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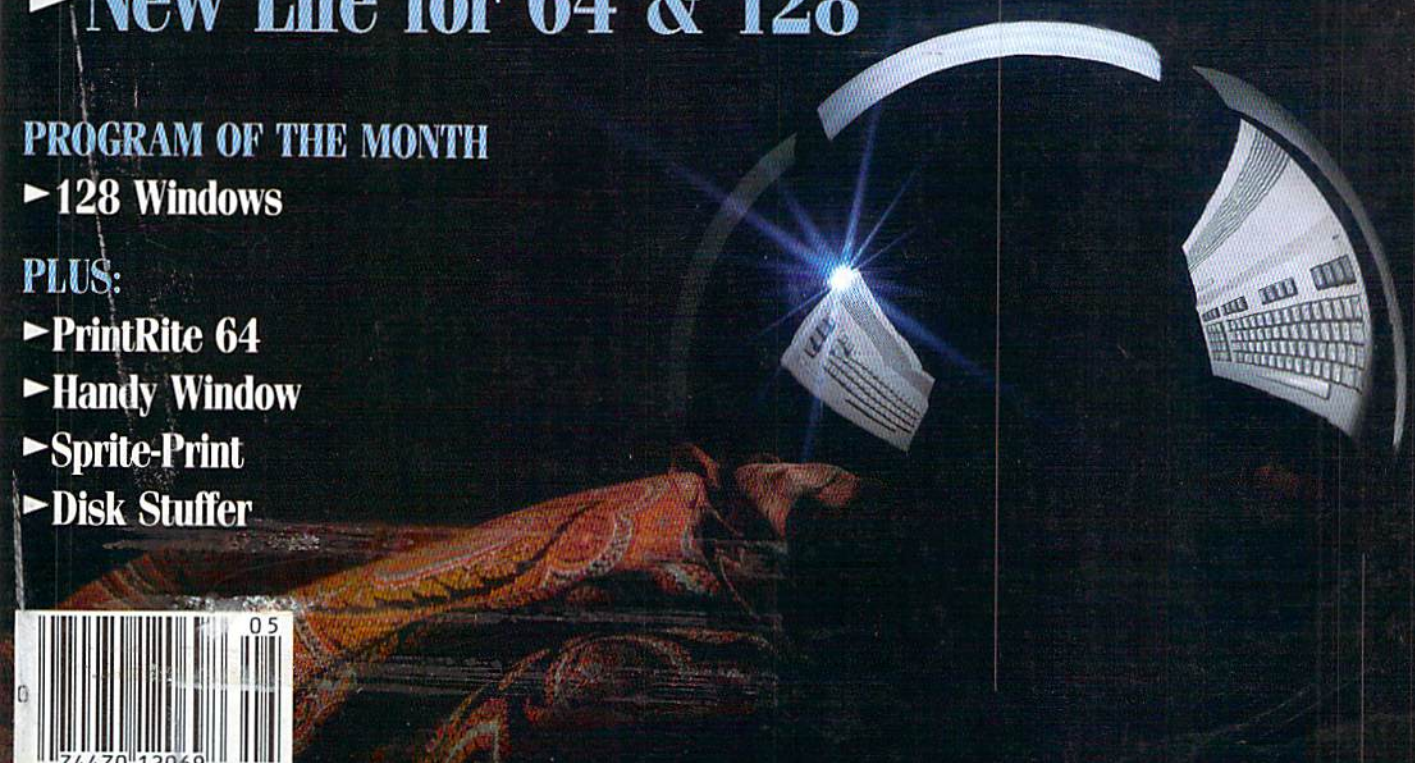

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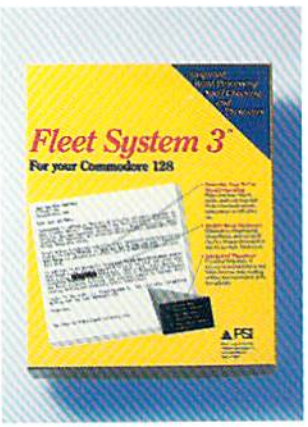

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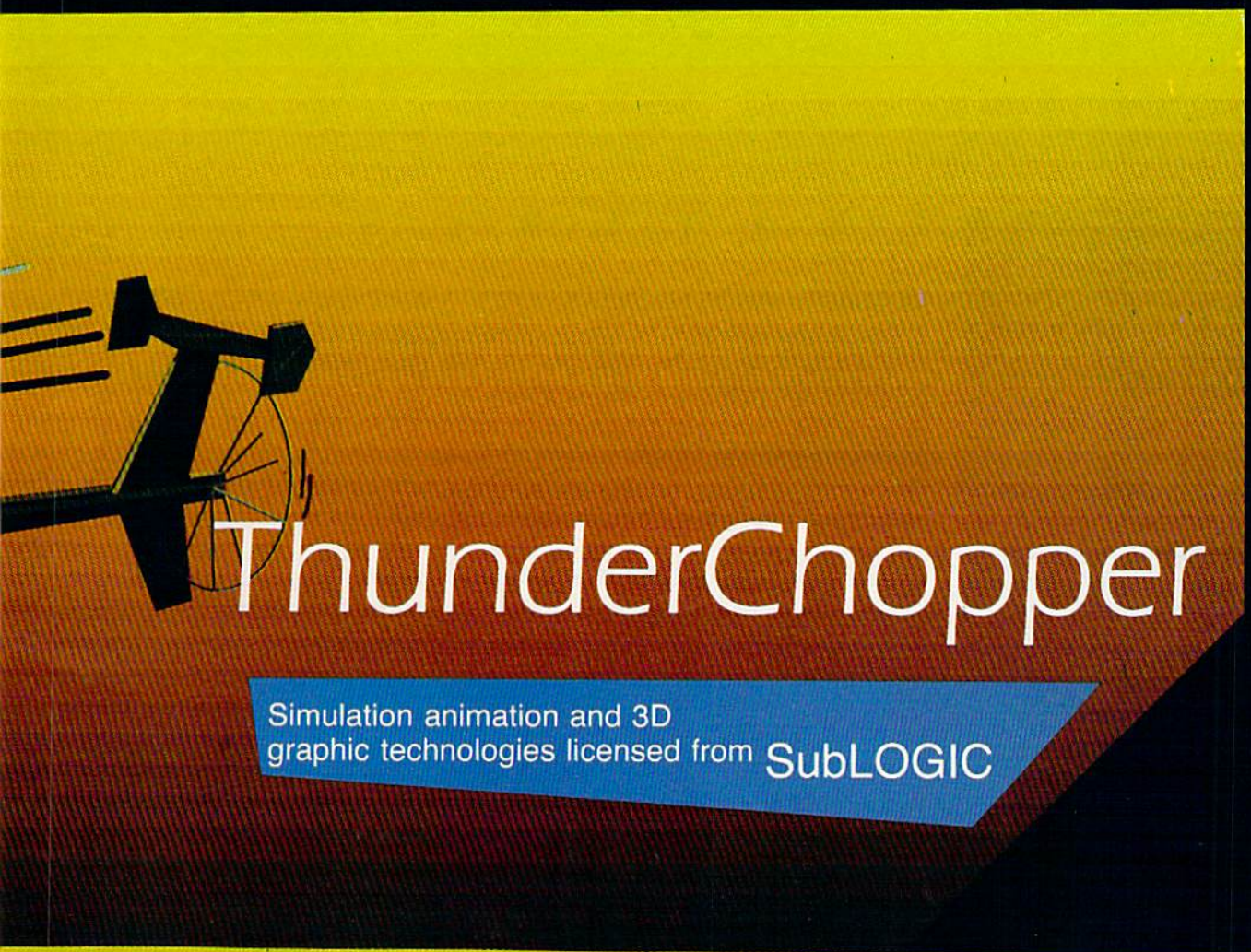

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VOLUME 4, NUMBER 5

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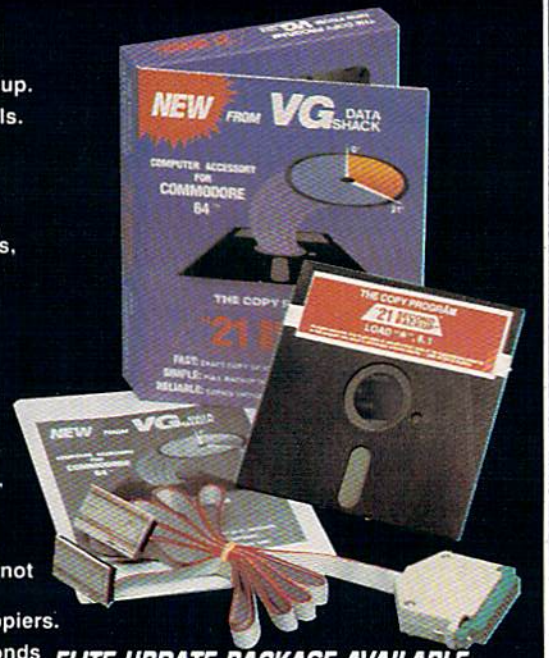

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ANOTHER TEST FOR THE 64?

Commodore continues its successful turnaround with two major announcements this past month.

First, Commodore officials are enthused about future prospects after the company posted its third consecutive profitable quarter. Commodore chairman Irving Gould predicts that the company's healthy financial outlook, combined with new products planned for this year, means that "Commodore is well-positioned for continued progress in 1987."

Commodore's president, Thomas Rattigan, notes that, with strong earnings for its third quarter ended December 31, Commodore is in a better financial position than it has been in a long time. Over $20 million in earnings represent the biggest profit for the beleaguered company in two years.

Riding this wave of financial success, Commodore also recently introduced two new computers for the Amiga line: the 2000 and the 500.

The 2000 is seen as a powerful business machine and a superior replacement for the current Amiga 1000, while the 500 is targeted toward the low-end home computer market. Many 64 and 128 owners may question Commodore's commitment to their computers and view the 500, which sports a price tag of $600, as a threat to their systems. (It wasn't that long ago that the 64 was also introduced as a $600 computer.)

Does this signal a swing in Commodore's commitment to the 64/128 line of computers?

The new ½ megabyte Amiga 500, with a built-in disk drive encased in a 128-like body, represents an excellent upgrade alternative, but it, nonetheless, remains untested. The current Amiga is just now catching up to the hoopla surrounding its introduction almost two years ago. The 64 remains the price/performance leader in the entry-level computer market, and all indications are that Commodore will not jeopardize its firm hold on that market.

Commodore's strong previous quarter performance is due, in part, to its broader product line, which includes increased Amiga sales, as well as the sale of PC clones in Europe. But the company's revenue-makers continue to be the 64 and 128. Sales of the 64 and 128 were primarily responsible for Commodore posting its third consecutive quarter in the black. And Commodore officials realize this.

In this month's lead article (p. 30), Nigel Shepherd, head of Commodore's North American operations, echoes Commodore's commitment to the 64/128 line and emphasizes that both of these computers figure strongly in Commodore's long-range plans. Shepherd predicts more visibility for the 64 and 128 this year, and notes that Commodore remains committed to serving all consumer needs, including first-time computer purchasers of the 64 and 128.

RUN, too, is committed to coverage of the 64/128 line. While other Commodore-specific publications are jumping on the Amiga bandwagon with more and more coverage of the Amiga computers, *RUN* remains faithful to its readers. *RUN* is the only major Commodore-specific publication that doesn't dilute its coverage of the C-64 and C-128.

Reader surveys reinforce this strategy, and, until our readers say otherwise, we will continue to give our readers the best in 64- and 128-specific coverage.

We look forward to exciting new applications products for the 64, as well as new developments in the GEOS arena.

This month, in addition to our candid interview with Commodore head Nigel Shepherd, we also feature a look at ordering computer products by mail. This can be a joy or a nightmare, depending on which company you're dealing with. In this article, we point out some of the precautions to follow and some of the pitfalls involved with mail order.

This issue also introduces several useful utility programs that greatly enhance and simplify the use of your 64 or 128. Handy Window (p. 78), written by Ian Adam, adds eight convenient accessory programs, including a memo pad and alarm clock. 128 Custom Windows (p. 46) lets you create some sensational-looking temporary windows in 80-column format—just like on the Amiga. And Sprite Print (p. 68) greatly eases the difficult task of printing sprites.

All of you Notepad 64 fans are, by now, familiar with the work of Bob Kodadek, who is back this month with another super program. PrintRite 64 (p. 52) performs some printing magic by making your printouts look more professional with true descenders.

Jim Grubbs, our expert in the area of "table-top" publishing, gives us the scoop on the most recent programs that combine text and graphics (p. 58).

THANK YOU, CONTESTANTS!

We extend our appreciation to the tens of thousands of *RUN* readers for making the 1986 RUNaway contest such a huge success. Just by entering the contest—even if you weren't chosen one of the 20 grand prize winners—you were entitled to a free bonus from QuantumLink. If you haven't received yours yet, please contact Jane Keely of QuantumLink at 703-448-8700.

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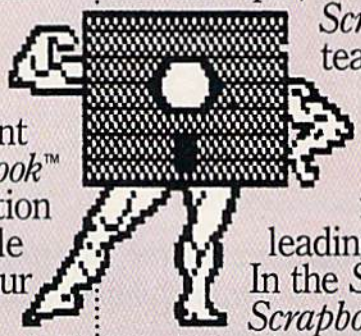

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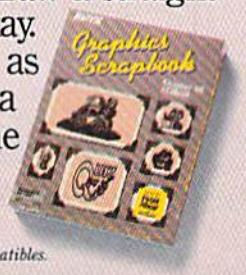

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Load and run any C-128 program with the run-stop key; use fancy screen clears in your C-128 programs; make mailers for your Print Shop creations; and more.

By JIM BORDEN

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

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

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

Trick of the Month

$3D7 Starting at the bottom—The next time you use *RUN*'s Perfect Typist program to check old listings, start at the end of the listing and work back to the beginning. Checking programs this way prevents the checksum from overwriting the line you check next. After checking the lines on the screen for accuracy, bring down the next group of lines by listing to the line at the top of the screen minus one. For example, if the top line is 5200, type LIST – 5199.

Ching Ko
McPherson, KS

$3D8 Print Shop mailers—My program prints mailers for the quarter-fold cards created by The Print Shop. It prints a mailer on a sheet of standard paper, then moves to the next sheet so you can print another one. If you own a word processor with a mail-merge option, you can print the mailer outline, then run the paper through a second time and use mail-merge to address it.

```
10 REM PRINT SHOP ENVELOPES-LONNIE BROWN
20 OPEN4,4:CMD4
30 PRINTSPC(10);:PRINT"!";:FORX=1TO56:PRINT
   "-";:NEXT:PRINT"!"
40 FORZ=2TO12:PRINTSPC(10)"!";:FORX=1TO56:P
   RINT" ";:NEXT:PRINT"!":NEXT
50 PRINTSPC( 4)"!";:FORX=1TO68:PRINT"-";:NE
   XT:PRINT"!"
60 FORZ=14TO39:PRINTSPC(4)"!"SPC(5)"!";:FOR
   X=1TO56:PRINT" ";:NEXT
70 PRINT"!"SPC(5)"!":NEXT
80 PRINTSPC( 4);:PRINT"!";:FORX=1TO68:PRINT
   "-";:NEXT:PRINT"!"
90 FORZ=40TO59:PRINTSPC(10)"!";:FORX=1TO56:
   PRINT" ";:NEXT:PRINT"!":NEXT
100 PRINTSPC(10);:PRINT"!";:FORX=1TO56:PRIN
   T"-";:NEXT:PRINT"!"
110 FORX=1TO4:PRINT#4:NEXT:CLOSE4
```

Lonnie Brown
Lakeland, FL

$3D9 Checking the checksum—If you're typing in a program that contains Data statements and a built-in checksum, there's an easy way to check for errors without executing the program. Find the line that contains the Poke and delete it. Also, put a Stop command just after the line that checks the value of the checksum. Then run the program.

If the checksum generates an Error message, find the mistake in the Data statements and make the needed changes, and then run the program again. If you get another error message, look for another mistake. When you run the program and get a Break message in the line that holds the checksum, you know your data is correct. Then type the Poke command (with variables) back

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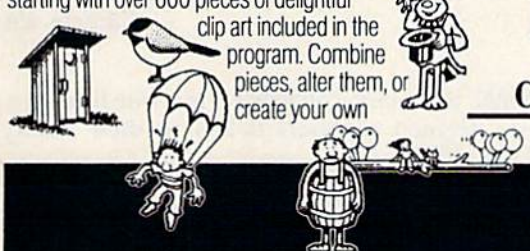

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in, remove the Stop command you added and save the program.

Stan Jones
Fairbanks, AK

$3DA Basic REF statement—I've found that including the source of a program I've gotten from a magazine in a REM statement at the beginning of the listing saves me time when I need to reference the source. I include the name of the magazine, the issue and the page on which the program begins.

Rodney L. Praegitzer
APO, NY

$3DB C-128 Automatic Load/Run menu—Imagine loading and running any disk-based program without typing in the Load and Run commands and the filename. This three-liner uses only the shifted run-stop and return keys to load and run programs.

Save my program as the first program on your disk. Then, each time you use the disk, press shifted run-stop to display the directory on the screen, move the cursor to the line with the program you want to run and press return. *Presto!* Your program loads and runs like magic! If your menu fills more than one screen, press the stop key, type CONT, press return and repeat the procedure above.

I added screen colors to the automenu program; you may change the color values to suit your tastes.

```
1Ø PRINT"{SHFT CLR}"CHR$(27)"M":REM 128 MEN
   U LOAD-LON D. OLSON
2Ø SCNCLR:BG=16:BO=15:CH=12:COLORØ,BG:COLOR
   4,BO:COLOR5,CH:DIRECTORY:INPUTA$:I=Ø
3Ø I=I+1:B$=MID$(A$,I,1):IFB$=CHR$(34)THEN4
   Ø:ELSE GOTO3Ø
4Ø I=I+1:C$=MID$(A$,I,1):IFC$=CHR$(34)THENP
   RINTCHR$(27)"L":RUN (D$):ELSE D$=D$+C$:G
   OTO4Ø
```

Lon D. Olson
Mesa, AZ

$3DC C-128 custom characters—Here's help for those of you who use custom characters on the C-64 but are having trouble with them on the C-128. To use them on the 128, you must first copy the ROM character set at locations 53248–55295 into RAM at 14336–16383 and then set bits 1, 2 and 3 of location 2604 to 1. This tells the 128 to look for characters beginning at 14336 in RAM.

Since Basic normally uses the area where the RAM characters will be, you need a GRAPHIC1:GRAPHIC0 command to move the start-of-Basic safely above this area and switch back to 40-Column mode. Don't use a hi-res screen, or the character set will be ruined.

The following program redefines the @ character to an up arrow.

```
1Ø REM 128 CUSTOM CHARS-NELSON SEARCY
2Ø GRAPHIC1:GRAPHICØ:REM FOR 4Ø COL ONLY
3Ø POKE 26Ø4,3Ø:POKE217,4:FAST
4Ø BANK14:FOR A=53248 TO 55295:B=PEEK(A):PO
   KEA-38912,B:NEXT:BANKØ:SLOW
5Ø FORA=14336 TO 14343:READ B:POKEA,B:NEXT:
   REM "@ TO {UP ARROW}"
6Ø DATA Ø,24,6Ø,126,24,24,24,24
```

Nelson Searcy
Forest City, NC

$3DD Better than a Basic loader—If you have some utilities in the form of Basic loaders (with Read and Poke statements and many Data lines), you can load, run and save them directly to memory with an ML monitor. Then you can load the programs directly with LOAD "program",8,1. Look at the C-64 Wedge program on your copy of the 1541 demo disk for an example. It loads your utilities much faster, since they don't have to be read and poked by Basic.

Rolf Stein
Naucalpan, Edo. Mexico, Mexico

$3DE Flipping faster through GEOS disk directories—One undocumented feature of GEOS lets you view the pages of a disk directory in Icon mode without the joystick. Just press the control key and the number key corresponding to the page number you wish to see.

Henry H. Tolbert
Marietta, GA

$3DF GEOS and the restore key—When you exit from GEOS to Basic, the restore key is redefined to reboot GEOS. You can eliminate this function either by typing POKE 792,71 and pressing return or by turning the computer off and on again.

R. V. Taylor
Little Rock, AR

$3E0 A Star with GEOS—Use your Star SG-10 printer with GEOS by setting the dip switches to the On position.

Mark L. Ellis
Germantown, TN

$3E1 RUN Script default file—Forgetting to give your document a filename when saving it in RUN Script 2.40 makes the program save the file with the default load name, " ", as the filename. Take advantage of this "error" by giving the default load name to a file you use often. Then, to load it, you just have to press F1 and L. When you want to scratch the file from RUN Script, use a question mark as the filename. Just be sure no other single-character filenames are on the disk, or they'll be erased, too.

Jim Borden
Carlisle, PA

$3E2 Decimal to binary converter—My one-line program converts decimal numbers 0–255 to their binary equivalents.

```
1 REM DEC TO BIN-JAMES R SCHWARTZ
1Ø INPUT D:FORI=7TOØSTEP-1:B$=B$+MID$(STR$(
```

→

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Listing continued.

```
SGN(D AND 2{UP ARROW}I)),2):NEXT:B=VAL(B
$):PRINTB
```

James R. Schwartz
Michigan City, IN

$3E3 C-128 fancy screen clears—My program contains a number of subroutines to clear your C-128's screen in fancy ways. Line 200 in the program fills the screen to demonstrate the effect; you need to eliminate that line in your programs.

```
Ø REM C-128 4Ø-COL SCREEN CLR - RAY SONIER
1Ø PRINT"{2 HOMEs}{SHFT CLR}":CHAR 1,15,1,"
   ENTER 1-7"+CHR$(13)
15 GETKEY A$:Z=INSTR("1234567",A$):ON Z GOT
   O 2Ø,3Ø,4Ø,5Ø,6Ø,7Ø,8Ø:GOTO15
2Ø GOSUB2ØØ:FOR A=ØTO19:WINDOW 19-A,Ø,2Ø+A,
   24,1:NEXT:GOTO1Ø
3Ø GOSUB2ØØ:FOR A=ØTO12:WINDOW Ø,12-A,39,12
   +A,1:NEXT:GOTO1Ø
4Ø GOSUB2ØØ:X=24:FOR A=35 TO Ø STEP-5:X=X-3
   :WINDOW A,X,39,24,1:NEXT:GOTO 1Ø
5Ø GOSUB2ØØ:X=Ø:FOR A=4TO39 STEP5:X=X+3:WIN
   DOW Ø,Ø,A,X,1:NEXT:GOTO1Ø
6Ø GOSUB2ØØ:FOR A=ØTO12:WINDOW 12-A,12-A,27
   +A,12+A,1:NEXT:GOTO1Ø
7Ø GOSUB2ØØ:FOR A=ØTO39:WINDOW A,Ø,A,24,1:N
   EXT:WINDOW Ø,Ø,39,24,Ø:GOTO 1Ø
8Ø GOSUB 2ØØ:FOR A=ØTO39:WINDOW39-A,Ø,39-A,
   24,1:NEXT:WINDOW Ø,Ø,39,24,Ø:GOTO 1Ø
2ØØ FOR X=1TO25:PRINT"**********
    **********":NEXT:RETURN
```

Ray Sonier
Bremerton, WA

$3E4 C-128 multiple directories—I've got an easy way to put two directories side by side on the 80-column screen. First, clear the screen, then issue a Directory command for the first disk. Then home the cursor and press the tab key five times. Next, press ESC T to set the top of a new window. Put your second disk in the drive and ask for a directory again. The directories will appear side by side. You can also use this procedure to compare program lines.

Al Blakey
Barre, VT

$3E5 M-i-c-k-e-y M-o-u-s-e—If you'd love to see your young child's face light up, load my program into your C-128 in 40-Column mode and type run, but don't press return yet. Place your toddler in front of the monitor screen, then press the return key. A picture of Mickey will be drawn right before your child's eyes!

```
1Ø REM C128 MICKEY MOUSE-RALPH SCHWARZ
5Ø COLORØ,2:COLOR1,1:COLOR2,8:COLOR3,3:COLO
   R4,2:GRAPHIC3,1
6Ø CIRCLE1,38,33,22,33:CIRCLE1,122,33,22,33
7Ø CIRCLE1,8Ø,1Ø9,41,7Ø,25Ø,11Ø:CIRCLE1,68,
   152,32,35,183,334
8Ø CIRCLE1,92,152,32,35,26,177:CIRCLE1,8Ø,1
   7Ø,18,28,1Ø5,255
9Ø CIRCLE1,68,96,8,24:CIRCLE1,92,96,8,24
1ØØ CIRCLE1,68,1Ø5,4,12:CIRCLE1,92,1Ø5,4,12
11Ø CIRCLE1,66,8Ø,9,2Ø,27Ø,25:CIRCLE1,94,8Ø
    ,9,2Ø,335,9Ø
12Ø CIRCLE1,58,92,1Ø,34,213,34Ø:CIRCLE1,1Ø2
    ,92,1Ø,34,2Ø,147
13Ø CIRCLE1,65,8Ø,15,29,31Ø,8Ø:CIRCLE1,95,8
    Ø,15,29,28Ø,5Ø
14Ø CIRCLE1,8Ø,1Ø9,3Ø,55,118,242:CIRCLE1,6Ø
    ,152,12,2Ø,29Ø,358
15Ø CIRCLE1,1ØØ,152,12,18,2,7Ø:CIRCLE1,8Ø,1
    6Ø,35,38,332,28
16Ø CIRCLE1,8Ø,16Ø,13,22,9Ø,27Ø:CIRCLE1,76,
    178,8,9,31Ø,7Ø
17Ø CIRCLE1,86,178,8,9,325,35:CIRCLE1,8Ø,13
    7,12,12
18Ø CIRCLE1,79,134,6,4:CIRCLE1,3Ø,187,3Ø,2Ø
    ,9Ø,2ØØ
19Ø CIRCLE1,13Ø,187,3Ø,2Ø,14Ø,27Ø:CIRCLE1,3
    2,2ØØ,37,4Ø,75,9Ø
2ØØ CIRCLE1,128,2ØØ,37,4Ø,27Ø,285:PAINT1,77
    ,199
21Ø PAINT1,42,1Ø9:PAINT1,8Ø,147
22Ø PAINT1,8Ø,165:PAINT3,65,198,1
23Ø PAINT3,95,198,1:PAINT3,8Ø,175,1
24Ø PAINT1,4Ø,33:PAINT1,12Ø,33
25Ø PAINT1,68,1Ø5:PAINT1,92,1Ø5
26Ø PAINT2,7Ø,152,1
```

Ralph Schwarz
Rexdale, Ontario, Canada

$3E6 Commodore Kentucky Derby—You needn't wait till May to catch triple-crown fever. My program, which runs on the C-64 and the C-128 (in 40-Column mode), simulates a thoroughbred race with a field of seven horses and generates odds for each horse. The program gives you $500 for betting, and the races continue until you run out of money or quit with the stop key.

```
Ø REM DARBEE BY PHILIP GEISER
1 M=5ØØ:POKE5328Ø,6:POKE53281,6
2 PRINTCHR$(142)"{SHFT CLR}{4 SPACEs}{CTRL
  8}{CTRL 9} KAINTUCKEE DARBEE {CTRL Ø}"
3 FORO=1TO7:O(O)=INT(RND(1)*26+1):PRINT"{CO
  MD 5}{CTRL 9} HORSE"O"{CRSR LF} {CTRL Ø}
  ODDS ARE"O(O)"TO 1"
4 PRINT"{CTRL 2} {PI}{CRSR DN}":NEXT:FORO=1
  TO7:P(O)=Ø:NEXT:PRINT:PRINT"{2 CRSR UPs}
  {CTRL 9}YOU HAVE $"M
5 INPUT"{2 SPACEs}-WHAT HORSE TO BET ON";H:
  IFH>7ORH<1THENPRINT"{2 CRSR UPs}":GOTO5
6 INPUT"{2 SPACEs}-HOW MUCH MONEY TO BET";B
  :IFB>MTHENPRINT"{2 CRSR UPs}":GOTO6
7 X=INT(RND(1)*7+1):P(X)=P(X)+1
8 PRINT"{HOME}";:FORD=1TOX*3-1:PRINT"{CRSR
  DN}";:NEXT:FORP=1TOP(X):PRINT" ";:NEXT:PR
  INT"{CTRL 2}{PI}"
9 IFP(X)=39THENPRINT"{HOME}"TAB(24)"{CTRL 9
  } WINNER IS #"X:GOTO11
1Ø GOTO7
11 IFX<>HTHEN13
12 M=M-B+B*O(X):FORQ=1TO3ØØØ:NEXT:GOTO2
13 M=M-B:FORQ=1TO3ØØØ:NEXT:IFM<=ØTHENPRINT"
   {SHFT CLR}{CTRL 9}* * YOU ARE OUT OF MON
   EY * *":END
14 GOTO2
```

Philip Geiser
Stronghurst, IL■

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Activating C-128 keys in C-64 mode—This program will let you use your C-128's keypad, no-scroll key and cursor keys while running programs in C-64 mode. It works by rewriting the IRQ routine so new keyboard-scan code can be added.

The program activates the no-scroll key by changing the Kernal CHROUT vector to freeze the computer in the IRQ routine when the key is pressed. When you've paused printing, you can press any key to start it again, but I'd suggest using the no-scroll key.

