrong. The message unintentionally misleads them into thinking the error is in line 30, whereas the typing mistake is actually somewhere in one of the Data statements in lines 190-350.

So, we've added a new feature to the Checksum program that alerts readers to the number of the Data statement line in the Checksum program where an error has actually been made. Note that this feature works only on the Checksum program itself, and not on any other program listing in RUN.

After you've entered and saved the Checksum program to disk, run it. If you've made any errors in any of the Data statements, the program will give you a specific line number. Find the mistake, correct it, press return, save the program and run it again. Repeat this procedure until the Checksum program runs flawlessly.

CONTROL CHARACTERS DEMYSTIFIED

All the graphics and control characters in the listings in RUN have been translated into understandable key combinations. They are the instructions you see inside the curly braces. For example, {SHIFT L} means you hold down the shift key while you press the L key once. You do *not* type in the curly braces. What appears on the screen will look quite different from what is designated inside the braces. Here are some more examples:

{22 SPACES}—press the space bar 22 times.
{SHIFT CLR}—hold down the shift key and press the clr-home key once.

{2 CRSR DNs}—press the cursor-down key twice.
{CTRL 1}—hold down the control key and press the 1 key.
{COMD T}—hold down the Commodore logo key and press the T key.

{5 LB.s}—press the British pound key (£, not #) five times.
Refer to the following paragraphs for any other Error messages you get from running any program listing in RUN.

OTHER ERROR MESSAGES

Having heard from many users over the years about their difficulties with typing in listings, we've identified a few recurring problems that plague many people but are easy to fix. So read on and see if your problem is one of these.

- You get an "Out of Data in Line xxx" message. This means that a program line was reading from Data statements and reached the end of the data before it was done reading. There are two possible problems.

One might be with the program line that reads the data, usually a For-Next loop. Make sure you have the proper values for the loop, because if, for example, the listing has a loop of 0 to 150, and you've typed 0 to 160, you'll get the Out of Data message. If the loop is

correct, then the problem lies in the Data statements themselves. One possibility is that you omitted a whole line of data. That's easy enough to find and correct. It's more likely that you've skipped one or more individual data items or typed in a period instead of a comma, which causes two data values to be read as one number. Check your typing carefully against the listing. Using RUN's Checksum program when you type in listings from the magazine should help in this case.

- You get an "Illegal Quantity Error in Line xxx" message. This means you've read a number from a Data statement and tried to poke it into a memory address. The error occurs because the number is larger than 255 (the largest value a memory address can contain), which means that somewhere in your Data statements you've made an error by typing in a number larger than 255. Again, this is easy to check for and correct. First look in your Data statements for a number larger than 255. You might have added an extra digit, or perhaps you ran two numbers together (23456 instead of 234,56).

- You get a "Syntax Error in Line xxx" message. This could be almost anything. What it tells you is that there is something wrong in the indicated line. Usually you've misspelled a Basic keyword or omitted some required character. List the line and examine it carefully.

- You get an "Error in Data" message. This occurs in programs that add up all the data as read, and, when finished, compares that sum with what it should be if the data were typed in correctly. If it isn't the same, it means an error somewhere in typing the Data statements. Go back and check the data carefully. Correct the mistake(s), save the new version and try again.

- Finally, we urge everyone who intends to type in one of our listings to use RUN's Checksum program, which will help you avoid every mistake we've mentioned above, except that it won't detect the omission of a line. ☐