The 128 Keys in 64 Mode program may not work with some commercial software, depending on how much the latter changes the Basic pointers. However, it should work with any Basic program that doesn't use the same memory addresses. R

Jim Borden
Carlisle, PA

Listing 1. *128 Keys in 64 Mode program.*

```
5 REM 128 KEYPAD IN 64 MODE - JIM BORDEN
                                        :REM*59
10 FOR X=49152TO49185:READ Z:POKEX,Z:CK=CK+
   Z:NEXT                               :REM*26
15 FOR X=XTO49285:POKE X,PEEK(X+1077Ø):NEXT
                                        :REM*9
20 POKE49258,117:POKE49259,192          :REM*78
25 FOR X=XTO49454:READ Z:POKEX,Z:CK=CK+Z:NE
   XT                                   :REM*9
30 IFCK<>26162THENPRINT"ERROR IN DATA LINES
   ...":END                             :REM*184
35 PRINT"{SHFT CLR} IT'S MAGIC! 128 KEYPAD
   KEYS NOW ACTIVE. "                   :REM*201
40 PRINT"{3 SPACEs}[NO SCROLL] AND CURSOR K
   EYS, TOO.":SYS49152:NEW              :REM*2
45 DATA 12Ø,169,23,141,2Ø,3,169,192,141,21,
   3,169,24,141,38,3,169,193,141,39 :REM*13
50 DATA 3,88,96,32,234,255,173,216,192,24Ø,
   3,2Ø6,216,192,24Ø,6,32,39,193,76 :REM*48
55 DATA 154,234,168,32,13,193,2Ø8,6,142,47,
   2Ø8,76,38,235,169,254,141,47,2Ø8:REM*1Ø1
60 DATA 162,8,72,173,1,22Ø,2Ø5,1,22Ø,2Ø8,24
   8,74,144,21,2ØØ,192,25,2Ø8,5,1Ø4:REM*2Ø8
65 DATA 162,255,2Ø8,221,2Ø2,2Ø8,24Ø,56,1Ø4,
   42,141,47,2Ø8,2Ø8,221,1Ø4,185    :REM*65
70 DATA 245,192,17Ø,41,127,16Ø,255,14Ø,47,2
   Ø8,2Ø1,1,2Ø8,2Ø,32,13,193,2Ø8    :REM*48
75 DATA 251,169,Ø,24Ø,8,173,34,193,73,1,141
   ,34,193,76,148,192,2ØØ,217,129   :REM*139
80 DATA 235,2Ø8,25Ø,132,2Ø3,32,39,193,138,7
   6,228,234,255,56,53,255,5Ø,52,55 :REM*34
85 DATA 49,255,43,45,255,13,54,57,51,255,48
   ,46,145,17,157,29,1,169,Ø,141,47:REM*1Ø3
90 DATA 2Ø8,174,1,22Ø,224,255,96,32,2Ø2,241
   ,72,169,5,141,216,192,169,Ø,2Ø8  :REM*8
95 DATA 247,1Ø4,96,72,169,Ø,141,34,193,1Ø4,
   96                                :REM*229
```

■

RUN It Right

C-128 (in C-64 mode)

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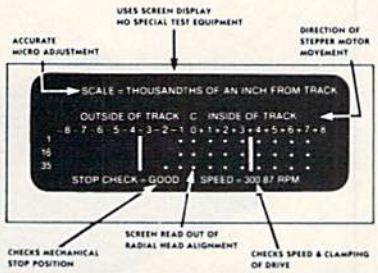

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The Accountant, Version 1.3

B

Small Businesses Can Now Be Spared Piles of Paperwork

The Accountant, designed for small business, is a simplified accounting system for the C-128 that handles the four common basic accounting tasks: maintaining the general ledger, running payroll and keeping track of accounts receivable and payable. Each task is covered in a separate section in the user's manual. To let you get a feel for program operation, The Accountant comes with a data disk that contains files for a fictitious company.

Before running the main program, you must run the Program Setup, which will prompt you for information about your company, your employee classifications, payroll deduction account numbers, and details about your printer. Once you've entered this and created a data disk, you can automatically load the main program from disk.

The Accountant is set up for a monthly accounting cycle. The program provides for 199 accounts distributed in 13 groupings, including three types of assets—current, fixed and other—as well as both current and long-term liabilities.

Updating the general ledger is done from the menu, as is verification of ledger balances. The program uses a set of self-balancing accounts. If, for some reason, the ledger becomes unbalanced, instructions are included in the manual for handling this situation.

Available general ledger reports include a detail report, which displays all the current month's postings and the ending balance, a listing of the chart of accounts, a balance report and a financial statement.

The check register lets you post checks, clear the register, display or edit posted checks, and print the register. Checks may be classified to as many as six general ledger accounts, in up to 400 classifications per month, and up to 200 checks can be posted per month. However, the program will not actually print the checks.

Report Card

A ***Superb!*** An exceptional program that outshines all others.

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

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

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

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

The general journal is accessed from the general ledger menu and lets you post up to 15 accounts in one journal entry, with a maximum of 30 such entries.

The payroll section, which can handle up to 60 employees, is divided into three sections: employee data, weekly payroll writeup and reports. The weekly payroll writeup lets you post regular, overtime and vacation hours, and will print payroll reports and payroll checks.

Although the accounts receivable and payable sections are accessible from the program's main menu, they are independent of the general ledger. Accounts receivable is a way of keeping track of up to 300 outstanding invoices among 100 customers; accounts payable keeps track of up to 300 invoices received from up to 99 vendors.

There are options to enter and edit customer, vendor and invoice information, to eliminate paid or credited invoices, and to generate a number of reports.

One advantage of this program is that you do not constantly have to swap disks. I also like the menu-driven approach to the software and the judicious use of letters, not numbers, as menu choices. I applaud KFS's decision to refrain from offering a confusing jumble of options to its users.

The manual is complete and easy to follow, and includes check lists for doing various monthly tasks. Unfortunately, its quality is marred by minor typographical errors and lack of an index.

I didn't like the fact that zip codes

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are limited to five characters and that phone numbers have no provision for area codes. Also, making corrections with this program is a hassle because different things get corrected in different ways. Even getting rid of simple typos requires the use of the left-arrow key above the control key instead of the inst/del key most people are accustomed to using.

The program's user-friendliness suffers in places where you find yourself doing what ought to be the computer's work. For instance, rather than just entering the various necessary facts about an employee for the payroll, you must supply rather complicated codes to record his or her exemptions, withholding classification, pay period, exemption from FICA, and so on.

Finally, there are references in the manual to the disk drive locking up during a file update. Although this didn't happen to me, I couldn't help but wonder about it. [Editor's note: According to KFS, this problem has been corrected in Version 1.3A.]

KFS maintains a help line and updated programs are made available for a handling charge of $2.95.

There are some rough spots with The Accountant, but it does seem adequate to keep the books of a small business. According to KFS, if you're unsure as to whether or not the product is right for you, you should first buy their $9.95 sample disk. And it also might be wise to check with your accountant before buying any accounting software. *(KFS Software, Inc., 1301 Seminole Blvd., Largo, FL 33540. C-128/$149.95 disk.)*

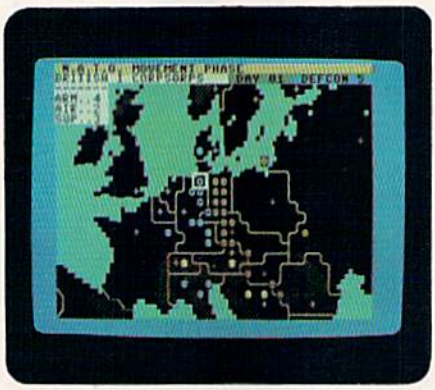
Alex Lane
Jacksonville, FL

Theatre Europe B+

Will You Select Peace or Nuclear War?

The overwhelming majority of war simulations let you recreate famous battles from the past. The scenario for Theatre Europe, however, is one that has never, and hopefully will never, take place. It is the invasion of West Germany by Warsaw Pact forces, and the attempt by NATO forces to prevent a communist takeover while avoiding a nuclear showdown.

Theatre Europe simulates the first 30 days of such a conflict. It is played on an on-screen map of Europe where NATO forces are represented by blue dots and Warsaw Pact forces by red dots. You can command either side, with the computer controlling the opposing armies, but, unfortunately, there is no option for a two-player game.



It's your move with Theatre Europe's on-screen map.

The game begins with most of both sides' units concentrated around the West German border. Each day consists of several phases in which you can move tactical units, attack enemy units, rebuild battle-worn units with reinforcements, assign air units to specific missions, and launch special missions using chemical or nuclear weapons.

To help you make strategic decisions, point values for overall combat strength, air support and state of supply are displayed when you move the cursor over a circle representing one of your units. If you've assigned sufficient air units to reconnaissance, then the point values for computer-controlled forces are available as well. A complete reinforcement schedule for both NATO and Warsaw Pact forces is included in the package along with a copy of the game map.

One of the ways in which Theatre Europe differs from most strategic war games, aside from the fact that it's less complicated than most, is that it lets you take part in the battles through action screens. After deciding which enemy units to attack in the Battle phase, you select a specific battle to participate in. You can then fire missiles at enemy infantry soldiers, tanks and jets.

Although the graphics and animation featured on the action screens would never win any awards, this option might be useful for wargamers who aren't quite ready to give up their arcade-style shoot-'em-ups, or anyone who doesn't want to spend the entire game staring at a map of Europe. Be warned, however, that your performance on these screens will directly affect the outcome of battles back on the main screen.

Theatre Europe can be frustrating at first, especially if you command the NATO forces and don't understand that you're in a no-win situation. Since the game only simulates the first month of what would probably be a long struggle, the NATO objective is really only to thwart the Warsaw Pact invasion, not to march in and wipe out the communists completely. If you command the Warsaw Pact armies, you have to use your military might to break through the NATO defenses and gain a foothold in Western Europe.

Theatre Europe can easily be completed in a single sitting, and games in progress can be saved to disk. The game includes three difficulty levels, of which levels two and three let you launch special missions with names like Assault-Breaker, Deep-Strike and Iron-Snake.

No matter which level you select, Theatre Europe is a good introduction to strategic military simulations and one that might even give you something to think about when the battle is over. *(Datasoft, 19808 Nordhoff Place, Chatsworth, CA 91311. C-64/$34.95 disk.)*

Bob Guerra
Charlestown, MA

Arctic Fox A

Battle Aliens, Nature And More as Commander Of This Super Tank

Arctic Fox, making the transition from the 512K Amiga, is a tank simulator with enough action for everyone.

Continued on p. 24.

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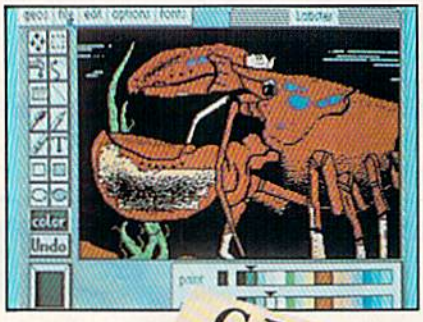

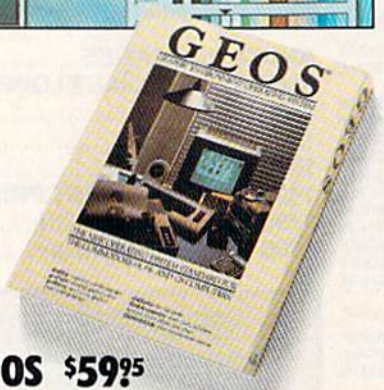

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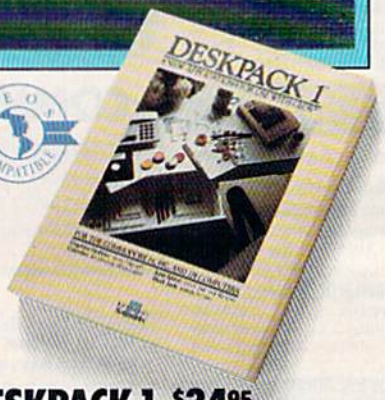

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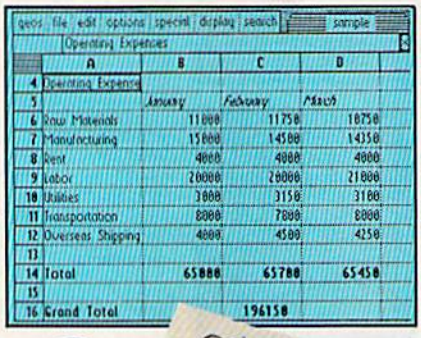

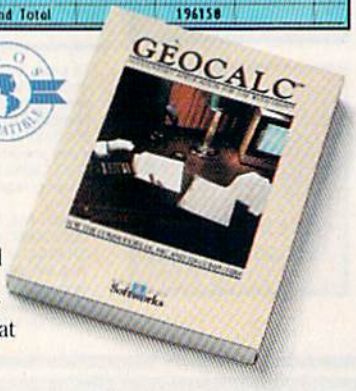

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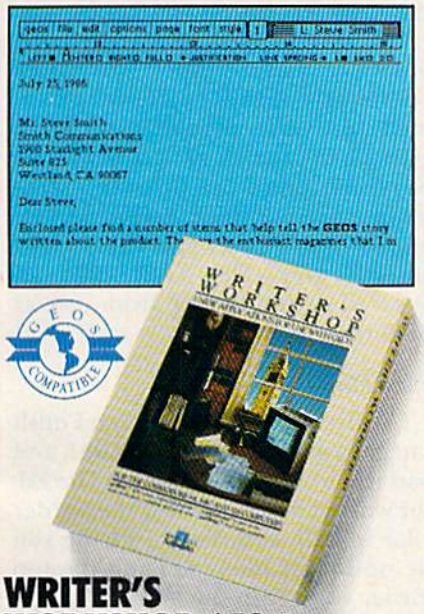

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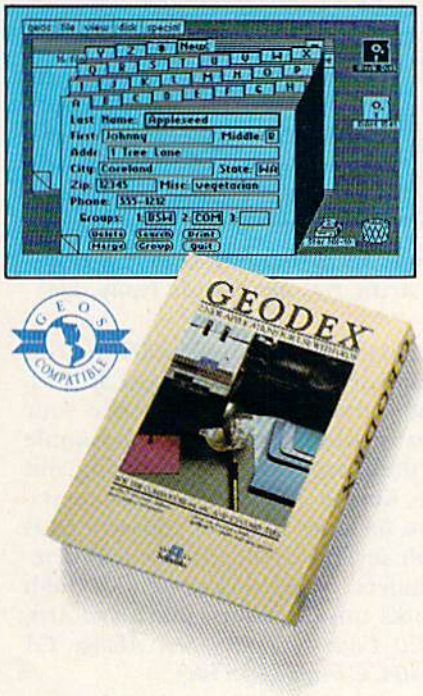

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Sooner or later, you're going to discover that there's more to Commodores than fun and games.

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Software Gallery

From p. 18.

Alien invaders have established a base in the northern polar regions and are busily converting the earth's atmosphere into a deadly mixture of ammonia, methane and chlorine gas. Protected by their own tanks, recon sleds, flyers and a force field, it is thought that only you and the Arctic Fox will be able to get through and destroy their headquarters—but time is fast running out.

You are in the driver's seat, with total control of both movement and weapons. The Fox is a 37-ton tank, specially suited to ice and snow, and fitted with a cannon, seeing-eye missiles and the ability to lay mines. It can also travel at 144 miles per hour, turn on a dime and climb steep grades.

There are four sections to this game: The first is an enemy preview. The alien war machines are paraded for inspection, and their specifications and armaments are listed on the screen.

It is in the Training mode that you can actually begin to fight the enemy. Be aware, however, that your armor is invincible while theirs is weakened. This level is little more than a duck shoot, but it gives you a safe opportunity to master the Fox's controls.

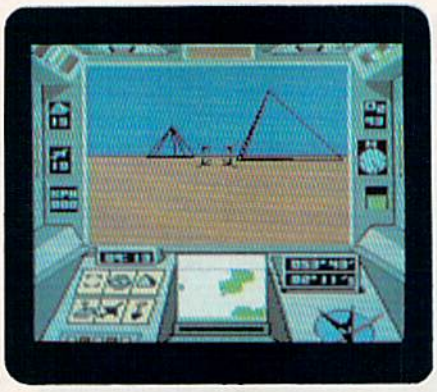
In the Beginner mode, the enemy is more difficult to destroy, and they can destroy you. This is a get-tough-or-die session: If you can't survive here, you're not going to be worth much at the Tournament level.

All the chips are on the table in the Tournament level. Enemy strength and firepower are equal to yours, and they'll be fighting hard to keep you away from headquarters until the completion of the atmospheric conversion that would kill everyone on Earth, including the commander of the Arctic Fox.

Due to the partial conversion of the atmosphere, the polar weather has now become unstable. At any moment you may find yourself in the middle of a blinding blizzard or in the darkness of a thunderstorm, lit only by the sporadic flash of lightning.

Your view of the terrain is provided by a color video display that shows you what is ahead or behind you. A smaller screen provides an overhead view through a satellite radar; however, this is easily scrambled during storms.

At the left of the control panel is a weapons console, and, above it, icons inform you of the amount of firepower left. At the right of the screen are a compass and an oxygen gauge. Because the atmosphere here is already hostile, if you run out of oxygen, you're dead.



You're surrounded by 37 tons of steel in Arctic Fox, but are you really safe?

Graphics, documentation and sound are all very good in Arctic Fox. The sound includes things like your treads swishing on snow, the rumble of thunder, your weapons firing and the Klaxon alarm. The documentation includes a quick-reference card with several keyboard command reminders. I give this simulation high marks on all counts. *(Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. C-64/$34.95 disk.)*

Ervin Bobo
St. Peters, MO

Photo Finish; Billboard Maker; Icon Factory

B-
B+
B

Round Out Your Graphics Library

With curiosity in GEOS at fever pitch, you'll be interested in hearing about other developments in the world of Commodore graphics. Three packages from Solutions Unlimited have, at least to a small extent, broadened the field of C-64 graphics programs. They are Photo Finish, Billboard Maker and Icon Factory.

Although considered graphics programs, they differ markedly from GEOS in that they're controlled exclusively from the keyboard, they cannot be used to create a graphics screen from scratch, and they do not contain word processors. Instead, they are variations of one theme—namely, the modifying and printing of graphics screens.

The objective of Photo Finish is to add color to hi-res and multicolor screen dumps that are performed with a dot matrix printer. The colors are actually various patterns substituted for what should be colored areas of the image as it appears on the screen. Since this process is commonly called scaling, Solutions Unlimited decided to name these color patterns "grey scales." Grey scales can be saved to and loaded from disk as small files.

Photo Finish's Color Editor

The first step in using Photo Finish is to get a graphics screen on disk and load it into the Color Editor. The Editor works by first splitting the border color in half, and then by giving you the option of interchanging the top border color with the bottom border color. You can enter another editor at any time to modify the patterns that correspond to each of the C-64's 16 colors.

Two other options are a color stripper that removes the color from the screen, and a flip option that flips the screen to create a mirror image.

No words of caution appear in the documentation concerning the use of the Color Editor, but it can be a source of trouble to the unsuspecting. One example is a problem that can occur when you're performing fine detailing of solid colors.

Let's suppose you wanted to change the trunk of a tree from brown to green, and there's a man wearing a green shirt standing in front of the tree. If your coloring grid adjoins both the man and the tree, you'll have to change the color of his shirt or it will blend into the tree trunk.

Photo Finish also lacks refinement in the grey scale area. The program can temporarily ruin the printout of an otherwise good screen when the patterns within the grey scale don't complement the image. Think of the consequences if brown is represented by a checkerboard pattern: A screen image of the Mona Lisa would appear

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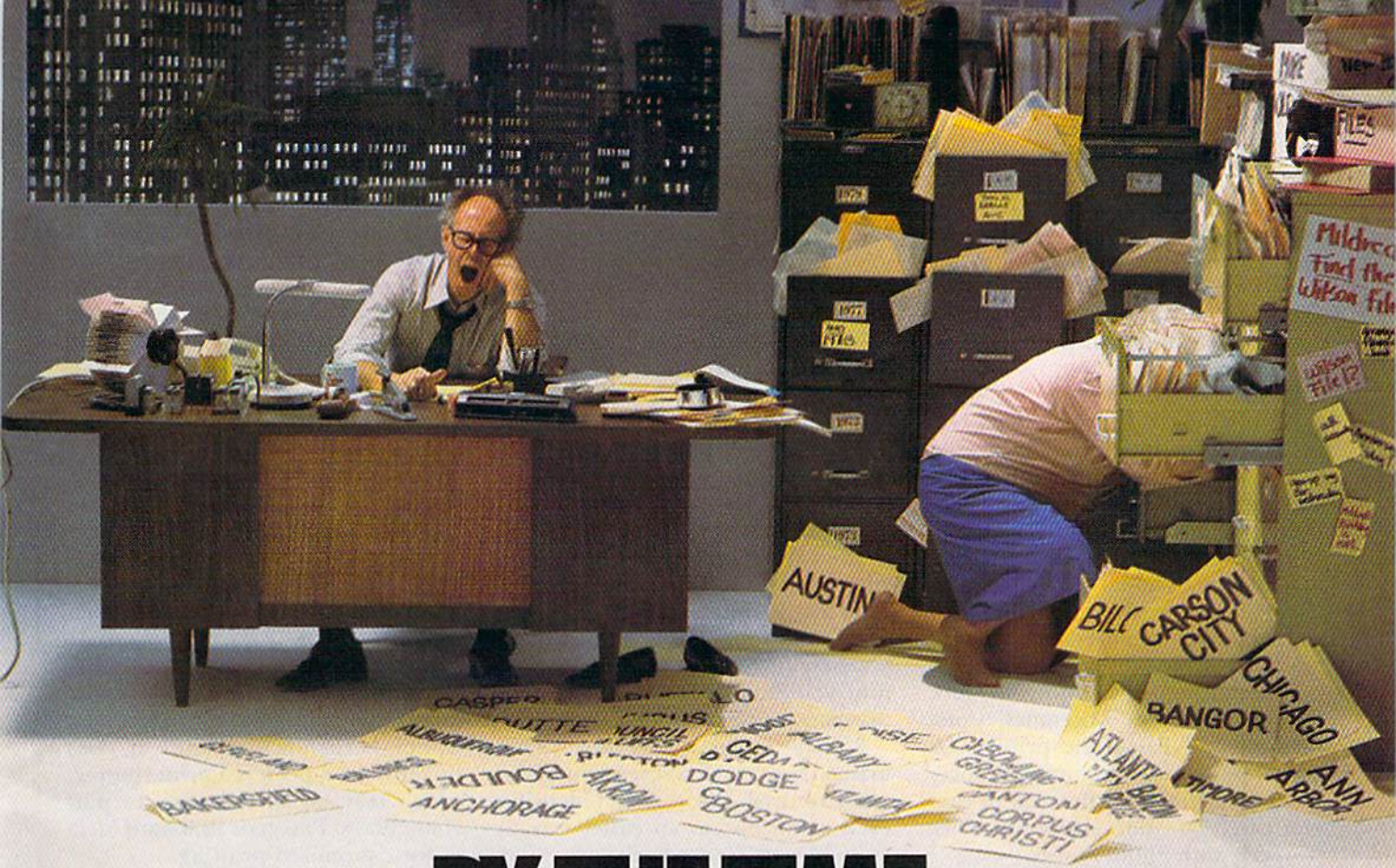

BY THE TIME SHE GETS TO "PHOENIX," HE'LL BE SLEEPING.

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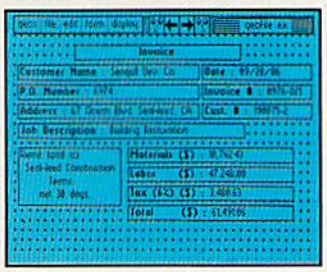

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to have a tablecloth draped over her shoulders!

However, the most disturbing aspect is that the checkerboard pattern would consist of perfectly straight horizontal and vertical lines—fine for technical illustrations, but not for following the contours of clothing.

Print Options

All three packages include an Optimizer routine that can be activated before a printout, provided that you generate a quadruple-sized—as opposed to single-sized—screen dump. The Optimizer utilizes a process that links individual pixels together by adding more pixels, which in turn smooths out ragged edges that may exist on a screen display.

I found the print options to work flawlessly on Star Micronics, Commodore and Panasonic printers. A separate printer-customizing program is included on the disk in case you can't get your printer to work properly with Photo Finish.

The short, 19-page manual that accompanies the program is adequate for providing all the pertinent information needed.

After using Photo Finish extensively, I'm still undecided as to whether or not it's a substantial and useful program. I was impressed with the package's ability to create distinctive and accurate hardcopies of both multicolor and hi-res screens, but you can already do that with most of the software packages that create the screens used by Photo Finish.

The title of the second program, the Billboard Maker, made me apprehensive, my reservations stemming from a bad experience with another poster-maker program, which made my Gemini 10-X's printhead begin to smoke after only 15 minutes of continuous printing.

As the name implies, Billboard Maker lets you print large, multipiece posters and normal-sized hard copies from screen images. In an effort to minimize damage to the printhead, I limited my enlarged printing to screens that contained few lines. I don't recommend using the enlarged screen printing unless you have a spare printhead or two and extra printer ribbons.

Billboard Maker can be likened to a computerized Ginsu knife, which lets you dice, slice and splice the screen image in a variety of ways. After that, you can save the modified screen to disk and print it.

After activating Billboard Maker and loading the hi-res or multicolor screen of your choice, you can move to menus, which are referred to as rooms in the documentation.

In one room, entitled the Ironing Board, you can flip the screen upside-down, strip the color from it, convert it to a negative image and flip it to a mirror image. A room named the Cutting Board gives you the option of framing the screen with a variety of attractive borders. When the screen is saved to disk and printed, the frame you selected is saved and printed right along with the image.

Another room lets you put text in a variety of fonts. With the Olympic font, you can place small, predefined drawings on your screen.

Billboard Maker's 54-page user's manual is not well written, nor is it a good tutorial guide. I found using each menu option an easier way to learn how to use the package.

Billboard Maker, though not a breakthrough in C-64 graphics, is fun and simple to use. No previous graphics knowledge is needed, but previously created graphics screens are essential. There is practically no way you can accidentally cause permanent alteration to an original screen with this program.

I found the third program, Icon Factory, to be a toss-up with Billboard Maker as the most interesting package of the trio. A clever menu screen depicting the exterior of a factory building appears on the start-up screen. You use the function keys to move from one strategically placed screen-manipulation option to another on the exterior of the building.

Software Compatibility

Icon Factory accepts screens created by nearly all the popular graphics programs, as well as images created by The Print Shop and Newsroom. Like the other two packages, it lets you read in a hi-res or multicolor screen from disk, then modify it until it no longer resembles the original. It also gives you the option of saving your modified screen to disk.

Icon Factory contains provisions for stretching a section of the screen image. Stretching is accomplished by adding solid lines of pixels on either the X or Y axis. An Overlay option is also included.

The same flipping, cropping and image-switching routines found in Billboard Maker make their home in Icon Factory. You can use it to convert a hi-res to a multicolor screen, and vice versa, via a process called Minimum Resolution Loss (MRL).

I was doubtful of the effectiveness of the MRL feature, because I've never seen any program that could successfully convert a finely detailed hi-res screen to a multicolor screen and back again without changing it at least slightly.

I was disappointed with the results I obtained with this feature. The MRL won't properly convert if there is more than one visible dot per 8-pixel × 8-pixel area.

Icon Factory possesses the Optimizer routine for smoothing the screen image by enlarging or linking together perpendicular lines. It does not, however, possess a print routine, which may be an incentive to purchase Photo Finish or Billboard Maker for customized printing.

Icon Factory's 24-page user's manual is clearly written, but not logically presented. Having to reference paragraphs on different pages wastes a lot of time.

As a C-64 graphics package, Icon Factory is an interesting development in the same context as Billboard Maker. I successfully created a good number of customized screens with the program and was favorably impressed with its overall performance and features.

Overall Summary

I'm convinced that the world can never have too many good C-64 graphics programs. The wide choice of commercial graphics and CAD packages, coupled with the enormous popularity of GEOS and print utilities like The Print Shop, indicate that there are plenty of C-64 users who share my view. While there's been a great deal of development and progress in this area, there's still plenty of room for growth.

Photo Finish, Billboard Maker and Icon Factory match or exceed the quality of workmanship I've seen in a variety of commercial graphics products. The weaknesses shared by the three programs lie in the documentation. The products themselves are

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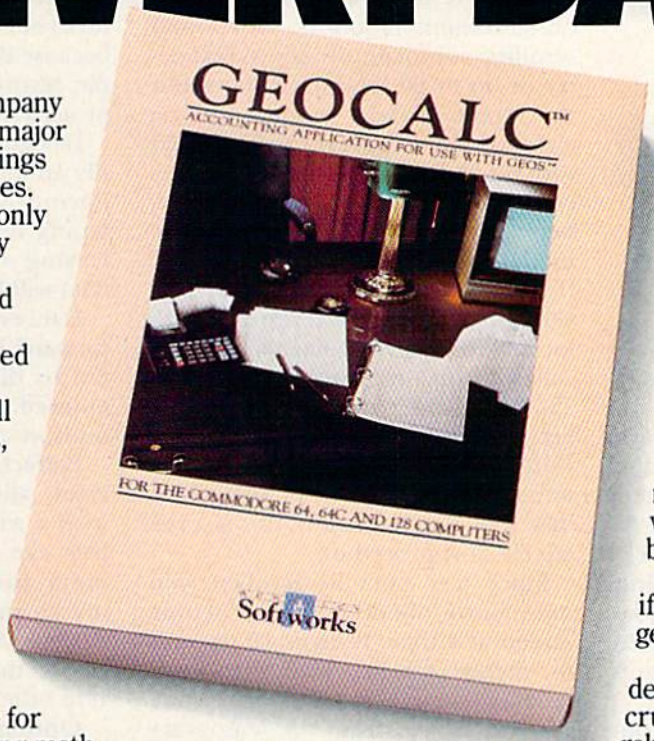

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With geoCalc, you get 112 columns and 256 rows to fill with all kinds of text and numbers. And formulas that range from simple addition to arctangents and cosines that could knock any physicist cold.

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free of programming defects and perform admirably in each area.

Whether or not these are worthwhile software investments is up to you. Beginners in this field are better off investing in a true graphics-generating package, such as Doodle! or KoalaPad, before considering purchasing any of these packages. However, if you're a C-64 computer artist, or already possess a sizeable collection of graphics screens, these programs can round out your personal inventory of C-64 software. *(Manufacturer: Solutions Unlimited, PO Box 177, Dobbs Ferry, NY 10522; Distributor: Relevant Software, 283 Mamaroneck Ave., White Plains, NY 10605. C-64/Icon Factory and Billboard Maker, $39.95 disks; Photo Finish, $29.95 disk.)*

Tim Walsh
***RUN* Staff**

Perfect Writer; Perfect Filer

B+

Two Compatible Programs Designed for Home Or Office Use

Perfect Writer and Perfect Filer are two separate programs that share the same basic command structure and can read each others files. Writer is a complete word processing package that includes both a spelling checker and a thesaurus. Filer is a database program that can generate form letters and maintain lists or office records.

The fact that these programs operate under the C-128's Z-80 processor is a mixed blessing. Without CP/M, these well-established programs wouldn't even be available to Commodore users. With it, we get a chance to experience the strengths, as well as the limitations, of an operating system that was designed for computers with rapid disk access and small memories.

Perfect Writer is a full-featured, well-documented, easy-to-use and powerful word processor that can be unreservedly recommended for anyone who works in the CP/M environment. The program's biggest asset turns out to be its instant compatibility. Despite the fact that it is capable of spell checking, searches, variable headings, multiple formats, footnotes and proportional printing, this CP/M software does not distinguish itself when compared to many other word processing packages that run under the C-128's Native mode, simply because it's too slow.

While newer operating systems such as that employed by the C-128 are designed to utilize 512K of RAM, CP/M 3.0 on the C-128 expects to have far less memory. As a result, Perfect Writer must constantly load the software appropriate to the task at hand: CP/M must be booted from one disk and Perfect Writer's main menu from another. Editing, spell checking and printing functions are all loaded from a separate disk.

Perfect Writer will run on either 40- or 80-column monitors. Horizontal scrolling automatically allows text entry of up to 80 logical columns, but the screen margin settings can be changed so that all text can be viewed without scrolling. The software comes configured to run on a single drive, but can easily be changed to accommodate up to four.

The program is designed to circumvent the relatively small workspace allocated for text by means of a system called virtual memory architecture. This lets you work on documents larger than the available memory would allow, while Perfect Writer automatically moves text in and out of disk files. Unfortunately, this is a relatively slow procedure.

Since text can't be scrolled, you must move about a document one screen at a time. It takes 12 seconds to change screens, with occasional lengthy pauses as the disk drive shuttles text to and from the temporary swap file. Using a Gemini 10X printer and Cardco G-Wiz interface, Perfect Writer's printer output program took almost two minutes and 30 seconds to print a 3K file. This was twice as long as it took either Nsweep (a CP/M public domain utility) or WordPro 128 to print the same text.

If you plan to use Perfect Writer frequently, you'd be well advised to invest in a 512K expander. Acting as a RAM disk and loaded with the necessary operating files, the expander virtually eliminates disk swaps and waits. Of course, text files won't be secure unless stored on floppies.

While the prudent user will remember to occasionally pause to save the work in progress, saves to a disk that is either full or covered with a write protect tab will cause Perfect Writer to crash. If this happens, and your C-128 returns to CP/M mode, all text in memory will be lost.

Some users also require data management software. Perfect Filer, a database program designed to be used in conjunction with Perfect Writer, is helpful for maintaining address lists and business records, as well as generating form letters and reports. After using one member of the Perfect Software family, getting acquainted with the next is a breeze. An excellent instruction manual makes it simple to harness the power of this easy-to-use, professional software.

What might be a lengthy chore—designing a form to fit your needs—turns out to be a very simple endeavor because Perfect Filer comes with sample record forms that can be edited or used as is.

Designing a form from scratch simply entails using the cursor keys, following easy-to-understand menus, typing in a label for each entry and leaving a trail of dashes where the data will be inserted.

Data entry and retrieval is straightforward, but slow. Each record is written to disk before the next can be entered, a process that took 13 seconds in one test with a 1571 drive.

Perfect Filer's sort option is powerful, allowing multiple level sorts with a wide variety of options. Data lists can be printed in various formats, including those tailored to match pre-printed business forms. Perfect Writer can then be used to create the formats and merge data into other documents.

Options to share records with yet another family member, Perfect Calc, make Perfect Writer and Perfect Filer part of a comprehensive group of programs that easily live up to the one-word description featured on the program packages . . . Professional. It's too bad that the C-128 can't run them a little faster. *(Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380. C-128/$69.95 each, disk.)*

John Premack
Lexington,MA ■

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COMMODORE EXEC *SPEAKS OUT!*

Nigel Shepherd, head of Commodore's North American operations, sees increasing prosperity with the 64/128 line, and other products as well.

Nigel Shepherd took over as general manager of Commodore North America in January of last year. Prior to that, he was general manager of Commodore Australia, Ltd., with responsibility for business in Australia and Southeast Asia.

We caught up with him in his office at Commodore's North American headquarters in West Chester, Pennsylvania, just after the Winter CES in early January. He was quite frank in talking about Commodore's previous financial problems. He remains optimistic about the company's status during the coming year, when they will introduce several new products for the 64/128 computer line, as well as the 128-D and the PC clones.

Earlier this year, Commodore posted its third consecutive profitable quarter. Their most recent quarter in the black represents the company's strongest earnings in over two years and indicates that the much-beleaguered company is on the rebound. We talked at length with Shepherd about Commodore's financial situation, its place in the home computer market, its goals, its marketing strategies and its plans for new products in the coming year.

by **DENNIS BRISSON**

ILLUSTRATED BY GREG SPALENKA

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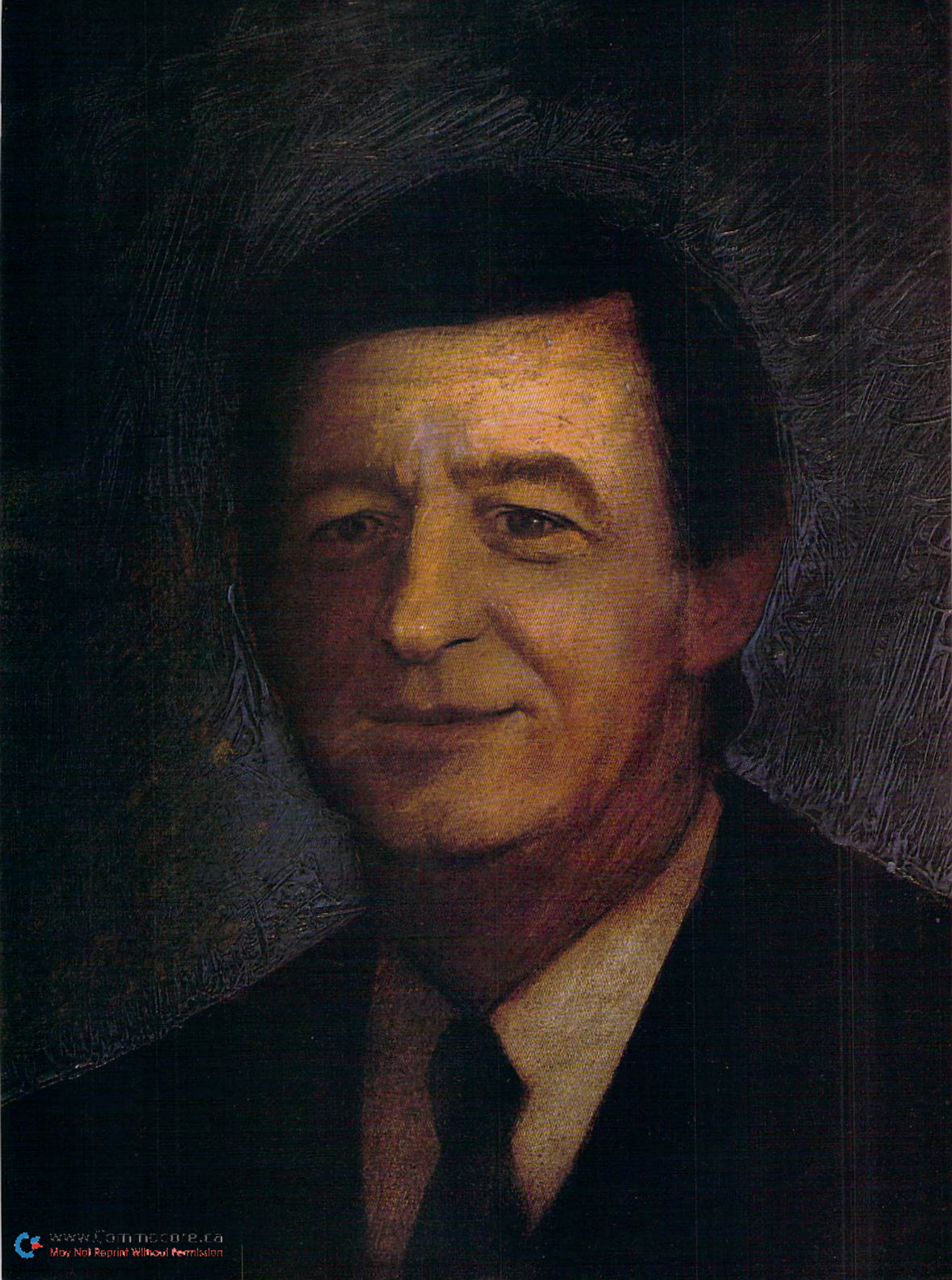

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The 64 is still North America's and the world's best-selling home computer.

RUN: You've been with Commodore North America for about one year. What were your goals for the company when you took the position, and to what extent have you achieved them?

Nigel Shepherd: The first goal was to get the North American company back into profitability by getting the overhead down to an acceptable level and achieving profitable sales. To the degree that Commodore USA has been profitable for the last three consecutive quarters, I think we've achieved that goal.

RUN: What are your goals for the company for 1987?

NS: It's very difficult to return any company to profitability and simultaneously increase sales. I think we've achieved the profitability objective. The second objective for us through 1987 is most definitely to increase sales.

RUN: What's the biggest problem you've had to deal with in this past year?

NS: Boy, that's a difficult one. I think probably the biggest problem occurred in the first half of the year when Commodore was suffering severe financial difficulties. We had to retain the confidence of both the retailer and the consumer, and convince them that Commodore was going to be around on an ongoing basis.

RUN: At the recent CES in Las Vegas, we witnessed a large Commodore presence and much activity and enthusiasm in the booth area. Does this signal a renewed commitment on the part of Commodore to the home computer market?

NS: Our commitment has always been there. What you saw at the CES was a presence we would like to have had in Las Vegas and Chicago in 1986. But we were just financially restrained from doing so. We definitely have an ongoing commitment to the home market, which is always going to be a very large part of our future.

RUN: How do you view that home market in the coming year?

NS: It's still a very viable market. In fact, in dollar terms, we think it's quite possible the home market will increase in 1987.

Four or five years ago, when someone bought a VIC-20 or C-64 for their home, in most cases it was their first computer purchase, so they weren't willing to spend much money. Today, however, as many as 40 to 50 percent of the computers going into the home are second computers, and people do spend more money on a second computer. They generally want to get something better—better quality, better speed or whatever it may be.

RUN: So the role of the Commodore 64/128 line in the home market is primarily as a computer for the first-time purchaser?

NS: Yes, I think it is. There aren't many other computers available in North America in the price range of the Commodore 64 and the 128. The next computer really is the Apple II, which is considerably more expensive. I didn't mention the Atari 65XE or the Atari 130XE, because they're just not a major factor in the U.S. marketplace.

RUN: What were the sales figures for the Commodore 64 and 128 line in 1986, and what is the ratio of sales between these two computers?

NS: The worldwide sales figure for '86 is 2.5 million. The ratio of 64 versus 128 sales is somewhere in the area of 2 to 1 or 3 to 1 in favor of the C-64.

We don't divulge specific unit sales for any models these days, but I think it's sufficient to say the 64 and 128 were very important units to us in 1986. The 64 is still North America's and the world's best-selling home computer. The 128, even on a worldwide basis, would probably hold fourth or fifth spot. To have two machines in the top five is certainly pretty satisfactory as far as we're concerned.

RUN: Obviously, you hope these fantastic sales figures continue. But, realistically, how much life is left in the 64?

NS: If somebody had asked me two years ago what the longevity of the C-64 was, I think I'd probably have said almost two years. It's no secret that we produced the Plus/4 and Commodore 16 because we felt they were going to succeed the Commodore 64 and the VIC-20. And it's no secret that we failed in this attempt because the Commodore 64 was just not going to die.

I think we parallel Apple in that regard. Remember a few years ago when Apple, feeling that the Apple II had a limited life, introduced the Apple III and the Lisa. Both companies have learned that neither the Apple II nor the Commodore 64 is going to die in the short term. We plan on the Commodore 64 being sold three or four years from now, which takes us into the 1990s.

RUN: Do you feel the bundling of GEOS and QuantumLink software has pushed sales of the 64 and 128?

NS: I have absolutely no doubt of that. GEOS is essentially a second operating system that gives the Commodore 64 another dimension. While some users may not choose to buy GEOS, I'm sure a very high percentage of them will.

Packing in the QuantumLink software is also a plus. The telecommunications side of the home computer business really hasn't grown at the rate people were forecasting one or two years ago, but I think the QuantumLinks of this world give the Commodore 64 a third dimension in terms of potential users. I think they make the Commodore 64 a much more attractive package.

RUN: What factors prompted Commodore to bring the 128-D and the PC-10 into the U.S. market from Europe?

NS: When the 128-D was launched—shortly after the 128, in the fall of 1985—the original design didn't pass the FCC. To meet FCC specifications, the 128-D required a fairly complete redesign. Because Commodore was facing other problems at that particular time, we didn't redesign it and launch it into North America. In fact, it's only in the last three to four months that we've completed the redesign so we can launch it.

Another factor in our decision to bring the 128-D into the States is its great success in Europe. There's obviously a demand in the States for a 128 that has a built-in drive and a separate keyboard, and that's aesthetically more a productivity-type machine than the 128 with a separate 1571.

So the success in Europe and the fact that we now have a machine that meets American specifications have led us to bring that machine here. Plus, frankly, a demand from our retailers, who obviously have seen the 128-D at shows and where we sell it in Europe.

The reason for bringing the PC in is similar to the 128-D.

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We have a lot of work to do in the education field to promote the 64.

The PC has been available in Europe for pretty close to two years, and shortly after its launch, it was the best-selling PC in countries like Germany. Even now—two years later—it holds the number two spot to IBM.

In the last two years, we've barely kept up with the demand for PCs in Europe. While that scenario existed, it didn't make sense for us to weaken the European situation by bringing the units into the United States. It's only because the company has improved financially that we've been able to open a new factory in Taiwan in the last three months, and we now have the manufacturing capability to build PCs for North America.

RUN: How do you think the PC-10 will fare in the already crowded U.S. market?

NS: Well, you're correct in saying that the market is crowded. Our philosophy on the PC is that as long as we can make a price-competitive PC clone that enables us to make money, that enables our retailers to make money, then we should definitely be in that marketplace.

We don't have any definite sights set on market share in the PC business. It's a very large business. We believe we can get a good return on investment if we sell somewhere between 60,000 and 100,000 units a year, and we're very confident we can do that.

The PC-10 was released only between Christmas and New Year's, which is probably the worst time to release any new product, and in the first ten days we shipped 6000 units. The demand from our retailers is very positive.

RUN: What about the availability of these products?

NS: The PC-10 is available right now, exclusively through specialist dealers. The 128-D will probably be released here in May.

RUN: What about the availability of some of the other new products we saw at the CES?

NS: We're currently shipping the 1351 mouse. We will ship the 1764 RAM expander in February. We'll start shipping the 1581 disk drive, which is a 3½-inch drive, in March.

RUN: Who do you think will be the typical purchaser of the 3½-inch drive?

NS: At this stage, that unit is aimed primarily at the hobbyist as a mass-storage device. However, we feel it's important to start seeding the 3½-inch drives into the marketplace in large volume. As they're becoming more popular in machines such as the Amiga and MS-DOS computers, the market for 3½-inch drives is increasing dramatically.

We feel that eventually the 3½-inch drives will come down in price, because of the large number being produced. If they come down far enough, then it may make sense for companies using 5¼-inch drives to change over to the 3½-inch.

We want to make sure we have the 3½-inch drives out there and available to companies that produce software for the Commodore 64 and the 128. Then, when the situation does arise—maybe in late 1987 or early 1988—where it's a good move to change over to the 3½-inch totally, the software developers will have software available for the market.

RUN: One of the criticisms of Commodore that we heard at the show was from software developers who complained about the lack of communication coming from the company. Do you see this as a problem in the past, and, if so, what plans do you have to bridge this communication gap?

NS: It has been a problem, caused largely by, again, our financial situation. We cut back overhead fairly substantially, and that included some of our software support people. Now, however, we're getting much closer to our software developers. Mike Brenner, who heads up our software department, is very aware of the need to communicate more closely with developers, and I think our communication in that area has improved substantially.

RUN: With better communication and a tighter relationship with software developers, will we be seeing more dedicated 128 software down the line?

NS: The type of software to be developed in the 128 mode will probably be mainly in the productivity area. The 64 side of that machine has the games. When we looked at this two months ago, we found 40 or 50—or maybe more—excellent productivity programs for the 128 already. There's no shortage right now. I think there are something like a dozen word processors for the 128.

RUN: Are third-party software developers working on software that integrates with the GEOS operating system?

NS: We're certainly starting to see that now. The reason for geoWrite and geoPaint, a couple of really basic packages, is to give the user something to do with GEOS once he opens the box. The whole concept was to encourage other software developers to boot front ends onto their programs to make them GEOS-compatible. The first programs are starting to come out now, and we're going to see others.

RUN: What are Commodore's plans to support the education market?

NS: Our main emphasis in education, as it has been for a number of years, is to promote the Commodore 64 for kindergarten through sixth grade. For these younger children, we believe the Commodore 64 is an excellent value.

We believe that at the top end of the education spectrum—in colleges and universities—the Amiga has a role to play. We have a lot of work to do in the education field to promote the 64, and we have even more work to do to make substantial inroads with the Amiga.

RUN: Is there an attempt to reheat the sales effort for the educational market?

NS: The effort was never cancelled. We certainly did withdraw from active participation in educational seminars, and we didn't have a large education presence in shows and exhibitions. But our education business has always been done through specialist education dealers, and they've remained very active. We're still selling a lot of Commodore 64s, in particular, in the schools.

But, yes, our corporate presence certainly has diminished in the education area, and it has to be resurrected over the next 12 to 18 months.

RUN: Some of the rumors our readers have heard and frequently ask us about are:

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We're looking forward to a very exciting 1987—for both the 64 and the 128 product lines.

1. Is Commodore going bankrupt?
2. Does Commodore plan to abandon support of the 128?

Would you address these two questions?

NS: No, we're not going bankrupt.

Until about June 1986, because of a pretty bad financial press (which, quite frankly, was deserved, because we weren't producing results), that may have been a legitimate question. I think that now, with three consecutive profitable quarters under our belt, we're starting to get a much better financial press. If you look at our stock, which reached a low of about 4½ at the beginning of 1986 and is now up over 10, you can see the response to the improved financial press coverage.

With regard to the 128, unequivocably, no—it's not being discontinued. I guess people are inclined to question the future of the 128 because they see it as attacked from two ends.

On the bottom end, you have the Commodore 64, which certainly has been enhanced with the GEOS and Quantum-Link software. That machine has also been given a face lift during the year, so it looks like a more sophisticated computer. From the top end, MS-DOS prices are coming down. They narrow the gap between the PC clones and the 128. I think that's the reason for the questions.

However, 128 sales for us were excellent through calendar 1986, and we know already they're going to be excellent for the first half of 1987. The 128 is an attractive purchase for parents who have older children and want to do some productivity in the home. It does everything you can do on the Commodore 64, but gives you additional productivity. When we have a machine that's perhaps the fourth or fifth best-selling computer in the world, there's no way we're going to abandon it.

RUN: Do you have anything else to say to the *RUN* readers, or would you care to clarify or elaborate on any of the points raised here?

NS: In general, we're looking forward to a very exciting 1987—for both the 64 and the 128 product lines. We think this year is going to be at least as successful as 1986, and probably even more so. We think there'll be more accessories and more software coming out for the C-64 and the 128. You're going to see more aggressive advertising for the product line as well, and both the 64 and the 128 will be given a far higher profile in 1987 than in 1986. We're very happy with both product lines, and they obviously figure in our long-term plans.■

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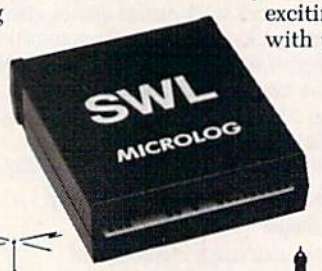

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MAIL ORDER MAXIMS

Become a satisfied customer by learning the ins and outs of shopping by mail.

By CHRISTINE ADAMEC

My husband and I ordered our very first computer by mail back in 1976, and I still remember our anticipation and awe as we reverently unpacked our brand-new Commodore PET. We'd had typical first-time mail order fears: Would it really work? Had we been crazily impulsive to order such an expensive product by mail? But our fears were groundless. It did work! And we loved it.

We've been buying computer products through the mail ever since, with minimal problems. You, too, can become a satisfied mail order customer if you follow a few guidelines.

There's a big demand for computer products in the booming mail order business. According to Maxwell Sroge, a leading mail-order consultant based in Chicago, computer items represent the fastest-growing segment of the multibillion-dollar mail-order industry, with a yearly expansion rate of about 30 percent.

This article will discuss the pros and cons of ordering by mail and provide hints on how to prevent problems. I'll also describe techniques to use when your best efforts fail and you're still unhappy with an order.

Advantages of Mail Order

One big plus of ordering by mail is the diverse selection of products available. Says consultant Sroge, "Computer manufacturers are cranking out marvelous products today, and you can find a wide selection of new merchandise through mail order. Retailers are cherry-picking the line and are far more limited on what they can stock."

Another major advantage is price. Many mail order companies discount prices 25 percent or more, and you won't pay sales tax on your item unless the mail order company is in your state and your state imposes a tax.

Of course, convenience is another attraction—you don't have to leave the comfort of your home to place an order. You can even shop while a blizzard is raging outside.

What about support if you should have a problem or a question? This may or may not be adequate through mail order, depending on your situation. Over-the-phone advice is usually available, and major firms staff full-time technicians to assist you, whether you're a complete novice who just received a computer for your birthday or the kind of person who enjoys dismantling your disk drive to insert a ROM chip. However, if you need to see the product before ordering it, or if you want to be able to discuss problems you're having with it in person, then mail order is probably not for you.

While mail order is never going to be as fast as going right to the store yourself, most companies strive to deliver as quickly as possible. Says president David Pomije of Pro-Tech-Tronics in Minneapolis, "If you order by noon and the item is in stock, it goes on the UPS truck by that afternoon. You should receive it within five to ten business days." Be aware, however, that if you pay by personal check, most companies will wait at least two weeks before shipping your order, to make sure the check clears.

Disadvantages of Mail Order

According to Vada Martin, a research analyst with the Federal Trade Commission (FTC) in

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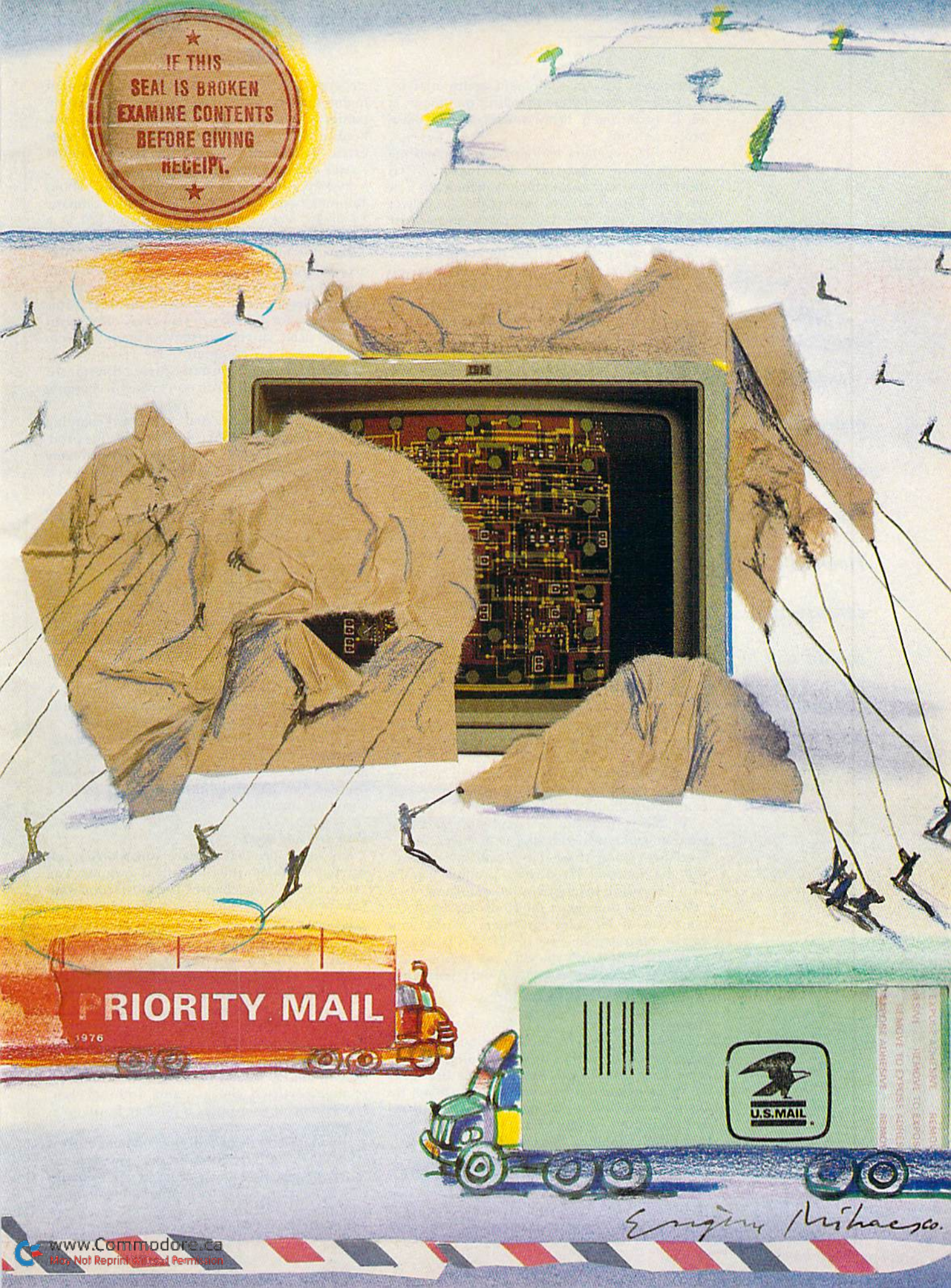

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Washington, DC, key complaints against mail order firms include failure to deliver on time or at all, to issue timely delay notices and to make proper refunds.

The FTC regulates mail order companies under the "mail order rule." This regulation requires firms to state prominently in their ads how fast they ship orders, or, barring that, to deliver the product within 30 days of receiving an order and payment.

If they can't deliver on time, the company must notify you that there's a problem and give you a new shipping date. When you receive this notification, you can either cancel your order and receive a full refund, or you can agree to the new date.

It's also important to know that if you cancel a prepaid order, the FTC requires the firm to refund your money within seven business days. If you paid by charge card, they must adjust your account within one billing cycle.

Note that the mail order rule is limited to actual *mail* orders. Phone orders are not covered.

. . . most mail order firms are good guys in white hats. However, . . . consumers should still be careful.

Reputable or Not?

The Direct Marketing Association (DMA), a New York-based trade association for the mail-order industry, recommends that you deal only with reputable companies. If the XYZ Corporation, which you've never heard of, suddenly offers a special deal that's 50 percent lower than everyone else, don't jump right in! First, check it out, especially if you're placing a large order. Consult the Better Business Bureau in the city where the firm is located.

The DMA also recommends reading computer magazines for information about mail order firms, and a recent DMA "action line" on computer purchases suggests you look for "company names that come up again and again, whether for good value and service or for problems and headaches." [Note: *RUN* magazine has a customer service representative to investigate consumer complaints about its advertisers.]

Another precaution to take before ordering from an unknown company is to check with a local user's group to see if its members have dealt with the company. Was delivery prompt? Was the firm responsive to questions or complaints?

When you do contact the company, ask about the terms of the sales agreement on the item you're interested in. Says the DMA, "Is there a warranty? Where will you get your questions answered at 10 PM Sunday night? A toll-free hotline, with 24-hour service, is a big plus."

Advice from the Pros

People actually in the mail-order business have valuable advice to offer on determining whether a company is reputable. Roger Dooley, president of Tenex Computer Express in South Bend, Indiana, is convinced that most mail order firms are good guys in white hats. However, he says consumers should still be careful.

His first recommendation: Read the fine print in every advertisement. "We've seen an ad for a very low-priced product, and then in the fine print at the bottom it said there was an 8 percent markup! Another 3 percent was added if you used a charge card. So the actual price was 11 percent higher than the price in bold letters!" (Many companies do charge extra for using a credit card, because the credit card company charges *them* extra. Be careful, though, for they shouldn't charge you over five percent.)

Dooley also advises consumers to ask about shipping costs. "Shipping might cost a company $4 or $5, when they're charging you $29 as a hidden extra fee."

David Pomije thinks it's a good sign if a firm accepts credit card payment. According to him, credit card companies have recently instituted a policy whereby only computer mail-order firms in business for at least two years may offer credit card service. "This has weeded out many problem companies," he comments. He recommends ordering from a company displaying credit card emblems, even if you don't plan on charging your order.