Listing. RUN's Checksum program. This program is available on RUN's BBS for users to download.

```
10 REM RUN'S CHECKSUM 64/128 - BOB KODADEK
20 MO=128:SA=3328:IF PEEK(40960)THEN MO=64:SA=49152
30 I=0:CK=0:CH=0:LN=190
40 FOR K=0 TO 16
50 FOR J=1 TO 10:READ B:IF B>255 THEN GOTO 170
60 CH=CH+B:POKE SA+I,B:I=I+1:NEXT
70 READ LC
80 IF LC<>CH THEN GOTO 170
90 CH=0:LN=LN+10
100 NEXT K
110 POKESA+110,240:POKESA+111,38:POKESA+140,234
120 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":PRINT
130 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO=128 THEN 1
60
140 POKESA+13,124:POKESA+15,165:POKESA+25,124:POKESA+2
6,165
150 POKESA+39,20:POKESA+41,21:POKESA+123,205:POKESA+12
4,189
160 POKESA+4,INT(SA/256):SYS SA:NEW
170 PRINT"YOU HAVE A DATA ERROR IN LINE ";LN;"!":END
180 REM DO NOT CHANGE THESE DATA STATEMENTS!
190 DATA 120,162,24,160,13,173,4,3,201,24,884
200 DATA 208,4,162,13,160,67,142,4,3,140,903
210 DATA 5,3,88,96,32,13,67,152,72,169,697
220 DATA 0,141,0,255,133,176,133,180,166,22,1206
230 DATA 164,23,134,167,132,168,170,189,0,2,1149
240 DATA 240,58,201,48,144,7,201,58,176,3,1136
250 DATA 232,208,240,189,0,2,240,42,201,32,1386
260 DATA 208,4,164,180,240,31,201,34,208,6,1276
270 DATA 165,180,73,1,133,180,230,176,164,176,1478
280 DATA 165,167,24,125,0,2,133,167,165,168,1116
290 DATA 105,0,133,168,136,208,239,232,208,209,1638
300 DATA 169,42,32,210,255,165,167,69,168,170,1447
310 DATA 169,0,32,50,142,169,32,32,210,255,1091
320 DATA 32,210,255,169,13,32,210,255,104,168,1448
330 DATA 96,104,170,24,32,240,255,104,168,96,1289
340 DATA 56,32,240,255,138,72,152,72,24,162,1203
350 DATA 0,160,0,32,240,255,169,42,208,198,1304
```

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do the sprites and any sound or music you need. Finally, create the program in the editor and make it self-running.

—LANCE DEMELLO
 ELK GROVE, CA

KINGS OF THE BEACH: When setting your teammate up for a spike, get directly behind him. If the spike gets blocked back to your side. You'll be in a very good position to dig the return.

On offense, don't always try to spike the ball. Dink it now and then, and you'll often dink for a winner.

—VICTOR R. HEREDIA
 EL PASO, TX

SKY SHARK: The key to this game is to swerve through the gunfire and hold down the fire-button. Remember, your ammo is unlimited but your bombs are not. Save the bombs for the super tanks, which you should always hit in the center.

—JOHN HULSMAN
 JASPER, IN

STREET FIGHTER: Here's a tip for a hidden practice mode within the game. First, get to the opponent you cannot defeat. Turn the disk over to side two, which is blank. After you are defeated, a false loading to the menu should occur, and the background of the current level will remain on the title screen. Just press the joystick button to continue on the current boss!

—JOHN HULSMAN
 JASPER, IN

STRIKE ACES: To get a little bit of extra firepower with the Tornado, select auto-arm. The wings will be loaded with Mavericks, and the bomb bay will have four bombs. That's two additional bombs! (If you load the weapons the regular way, you can have only two bombs.)

The manual says that if time is critical, you should climb higher to pick up speed. This is true. At 50,000 feet (the highest you can go), with the speed set at zero and no afterburners, you can reach around 900 knots. If you do this to save time or to shorten a trip, be sure you come down in time to set up your bombing run.

The MIG 27 is a maneuverable plane that carries few weapons. I find that the Kerry doesn't fire. The F-111F carries the most bombs and missiles but has no cannon.

—MATTHEW ALIBERTI
 LEWISTON, ME

TEENAGE MUTANT NINJA TURTLES: Here's a way to give all your turtles their energy back. First, find a pizza and give it to one of your turtles. Save the game, then reload it and continue the saved game. The pizza you ate will have returned.

—THOMAS BONGIORNO
 SHIRLEY, NY

Have you always wanted to see your name in print? Wanted to be the hit of the user's group? It's easy! To submit your game tips for consideration, send them to Gold Mine, PO Box 101011, Pittsburgh, PA 15237. Put your name, address and Social Security Number on every piece of paper you send. Please use 8 1/2-by-11-inch paper. RUN pays \$5 per submission on publication. Neatness counts!

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*These RUN programs are also available on ReRUN disks.