Pomije also observes that credit card charging protects customers if they don't receive the product they've ordered. "The credit card company will sometimes issue a credit, and then they'll contact the mail order firm and tell them the customer didn't receive the goods." Of course, when you don't receive an item, your first step should be to check with the mail-order company.

Another indicator of a mail-order company's character is how they treat callers. Peter Sattler, president of Tussey Computer Products in State College, Pennsylvania, says, "Are their people genuinely informative and polite? Their attitude tells you whether or not the company has its act together, and is a good indicator of how your order will be handled."

Pomije says he feels another sign of reputability is putting out a catalog. "A catalog usually indicates a company that's been around awhile."

A final sign of good service is a toll-free number for ordering. Says Pomije, a toll-free number "suggests that the business is at least somewhat solvent, because they had to go through AT&T to get a clean 800 number."

Basic Do's and Don'ts

Say you've decided to place a mail order, and you feel confident the company is a winner. You can optimize your chances for satisfaction with your order by following these basic rules:

1. When you place the order, ask for the delivered price and for a shipping date and estimated date of arrival. Also, write down exactly what you're supposed to be getting, so you can compare it with what actually arrives.
2. Don't send cash! (Yes, people do that.) It might get lost or stolen, with no one accountable. Send a check or money order, or use your credit card.
3. When sending your order, provide a complete description of what you want. "We sometimes receive certified checks—and nothing else," says Pomije. If your order is unclear, it will delay shipment.
4. If you haven't dealt with the company before, Maxwell Sroge recommends that you test the waters by placing a small order. If you're happy with it, then you can place a larger one with more confidence.
5. Be sure to ask when a credit card charge will

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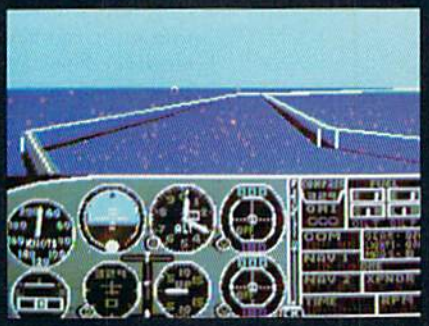

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Circle 26 on Reader Service card.

actually be levied: when the product is shipped, or when the company receives your order. "We don't charge until an item is actually shipped, but some companies charge you immediately," says Roger Dooley.

6. Unless low price is the overriding factor, avoid mail order companies that sell everything from tractors to tractor feeds. Instead, buy from firms that concentrate on Commodore products or computer products in general. These companies will have a better understanding of your needs.

Handling Problems

Suppose you have ordered an exciting new program, or maybe a printer. It arrives, and it doesn't work. Should you throw up your hands and scream?

Says Roger Dooley, "Sometimes a product isn't truly defective when a customer is having difficulty using it. We encourage people to check in with our customer service staff prior to returning a product, because frequently we can resolve the problem immediately over the phone."

David Pomije agrees and says, "In the mass merchandising electronics field, about 50 percent of returned products come back because of customer error—they didn't know how to hook it up or something else. We have both customer assistance and technical support departments to handle questions consumers may have."

But maybe the product *is* defective; reputable companies admit this is true of about 1 or 2 percent of the items they sell. You should be able to return the item for a refund or receive a replacement, as long as you act promptly within the warranty period.

If you decide to send the product back for repair, always call first. When you describe the defect to the customer service person, be sure to write down his or her name, as well as the date, the nature of the problem you described and what you were told to do. Then enclose a letter with the returned product and reference the person you talked to, the problem you talked about, and so forth.

What if your order never arrives? Most computer companies are computerized themselves, and they should be able to track the status of your order rapidly. If the item was shipped through United Parcel Service but never arrived, the company will request a tracer on the package. Sattler warns, however, that "UPS is not computerized and has an enormous paperwork system. They make us wait at least two weeks to trace a package, so take that into account on a nondelivery complaint."

Dooley recalls a humorous incident when a customer insisted he'd never received his hardware, although UPS had a signed receipt. The mystery was soon solved: His cleaning lady had signed for the package, put it in the garage and then forgot to tell him!

If you feel frustrated with a firm's customer service people and your complaint is still unresolved, whether it's nondelivery, a defect or some other problem, Pomije recommends asking for the president or owner of the firm. "He'll generally be willing and eager to help you." Pomije takes customer calls that can't be resolved otherwise, and he feels most other company heads will listen and try to help when the normal channels don't work.

If a Company Won't Help

You've tried everything; letters and phone calls have been ignored, and even the head of the company wasn't interested. Time to take action!

Ask the Better Business Bureau, either local or national, for the address of the Better Business Bureau in the city where the delinquent company is based.

You should also contact your state consumer bureau and request the necessary forms for a formal complaint. Describe the problem as simply as possible (they may know nothing about computers!), and include copies of relevant information. Ask them for the name and address of the consumer agency in the state where the mail-order company is located, and write to that agency also.

Another possible route is through any local or regional newspapers that may provide "help" columns, where consumers can air complaints. The paper will call all over the country to help you resolve a problem, and, since any business detests bad publicity, a firm that's ignored you in the past may suddenly respond.

If you received a defective product through the U.S. Postal Service, the FTC recommends that you complain to your Postal Inspector for an investigation of possible mail fraud.

When you have a complaint against a company, the FTC wants to know. However, they can't act on individual complaints. According to Vada Martin, the Commission is "directed to act in the public interest where patterns or problems involving numerous consumers are found to exist." However, if a company is treating you unfairly, it seems likely they're doing it to others as well, so a letter to the FTC would be in order.

You should also relate your complaint to the Direct Marketing Association in New York. They want to know about the problem companies that tend to give everyone else a bad name. And don't forget to notify the magazine that carried the ad.

Table 1. *Organizations to contact when you have a consumer complaint.*

Your local Better Business Bureau or
Council of Better Business Bureaus
1515 Wilson Blvd. • Suite 300 • Arlington, VA 22209 • 703-726-0100

Direct Marketing Association
6 East 43rd St. • New York, NY 10017 • 212-689-4977

Your local Postal Inspector or
U.S. Postal Service
Law Department
475 Lenfant Plaza SW • Washington, DC 20260

Federal Trade Commission
Correspondence Branch
6th St. and Pennsylvania Ave. NW • Washington, DC 20580
(The FTC doesn't help with complaints, but it likes to hear about them.)

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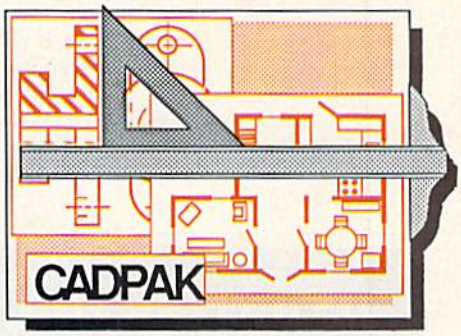

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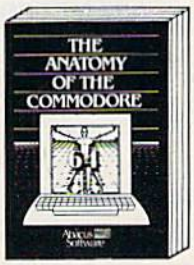

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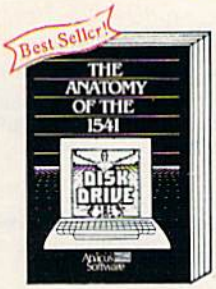

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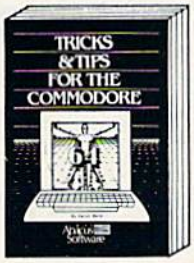

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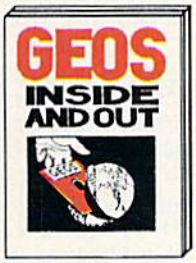

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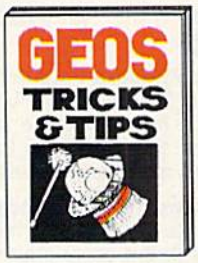

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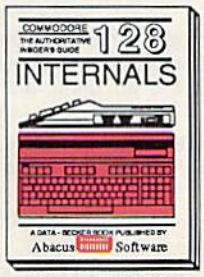

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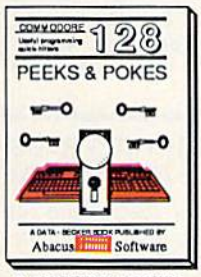

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There are numerous good-sized and reputable companies selling computer products by mail.

They have a vested interest in keeping their readers happy by avoiding disreputable advertisers.

Bankruptcy

What if the company goes bankrupt? Is all hope lost? "No," says Neil Buchalter, a Titusville, Florida, attorney who specializes in bankruptcy cases.

In the light of the federal bankruptcy code, Buchalter claims, it's probably better for the consumer if a firm files for bankruptcy than if it merely ceases to do business. "If they just shut their doors," he explains, " it's basically first come, first served, and you have to file a lawsuit to try to collect. That can be difficult when the company is out of state."

Buchalter says that if a company files for bankruptcy before you receive your order, you should receive a notice from the bankruptcy court. "At that point, you file a proof of claim form with the court, setting forth the amount you paid and what you purchased. He recommends that you include proof of payment, such as a copy of your credit card bill or cancelled check."

Buchalter adds, "People who paid for products they haven't received are entitled to a priority claim of up to $900 before other categories of creditors. If your claim exceeds $900, the amount in excess falls into a lower priority category.

"You don't need to hire an attorney to file a proof of claim," he continues. "Some courts will mail you the claim form and instructions, and it's easy to complete." Also, filing is free.

Buchalter does caution that consumers won't receive "a hundred cents on the dollar," but they should receive some amount, depending on the individual case. Cases may be resolved in six months, or they can take years.

What if you think a company has gone bankrupt, but no one has notified you? "Call the company and ask them," says Buchalter. "If they receive hundreds or thousands of calls from customers, they'll want it to stop. When they file for bankruptcy, they're protected by a court order saying creditors may not harass them or try to collect from them. It's to their advantage to notify all concerned."

Give It a Try

Buying software and hardware by mail order can be a money-saving, time-saving and generally satisfying experience. As consultant Maxwell Sroge says, "There are numerous good-sized and reputable companies selling computer products by mail."

I plan to continue buying by mail—and complain if I'm not satisfied. Mail order may work for you, too! ■

Christine Adamec is a professional writer and frequent contributor to RUN. *She has also written for other business- and computer-related publications such as* Management Digest, In Business, MicroAge Quarterly *and* Boston Business Journal. *You can write to her at 1921 Ohio St. NE, Palm Bay, FL 32907.*

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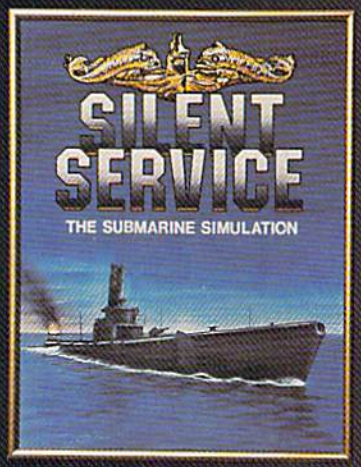

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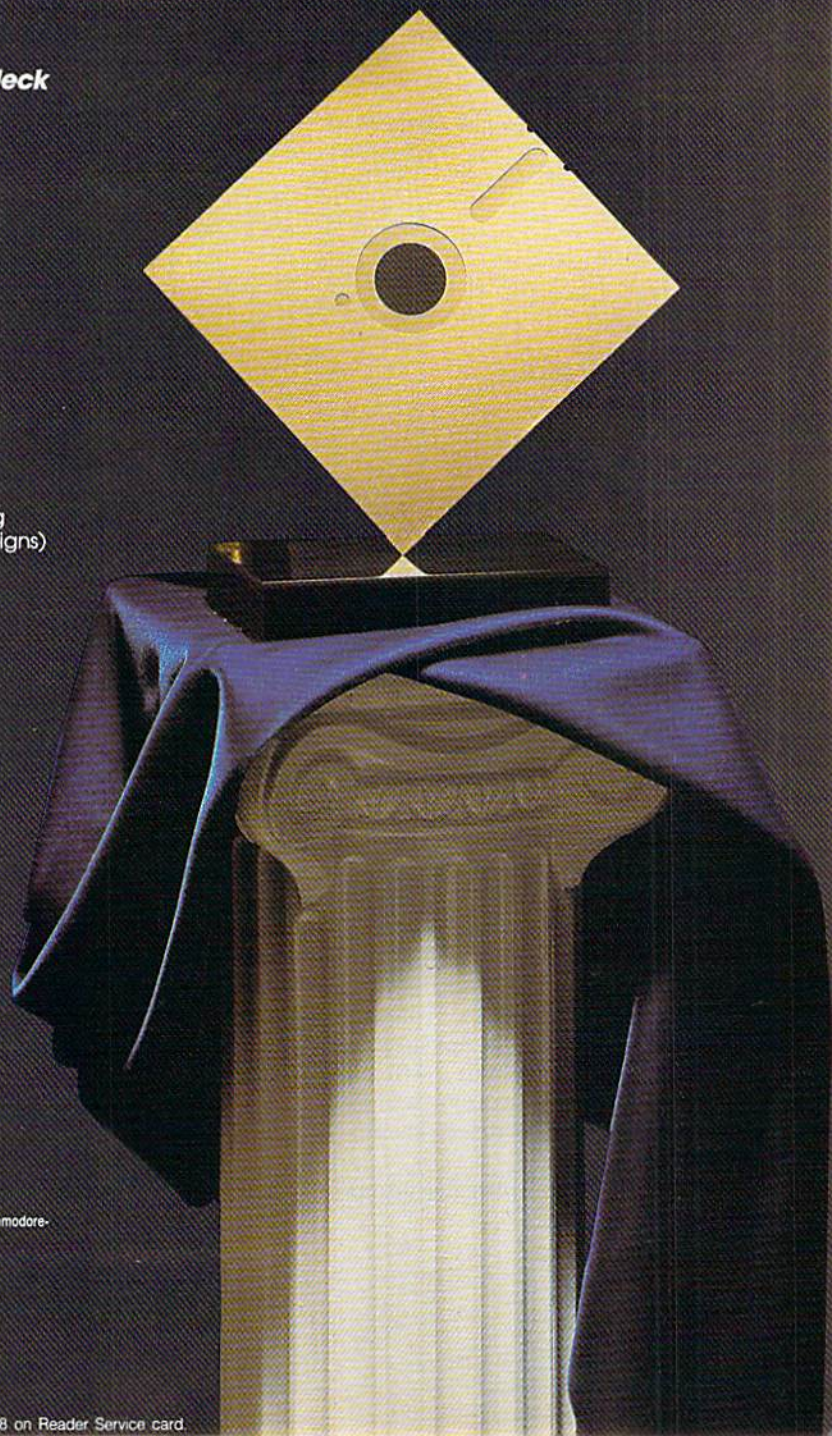

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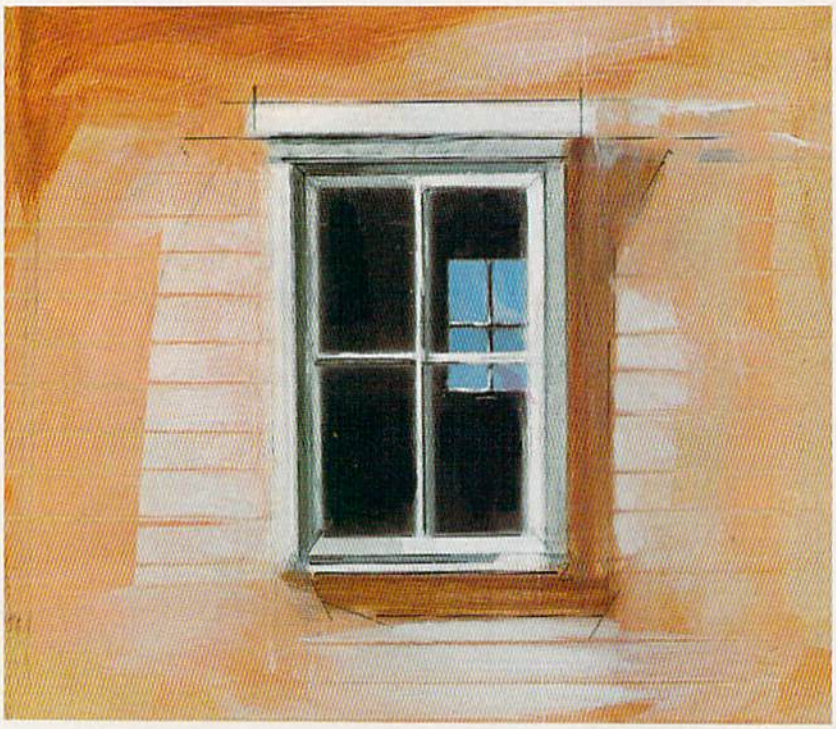
C-128 Custom Windows

Create dazzling and useful windows of virtually any size on your 80-column screen.

By FREDERICK GODDARD



I've long envied the Amiga's ability to create temporary windows that allow you to view the disk directory or list a program without disturbing the original screen display. To take advantage of the C-128's similar capabilities, I designed 80-Column Custom Windows, a utility that gives C-128 owners access to Amiga-like windowing feats. It will not turn your C-128 into an Amiga, but it will allow you to create temporary windows with either Basic or direct keyboard commands.

This utility is lightning fast and provides up to eight bordered windows with a shadow, or 3-D, effect. You can enter commands in the windows, list and change lines in a program, display a disk directory and enter the machine language monitor. 80-Column Custom Windows doesn't alter your computer's operating system in any way. When you're finished with the windows, you can erase them, leaving the original screen intact.

Getting Started

Type in Listing 1 and save it to disk. This listing creates a machine language program called Custom Windows on the disk. When you load and run Custom Windows, the screen clears and a title box appears, telling you that the program is active and you have 96,765 bytes free. This machine language version loads and runs like a Basic program, so if you save it as an autoboot program, be sure to identify it as being in Basic.

Listing 2 is a short demo program that shows you how you can use Custom Windows. Once you have the Custom Windows program on your disk, type in and run Listing 2 to see an amazing demonstration.

How It Works

Custom Windows occupies specific memory locations at 7169–8785 ($1C01–$2251). The beginning of Basic is moved up to 16385 ($4001) with a Graphic1:Graphic5 command. Some of the variable memory in Bank 1 is reserved to store the screen text and attributes underneath the windows you create. The default value for this allocation is 16K, but you can poke a different amount if you wish (as little as 4K or as much as 32K). It takes 2K of memory to create a temporary window that covers half the screen, so the default value of 16K is ample.

The program thus lets you open up to eight 80-column temporary windows at a time; when the windows are closed, the original screen will reappear intact. Each window has a number (1–8) displayed in the upper-left corner. The procedure for opening a window is the same whether you use Basic or direct keyboard commands.

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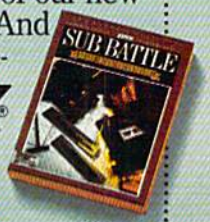

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To open a window, you first set the color. In Basic you can use either the Color or Print command to do this; in Immediate mode, you use the control and logo keys, along with number keys 1–8. You get the most attractive results if you choose light shades. (Dark shades nullify the shadow effect.)

Next, set the size and location of the window. Use the Window command in Basic or position the cursor at the top-left corner of the new window and press ESC T; then position the cursor at the bottom-right corner and press ESC B. Be sure to allow two extra columns and rows for the border.

Third, open the window using the commands listed below. When you issue a command to close a window, the last window opened will be closed, and the screen will display the text that existed before that window was opened.

To use Custom Windows in a Basic program, insert the following lines at the beginning of the program:

```
2 GRAPHIC1:GRAPHIC5
3 BLOAD"Custom Windows"B0,P7169
4 X=16:POKE 7194,X:SYS7197:CLR
```

Line 2 sets the start of the Basic program at $4001 to allow space for Custom Windows. Line 3 loads Custom Windows. Line 4 sets the number of kilobytes to be allocated for window memory. (The default is 16; change the value of X to another number from 4 to 32 to allocate less or more Bank 1 memory for this purpose.) Line 4 also executes SYS 7197 to activate Custom Windows and set variable pointers.

Command Options

Activate the program. Clears the screen, prints a title box indicating the number of bytes free, sets the pointers to the next window, redefines the run key, and sets an interrupt wedge for direct keyboard commands. In Basic, use SYS 7197. You can activate the program without printing the title box with SYS 8442. If you're going to use the program exclusively as a Basic program subroutine and don't want to activate the interrupt wedge for direct keyboard entry, use SYS 8220.

Open a window. In Basic, use SYS 7200. Direct from the keyboard, simultaneously press the control and stop keys.

Close a window. In Basic, use SYS 7203. Direct from the keyboard, simultaneously press the logo and stop keys. (You should always execute a Print command after you close window 1 from Basic.)

Reset pointers and enable interrupt. In Basic, use SYS 8364,1. Direct from the keyboard, simultaneously press the shift and stop keys. Resetting the pointers locks in existing windows and also sets the next window to be opened at 1.

Reset pointers and disable interrupt. In Basic, use SYS 8364,0. Direct from the keyboard, simultaneously press the ALT and stop keys.

Reset (interrupt unchanged). In Basic, use SYS 8220.

Enable interrupt (pointers unchanged). In Basic, use SYS 8319.

Disable interrupt (pointers unchanged). In Basic, use SYS 8371.

Open a directory window. Puts a special window on the screen designed for directory displays. The left edge of the window is in the column in which the cursor was located when the command was issued. You must issue a separate Directory command to display the disk directory in this window. In Basic, use SYS 8666. Direct from the keyboard, simultaneously press the control and ALT keys.

Limitations

If you try to open a ninth window, the program will ignore the command. It will also ignore a command to open a window if there isn't enough memory in Bank 1 to hold all the text and attributes under the new window, or if the window has fewer than four rows or eight columns.

When you issue a Close Window command, the last window opened will be closed. That is, if you have three windows on the screen, it is not possible to close window 2 before closing window 3. If you use Custom Windows in a Basic program, you must, after closing window 1, issue a Print command to set the screen pointers before you can open any new windows.

When you use direct keyboard commands (as opposed to Basic commands), the program works through an interrupt wedge. This produces ghost cursors on the screen if you use different colors for the windows. These cursors won't affect the validity of the screen text, but they will be obvious.

You can minimize the ghost cursors by applying the following two rules. First, never open a window with the cursor in the left-most or right-most column of the window. A simple cursor-right key entry before the Control/Stop command generally will fix this. Second, always change the character color to the previous window's color and clear the current window before issuing the Close Window command (logo/stop).

Finally, you can load and run a program with Custom Windows activated as long as the program doesn't overwrite Custom Windows in memory locations 7169–8785. This means that you can't run programs that use 40-column, high-resolution graphics while Custom Windows is active. Before running any commercial software or programs that use such graphics, reset the computer by pressing the reset button or the stop and restore keys.

80-Column Custom Windows is a very useful and attractive utility. I've put it to work as an autoboot program on all my disks, as it's very helpful when I'm writing programs or cleaning up disks. I hope you have as much fun with it as I have. R

Frederick Goddard (4828 NW 17th Place, Gainesville, FL 32605) is an economist on the faculty of the University of Florida. His job includes developing computer applications for schools, and he has written several programs for the Apple and Commodore computers.

Listing 1. *Basic loader for the 80-Column Custom Windows program.*

```
10 REM BASIC LOADER FOR CUSTOM W
   INDOWS BY FREDERICK GODDARD
                          :REM*76
20 GRAPHIC1:GRAPHIC5:FAST:RESTOR
   E                      :REM*154
30 FORI=7169TO8689STEP10:REM*220
40 FORJ=0TO9:READX:POKEI+J,X:NEX
   T:NEXT                 :REM*54
50 BSAVE"CUSTOM WINDOWS",B0,P716
   9TOP8700               :REM*38
60 SYS7197:END            :REM*24
100 DATA 22,28,0,0,254,37,58,222
    ,49,58,222,53,58,158,55,49,5
    7,55,58,162,0         :REM*130
110 DATA 0,0,0,0,16,0,0,76,48,33
    ,76,54,29,76,15,31,165,228,1
    33,250,165,229        :REM*188
120 DATA 133,251,133,228,173,6,3
    4,141,10,34,234,234,173,0,34
    ,24,105,48,141        :REM*184
130 DATA 71,28,32,125,255,142,19
    ,18,49,146,0,174,1,34,200,32
    ,125,255,183,0        :REM*110
140 DATA 200,208,248,169,112,32,
    210,255,166,250,134,228,166,
    251,232,134           :REM*12
```

→

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Listing 1 continued.

```
15Ø DATA 229,166,231,134,253,166
    ,23Ø,134,252,134,231,174,2,3
    4,2Ø2,2Ø8,6          :REM*1Ø8
16Ø DATA 169,19,32,21Ø,255,96,32
    ,116,28,32,125,255,18Ø,Ø,2Ø2
    ,2Ø8,248,169          :REM*2
17Ø DATA 1Ø8,32,21Ø,255,234,166,
    253,134,231,134,23Ø,174,2,34
    ,2Ø2,32,116,28        :REM*42
18Ø DATA 169,17Ø,32,21Ø,255,2Ø2,
    2Ø8,25Ø,166,252,232,134,23Ø,
    166,25Ø,134           :REM*182
19Ø DATA 229,174,1,34,2Ø2,32,116
    ,28,169,175,32,21Ø,255,2Ø2,2
    Ø8,25Ø,169,186        :REM*96
2ØØ DATA 32,21Ø,255,32,116,28,32
    ,116,28,164,253,136,166,25Ø,
    2Ø2,24,32,24Ø         :REM*114
21Ø DATA 255,32,125,255,27,66,Ø,
    164,252,2ØØ,166,251,232,24,3
    2,24Ø,255,32          :REM*226
22Ø DATA 125,255,27,84,147,Ø,174
    ,24,28,134,248,32,18Ø,3Ø,173
    ,27,28,41,128         :REM*112
23Ø DATA 24Ø,5,169,14,32,21Ø,255
    ,96,32,54,29,169,147,141,74,
    3,169,1,133           :REM*98
24Ø DATA 2Ø8,96,234,234,169,18,3
    2,45,29,142,1,214,169,19,32,
    45,29,14Ø,1           :REM*128
25Ø DATA 214,96,72,169,31,32,45,
    29,1Ø4,141,1,214,96,169,31,3
    2,45,29,173,1         :REM*176
26Ø DATA 214,96,141,Ø,214,44,Ø,2
    14,16,251,96,172,Ø,34,2ØØ,19
    2,9,2Ø8,1,96          :REM*39
27Ø DATA 169,16,24,136,24Ø,5,1Ø5
    ,8,76,66,29,133,25Ø,169,34,1
    33,251,56,165         :REM*115
28Ø DATA 231,229,23Ø,141,1,34,23
    8,1,34,56,233,6,176,1,96,165
    ,23Ø,24Ø,3,238        :REM*251
29Ø DATA 1,34,56,165,228,229,229
    ,141,2,34,238,2,34,56,233,3,
    176,1,96,165           :REM*7
3ØØ DATA 228,2Ø1,24,24Ø,3,238,2,
    34,169,Ø,141,4,34,174,2,34,2
    4,1Ø9,1,34,144        :REM*133
31Ø DATA 3,238,4,34,2Ø2,2Ø8,244,
    141,3,34,24,46,3,34,46,4,34,
    173,9,34,24           :REM*37
32Ø DATA 1Ø9,3,34,141,5,34,173,1
    Ø,34,1Ø9,4,34,141,6,34,176,4
    ,2Ø1,255,2Ø8,1        :REM*237
33Ø DATA 96,173,9,34,133,252,173
    ,1Ø,34,133,253,238,Ø,34,16Ø,
    Ø,165,23Ø,145         :REM*147
34Ø DATA 25Ø,2ØØ,165,228,145,25Ø
    ,2ØØ,173,1,34,145,25Ø,2ØØ,17
    3,2,34,145,25Ø        :REM*191
35Ø DATA 2ØØ,165,252,145,25Ø,2ØØ
    ,165,253,145,25Ø,169,Ø,141,1
    2,34,166,23Ø          :REM*185
36Ø DATA 24Ø,1,2Ø2,138,166,229,2
    4Ø,11,24,1Ø5,8Ø,144,3,238,12
    ,34,2Ø2,2Ø8           :REM*147
37Ø DATA 245,141,11,34,2ØØ,145,2
    5Ø,2ØØ,173,12,34,145,25Ø,165
    ,248,141,24,28        :REM*93
38Ø DATA 169,128,133,248,32,125,
    255,145,17,Ø,32,88,3Ø,162,25
    2,142,185,2,32        :REM*111
39Ø DATA 145,3Ø,173,12,34,24,1Ø5
    ,8,141,12,34,32,88,3Ø,32,135
    ,3Ø,32,36,29          :REM*183
4ØØ DATA 141,27,28,32,145,3Ø,173
    ,5,34,141,9,34,76,38,28,24,1
    73,13,34,1Ø5,1        :REM*189
41Ø DATA 144,3,238,14,34,141,13,
    34,96,173,11,34,141,13,34,17
    3,12,34,141,14        :REM*249
42Ø DATA 34,96,16Ø,Ø,162,1,32,11
    9,255,24,165,252,1Ø5,1,144,2
    ,23Ø,253,133          :REM*157
43Ø DATA 252,96,24,173,13,34,1Ø5
    ,8Ø,144,3,238,14,34,141,13,3
    4,96,172,13,34        :REM*215
44Ø DATA 174,14,34,32,8,29,96,17
    3,2,34,141,8,34,173,1,34,141
    ,7,34,32,135          :REM*167
45Ø DATA 3Ø,32,36,29,32,1Ø1,3Ø,2
    Ø6,7,34,2Ø8,245,32,12Ø,3Ø,2Ø
    6,8,34,2Ø8,228        :REM*255
46Ø DATA 96,165,23Ø,2Ø1,1,24Ø,34
    ,32,88,3Ø,174,2,34,2Ø2,142,8
    ,34,32,12Ø,3Ø         :REM*1Ø7
47Ø DATA 32,135,3Ø,32,36,29,41,2
    54,72,32,135,3Ø,1Ø4,32,25,29
    ,2Ø6,8,34,2Ø8         :REM*123
48Ø DATA 232,165,228,2Ø1,23,24Ø,
    44,32,88,3Ø,174,2,34,2Ø2,32,
    12Ø,3Ø,2Ø2,2Ø8        :REM*2Ø1
49Ø DATA 25Ø,174,1,34,2Ø2,142,7,
    34,32,135,3Ø,32,36,29,41,254
    ,72,32,135,3Ø         :REM*115
5ØØ DATA 1Ø4,32,25,29,32,73,3Ø,2
    Ø6,7,34,2Ø8,232,96,172,Ø,34,
    2Ø8,1,96,169          :REM*171
51Ø DATA 34,133,251,169,Ø,133,25
    Ø,169,1Ø,24,1Ø5,8,136,2Ø8,25
    1,168,177,25Ø         :REM*1Ø9
52Ø DATA 141,1,34,2ØØ,177,25Ø,14
    1,2,34,2ØØ,177,25Ø,141,9,34,
    133,252,2ØØ           :REM*134
53Ø DATA 177,25Ø,141,1Ø,34,133,2
    53,2ØØ,177,25Ø,141,11,34,2ØØ
    ,177,25Ø,141          :REM*68
54Ø DATA 12,34,24,32,88,3Ø,32,1Ø
    6,31,173,12,34,24,1Ø5,8,141,
    12,34,32,88,3Ø        :REM*254
55Ø DATA 32,1Ø6,31,32,116,28,76,
    166,31,234,173,2,34,141,8,34
    ,173,1,34,141         :REM*132
56Ø DATA 7,34,32,135,3Ø,32,143,3
    1,165,25Ø,32,25,29,2Ø6,7,34,
    2Ø8,243,32,12Ø        :REM*118
57Ø DATA 3Ø,2Ø6,8,34,2Ø8,226,96,
    16Ø,Ø,162,1,169,252,32,116,2
    55,133,25Ø,165        :REM*17Ø
58Ø DATA 252,24,1Ø5,1,144,2,23Ø,
    253,133,252,96,32,116,28,2Ø6
    ,Ø,34,2Ø8,1,96        :REM*154
59Ø DATA 169,Ø,133,25Ø,172,Ø,34,
    169,8,24,1Ø5,8,136,2Ø8,25Ø,1
    68,177,25Ø,133        :REM*132
6ØØ DATA 252,2ØØ,177,25Ø,133,228
    ,2ØØ,177,25Ø,141,1,34,2Ø6,1,
    34,24,165,252         :REM*216
61Ø DATA 1Ø9,1,34,133,253,2ØØ,17
    7,25Ø,141,2,34,2Ø6,2,34,56,1
    65,228,133,251        :REM*68
62Ø DATA 237,2,34,133,25Ø,32,116
    ,28,32,116,28,166,251,164,25
    3,2Ø2,136,136          :REM*2Ø
63Ø DATA 24,32,24Ø,255,32,125,25
    5,27,66,Ø,166,25Ø,164,252,23
    2,232,2ØØ,24          :REM*156
64Ø DATA 32,24Ø,255,32,125,255,2
    7,84,Ø,32,125,255,19,29,157,
    Ø,96,173,26,28        :REM*226
65Ø DATA 2Ø8,1,96,1Ø,1Ø,133,25Ø,
    169,255,56,229,25Ø,141,1Ø,34
    ,133,54,133,58         :REM*2
66Ø DATA 169,Ø,141,9,34,141,Ø,34
    ,133,53,133,57,96,32,28,32,1
    2Ø,56,32,226          :REM*168
67Ø DATA 33,144,16,173,21,3,141,
    96,32,169,91,141,2Ø,3,169,32
    ,141,21,3,88          :REM*254
68Ø DATA 96,32,97,32,76,1Ø1,25Ø,
    174,25,28,2Ø8,3,76,134,32,2Ø
    6,25,28,96,162        :REM*182
69Ø DATA 32,142,25,28,96,169,63,
    197,212,2Ø8,249,165,211,41,1
    ,24Ø,243,169          :REM*168
7ØØ DATA 134,141,1Ø3,32,2Ø8,231,
    169,63,197,212,2Ø8,43,165,21
    1,41,4,24Ø,6          :REM*222
71Ø DATA 32,249,28,76,1Ø9,32,165
    ,211,41,2,24Ø,6,32,35,28,76,
    1Ø9,32,165,211        :REM*144
72Ø DATA 41,9,24Ø,195,41,1,168,3
    2,28,32,152,2Ø8,186,169,115,
    2Ø8,2Ø2,165           :REM*25Ø
73Ø DATA 211,41,12,2Ø1,12,2Ø8,17
    9,166,236,2Ø2,134,25Ø,32,116
    ,28,32,116,28         :REM*166
74Ø DATA 169,5Ø,56,229,25Ø,176,4
    ,169,5Ø,133,25Ø,165,25Ø,24,1
    Ø5,29,168,162         :REM*36
75Ø DATA 23,24,32,24Ø,255,32,125
    ,255,27,66,Ø,164,25Ø,162,Ø,2
    4,32,24Ø,255          :REM*172
76Ø DATA 32,125,255,27,84,Ø,32,2
    49,28,2Ø8,183,169,Ø,133,25Ø,
    169,16,133,251        :REM*162
77Ø DATA 133,253,173,Ø,16,16Ø,7,
    24,113,25Ø,136,2Ø8,251,1Ø5,1
    Ø,133,25Ø,1Ø9         :REM*157
78Ø DATA 8,16,133,252,173,8,16,2
    4,1Ø9,9,16,17Ø,16Ø,Ø,177,252
    ,145,25Ø,2ØØ          :REM*93
79Ø DATA 2Ø2,2Ø8,248,142,8,16,76
    ,63,32,32,25Ø,32,32,125,255,
    19,19,159,147         :REM*251
8ØØ DATA Ø,162,5,16Ø,56,24,32,24
    Ø,255,32,125,255,27,66,Ø,162
    ,1,16Ø,22,24          :REM*87
81Ø DATA 32,24Ø,255,32,125,255,2
    7,84,27,82,153,Ø,234,32,32,2
    8,32,125,255          :REM*67
82Ø DATA 14,32,32,195,2Ø7,2Ø5,2Ø
    5,2Ø7,196,2Ø7,21Ø,197,32,49,
    5Ø,56,32,32           :REM*93
83Ø DATA 195,213,211,212,2Ø7,2Ø5
    ,32,215,2Ø1,2Ø6,196,2Ø7,215,
    211,13,32,32          :REM*247
84Ø DATA 66,89,32,198,82,69,68,6
    9,82,73,67,75,32,199,79,68,6
    8,65,82,68,44         :REM*2Ø7
85Ø DATA 32,4Ø,67,41,49,57,56,54
    ,13,32,32,32,32,32,32,32,32,
    57,54,55,54,53        :REM*61
86Ø DATA 32,32,66,89,84,69,83,32
    ,7Ø,82,69,69,19,19,Ø,162,1,1
    6Ø,22,24,32           :REM*3
87Ø DATA 24Ø,255,32,125,255,142,
    2Ø7,19,19,17,17,17,17,17,17,
    159,Ø,32,28,32        :REM*177
88Ø DATA 96,Ø,32,191,32,169,Ø,13
    3,2Ø8,96,173,2Ø,3,2Ø1,91,24Ø
    ,8,173,2Ø,3           :REM*173
89Ø DATA 141,95,32,56,96,173,21,
    3,2Ø1,32,2Ø8,241,24,96,Ø
                          :REM*231
```

Listing 2. *Demo program for Custom Windows.*

```
1 REM DEMONSTRATION OF CUSTOM WI
  NDOWS                   :REM*221
2 FAST:GRAPHIC1:GRAPHIC5: REM ML
   PROGRAM AT $1CØ1-22ØØ:REM*158
3 BLOAD"CUSTOM WINDOWS",BØ,P7169
                          :REM*227
4 X=16:POKE7194,X:SYS7197:CLR :R
  EM ALLOCATE X-K BYTES OF B1 ME
  MORY FOR WINDOWS        :REM*78
5 COLOR5,8:WINDOW2,8,35,17:SYS72
  ØØ                      :REM*253
```


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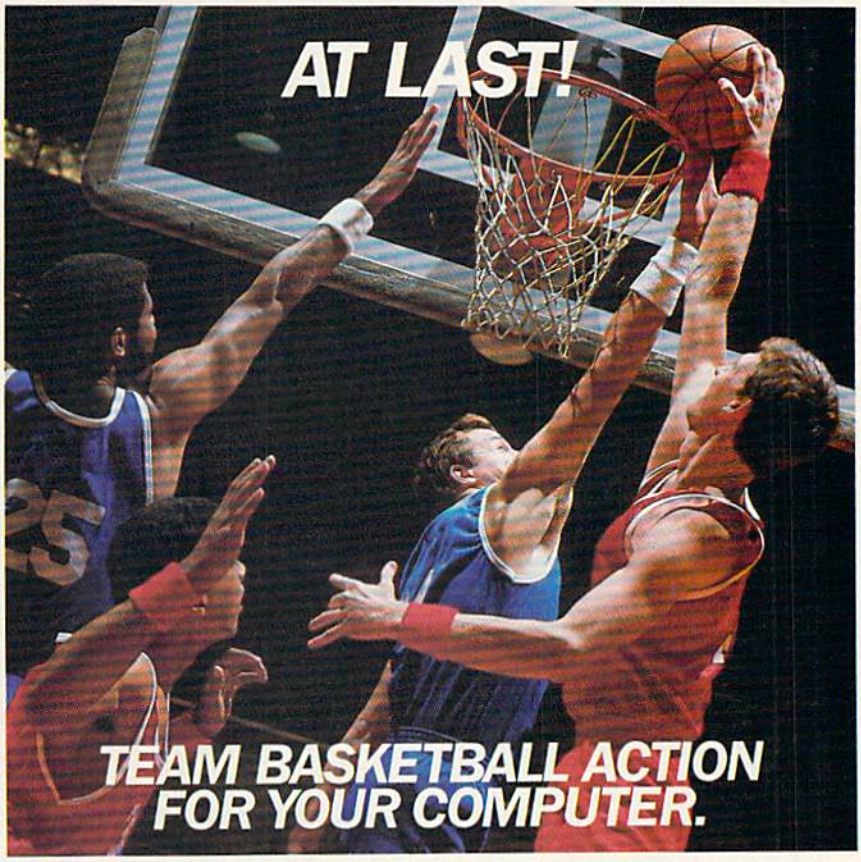
```
6 PRINT"WELCOME TO THE WORLD OF
                              :REM*14
7 PRINT"COMMODORE 128 8Ø-COLUMN
                              :REM*53
8 PRINT"CUSTOM WINDOWS{CRSR DN}
                              :REM*218
9 PRINT"{2 SPACEs}THIS POWERFUL
  PROGRAM ALLOWS              :REM*93
1Ø PRINT"YOU TO PUT UP TO EIGHT
   WINDOWS                    :REM*42
11 PRINT"ON THE SCREEN...
                              :REM*165
12 SLEEP2:COLOR5,15:WINDOW4Ø,12,
   7Ø,2Ø:SYS72ØØ              :REM*84
13 PRINT"{CRSR DN}...AND REMOVE
   THEM TO LEAVE              :REM*215
14 PRINT"THE ORIGINAL SCREEN
                              :REM*86
15 PRINT"UNCHANGED.           :REM*2Ø3
16 SLEEP2:COLOR5,11:WINDOW15,16,
   41,22:SYS72ØØ              :REM*1Ø
17 COLOR5,2:WINDOW19,14,47,19:SY
   S72ØØ                      :REM*1
18 COLOR5,15:WINDOW24,1Ø,54,16:S
   YS72ØØ                     :REM*112
19 COLOR5,4:WINDOW31,7,6Ø,13:SYS
   72ØØ                       :REM*2Ø1
2Ø COLOR5,5:WINDOW39,4,65,1Ø:SYS
   72ØØ                       :REM*8Ø
21 COLOR5,14:WINDOW45,7,75,14:SY
   S72ØØ                      :REM*83
22 PRINT"{CRSR DN}HERE ARE EIGHT
    WINDOWS":SLEEP6           :REM*212
23 GOSUB26:GOSUB26:GOSUB26:GOSUB
   26:GOSUB26:PRINT           :REM*41
24 REM ALWAYS EXECUTE A 'PRINT'
   COMMAND AFTER CLOSING THE LAS
   T WINDOW                   :REM*112
25 GOTO28                     :REM*85
26 FORI=1TO5ØØ:NEXT:SYS72Ø3:
                              :REM*234
27 RETURN                     :REM*85
28 COLOR5,14:WINDOW15,1Ø,65,22:S
   YS72ØØ:PRINT"YOU CAN USE:"CHR
   $(142)                     :REM*198
29 PRINTTAB(8)"GRAPHICS {SHFT A}
    {SHFT S} {SHFT Z} {SHFT X}{C
   TRL N}                     :REM*243
3Ø PRINTTAB(8)"{CTRL 8}COLORS{CO
   MD 6}                      :REM*168
31 PRINTTAB(8)"{CTRL 9}REVERSE
                              :REM*33
32 PRINTTAB(8)"{CTRL B}UNDERLINE
                              :REM*118
33 PRINTTAB(8)"{CTRL O}FLASH{CRS
   R DN}":SLEEP3:SYS72Ø3:REM*131
34 SLEEP1:COLOR5,8:WINDOW4Ø,15,6
   5,21:SYS72ØØ               :REM*24
35 PRINT"SYS 8666 WILL LET YOU
                              :REM*249
36 PRINT"PLACE A DIRECTORY
                              :REM*162
37 PRINT"WINDOW ON THE SCREEN.":
   SLEEP2                     :REM*139
38 PRINTTAB(6);                 :REM*2
39 SYS8666:PRINT"DIRECTORY":CATA
   LOG                        :REM*47
4Ø SLEEP2:SYS72Ø3              :REM*138
41 COLOR5,5:WINDOW67,16,77,19:SY
   S72ØØ                      :REM*61
42 PRINTCHR$(27)"L{CTRL O}HIT SP
   ACETO END";                :REM*28
43 X=25ØØ                     :REM*17
44 DO:X=X-1                   :REM*168
45 GETK$:IFK$=" "THENX=1:EXIT
                              :REM*23
46 LOOP WHILE X > Ø           :REM*154
47 PRINT"{2 HOMEs}{CTRL 1}{SHFT
   CLR}":FORI=ØTO2ØØ:NEXT:SYS719
   7:IFXTHENEND               :REM*117
```

■



Two-On-Two Basketball Action

One-on-one is OK for a little practice, but real basketball is a **team** sport. To be really good at it, you need **all** the skills – passing, dribbling, shooting, stealing and rebounding. That's what it takes to win a championship. That's what **GBA Championship Basketball™: Two-on-Two™** delivers.

From the roar of the crowd to the swish of the net, from slam dunks to three-point shots, it's all here – fast and competitive.

Not only is there **team** action, but you can even compete in a 4-division, 23-team league – all the way to the playoffs and the GBA Championship game!

When you're ready to jump into the big leagues of computer basketball, start with the game that begins where the others leave off – **GBA Championship Basketball: Two-on-Two.**

Commodore Amiga screen shown.

"...the best arcade basketball game I've seen. If you liked *One on One*, you'll *love* this..."
– Randy Chase, *Guide to Computer Living*

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For Commodore 64, 128 and Amiga, Apple IIe, IIc, and IIGS, Atari ST, IBM PC, PCjr, Tandy 1000 and 100% compatibles.

Circle 23 on Reader Service card.

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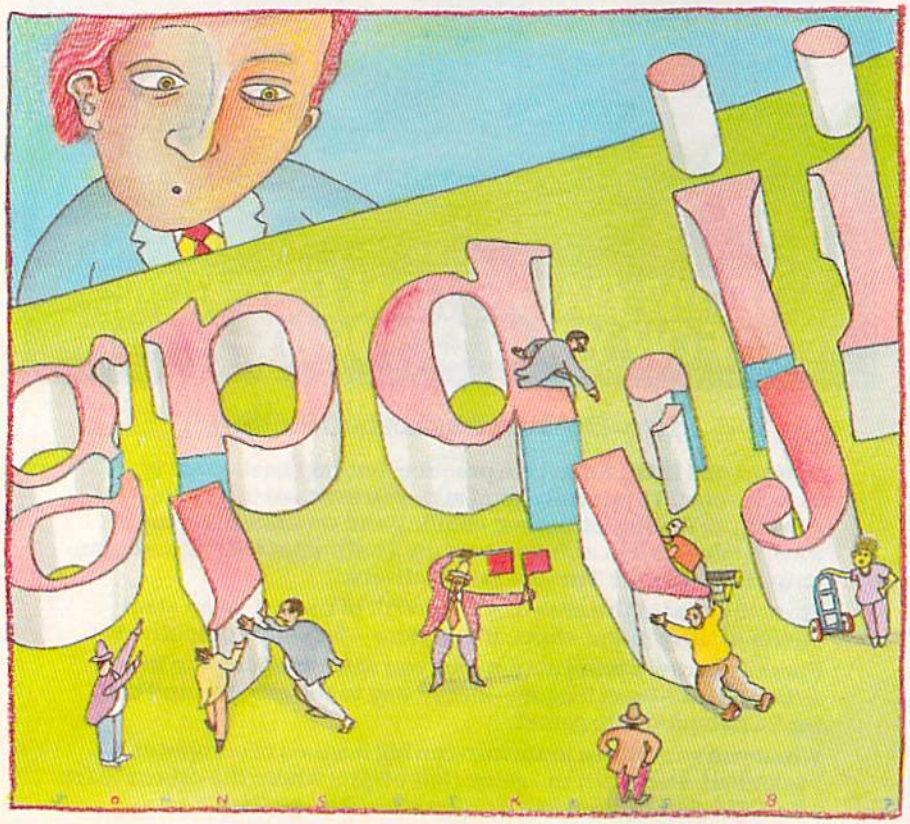
PRINTRITE 64

Treat your printer to the true descenders that make the difference between a professional-looking document and a dud.

By BOB KODADEK



From your experience with typewritten or printed material, you know that some lowercase characters (g, j, p, q and y), the comma and the semicolon have "tails" extending below the base of the printed line. These are called descenders.

Unfortunately, some Commodore dot matrix printers, such as the 1525, MPS-801 and MPS-803, use fonts in which the punctuation marks and characters with descenders are moved up above the printed line, making them look unnatural and sometimes difficult to read. Although adequate for rough drafts, this type of print is unsuitable for formal documents or correspondence. These printers also lack a much-needed underline command.

PrintRite 64 is a handy C-64 wedge program that adds true descenders to the lowercase letters and punctuation produced by the 1525 and MPS-801/803 printers. It also creates the missing underline command.

As an added bonus, PrintRite 64 is designed to boot RUN Script 64 Version 1.0 (*RUN*, March and April 1986). It can also function in Immediate mode and be accessed by any Basic or machine language program as long as certain command restrictions are observed.

Using PrintRite 64 with RUN Script 1.0

Type in the basic loader program (Listing 1). Any time you wish to use PrintRite 64, just load and run this program.

PrintRite 64 will prompt you with LOAD RUNSCRIPT? (Y or N). If you answer yes, the program asks for the device number. You then insert a disk or tape containing RUN Script and press 1, 8 or 9, as appropriate. The program searches for and loads a program file named RUNSCRIPT. It then moves the character set, defines the macros, alters the vectors and boots RUN Script.

Before printing a document, you must change the page length from the default value of 66 to a value of 49. Enter the RUN Script dot command .pl49 at the beginning of each document to make this change.

To underline a word, sentence or phrase, use the macro character u. Place this macro before and after the text to be underlined. Other predefined macro characters are R (reverse on), r (reverse off), D (double width on), and d (double width off).

Command Limitations

To preserve the integrity of PrintRite 64, the only valid print commands are as follows:

CHR$(13)—carriage return

RUN It Right

C-64; 1525, MPS-801 or MPS-803 printer

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ILLUSTRATED BY JOHN S. DYKES

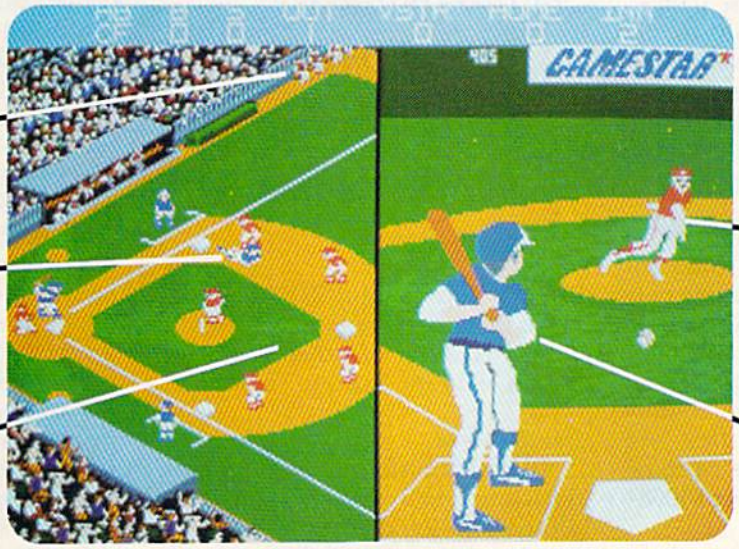
You Told Us What The Best Computer Baseball Game Would Have

"Great graphics"

"Relief pitchers —and subs"

"I like to slide —even head first."

"Let me see what's happening on the whole field."



"I want to play in the series!"

"I want to be able to throw a lot of different pitches."

"Put me right at the plate when I'm batting."

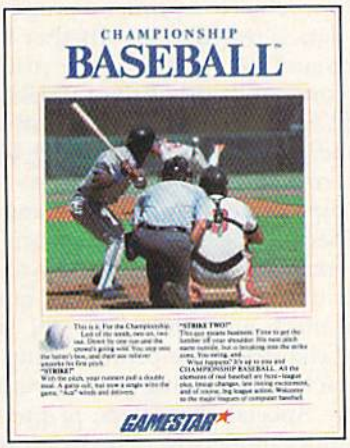
Here It Is.

CHAMPIONSHIP BASEBALL™

With 4 Divisions, 24 Teams, Playoffs and a Championship Series

You've been asking for the best in computer baseball games, and you want it *all*—graphics *and* features. We've heard you, and **Gamestar's** *Championship Baseball* delivers. No other product gives you the complete sport of baseball like *Championship Baseball:*

- Player Draft, complete with reserves.
- Setting your starting lineup.
- Batting Practice, Exhibition Game and League Play options.
- Each division is tougher than the last, so there's always a new challenge.



- You control all the action on the field—pitching (8 different pitches), hitting, catching, outfield relays, base running, even sliding under tags.
- Player substitutions can be made throughout the game.
- Division, playoff and championship series play.

All this and much more in the most complete baseball program available. When you're ready to step into the major leagues of computer baseball, Championship Baseball's your ticket. Nobody else gives you more.

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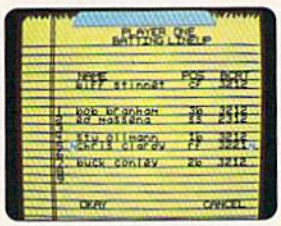
Select your players from the talent pool, based on their characteristics and skill ratings. Name them after today's stars, or anyone you want.



Determine the batting order that will have the best chance against your opponent.

Batting window disappears when the ball's in play, so you can see continuous action.

GAMESTAR

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Circle 5 on Reader Service card.

CHR$(14)—enter Double-Width mode
CHR$(15)—enter Standard Character mode
CHR$(17)—underline toggle
CHR$(18)—enter reverse field
CHR$(146)—turn off reverse field

Further restrictions apply to the use of double-width or reverse-field characters. In neither case can you include any special characters in the word or phrase to be printed, and any double-width text must appear on a separate line.

RUN Script 1.0 normally uses all the C-64's memory by switching out the Basic interpreter and leaving only the operating system, or Kernal, intact. RUN Script uses locations 6691 and 6692 as pointers to the top of available memory. The Boot routine places a smaller value in these two locations to allow PrintRite 64 to reside concurrently in RAM at 51968–53247.

Using the Program from Basic or Immediate Mode

To use the wedge in Immediate mode or from a Basic program, first load and run PrintRite 64. When prompted to load RUN Script 1.0, press N. Always open the printer with a device number of 4 and secondary address of 7; for example: OPEN 4,4,7. Any program that observes the above guidelines and doesn't occupy the same memory area should be compatible with PrintRite 64.

You can disable the wedge from Basic by pressing the run/stop and restore keys from Basic or after exiting RUN Script. You can restart it by entering SYS 52296.

The printer's default comma and semicolon are used to increase output speed. If you want to use these characters, remove the two REM statements in lines 10 and 11 of the Basic loader before running it. You can also make these two Pokes in Immediate mode. To disable either character, poke a 10 in the location shown.

Special characters are really composed of two characters . . . the top half and the part that descends below the line.

How It Works

All data transferred for output on the computer's serial bus is intercepted and handled by a wedge at locations $0326–$0327 (806–807). Location $9A (154) is checked to see whether a channel to a printer was opened with device number 4. If this value is not found, the data is sent to its intended destination—the screen or the disk drive.

If a channel to a printer was opened, the data is tested to see whether it's a command being sent to the printer. All commands other than CHR$(13) and CHR$(17) are validated and sent to the printer. The remaining bytes are considered to be characters and are then evaluated as either standard or special. Special characters are the lowercase letters g, j, p, q and y, along with the comma, semicolon, quotation mark and underline. All standard characters are printed using the character set residing in the printer's ROM. Special characters, printed in Graphics mode, are really composed of two characters, one the top half, and the other the part that descends below the line.

When PrintRite 64 is activated, the printer prints each line in two passes. On the first pass, the routine counts the leading spaces and determines the left margin. It then positions the printhead using the command to set a tab, CHR$(16). The program prints all normal characters and the top half of all special characters on this pass.

On the second pass, the program checks the buffer for special characters, underline toggles and carriage returns. PrintRite then determines the placement of these special characters. It locates the printhead, looks up the graphics data from a table and prints the character.

To speed up the printing process, the routine scans from the current print position to the end of the line. If no valid characters exist, or if the line consists of spaces, a carriage return is printed immediately. Without this technique, printing speed would be reduced to a crawl.

All carriage returns are printed in the Graphics mode at nine lines per inch. This technique allows no spacing between the top and bottom of each character. Therefore, each two-part special character appears as a unity. Since two carriage returns are required for each printed line of text, the line-feed spacing effectively becomes 4½ lines per inch. This is why the page length must be 49 instead of the normal 66.

PrintRite 64 can improve the quality of your documents, making them more readable and attractive. It's a welcome addition to any word processing application. ®

Bob Kodadek (3164 Surrey Lane, Aston, PA 19014) is a computer programmer who heads his own commercial software company, Family Software.