† These ReRUN disk bonus programs are available *only* on ReRUN.

‡ As of Nov/Dec '91 all ReRUN documentation is solely disk-based.

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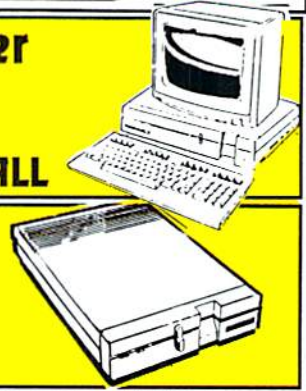
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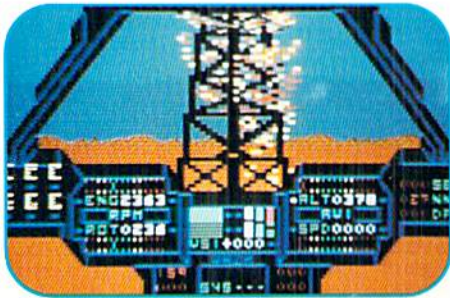
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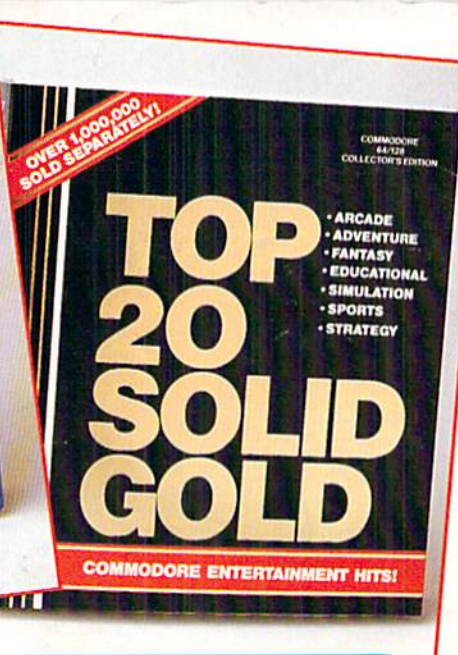
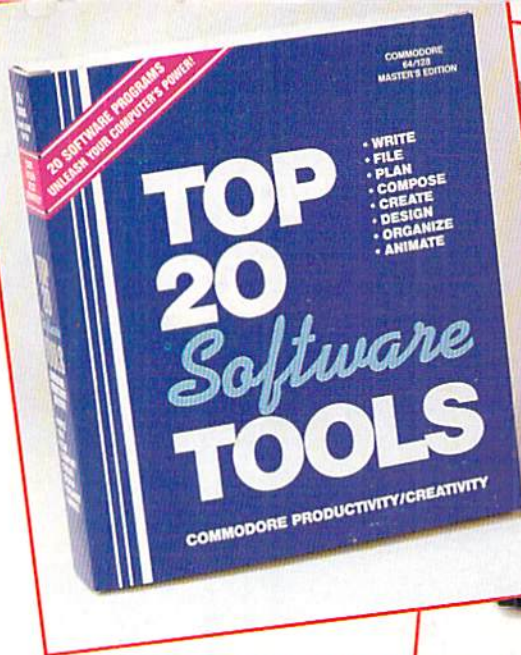
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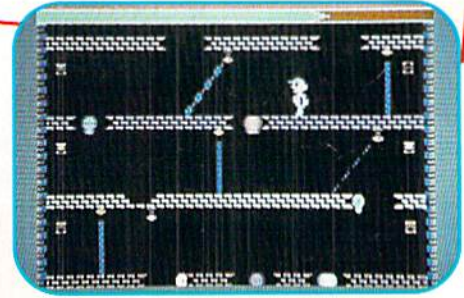
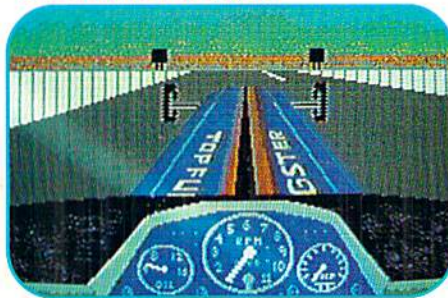
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