Listing 1. *The PrintRite 64 program.*

```
1 REM *-- PRINTRITE 64 V3{2 SPAC
  Es}--*                  :REM*203
2 REM *-- BY{2 SPACEs}BOB KODADE
  K{2 SPACEs}--*          :REM*20
7 PRINT"READING..." :FOR I= 0 TO
   938:READ BYTE          :REM*73
8 POKE 51968+I,BYTE:CK=CK+BYTE:N
  EXT I                   :REM*246
9 IF CK <> 124821 THEN PRINT"DAT
  A ERROR!":END           :REM*211
10 REM{2 SPACEs}POKE 52747,59: R
   EM{2 SPACEs}ENABLE CUSTOM SEM
   I-COLON                :REM*146
11 REM{2 SPACEs}POKE 52748,44: R
   EM{2 SPACEs}ENABLE CUSTOM COM
   MA                     :REM*197
12 POKE 53272,23:SYS 51968
                          :REM*194
50 DATA 169,147,32,210,255,162,5
   ,160,11,24,32,240,255,32,17,2
   04,80,82,73,78         :REM*224
60 DATA 84,82,73,84,69,32,54,52,
   45,86,51,13,13,13,0,32,17,204
   ,76,79,65,68           :REM*140
70 DATA 32,82,85,78,83,67,82,73,
   80,84,63,32,40,89,47,78,41,13
   ,13,0,32,228           :REM*6
80 DATA 255,201,78,208,3,76,72,2
   04,201,89,208,242,32,17,204,7
   3,78,80,85,84          :REM*62
90 DATA 32,68,69,86,73,67,69,32,
   35,32,40,49,47,56,47,57,41,13
   ,13,0,32,228           :REM*24
100 DATA 255,201,49,240,8,201,56
   ,240,4,201,57,208,241,56,233
   ,48,170,160,0          :REM*100
110 DATA 32,186,255,169,9,162,63
   ,160,204,32,189,255,169,0,16
   2,73,160,18,32         :REM*98
120 DATA 213,255,144,20,169,13,3
   2,210,255,32,17,204,73,47,79
   ,32,69,82,82           :REM*236
130 DATA 79,82,33,0,96,120,169,5
   1,133,1,162,0,160,216,134,25
   1,132,252,162          :REM*70
140 DATA 0,160,8,134,253,132,254
   ,162,0,160,16,32,230,203,169
   ,55,133,1,88           :REM*220
150 DATA 160,0,185,47,204,153,0,
   254,240,3,200,208,245,162,25
```

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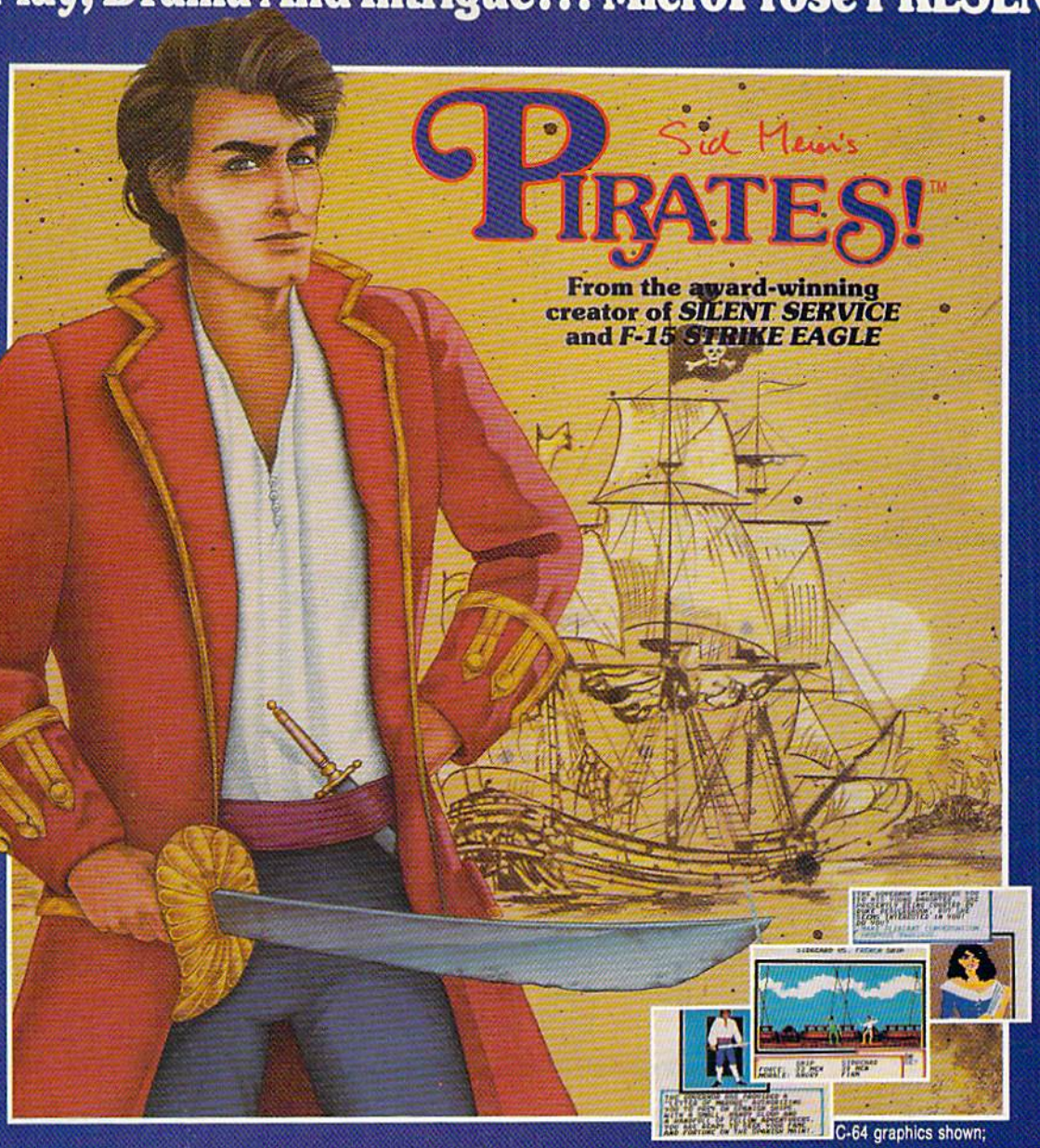

C-64 graphics shown; Actual screens may vary.

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Circle 103 on Reader Service card.

Listing 1 continued.

```
    5,160,201,142          :REM*82
160 DATA 35,26,140,36,26,32,72,2
    04,76,99,26,142,240,207,140,
    241,207,160,0          :REM*50
170 DATA 177,251,145,253,165,254
    ,205,241,207,208,8,165,253,2
    05,240,207,208         :REM*180
180 DATA 1,96,230,251,208,2,230,
    252,230,253,208,227,230,254,
    160,0,240,221          :REM*140
190 DATA 104,133,251,104,133,252
    ,208,3,32,210,255,160,0,230,
    251,208,2,230          :REM*6
200 DATA 252,177,251,208,241,165
    ,252,72,165,251,72,96,149,3,
    17,196,3,14            :REM*110
210 DATA 132,3,15,210,3,18,146,3
    ,146,0,82,85,78,83,67,82,73,
    80,84,120,169          :REM*152
220 DATA 98,141,38,3,169,204,141
    ,39,3,169,0,141,164,206,141,
    162,206,169,15         :REM*90
230 DATA 141,161,206,88,96,72,16
    5,154,201,4,240,4,104,76,202
    ,241,169,2,205         :REM*108
240 DATA 24,208,240,245,104,141,
    163,206,201,14,240,238,201,1
    5,240,234,201          :REM*26
250 DATA 18,240,230,201,146,240,
    226,201,10,208,5,169,17,76,2
    02,241,201,16          :REM*146
260 DATA 240,247,201,8,240,243,2
    01,26,240,239,201,27,240,235
    ,201,145,240           :REM*59
270 DATA 231,138,72,152,72,174,1
    64,206,208,13,162,0,142,167,
    206,169,32,157         :REM*157
280 DATA 170,206,232,208,250,172
    ,164,206,173,163,206,153,170
    ,206,238,164           :REM*7
290 DATA 206,174,167,206,208,18,
    201,32,240,9,140,169,206,140
    ,165,206,76            :REM*161
300 DATA 222,204,169,0,76,254,20
    4,201,13,240,59,160,7,185,27
    ,206,170,173           :REM*203
310 DATA 163,206,217,11,206,240,
    20,136,16,241,172,167,206,20
    8,3,32,211,205         :REM*135
320 DATA 173,163,206,32,202,241,
    76,21,205,32,162,205,173,167
    ,206,208,3,32          :REM*141
330 DATA 211,205,32,183,205,32,1
    57,205,104,168,104,170,173,1
    63,206,96,32           :REM*29
340 DATA 162,205,32,202,241,76,4
    4,205,238,165,206,238,169,20
    6,174,165,206          :REM*121
350 DATA 173,162,206,208,30,189,
    170,206,160,8,217,11,206,240
    ,20,136,16,248         :REM*231
360 DATA 232,236,164,206,144,232
    ,32,202,241,169,0,141,164,20
    6,76,18,205            :REM*143
370 DATA 172,165,206,185,170,206
    ,141,166,206,201,13,240,232,
    160,6,185,20           :REM*233
380 DATA 206,170,173,166,206,217
    ,11,206,240,39,136,16,241,20
    1,17,208,16            :REM*93
390 DATA 173,162,206,73,255,141,
    162,206,240,0,206,169,206,76
    ,38,205,173            :REM*161
400 DATA 162,206,240,8,32,211,20
    5,162,84,32,183,205,76,38,20
    5,32,211,205           :REM*193
410 DATA 32,178,205,76,38,205,72
    ,169,15,208,3,72,169,8,205,1
    61,206,240,6           :REM*249
420 DATA 141,161,206,32,202,241,
    104,96,173,162,206,208,14,18
    9,35,206,201           :REM*37
430 DATA 95,240,6,32,202,241,232
    ,208,243,96,189,77,206,201,9
    5,240,6,32,202         :REM*47
440 DATA 241,232,208,243,96,160,
    0,140,168,206,204,169,206,24
    0,13,248,173           :REM*113
450 DATA 168,206,24,105,1,141,16
    8,206,200,208,238,216,169,16
    ,32,202,241            :REM*219
460 DATA 173,168,206,74,74,74,74
    ,32,253,205,173,168,206,41,1
    5,24,105,48,32         :REM*219
470 DATA 202,241,169,255,141,167
    ,206,96,10,10,89,81,80,74,71
    ,34,17,77,77           :REM*171
480 DATA 49,70,63,56,49,42,35,21
    ,0,14,7,0,28,184,196,196,164
    ,252,128,95            :REM*17
490 DATA 128,128,128,250,128,128
    ,95,252,164,196,196,184,128,
    95,188,192,192         :REM*181
500 DATA 192,252,128,95,128,135,
    128,135,128,128,95,128,192,1
    92,128,128,128         :REM*243
510 DATA 95,128,200,200,128,128,
    128,95,128,132,132,132,131,1
    28,95,130,132          :REM*41
520 DATA 132,131,128,128,95,135,
    128,128,128,128,128,95,128,1
    28,128,128,135         :REM*18
530 DATA 132,95,128,130,129,128,
    128,128,95,130,130,130,130,1
    30,130,95,130          :REM*18
540 DATA 134,134,134,131,130,95,
    130,134,134,130,130,130,95,1
    35,130,130,130         :REM*46
550 DATA 130,130,95,130,130,130,
    130,135,134,95,130,130,131,1
    30,130,130,95          :REM*40
560 DATA 98,79,66,107,79,68,65,6
    8,69,75                :REM*208
```

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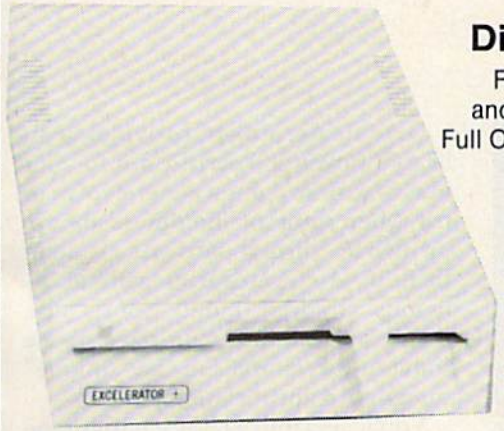

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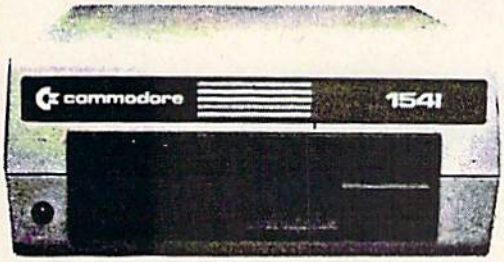

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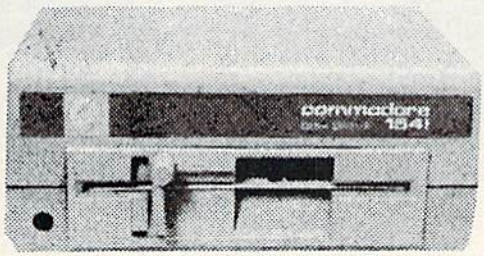

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Electronic Expressions Update

Design your own cards, letters and awards with the latest in text and graphics programs.

By JIM GRUBBS

In the December 1986 issue, *RUN* published my article, "Electronic Expressions," a review of several commercial software packages for combining text and graphics to create anything from greeting cards to newsletters. Since then, a number of new programs and enhancements to those already on the market have appeared. In this follow-up, I'll review some of these recent offerings.

All the programs in this review will work on either a C-64 or a C-128 in 64 mode.

Certificate Maker

Springboard Software has recently released a Commodore version of an already existing text-and-graphics package called Certificate Maker, which I mentioned in the December article. I've now tried it, and I like it.

Certificate Maker provides a library of over 200 certificates for various occasions, plus a generic form to use when none of the others are appropriate. Springboard has grouped them in seven categories: general, religious, children, family, sports, academic and unique. You have to see some of the samples in the "unique" category to appreciate them.

You'll also find a choice of five type fonts and 24 borders. Some of the certificates print horizontally, some vertically, and some are half-size horizontal. You have no choice about these parameters for any particular certificate.

Certificate Maker works a lot like Broderbund's The Print Shop and Unison World's PrintMaster. Also, users of Springboard's own Newsroom will note a similarity in the way Certificate Maker is presented on the screen.

I've given both Print Shop and Newsroom high marks for usability, and Certificate Maker rates just as high. While the manual is well-written, the clarity of the screen instructions make it almost unnecessary.

If you have a number of identical certificates to print, with only a change in the name of the recipient, Certificate Maker lets you create the list of names ahead of time, and then the program does the rest. This feature works particularly well with two disk drives. In fact, the program functions best in general with two drives, though it's satisfactory with one. You just have to do more disk swapping.

The sample certificate pictured in this article shows what you can expect

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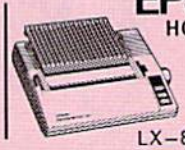

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in the way of quality from Certificate Maker. The example was printed on an Okidata 120 printer. Certificate Maker supports virtually all the popular printers, even the old Commodore 1525.

I'm sure we can expect both Springboard and third-party manufacturers to come out with additional borders, fonts and certificates for Certificate Maker. Perhaps we can even look forward to a certificate editor, like the editors found in other graphics programs. Otherwise, Certificate Maker already offers all you could wish in a program of this sort.

Graphics Expander, Volume 1

I mentioned Springboard's Graphics Expander, along with Certificate Maker, in the December article, but it wasn't available for review at that time. Now that I've tried it, I'm disappointed. Unfortunately, even the best software houses put out disappointing packages from time to time.

Graphics Expander, Volume 1, is designed to be used with Broderbund's The Print Shop. It's a full-featured utility that comes with over 300 graphics and includes a graphics editor for creating your own Print Shop graphics. As far as it goes, the program works well, but there are problems.

First, both the packaging and the manual for the copy of the software I reviewed make repeated reference to the program's ability to incorporate and then modify graphics from other sources. However, my Commodore version didn't actually include these features. While that's a significant disadvantage, it's not the omission that concerns me as much as the fact that the packaging and manual don't indicate these features aren't available in the Commodore version.

There are also numerous mentions of Apple DOS in the manual. These are certainly out of place in documentation for the Commodore version.

The next deficiency isn't Springboard's alone. Several of the packages I've tried lately exhibit the same problem: The graphics that come with the package aren't compatible with the older Commodore 1525 and MPS-801 printers. Even the Okidata 120 and other non-Commodore printers with a 1525/MPS-801 Emulation mode can't print out Graphics Expander images.

Unfortunately, Springboard doesn't make this clear. While I don't expect every software house to support every possible printer, I do expect clear markings indicating exactly what does work with the package.

If you have the proper hardware and don't need to capture portions of high-resolution pictures, Graphics Expander will be a welcome addition to your program collection. However, it could have been a lot better, and the labeling problems definitely need to be addressed.

Holiday Edition Graphics Library

If it's additional fonts and graphics for The Print Shop you're looking for, the Holiday Edition Graphics Library from Broderbund is unequaled.

Now that The Print Shop Companion makes it possible for Print Shop users to choose from additional fonts, borders and graphics, Broderbund is including these items with their graphics releases from time to time. That's the case here, with ten new fonts and 14 borders especially designed for the holidays. Virtually every major holiday is included in the assortment of 70 graphics.

Because the Screen Magic feature of The Print Shop can be used with many high-resolution graphics packages, 12 full-panel scenes that are, in fact, hi-res graphics have been included in Holiday Edition. The sample printout in this article illustrates how these panels can be combined with some of the new fonts to create appealing pictures.

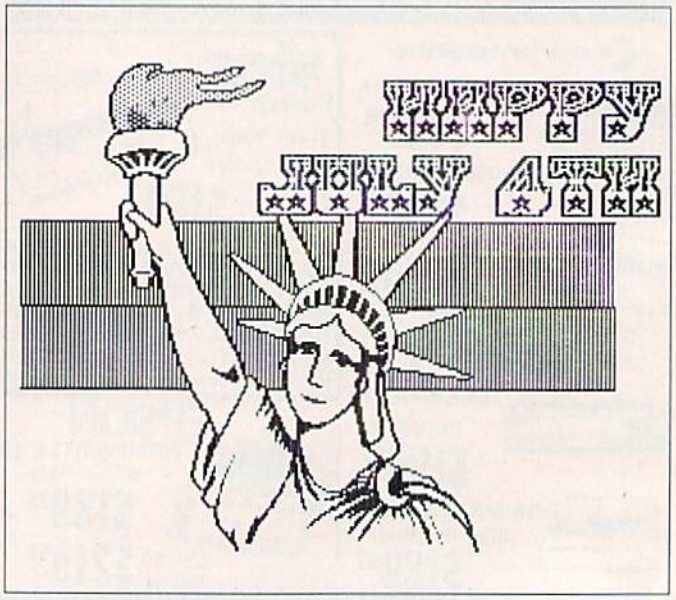
It's thumbs up for Holiday Edition, especially the new fonts, borders and full-panel images.

Davka Graphics

I think Davka Graphics deserves the award for recognizing a need and providing a top-quality package to meet that need. They've put together a package of over 60 Jewish symbols representing holidays, events and places to be used with The Print Shop. The graphics are well done, and the package includes versions for both Commodore and non-Commodore printers.

I'm especially impressed that they've programmed in a Hebrew text font. There's a conversion chart to go

Printout from Certificate Maker.



A Fourth of July graphic created with Holiday Edition.

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with it, showing what letters to type on the keyboard to produce the Hebrew letters in the printout.

Graphics Scrapbook

Epyx Software is contributing to the increasing family of Print Shop graphics with two Graphics Scrapbook packages. Chapter One of the Scrapbook is dedicated to sports scenes, while Chapter Two is labelled Off the Wall. These programs provide over 100 graphics each. Some of the choices in Off the Wall are sure to tickle your funny bone.

Epyx has chosen to support only non-Commodore printers, and it clearly says that on the packaging.

Micro.Ad

If you own The Print Shop and are involved in promotional activities, whether commercial or non-profit, you'll be interested in the Micro.Ad package containing Micro.Ad.Magic and Micro.Ad.Video. These programs, produced by a firm called MicroAds, let you take Print Shop images and add text to them to create and display electronic "slide" shows, generate titles for video tapes or produce other types of sequential text-and-graphics screen displays.

Any graphics you produce with the Screen Magic feature of The Print Shop can be used with Micro.Ad .Magic. Micro.Ad.Video also works well with Chameleon format bit-mapped, hi-res screen files.

Screen Magic files are saved in black-and-white, but with Micro.Ad .Magic it's possible to add color. While the result is not as good as a true color image, it's still effective. The program also lets you add standard Print Shop graphics to your screens.

The Micro.Ad package includes a short, but thorough, set of instructions, and the programs are easy to use. After you've selected the colors and design, you save the resulting file as a Micro.Ad video file for direct display, or you create a separate Screen Magic file. The second of these options lets you return to The Print Shop and overlay additional text and graphics for some really impressive displays. When you're ready to start your show, just load the display program.

Another program in the package, a small utility called Micro.Ad.Maint, lets you copy, rename and scratch files. Your slide show must use a predetermined set of filenames, and this utility makes it easy to get everything in order.

For my money, the Micro.Ad package is a winner. With it and a utility for converting files between various graphics programs (see below), you'll be able to create and display professional-looking screen sequences.

Graphics Converter

If you don't think there are enough graphics available for your favorite graphics program, or some of your favorite graphics were designed for use with another package, then take heart. Several conversion packages are appearing that make many of the pictures now available compatible with the program of your choice.

Cardinal Software is offering an excellent program in this category. It's called, appropriately enough, Graphics Converter, and it converts Print Shop graphics to PrintMaster format and vice versa. This program supports two disk drives, and it works with the non-Commodore version of Print Shop graphics. Once the graphics have been converted to PrintMaster format, that program can print them on a Commodore printer.

Photocopy

Megasoft has introduced a dandy conversion utility called Photocopy. It includes several features that owners of more than one graphics program will appreciate.

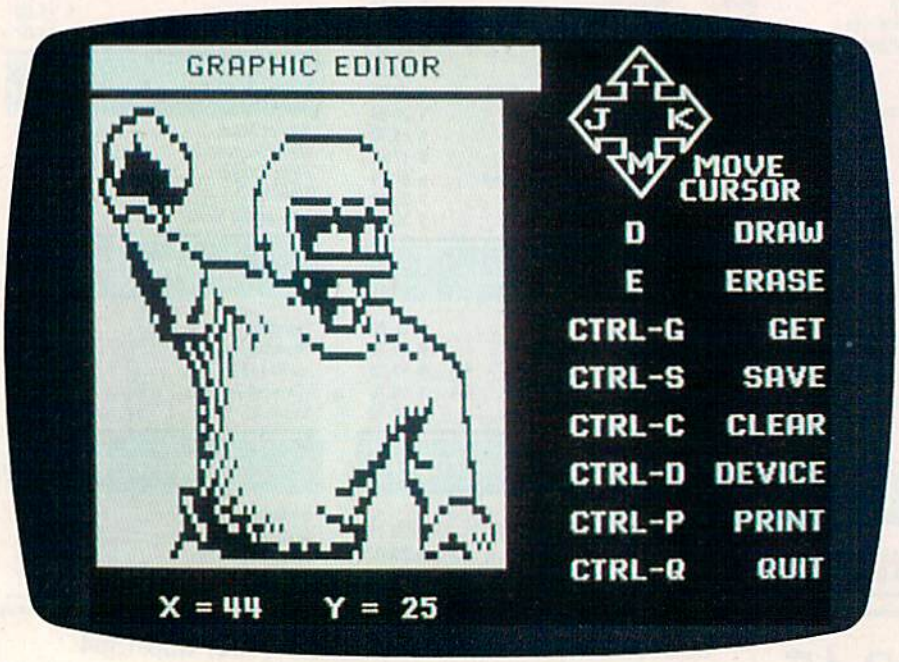
First, it can convert Print Shop graphics, in both Commodore and non-Commodore versions, for use as "photos" with Newsroom printouts. Photocopy will also produce Print Shop graphics from high-resolution pictures created with Doodle!, Flexidraw, Graphics Basic and others, although only a portion of the picture can be used because of the size limitations inherent in The Print Shop and Newsroom. An additional Photocopy option will let you capture Newsroom-type "banners" from high-resolution pictures.

A joystick is required for Photocopy operation. MSD disk drives aren't supported by the program, but it works fine with Commodore 1541 and 1571 units.

The only thing I found missing in Photocopy is a full-featured disk utility to be used from within the program. You can format disks from inside the program, but I find that I often forget the name of a file I want to convert, and being able to access a directory listing without exiting the program would be a big help.

As an example of what can be done with Photocopy, I used it to convert an Abe Lincoln graphic from Broderbund's Holiday Edition for use with Newsroom.

You'll probably be seeing advertisements for additional graphics conversion packages. If you're considering such a program, keep in mind that the more options it has, the more useful it's likely to be. Of course, the



Screen display from Graphics Scrapbook, from Epyx.

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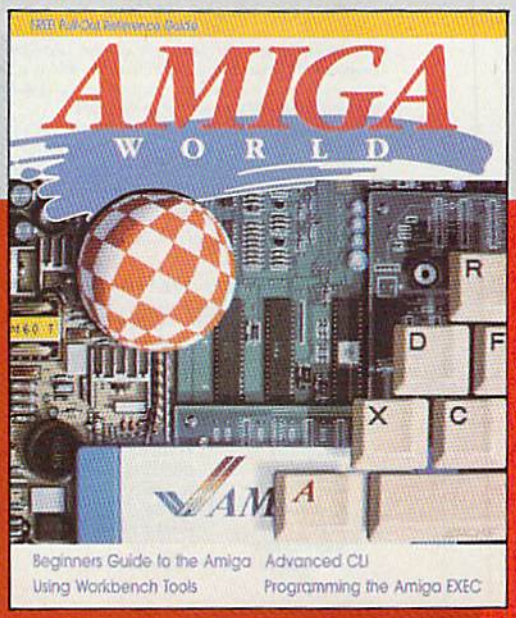

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Jim Grubbs (PO Box 3042, Springfield, IL 62708) is a writer, publisher, lecturer and amateur radio operator. His books include The Commodore Ham's Companion, Command Post *and* Get***CONNECTED to Packet Radio.

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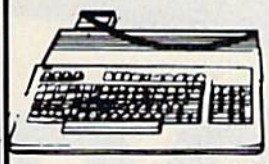

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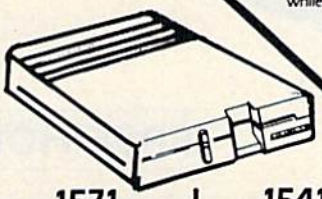

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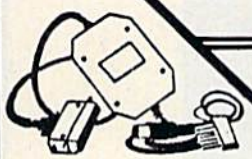

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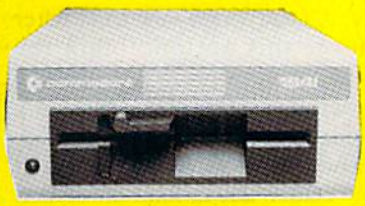

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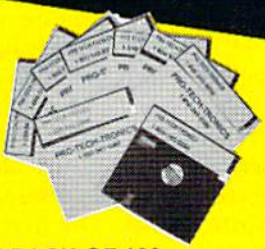

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SPRITE-PRINT

Capture your C-64 graphics creations with this menu-driven, sprite-printing program.

By ROY DUNCAN

Movable object blocks, better known as sprites, are a nice complement to the C-64's graphics. Unfortunately, sprites can't be printed in a conventional manner. This program is for those of you who have always wanted to print sprites but were afraid to ask how.

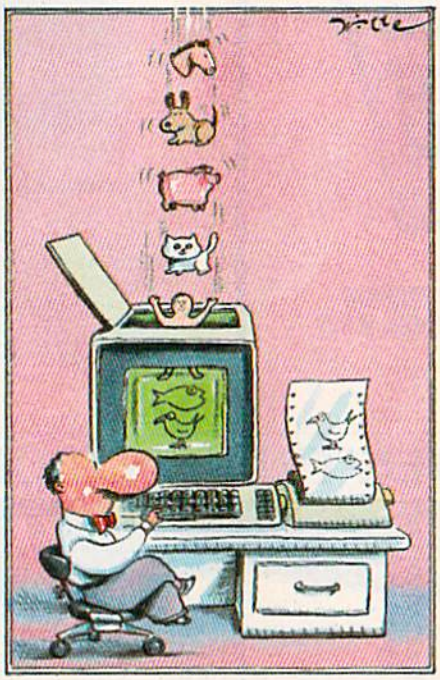
Sprite-Print is a menu-driven program that lets you copy sprites onto a high-resolution graphics screen beginning at address 8192. The program prints the contents of this hi-res screen and also allows you to copy and print text along with the sprites.

How To Use Sprite-Print

To demonstrate Sprite-Print, you must type in three program listings. Listing 1 is the main Sprite-Print program. It does all the work, with the exception of printing the screen. Listing 2 prints the screen by creating a short machine language file called PDUMP/1525. Whenever you select the Print option, this file is loaded from the disk. Listing 3 creates the sprite.

After you have typed in and saved the programs, run Listing 3. When the cursor reappears, load and run Listing 1 without clearing a screen. When the options screen appears, select option 6 to clear the hi-res screen, then press 1 to create a screen in a different area of memory. Next, select option 2 or 3 for uppercase or lowercase, respectively. Finally, select the normal Commodore character set.

After a few minutes, the sprite created by Listing 3 will begin to form on the screen. Once the cursor returns, choose option 4 from the main menu to print the sprite. When the program is finished, press any key to return to the options screen.



Program Operation

Here's how each option in Listing 1 works:

Option 1, Create Screen. When you select this option, the computer asks what you want to copy, then places that data on the hi-res screen. This option does not alter the contents of the screen. If you want to copy sprites, you may not want to erase the hi-res screen.

Option 1 also offers the ability to load an alternate character set from disk. The first two bytes of the character-set file contain the address from which that file was saved. Since these bytes are not part of the character set, they are removed in line 2590. If your character set appears to be altered, change line 2590 to:

```
2590 T = 50176
```

Option 2, Save Screen to Disk. This option saves a hi-res screen to disk. To see how this feature works, run Listing 3, then run Listing 1 without clearing the screen. Select option 6 to clear the hi-res screen, followed by option 1 to create a screen. Follow the prompts generated by option 1 to create your sprite on the hi-res screen. Once the sprite is created, press any key to return to the main menu. Finally, select option 2. Enter a filename at the prompt and press the return key.

The hi-res screen is saved to disk as a program file. If you choose this option accidentally, enter filename $ to return to the main menu.

Option 3, Load Screen from Disk. After you choose this option, follow the steps outlined for option 2 to create a screen file. Place the disk containing the screen in the drive and select option 3. Enter the screen's filename and press the return key to load the screen into memory. The program will remain at the main menu if it encounters a load error. Again, if you choose this option accidentally, enter filename $ to return to the main menu.

Option 4, Print Screen. This option prints the graphics screen in memory to a 1525, MPS-801, MPS-803 or other 1525-compatible printer. When you call this routine, the machine language file created by Listing 2, called PDUMP/1525, is loaded from disk. If a disk error occurs during loading, the program will return you to the main menu. You can change the

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PDUMP/1525 filename as long as the change is reflected in the value F$ in line 2260.

Option 5, Display Screen. This displays the hi-res screen in memory. Pressing any key returns you to the main menu.

Option 6, Clear Screen. This option clears hi-res color memory and the hi-res screen.

Option 7, Exit Program.

When the program is waiting for you to press a key, the cursor will flash in the upper-left corner of the screen. This tells you that the program has finished drawing the hi-res screen.

Subroutines

Sprite-Print also contains three short machine-code subroutines. The first, accessed with SYS 828, copies 128 characters from ROM to RAM. The second is activated by SYS 869 and clears hi-res memory by poking zeros into locations 8192 to 16191. The third subroutine is activated with a SYS 923 and fills hi-res color memory, beginning at 1024, with predetermined values. The default color value is 12, which creates black plotting on a medium gray background. To change the color combination, change the POKE 251,12 in lines 80 and 2340 to POKE 251,x, where x = [plot color]* 16 + [screen color].

The Print Subroutine

I designed the printing subroutine as a separate program so you can use it in your own programs. Just load the subroutine with the command

```
LOAD "filename",8,1
```

Then poke 49152 with the value of the hi-res screen's starting address divided by 256. Sprite-Print prints the hi-res screen beginning at 8192, requiring you to enter

```
POKE 49152,8192/256
```

before printing. The Print subroutine can be executed as follows:

```
OPEN4,4:PRINT#4:SYS 32959: PRINT#4:
  CLOSE 4
```

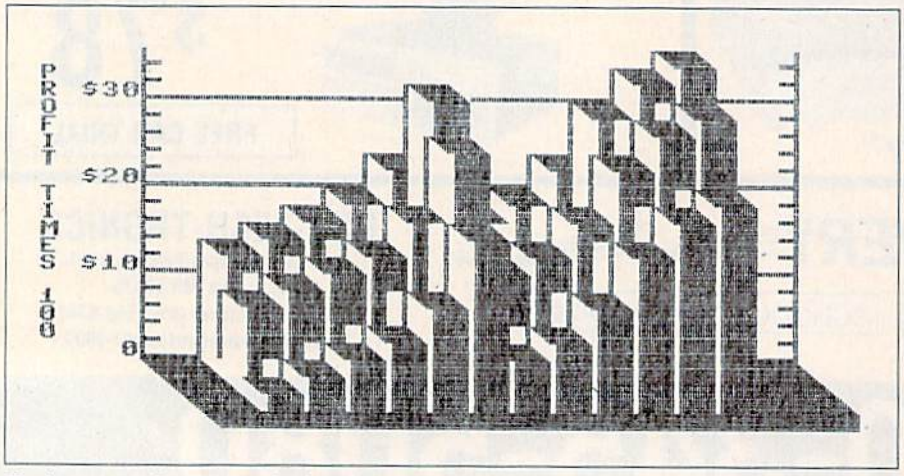
The routine uses locations 251 to 254, as well as 49152 to 49173.

Whether you use Sprite-Print in its entirety or use just a few of its subroutines, I think you will find it useful for many applications. Ⓡ

Address all author correspondence to Roy Duncan, 90 Savoy Drive, Florida Gardens, Surfers Paradise, Queensland 4217, Australia.

Listing 1. *Main Sprite-Print program.*

```
1 IFPD%=1THEN23ØØ          :REM*59
3 IFPD%=2THEN2263          :REM*27
5 GOSUB13ØØ:POKE53281,12:POKE532
  8Ø,2                     :REM*181
6 PRINT"{SHFT CLR}{CTRL 1}{9 CRS
  R DNs}"TAB(13)"PLEASE WAIT..."
  :POKE49152,32            :REM*12
7 WH=PEEK(53269):POKE53269,Ø
                           :REM*1Ø1
1Ø GOSUB96Ø:FORX=16192TO18999:PO
   KEX,Ø:NEXT:GOSUB75Ø:GOTO2ØØØ
                           :REM*6
2Ø POKE56578,3:POKE56576,7:POKE5
   3272,29:POKE53265,59    :REM*15Ø
7Ø IFPEEK(2)=1ORPEEK(2)=2THENGOS
   UB135Ø:GOSUB1ØØØ        :REM*14Ø
8Ø POKE251,12:SYS923:A=WH:B=PEEK
   (53271):C=PEEK(53277):Z=1:Y=Ø
   :WW=PEEK(53264)         :REM*178
1ØØ IFNOTAANDZTHENZ=Z*2:Y=Y+1:IF
    Y>7THEN234Ø            :REM*168
12Ø IFNOTAANDZTHENIFY<=7THEN1ØØ
                           :REM*254
13Ø IF(BANDZ)AND(CANDZ)THEN56Ø
                           :REM*168
14Ø IF(BANDZ)THEN25Ø       :REM*162
15Ø IF(CANDZ)THEN37Ø       :REM*198
16Ø D=492ØØ+63*Y:E=PEEK(53248+2*
    Y):F=PEEK(53249+2*Y):E=E-24:
    F=F-5Ø                 :REM*25Ø
165 IFAANDWWTHENE=E+255    :REM*155
17Ø G=8192+(32Ø*INT(F/8))+(F-(8*
    INT(F/8)))+(8*INT(E/8)):H=E-
    (8*INT(E/8))           :REM*142
18Ø J=F-(8*INT(F/8)):FORX=ØTO2Ø:
    FORW=ØTO2              :REM*23Ø
2ØØ I=PEEK(D+X*3+W):POKEG,IORPEE
    K(G):G=G+8:NEXT        :REM*26
21Ø J=J+1:G=G-23:IFJ=>8THENJ=Ø:G
    =G+312                 :REM*Ø
22Ø NEXT                   :REM*23Ø
23Ø Z=Z*2:Y=Y+1            :REM*92
24Ø GOTO1ØØ                :REM*17Ø
25Ø D=492ØØ+63*Y:E=PEEK(53248+2*
    Y):F=PEEK(53249+2*Y):E=E-24:
    F=F-5Ø                 :REM*84
255 IFAANDWWTHENE=E+255    :REM*245
26Ø G=8192+(32Ø*INT(F/8))+(F-(8*
    INT(F/8)))+(8*INT(E/8)):H=E-
    (8*INT(E/8))           :REM*233
27Ø J=F-(8*INT(F/8)):FORX=ØTO2Ø:
    FORW=ØTO2              :REM*65
29Ø I=PEEK(D+X*3+W):POKEG,IORPEE
    K(G):G=G+8:NEXT        :REM*117
3ØØ J=J+1:G=G-23:IFJ=>8THENJ=Ø:G
    =G+312                 :REM*91
31Ø FORW=ØTO2:I=PEEK(D+X*3+W):PO
    KEG,IORPEEK(G):G=G+8:NEXT
                           :REM*2Ø1
33Ø J=J+1:G=G-23:IFJ=>8THENJ=Ø:G
    =G+312                 :REM*121
34Ø NEXT                   :REM*95
35Ø Z=Z*2:Y=Y+1            :REM*213
36Ø GOTO1ØØ                :REM*35
37Ø D=492ØØ+63*Y:E=PEEK(53248+2*
    Y):F=PEEK(53249+2*Y):E=E-24:
    F=F-5Ø                 :REM*2Ø5
375 IFAANDWWTHENE=E+255    :REM*11Ø
38Ø G=8192+(32Ø*INT(F/8))+(F-(8*
    INT(F/8)))+(8*INT(E/8)):H=E-
    (8*INT(E/8))           :REM*97
39Ø J=F-(8*INT(F/8)):FORX=ØTO2Ø:
    FORW=ØTO2              :REM*185
41Ø I=PEEK(D+X*3+W):L=Ø:M=Ø:K=12
    8                      :REM*125
42Ø FORN=679TO686:POKEN,IANDK:K=
    K/2:NEXT               :REM*1Ø3
43Ø IFPEEK(679)THENL=L+192
                           :REM*27
44Ø IFPEEK(68Ø)THENL=L+48
                           :REM*241
45Ø IFPEEK(681)THENL=L+12
                           :REM*183
46Ø IFPEEK(682)THENL=L+3:REM*169
47Ø IFPEEK(683)THENM=M+192
                           :REM*149
48Ø IFPEEK(684)THENM=M+48:REM*47
49Ø IFPEEK(685)THENM=M+12
                           :REM*245
5ØØ IFPEEK(686)THENM=M+3:REM*231
51Ø POKEG,LORPEEK(G):G=G+8:POKEG
    ,MORPEEK(G):G=G+8:NEXT
                           :REM*161
52Ø J=J+1:G=G-47:IFJ=>8THENJ=Ø:G
    =G+312                 :REM*216
53Ø NEXT                   :REM*3Ø
54Ø Z=Z*2:Y=Y+1            :REM*148
55Ø GOTO1ØØ                :REM*226
56Ø D=492ØØ+63*Y:E=PEEK(53248+2*
    Y):F=PEEK(53249+2*Y):E=E-24:
    F=F-5Ø                 :REM*14Ø
565 IFAANDWWTHENE=E+255    :REM*45
57Ø G=8192+(32Ø*INT(F/8))+(F-(8*
    INT(F/8)))+(8*INT(E/8)):H=E-
    (8*INT(E/8))           :REM*32
58Ø J=F-(8*INT(F/8)):FORX=ØTO2Ø:
    FORO=1TO2:FORW=ØTO2    :REM*146
```



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Listing 1 continued.

```
600 I=PEEK(D+X*3+W):L=0:M=0:K=12
    8                          :REM*60
610 FORN=679TO686:POKEN,IANDK:K=
    K/2:NEXT                   :REM*38
620 IFPEEK(679)THENL=L+192
                               :REM*218
630 IFPEEK(680)THENL=L+48
                               :REM*176
640 IFPEEK(681)THENL=L+12
                               :REM*118
650 IFPEEK(682)THENL=L+3:REM*104
660 IFPEEK(683)THENM=M+192
                               :REM*84
670 IFPEEK(684)THENM=M+48
                               :REM*238
680 IFPEEK(685)THENM=M+12
                               :REM*180
690 IFPEEK(686)THENM=M+3:REM*166
700 POKEG,LORPEEK(G):G=G+8:POKEG
    ,MORPEEK(G):G=G+8:NEXT
                               :REM*96
710 J=J+1:G=G-47:IFJ=>8THENJ=0:G
    =G+312                     :REM*150
720 NEXT:NEXT                  :REM*214
730 Z=Z*2:Y=Y+1                :REM*82
740 GOTO100                    :REM*160
750 FORA=869TO922:READB:POKEA,B:
    NEXT                       :REM*224
760 FORA=923TO956:READB:POKEA,B:
    NEXT:RETURN                :REM*8
770 DATA234,72,138,72,152,72,162
    ,32,169,0,133,251,138,133,25
    2,160,0,169,0              :REM*125
780 DATA145,251,200,208,251,232,
    224,63,208,239,169,0,133,251
    ,169,63,133,252            :REM*243
790 DATA160,0,169,0,145,251,200,
    192,64,208,249,104,168,104,1
    70,104,96                  :REM*65
800 DATA234,72,138,72,152,72,160
    ,0,173,251,0,153,0,4,153,250
    ,4,153,244,5,153           :REM*249
810 DATA238,6,200,192,250,208,23
    9,104,168,104,170,104,96
                               :REM*67
820 DATA234,72,138,72,152,72,160
    ,0,185,0,208,153,0,196,185,0
    ,209,153,0,197,185         :REM*111
830 DATA0,210,153,0,198,185,0,21
    1,153,0,199,200,208,229,104,
    168,104,170,104,96         :REM*133
890 DATA234,72,138,72,152,72,160
    ,0,185,0,216,153,0,196,185,0
    ,217,153,0,197,185         :REM*79
900 DATA0,218,153,0,198,185,0,21
    9,153,0,199,200,208,229,104,
    168,104,170,104,96         :REM*15
960 FORX=0TO7:Z=PEEK(2040+X):FOR
    Y=0TO62                    :REM*217
990 POKE49200+63*X+Y,PEEK(Z*64+Y
    ):NEXT:NEXT:RETURN         :REM*31
1000 IFPEEK(2)=2THENFORX=828TO86
    8:READY:NEXT               :REM*249
1010 IFPEEK(2)=2THENFORX=828TO86
    8:READY:POKEX,Y:NEXT:REM*55
1020 IFPEEK(2)=1THENFORX=828TO86
    8:READY:POKEX,Y:NEXT:REM*65
1030 IFPEEK(2)=1THENFORX=828TO86
    8:READY:NEXT               :REM*24
1035 IFCO=1THEN1090             :REM*185
1040 POKE56334,PEEK(56334)AND254
                               :REM*184
1050 POKE1,PEEK(1)AND251:SYS828:
    POKE1,PEEK(1)OR4           :REM*106
1080 POKE56334,PEEK(56334)OR1
                               :REM*240
1090 G=8192:FORX=16512TO17511:PO
    KEX,0:NEXT                 :REM*78
1100 FORC=0TO24:T$="":POKE51,0:P
    OKE52,160                  :REM*16
1105 FORB=0TO39:A=PEEK(1024+C*40
    +B):QQ=16512+C*40+B        :REM*1
1110 IFA<32THENA=A+64:GOTO1140
                               :REM*186
1120 IFA>63ANDA<96THENA=A+32:GOT
    O1140                      :REM*78
1130 IFA>96ANDA<128THENA=A+64:GO
    TO1140                     :REM*210
1135 IFA>127THENPOKEQQ,1:A=A-128
    :GOTO1110                  :REM*151
1140 T$=T$+CHR$(A):NEXT:D=C:E=0:
    F=G+D*320+E*8              :REM*196
1180 FORH=1TOLEN(T$):QQ=16512+D*
    40+(H-1)                   :REM*164
1190 I=ASC(MID$(T$,H,1)):REM*242
1192 IFI=32ANDPEEK(QQ)=0THEN1270
                               :REM*184
1195 IFI>31ANDI<64THEN1230
                               :REM*239
1200 IFI>63ANDI<96THENI=I-64:GOT
    O1230                      :REM*188
1205 IFI>96ANDI<128THENI=I-32:GO
    TO1230                     :REM*215
1210 IFI>160ANDI<192THENI=I-64:G
    OTO1230                    :REM*162
1215 IFI>191ANDI<224THENI=I-96:G
    OTO1230                    :REM*247
1220 IFI>223ANDI<255THENI=I-64:G
    OTO1230                    :REM*116
1225 IFI=255THENI=126           :REM*23
1230 V=50176+I*8                :REM*160
1240 FORJ=0TO7                  :REM*44
1250 IFPEEK(QQ)=0THENPOKEF+J,PEE
    K(F+J)ORPEEK(V+J)          :REM*200
1255 IFPEEK(QQ)=1THENPOKEF+J,PEE
    K(F+J)OR255-PEEK(V+J)
                               :REM*207
1260 NEXT                      :REM*250
1270 F=F+8                     :REM*114
1280 NEXT:NEXT:RETURN          :REM*245
1300 PRINT"{SHFT CLR}":FORX=0TO9
    99:PRINT"{HOME}{CTRL 9}DATA
    {CTRL 0}"X:POKE20000+X,PEEK
    (1024+X):NEXT              :REM*225
1310 PRINT"{SHFT CLR}":RETURN
                               :REM*239
1350 FORX=0TO999:POKE1024+X,PEEK
    (20000+X):NEXT:RETURN
                               :REM*73
2000 PRINT"{SHFT CLR}{7 CRSR DNs
    }{3 CRSR RTs}1. CREATE SCRE
    EN."                       :REM*63
2010 PRINT"{CRSR DN}{3 CRSR RTs}
    2. SAVE SCREEN TO DISK."
                               :REM*149
2012 PRINT"{CRSR DN}{3 CRSR RTs}
    3. LOAD SCREEN FROM DISK."
                               :REM*177
2014 PRINT"{CRSR DN}{3 CRSR RTs}
    4. PRINT CURRENT SCREEN."
                               :REM*211
2016 PRINT"{CRSR DN}{3 CRSR RTs}
    5. DISPLAY SCREEN."  :REM*9
2018 PRINT"{CRSR DN}{3 CRSR RTs}
    6. CLEAR SCREEN."    :REM*47
2019 PRINT"{CRSR DN}{3 CRSR RTs}
    7. EXIT PROGRAM."    :REM*74
2020 PRINT"{HOME}{CRSR DN}"TAB(1
    6)"OPTIONS.{HOME}"; :REM*13
2030 POKE204,0:POKE198,0:REM*161
2035 IFQITHENQI=0:PRINT"{HOME}{2
    2 CRSR DNs}{6 CRSR RTs}LOAD
     ERROR. CHECK DISK{HOME}";
                               :REM*166
2040 GETKEY$:IFKEY$=""THEN2040
                               :REM*45
2050 IFASC(KEY$)<49ORASC(KEY$)>5
    5THEN2040                  :REM*46
2060 POKE204,1:ONVAL(KEY$)GOTO20
    70,2150,2210,2260,2300,2390
    ,2380                      :REM*102
2070 PRINT"{SHFT CLR}{CRSR DN}"T
    AB(16)"OPTIONS."     :REM*38
2080 PRINT"{5 CRSR DNs}{3 CRSR R
    Ts}1. SPRITES ONLY."
                               :REM*222
2090 PRINT"{CRSR DN}{3 CRSR RTs}
    2. SPRITES & UPPERCASE/GRAP
    HICS":PRINT"{6 CRSR RTs}CHA
    RACTERS."                  :REM*200
2100 PRINT"{CRSR DN}{3 CRSR RTs}
    3. SPRITES & UPPERCASE/LOWE
    RCASE":PRINT"{6 CRSR RTs}CH
    ARACTERS."                 :REM*192
2105 PRINT"{CRSR DN}{3 CRSR RTs}
    4. RETURN TO MENU.{HOME}";
                               :REM*137
2110 POKE204,0:POKE198,0:REM*242
2120 GETKEY$:IFKEY$<>"1"ANDKEY$<
    >"2"ANDKEY$<>"3"ANDKEY$<>"4
    "THEN2120                  :REM*174
2125 POKE204,1:IFKEY$="4"THEN200
    0                          :REM*179
2130 POKE2,VAL(KEY$)-1         :REM*38
2140 GOTO2470                  :REM*82
2150 OPEN1,8                   :REM*62
2160 PRINT"{HOME}{22 CRSR DNs}{9
     CRSR RTs}SCREEN TO SAVE:";
    :INPUT#1,F$                :REM*140
2170 IFF$=""THEN2160           :REM*154
2180 CLOSE1:IFF$="$"THEN2000
                               :REM*254
2190 POKE193,0:POKE194,32:POKE17
    4,64:POKE175,63:POKE144,0:O
    PEN15,8,15,F$              :REM*188
2200 SYS62957:CLOSE15:GOTO2000
                               :REM*246
2210 OPEN1,8                   :REM*122
2220 PRINT"{HOME}{22 CRSR DNs}{9
     CRSR RTs}SCREEN TO LOAD:";
    :INPUT#1,F$                :REM*250
2230 IFF$=""THEN2220           :REM*186
2240 CLOSE1:IFF$="$"THEN2000
                               :REM*58
2245 GOSUB2430:IFQI=1THEN2000
                               :REM*143
2250 PD%=1:POKE144,0:LOADF$,8,1
                               :REM*188
2260 F$=" PDUMP/1525":GOSUB2430:
    IFQI=1THEN2000             :REM*194
2262 PD%=2:POKE144,0:LOADF$,8,1
                               :REM*8
2263 PRINT"{22 CRSR DNs}{9 CRSR
    RTs}PRINTING...{4 SPACEs}"
                               :REM*173
2270 OPEN4,4:PRINT#4:SYS32959:PR
    INT#4:CLOSE4:GOTO2000
                               :REM*222
2300 POKE56578,3:POKE56576,7:POK
    E53272,29:POKE53265,59
                               :REM*134
2340 PRINT"{HOME}";:POKE251,12:S
    YS923:POKE198,0:POKE204,0:W
    AIT198,1:POKE204,1         :REM*23
2350 POKE56578,63:POKE56576,199:
    POKE53272,21:POKE53265,27:G
    OTO2000                    :REM*217
2380 POKE2,0:SYS2              :REM*29
2390 PRINT"{22 CRSR DNs}{9 CRSR
    RTs}ARE YOU SURE [Y/N] ?":P
    OKE198,0                   :REM*39
2400 GETKEY$:IFKEY$<>"Y"ANDKEY$<
    >"N"THEN2400               :REM*155
2410 IFKEY$="N"THEN2000        :REM*177
2420 SYS869:GOTO2000           :REM*107
2430 OPEN15,8,15:POKE144,0:OPEN2
    ,8,2,F$+",P,R"             :REM*53
2440 CLOSE2:INPUT#15,QI:IFQI=0TH
    EN2460                     :REM*103
2450 QI=1                      :REM*125
2460 CLOSE15:RETURN            :REM*241
2470 PRINT"{SHFT CLR}{CRSR DN}"T
    AB(16)"OPTIONS."           :REM*183
2480 PRINT"{5 CRSR DNs}{3 CRSR R
    Ts}1. NORMAL CHARCTER SET."
                               :REM*113
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Listing 1 continued.

```
249Ø PRINT"{CRSR DN}{3 CRSR RTs}2. CUSTOM C
     HARCTER SET.{HOME}";:POKE198,Ø:POKE2Ø4
     ,Ø                              :REM*121
25ØØ GETKEY$:IFKEY$<>"1"ANDKEY$<>"2"THEN25Ø
     Ø                               :REM*165
251Ø POKE2Ø4,1:IFKEY$="1"THENCO=Ø:GOTO2Ø
                                     :REM*199
252Ø CO=1                            :REM*187
253Ø OPEN1,Ø                         :REM*187
254Ø PRINT"{HOME}{12 CRSR DNs}FILENAME OF C
     HARACTER SET:";:INPUT#1,F$      :REM*147
255Ø IFF$=""THEN254Ø                 :REM*23
256Ø CLOSE1:IFF$="$"THEN2Ø7Ø          :REM*Ø
257Ø GOSUB243Ø:IFQI=1THENCO=Ø:GOTO2ØØØ
                                     :REM*174
258Ø POKE144,Ø:OPEN2,8,2,F$+",P,R"   :REM*178
259Ø GET#2,T$,T$:T=5Ø176             :REM*74
26ØØ POKE51,Ø:POKE52,16Ø:GET#2,T$    :REM*1Ø
26Ø5 POKET,ASC(T$+CHR$(Ø)):IFST<>ØTHENCLOSE
     2:GOTO2Ø                        :REM*83
261Ø POKE1Ø24,ASC(T$+CHR$(Ø)):T=T+1:GOTO26Ø
     Ø                               :REM*176
```

Listing 2. *Screen-printing program.*

```
1Ø OPEN2,8,2," PDUMP/1525,P,W"       :REM*126
2Ø PRINT#2,CHR$(Ø);CHR$(128);        :REM*3Ø
3Ø READA:IFA=-1THENCLOSE2:END        :REM*68
4Ø PRINT#2,CHR$(A);                  :REM*32
5Ø GOTO3Ø                            :REM*246
1ØØ DATA 169,248,45,14,192,141,2,192,173,15
     ,192,24,1Ø9,Ø,192,141,3,192,169:REM*128
11Ø DATA 7,45,16,192,24,1Ø9,2,192,141,2,192
     ,169,Ø,141,19,192,16Ø,3,162,5   :REM*78
12Ø DATA 169,248,45,16,192,141,18,192,14,19
     ,192,24,14,18,192,144,3,238,19  :REM*178
13Ø DATA 192,136,2Ø8,25,173,18,192,24,1Ø9,2
     ,192,141,2,192,144,3,238,3,192  :REM*114
14Ø DATA 173,19,192,24,1Ø9,3,192,141,3,192,
     2Ø2,2Ø8,213,173,18,192,24,1Ø9,2 :REM*32
15Ø DATA 192,141,2,192,144,3,238,3,192,173,
     19,192,24,1Ø9,3,192,141,3,192   :REM*9Ø
16Ø DATA 173,21,192,24Ø,3,76,38,129,169,1,1
     41,4,192,173,14,192,41,7,141,18:REM*1Ø6
17Ø DATA 192,169,7,56,237,18,192,141,18,192
     ,24Ø,11,14,4,192,2Ø6,18,192,173:REM*122
18Ø DATA 18,192,2Ø8,245,16Ø,Ø,173,2,192,133
     ,251,173,3,192,133,252,177,251  :REM*1Ø8
19Ø DATA 13,4,192,145,251,173,17,192,24Ø,1,
     96,177,251,77,4,192,145,251,96  :REM*146
2ØØ DATA 162,4,32,2Ø1,255,169,8,32,21Ø,255,
     169,1,141,21,192,169,Ø,141,9    :REM*11Ø
21Ø DATA 192,173,9,192,1Ø,1Ø,1Ø,56,237,9,19
     2,141,1Ø,192,169,Ø,141,14,192   :REM*172
22Ø DATA 141,15,192,141,5,192,169,197,141,1
     2,192,141,6,192,169,1,141,4,192:REM*234
23Ø DATA 173,14,192,41,7,141,18,192,169,7,5
     6,237,18,192,141,7,192,24Ø,8,14 :REM*84
24Ø DATA 4,192,2Ø6,7,192,2Ø8,248,169,7,141,
     8,192,173,1Ø,192,141,16,192,169:REM*18Ø
25Ø DATA 1,141,13,192,76,Ø,128,173,2,192,13
     3,251,173,3,192,133,252,16Ø,Ø   :REM*28
26Ø DATA 177,251,45,4,192,24Ø,33,173,16,192
     ,56,237,1Ø,192,141,18,192,24Ø   :REM*123
27Ø DATA 11,14,13,192,2Ø6,18,192,173,18,192
     ,2Ø8,245,173,13,192,24,1Ø9,11   :REM*89
28Ø DATA 192,141,11,192,238,16,192,2Ø6,8,19
     2,173,8,192,24Ø,3,76,3Ø,129,173:REM*1Ø5
29Ø DATA 14,192,133,251,173,12,192,133,252,
     16Ø,Ø,169,128,24,1Ø9,11,192,145:REM*115
3ØØ DATA 251,169,Ø,141,11,192,238,14,192,17
     3,14,192,2Ø8,6,238,15,192,238   :REM*173
31Ø DATA 12,192,173,15,192,24Ø,7,173,14,192
```

Continued on p. 110.

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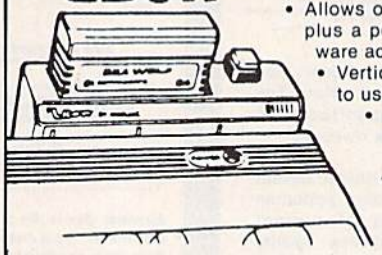

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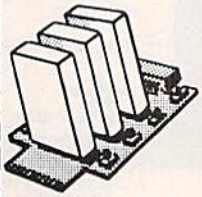

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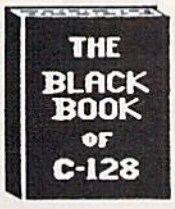

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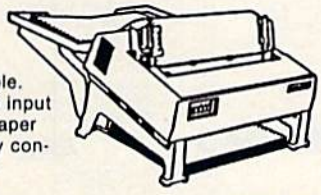

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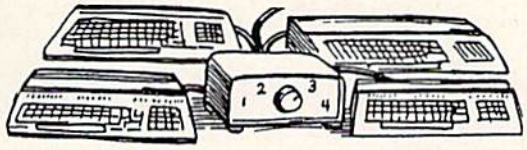

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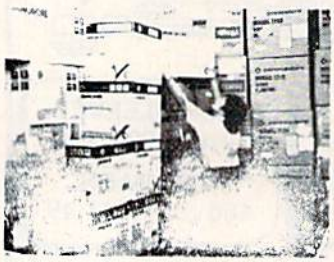

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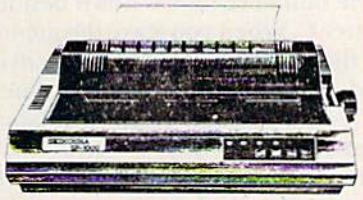

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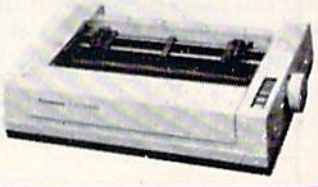

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HANDY WINDOW

This desktop accessory gives you an alarm clock, a memo pad and six other useful features to make your computing easier.

By IAN ADAM

Handy Window is a collection of eight computer routines, all rolled into one package. It's so easy and convenient to use that you'll wonder how you ever computed without it.

After you've loaded the program into your C-64 or C-128 (40-column screen only), you can proceed with programming, or you can run a Basic program. You only have to remember that Handy Window uses just two keys: shift and control. Pressing them at the same time displays the Handy Window menu; the same combination removes the menu from the screen and returns you to the program you were in before.

Both the C-64 and C-128 versions give you full control of a memo pad, an accurate digital clock and an alarm, as well as access to the printer.

Getting Started

The first step in using this program is the hardest. You have to type in the appropriate version of Handy-Maker (Listing 1 or 2). When you're finished, be sure to save it to disk. Handy-Maker creates a disk file with the Handy Window program in it.

When you run the program, it prompts you to insert a disk for the code. Insert any formatted disk, then press any key to create a file called .HANDY64 or .HANDY128 on the disk. This process takes about 30 seconds. You can place a copy of Handy Window on any of your other disks by running the program once for each disk.

The resulting file isn't a Basic program that you can load and run; it's a machine language file that must be executed. On the C-64, you execute the file with the following two-line program:

```
10 IF PEEK(49152)<>120 THEN
   LOAD".HANDY64",8,1
20 SYS 49152:NEW
```

On the C-128 in 128 mode, a different two-line program is required:

```
10 BLOAD".HANDY128"
20 SYS 4864
```

How To Use It

The Handy Window menu gives you eight choices, from which you make selections by pressing the corresponding keys. These are the eight options:

Memo Pad (A): Choosing A produces a blank screen on which you can type memos to yourself. All screen editing functions are active, including scrolling and screen clear, so be careful not to erase your message. Press the shifted control key to return to the mode you were in when you pressed A. If you choose A again, your notes will still be there, waiting for you.

Show Clock (B): The digital clock is always displayed when the menu is on-screen. If you choose this option, however, the clock will also be displayed when you leave the menu to enter the Memo mode or return to your original program. A bull's-eye appears beside the letter B to acknowledge your selection.

Hide Clock (C): When you select this option, the only immediate result is that the bull's-eye moves down beside the letter C. When you leave the menu later, the clock will no longer be displayed. It will continue to keep time, however, so you can retrieve it later with menu choice B.

Set Clock (D): When you first access the menu, the clock at the top probably won't be running. If you press D, the cursor will appear at the time display. Simply type in the present time directly over the display, making sure to set AM or PM, then press the return key. The clock will be set to whatever is showing in the time display area and will start running immediately.

To get a stopwatch/timer, select D, then press shift-CLR to clear the screen. When you press the return key, the stopwatch, set to all zeros, begins running. Press D again to stop it.

Set Alarm (E): The alarm time is shown at the bottom of the menu. When you press E, the cursor appears there, and you enter the alarm time just as you did when setting the clock, again remembering to set AM or PM. When you press the return key, the alarm is enabled, and the display changes to AL ON to remind you.

When the preset time arrives, a buzzer or bell will sound, the screen will flash orange and black, and ALARM will be printed on the screen. You acknowledge it by pressing the shift and control keys simultaneously, which, of course, brings up the menu. If the alarm sounds while the menu is displayed, you can cancel it by pressing F.

No Alarm (F): This option disables the

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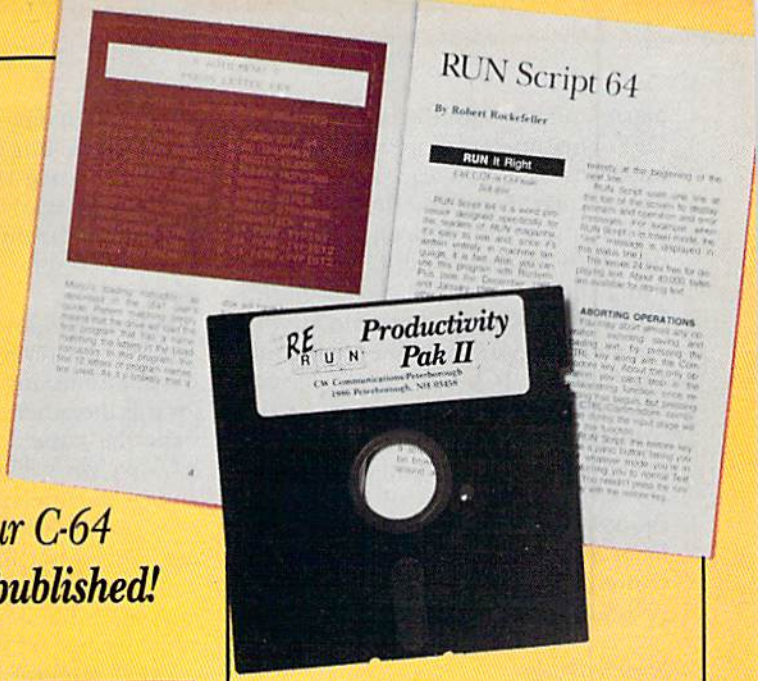

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alarm and changes the display to AL OFF. The time set remains displayed, however, and you can reactivate it later by pressing E and the return key (to enter the time shown). This would be handy if, for example, you were using the computer alarm to get up for work or school and wanted to disable it temporarily on the weekend.

Print Screen (G): Pressing G sends whatever was on the screen to the printer. This is a simple routine, so don't expect anything fancy. It's great for a quick snapshot of the screen, though.

Print Memo (H): Option H sends the contents of your memo pad to the printer.

How It Works

Because the program is in machine language, you can achieve some effects—such as instant transfer of information screens—that are almost impossible to achieve in Basic. The program for the C-64 is placed in high RAM at 49152, and storage for extra screens of information is in hidden RAM behind the Basic ROM. The C-128 version is located in the applications program area at RAM location 4864, and extra screens are stored at the top of Bank 0, slightly reducing the space available for Basic programs.

The program also uses the Interrupt routine of the C-64 or C-128. Sixty times every second, the computer stops what it's doing, sets aside its work and does some "housekeeping"—reading the keyboard, updating the TI$ clock, and so on. By modifying the vector for this Interrupt routine so that it points to your program, you can add the extra functions to the list of housekeeping chores. This allows you to carry out other activities, such as writing or running another program, while Handy Window checks in to see whether it's needed. In effect, the computer is running two programs simultaneously.

The digital clock doesn't use TI$ to get the time because TI$ is inaccurate, particularly on the C-64. It tends to run too fast and stops entirely when the computer accesses a peripheral. Instead, the clock is based on the time-of-day feature of one of the two 6526 CIA interface chips. These chips are used for timing a variety of internal activities, as well as communicating with the disk drive and modem. The time-of-day feature is not normally used, but it's extremely accurate. Because there are two CIA chips, you could theoretically have two clocks for different time zones.

Final Tips

Handy Window shares computer assets with whatever other programs you might be running. It will do just fine as long as the other programs don't overwrite the same areas in memory. But it won't work if the other programs change the interrupt vector, and it's incompatible with any program that uses the same RAM for storage. If you're uncertain whether a program is compatible with Handy Window, you'll have to try it and find out.

Don't attempt to use Handy Window when any input/output processes (such as printing, disk access or modem communication) are active. Because Handy Window interrupts normal operation, it will shut down these activities automatically.

If the Handy Window menu should fail to appear when you press shift-CTRL, the interrupt vector probably has been changed. This can happen easily—for example, if you press the stop-restore combination by mistake. To restore Handy Window, just type

```
SYS 49152 <return>
```

for the C-64, or

```
SYS 4864 <return>
```

for the C-128.

Finally, Handy Window doesn't work on the C-128's 80-column screen. If you invoke it in this mode, you'll get the menu, but none of the functions will work properly. Ⓡ

Address all author correspondence to Ian Adam, 4425 West 12th Ave., Vancouver, B.C., Canada V6R 2R3.

Listing 1.

C-64 version of the Handy-Maker program.

```
1Ø PRINT"{SHFT CLR}{CRSR DN}HAND
   Y-WINDOW BY IAN ADAM":REM*164
2Ø PRINT"{CRSR DN}INSERT DISK FO
   R CODE, THEN PRESS A KEY"
                          :REM*36
3Ø WAIT198,1              :REM*5Ø
4Ø OPEN2,8,2,".HANDY64,P,W"
                          :REM*5Ø
5Ø FORI=1TO1132:READA:X=X+A
                          :REM*56
6Ø PRINT#2,CHR$(A);:NEXT:CLOSE2
                          :REM*116
7Ø IFX<>122646THENPRINT"DATA ERR
   OR: FILE NO GOOD":STOP:REM*78
8Ø PRINT"{CRSR DN}USE HANDY LOAD
   ER 64 TO LOAD '.HANDY64'
                          :REM*6
9Ø DATA Ø,192,12Ø,169,79,141,2Ø,
   3,169,192,141,21,3,88,162,51,
   189,27,192             :REM*16
1ØØ DATA 32,21Ø,255,2Ø2,16,247,1
   41,1Ø2,196,96,13,76,82,84,67
   ,45,84,7Ø,73           :REM*118
11Ø DATA 72,83,32,83,83,69,82,8Ø
   ,13,13,54,56,57,49,32,77,65,
   68,65,32,78            :REM*146
12Ø DATA 65,73,32,89,66,13,52,54
   ,32,87,79,68,78,73,87,45,73,
   68,78,65,72            :REM*16
13Ø DATA 13,173,13,22Ø,41,4,1Ø,4
   5,74,196,24Ø,22,141,1Ø1,196,
   141,15,212             :REM*182
14Ø DATA 169,24Ø,141,2Ø,212,169,
   33,141,18,212,173,33,2Ø8,141
   ,1Ø7,196,173           :REM*76
15Ø DATA 1Ø1,196,24Ø,21,165,162,
   41,8,141,33,2Ø8,141,24,212,1
   62,4,189,144           :REM*14Ø
16Ø DATA 195,157,68,4,2Ø2,16,247
   ,173,1Ø4,196,24Ø,95,162,1,17
   3,11,22Ø,168           :REM*216
17Ø DATA 16,2,162,16,142,37,4,16
   2,32,41,16,24Ø,2,162,49,142,
   26,4,32,138            :REM*52
18Ø DATA 195,141,27,4,173,1Ø,22Ø
   ,32,13Ø,195,142,29,4,141,3Ø,
   4,173,9,22Ø            :REM*68
19Ø DATA 32,13Ø,195,142,32,4,141
   ,33,4,173,8,22Ø,9,48,141,35,
   4,169,32,141           :REM*144
2ØØ DATA 36,4,141,25,4,169,58,14
   1,28,4,141,31,4,169,46,141,3
   4,4,169,13             :REM*234
21Ø DATA 141,38,4,17Ø,157,25,216
   ,2Ø2,2Ø8,25Ø,173,1Ø2,196,1Ø,
   24Ø,6,2Ø6              :REM*162
22Ø DATA 1Ø2,196,76,49,234,173,1
   41,2,2Ø1,5,2Ø8,246,32,136,19
   3,173,1Ø2              :REM*198
23Ø DATA 196,73,16Ø,141,1Ø2,196,
   48,15,12Ø,32,32,195,174,1Ø6,
   196,154,1Ø4            :REM*244
24Ø DATA 141,24,2Ø8,76,49,234,17
   3,24,2Ø8,72,186,142,1Ø6,196,
   32,22Ø,194             :REM*6Ø
25Ø DATA 32,2Ø4,255,32,8Ø,195,88
   ,32,228,255,24Ø,251,32,159,1
   93,76,43,193           :REM*8
26Ø DATA 173,33,2Ø8,72,173,134,2
   ,141,33,2Ø8,169,147,133,143,
   32,21Ø,255             :REM*9
27Ø DATA 1Ø4,141,33,2Ø8,32,73,19
   5,173,1Ø3,196,24Ø,7,162,4,16
   Ø,184,32,251           :REM*195
28Ø DATA 194,32,2Ø7,255,2Ø1,13,2
   Ø8,249,32,21Ø,255,76,94,193,
   152,16Ø,16             :REM*9
29Ø DATA 141,1Ø5,196,169,32,141,
   198,195,141,214,195,169,87,1
   53,198,195             :REM*181
3ØØ DATA 96,169,6,168,141,74,196
   ,14Ø,75,196,173,1Ø1,196,24Ø,
   17,169,Ø,141           :REM*47
31Ø DATA 1Ø1,196,141,24,212,141,
   18,212,173,1Ø7,196,141,33,2Ø
   8,96,16Ø,Ø             :REM*59
32Ø DATA 2Ø1,65,24Ø,149,2Ø1,66,2
   4Ø,197,2Ø1,67,24Ø,19Ø,2Ø1,68
   ,24Ø,1Ø7,2Ø1           :REM*9
33Ø DATA 69,24Ø,122,2Ø1,7Ø,24Ø,1
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```
    98,140,104,196,201,71,240,7,
    160,184,201              :REM*65
340 DATA 72,240,3,96,160,176,162
    ,4,32,251,194,169,47,162,4,3
    2,186,255                :REM*3
350 DATA 169,0,32,189,255,32,192
    ,255,162,47,32,201,255,169,4
    ,133,252,169             :REM*197
360 DATA 0,133,251,162,25,160,0,
    169,13,32,210,255,202,48,30,
    177,251,41               :REM*237
370 DATA 127,201,32,16,2,9,64,32
    ,210,255,200,192,40,208,238,
    24,152,101               :REM*201
380 DATA 251,133,251,144,220,230
    ,252,176,216,169,47,32,195,2
    55,76,204                :REM*205
390 DATA 255,162,0,160,26,24,32,
    240,255,169,0,141,104,196,16
    2,26,160,4               :REM*221
400 DATA 208,20,169,14,160,32,32
    ,130,193,162,11,136,24,32,24
    0,255,169                :REM*101
410 DATA 128,162,215,160,5,72,14
    1,15,220,134,251,132,252,10,
    133,207,32               :REM*47
420 DATA 207,255,201,13,208,249,
    160,0,177,251,106,200,177,25
    1,41,15,144              :REM*175
430 DATA 2,9,16,170,160,6,104,72
    ,48,2,160,11,138,56,233,18,4
    8,7,208,12               :REM*233
440 DATA 104,72,73,146,170,177,2
    51,105,240,138,144,2,73,128,
    141,11,220               :REM*135
450 DATA 192,6,208,27,162,1,168,
    16,2,162,16,142,82,196,162,3
    2,41,16,240              :REM*155
460 DATA 2,162,49,142,76,196,32,
    138,195,141,77,196,160,4,32,
    196,194,168              :REM*107
470 DATA 233,96,16,251,140,10,22
    0,104,240,14,152,32,131,195,
    142,79,196               :REM*211
480 DATA 141,80,196,169,0,240,17
    ,160,7,177,251,41,15,133,253
    ,136,177,251             :REM*53
490 DATA 10,10,10,10,5,253,141,9
    ,220,162,1,142,8,220,96,160,
    0,132,198                :REM*107
500 DATA 185,0,0,153,100,196,136
    ,208,247,132,143,169,21,141,
    24,208,162               :REM*61
510 DATA 180,160,216,32,251,194,
    162,176,160,4,165,1,72,41,25
    4,133,1,134              :REM*89
520 DATA 254,132,252,160,0,132,2
    51,132,253,162,4,177,251,145
    ,253,136,208             :REM*230
530 DATA 249,230,252,230,254,202
    ,208,242,104,133,1,96,165,14
    3,240,14,141             :REM*252
540 DATA 103,196,165,206,164,211
    ,145,209,162,184,32,249,194,
    160,176,162              :REM*216
550 DATA 4,32,251,194,160,180,16
    2,216,32,251,194,185,108,196
    ,153,0,0,136             :REM*204
560 DATA 208,247,173,105,196,141
    ,104,196,96,169,248,133,253,
    133,251,169              :REM*100
570 DATA 5,133,252,169,217,133,2
    54,162,208,160,15,169,13,145
    ,253,189,148             :REM*138
580 DATA 195,145,251,202,240,222
    ,136,16,241,56,165,251,233,4
    0,133,251                :REM*38
590 DATA 133,253,176,228,198,252
    ,198,254,144,222,168,74,74,7
    4,74,9,48                :REM*4
600 DATA 170,152,41,15,9,48,96,1
    ,12,1,18,13,66,32,32,32,32,3
    2,32,32,32               :REM*244
610 DATA 32,32,32,32,32,32,66,10
    7,67,67,67,67,67,67,67,67,67
    ,67,67,67,67             :REM*0
620 DATA 67,115,66,32,1,32,13,5,
    13,15,32,16,1,4,32,32,32,66,
    66,32,2,32               :REM*132
630 DATA 19,8,15,23,32,3,12,15,3
    ,11,32,66,66,87,3,32,8,9,4,5
    ,32,3,12,15              :REM*226
640 DATA 3,11,32,66,66,32,4,32,1
    9,5,20,32,32,3,12,15,3,11,32
    ,66,66,32,5              :REM*34
650 DATA 32,19,5,20,32,32,1,12,1
    ,18,13,32,66,66,32,6,32,14,1
    5,32,32,32,1             :REM*230
660 DATA 12,1,18,13,32,66,66,32,
    7,32,16,18,9,14,20,32,19,3,1
    8,14,32,66               :REM*178
670 DATA 66,32,8,32,16,18,9,14,2
    0,32,13,5,13,15,32,66,107,67
    ,67,67,67,67             :REM*180
680 DATA 67,67,67,67,67,67,67,67
    ,67,115,66,1,12,32,15,6,6,32
    ,49,58,48,48             :REM*192
690 DATA 32,1,13,66,74,67,67,67,
    67,67,67,67,67,67,67,67,67,6
    7,67,75,0,0              :REM*68
700 DATA 0,0,0               :REM*58
```

Listing 2.

C-128 version of the Handy-Maker program.

```
10 PRINT"{SHFT CLR}{CRSR DN}HAND
   Y-WINDOW 128 IS LOADING..."
                             :REM*178
20 FORI=4864TO6023:READA:X=X+A:P
   OKEI,A:NEXT               :REM*196
30 IFX<>116258THENPRINT"DATA ERR
   OR":STOP                  :REM*186
40 PRINT"{CRSR DN}INSERT DISK FO
   R CODE, PRESS A KEY" :REM*140
50 GETKEYA$                  :REM*32
60 BSAVE".HANDY128",B0,P4864 TO
   P6023:SYS4864             :REM*206
70 PRINT"{CRSR DN}FOR FUTURE LOA
   D:"                       :REM*54
80 PRINT"{CRSR DN}WITH 1571: BOO
   T"CHR$(34)".HANDY128"CHR$(34)
                             :REM*88
90 PRINT"WITH 1541: BLOAD"CHR$(3
   4)".HANDY128"CHR$(34)":SYS486
   4"                        :REM*150
100 DATA 120,169,82,141,20,3,169
    ,19,141,21,3,141,132,23,169,
    240,141,19,18            :REM*174
110 DATA 88,32,125,255,13,13,72,
    65,78,68,73,45,87,73,78,68,7
    9,87,32,49,50            :REM*114
120 DATA 56,13,66,89,32,73,65,78
    ,32,65,68,65,77,32,49,57,56,
    55,13,13,80,82           :REM*34
130 DATA 69,83,83,32,83,72,73,70
    ,84,45,67,79,78,84,82,79,76,
    13,0,96,216,32           :REM*236
140 DATA 36,192,8,173,13,220,41,
    4,10,45,14,23,240,27,160,0,1
    40,4,212,141             :REM*92
150 DATA 131,23,141,1,212,160,24
    1,140,6,212,172,32,208,140,1
    37,23,160,33             :REM*224
160 DATA 140,4,212,173,131,23,24
    0,26,37,162,141,32,208,141,2
```


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```
    4,212,240,13          :REM*92
170 DATA 160,4,185,126,23,153,68
    ,4,136,16,247,48,3,32,209,20
    ,173,134,23           :REM*60
180 DATA 240,93,162,1,173,11,220
    ,168,16,2,162,16,142,37,4,16
    2,32,142,36,4         :REM*56
190 DATA 142,25,4,41,16,240,2,16
    2,49,142,26,4,32,17,22,141,2
    7,4,173,10,220        :REM*0
200 DATA 32,9,22,142,29,4,141,30
    ,4,173,9,220,32,9,22,142,32,
    4,141,33,4,173        :REM*182
210 DATA 8,220,9,48,141,35,4,169
    ,58,141,28,4,141,31,4,169,46
    ,141,34,4,169         :REM*140
220 DATA 13,141,38,4,170,157,25,
    216,202,208,250,173,132,23,1
    68,10,240,7           :REM*20
230 DATA 206,132,23,40,76,105,25
    0,166,211,224,5,208,246,120,
    32,190,20,165         :REM*240
240 DATA 215,208,238,152,73,160,
    141,132,23,48,10,32,52,23,17
    4,136,23,154          :REM*134
250 DATA 76,8,20,186,142,136,23,
    174,134,23,240,10,169,32,162
    ,13,157,25,4          :REM*14
260 DATA 202,208,250,181,0,157,0
    ,240,202,208,248,162,242,134
    ,177,162,9,160        :REM*209
270 DATA 2,32,35,22,162,24,142,3
    9,10,160,216,32,31,22,142,13
    8,23,173,38,10        :REM*113
280 DATA 16,3,32,245,198,32,204,
    255,160,1,32,61,22,88,32,228
    ,255,240,251          :REM*159
290 DATA 32,220,20,164,213,76,10
    8,20,141,138,23,173,135,23,1
    41,134,23,32          :REM*49
300 DATA 125,255,19,19,147,0,173
    ,133,23,240,6,160,251,32,23,
    22,88,32,207          :REM*19
310 DATA 255,169,13,32,210,255,7
    6,152,20,152,160,16,141,135,
    23,169,32,141         :REM*87
320 DATA 138,22,141,154,22,169,1
    19,153,138,22,96,168,141,14,
    23,140,15,23          :REM*201
330 DATA 174,131,23,240,24,162,0
    ,142,131,23,142,4,212,174,13
    7,23,142,32           :REM*51
340 DATA 208,169,32,162,4,157,68
    ,4,202,16,250,96,160,0,201,6
    5,240,155,201         :REM*65
350 DATA 66,240,192,201,67,240,1
    85,201,68,240,106,201,69,240
    ,112,201,70           :REM*209
360 DATA 240,193,140,134,23,201,
    71,240,7,160,251,201,72,240,
    3,96,160,244          :REM*149
370 DATA 32,23,22,88,169,47,162,
    4,32,186,255,169,0,32,189,25
    5,32,192,255          :REM*187
380 DATA 162,47,32,201,255,169,4
    ,133,175,169,0,133,174,162,2
    5,160,0,169,13        :REM*1
390 DATA 32,210,255,202,48,30,17
    7,174,41,127,201,32,16,2,9,6
    4,32,210,255          :REM*53
400 DATA 200,192,40,208,238,24,1
    52,101,174,133,174,144,220,2
    30,175,176,216        :REM*71
410 DATA 169,47,32,195,255,76,20
    4,255,152,140,134,23,162,26,
    160,4,208,21          :REM*51
420 DATA 162,11,160,7,24,32,240,
    255,169,78,160,32,32,184,20,
    169,128,162           :REM*97
430 DATA 215,160,5,72,141,15,220
    ,134,174,132,175,32,207,255,
    160,0,177,174         :REM*31
440 DATA 106,200,177,174,41,15,1
    44,2,9,16,170,160,6,104,72,4
    8,2,160,11,138        :REM*13
450 DATA 56,233,18,48,7,208,12,1
    04,72,73,146,170,177,174,105
    ,240,138,144,2        :REM*25
460 DATA 73,128,141,11,220,192,6
    ,208,27,162,65,168,16,2,162,
    80,142,22,23          :REM*237
470 DATA 162,32,41,16,240,2,162,
    49,142,16,23,32,17,22,141,17
    ,23,160,4,32          :REM*3
480 DATA 241,21,168,233,96,16,25
    1,140,10,220,104,240,14,152,
    32,10,22,142          :REM*183
490 DATA 19,23,141,20,23,169,0,2
    40,17,160,7,177,174,41,15,13
    3,176,136,177         :REM*185
500 DATA 174,10,10,10,10,5,176,1
    41,9,220,162,1,142,8,220,96,
    168,74,74,74          :REM*139
510 DATA 74,9,48,170,152,41,15,9
    ,48,96,162,49,120,142,0,255,
    162,4,134,177         :REM*107
520 DATA 162,4,132,175,160,0,132
    ,174,132,176,177,174,145,176
    ,136,208,249          :REM*16
530 DATA 230,175,230,177,202,208
    ,242,140,0,255,96,162,9,169,
    0,149,208,149         :REM*182
540 DATA 240,202,16,249,132,212,
    132,213,162,20,142,44,10,162
    ,24,24,32,45          :REM*166
550 DATA 192,169,13,162,39,56,32
    ,45,192,32,125,255,153,147,9
    8,17,157,157          :REM*112
560 DATA 98,171,99,99,99,99,99,9
    9,99,99,99,99,99,99,99,17
    9,98,32,65,32         :REM*14
570 DATA 77,69,77,79,32,80,65,68
    ,32,32,32,98,98,32,66,32,83,
    72,79,87,32,67        :REM*108
580 DATA 76,79,67,75,32,98,98,11
    9,67,32,72,73,68,69,32,67,76
    ,79,67,75,32          :REM*10
590 DATA 98,98,32,68,32,83,69,84
    ,32,32,67,76,79,67,75,32,98,
    98,32,69,32,83        :REM*52
600 DATA 69,84,32,32,65,76,65,82
    ,77,32,98,98,32,70,32,78,79,
    32,32,32,65,76        :REM*8
610 DATA 65,82,77,32,98,98,32,71
    ,32,80,82,73,78,84,32,83,67,
    82,78,32,98,98        :REM*78
620 DATA 32,72,32,80,82,73,78,84
    ,32,77,69,77,79,32,98,171,99
    ,99,99,99,99          :REM*34
630 DATA 99,99,99,99,99,99,99,99
    ,99,179,98,65,76,32,79,70,70
    ,32,49,58,48          :REM*168
640 DATA 48,32,65,77,98,106,99,9
    9,99,99,99,99,99,99,99,99,99
    ,99,99,99,107         :REM*224
650 DATA 7,19,29,29,0,169,1,141,
    134,23,96,173,135,23,141,134
    ,23,173,138,23        :REM*122
660 DATA 240,23,141,133,23,173,3
    8,10,16,3,32,245,198,162,251
    ,160,4,32,31          :REM*158
670 DATA 22,169,19,32,210,255,16
    2,2,134,177,162,49,142,0,255
    ,160,242,162,9        :REM*158
680 DATA 32,35,22,160,24,162,216
    ,32,31,22,169,49,141,0,255,1
    89,0,240,149,0        :REM*76
690 DATA 202,208,248,142,0,255,9
    6,1,12,1,18,13,0,0,0,0,0
                          :REM*22
```

■

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DISK STUFFER

Save up to 288 graphics files on one side of a 1541 disk.

By STEVE CANNY

Long Directory is a group of three programs that utilize normally wasted disk space when you're storing lots of little graphics files, such as those created by The Print Shop and PrintMaster. It will let you save up to 288 of these files on one side of a 1541 disk, provided they don't exceed a total of 664 blocks.

To create a "long directory," first type in Listings 1, 2 and 3 and save them to disk before running them. Then load and run Listing 1, remove the program disk, insert a blank data disk and follow the screen instructions. Listing 1 allocates track 19 on the data disk, so the DOS won't save any files there.

When Listing 1 is finished, test it by entering the New command, followed by this one-liner:

```
10 FORT=1TO144:SAVE"TEST"+STR$(T),
   8:NEXT
```

This will save 144 test files to the data disk in about ten minutes. Then load and run Listing 2 from the program disk, reinsert the data disk and follow the screen instructions again. Listing 2 transfers the contents of track 18 to track 19 and reformats track 18 to accept an additional 144 files. When Listing 2 is done, enter the New command and use the one-liner to add another 144 test files to the data disk. Just change the TEST in the one-liner to TESTS this time around.

Now load and run Listing 3 from the program disk, reinsert the data disk and follow the screen prompts. Listing 3 finds the last sector on track 18 on the data disk and changes the sector link to point to sector 1 on track 19, which contains the second directory added to the disk. Listing 3 then links the first 144 files with the second 144 files and validates the disk to prevent overwriting. After you've modified the data disk with Listing 3, place a write-protect tab on it to prevent alterations.

You can't validate disks modified by Long Directory, nor can you scratch files from them or add files to them. Also, if you have a 1571 drive, you can read the directory in 1541 mode only.

When you load the data disk's directory and list it, you'll find that the test file appears 288 times. To use Long Directory with your own files, just substitute them for the one-liner after running Listings 1 and 2. Ⓡ

Address all author correspondence to Steve Canny, 1228 Monroe, Ottumwa, IA 52501.

Listing 1. *Long Directory program 1.*

```
1Ø REM LISTING 1 LONG DIRECTORY
                              :REM*164
2Ø REM:STEVE CANNY            :REM*182
3Ø REM:1228 MONROE            :REM*132
4Ø REM: OTTUMWA,IOWA 525Ø1
                              :REM*21Ø
5Ø PRINT"{SHFT CLR}{3 CRSR DNs}I
   NSERT BLANK DISK INTO DRIVE 8
    TO ":PRINT"RECEIVE SPECIAL F
   ORMAT"                     :REM*192
6Ø PRINT"{CRSR DN}THEN ANY PRESS
    KEY TO CONTINUE"          :REM*4
7Ø GETA$:IF A$="" THEN7Ø:REM*114
8Ø PRINT"{SHFT CLR}{4 CRSR DNs}W
   ORKING...."                :REM*1Ø8
9Ø INPUT"{3 CRSR DNs}DISK NAME";
   A$                         :REM*254
1ØØ INPUT"ID";B$              :REM*88
11Ø OPEN15,8,15:PRINT#15,"NØ:"+A
    $+","+B$                  :REM*11Ø
12Ø CLOSE15:OPEN15,8,15,"IØ"
                              :REM*122
13Ø OPEN8,8,8,"#"             :REM*194
14Ø PRINT#15,"U1";8;Ø;18;Ø:GOSUB
    2ØØ                       :REM*74
15Ø PRINT#15,"B-P";8;76       :REM*12
16Ø PRINT#8,CHR$(Ø);CHR$(Ø);CHR$
    (Ø);CHR$(Ø);              :REM*226
17Ø PRINT#15,"U2";8;Ø;18;Ø:GOSUB
    2ØØ                       :REM*1Ø4
18Ø CLOSE8:CLOSE15            :REM*15Ø
19Ø PRINT"{SHFT CLR}{3 CRSR DNs}
    NOW YOU CAN PLACE UP TO 144
    FILES ON":PRINT"THIS DISK, T
    HEN ";                    :REM*16
195 PRINT"RUN LISTING 2.":END
                              :REM*173
2ØØ INPUT#15,EN,EM$,ET,ES:REM*72
21Ø IF EN THEN PRINT EN,EM$,ET,E
    S                         :REM*12Ø
22Ø RETURN                    :REM*22
```

Listing 2. *Long Directory program 2.*

```
1Ø REM LISTING 2 LONG DIRECTORY
                              :REM*168
5Ø PRINT"{SHFT CLR}{3 CRSR DNs}I
   NSERT DATA DISK INTO DRIVE 8
   TO COPY & CLEAR TRACK 18"
                              :REM*15Ø
6Ø PRINT"{3 CRSR DNs}THEN PRESS
   ANY KEY TO CONTINUE"       :REM*248
7Ø GETA$:IFA$=""THEN7Ø        :REM*114
8Ø PRINT"{SHFT CLR}{4 CRSR DNs}W
   ORKING..."                 :REM*234
9Ø OPEN15,8,15,"I":OPEN8,8,8,"#"
                              :REM*12
1ØØ FORT=1TO17                :REM*88
11Ø PRINT#15,"U1";8;Ø;18;T:GOSUB
    42Ø                       :REM*126
12Ø PRINT#15,"B-P";8;Ø        :REM*16
13Ø PRINT#8,CHR$(19);         :REM*122
14Ø PRINT#15,"U2";8;Ø;19;T:GOSUB
    42Ø                       :REM*158
15Ø NEXT T                    :REM*66
16Ø PRINT#15,"U1";8;Ø;18;18:GOSU
    B42Ø                      :REM*19Ø
17Ø PRINT#15,"U2";8;Ø;19;18:GOSU
    B 42Ø                     :REM*2Ø2
18Ø PRINT#15,"U1";8;Ø;18;1:GOSUB
     42Ø                      :REM*54
19Ø PRINT#15,"B-P";8;Ø        :REM*86
2ØØ PRINT#8,CHR$(Ø);CHR$(255);
                              :REM*178
21Ø FORT=2TO255               :REM*2Ø8
22Ø PRINT#15,"B-P";8;T        :REM*126
23Ø PRINT#8,CHR$(Ø);          :REM*134
24Ø NEXT T                    :REM*156
```

→

RUN It Right

C-64; C-128; 1541 disk drive; 1571 disk drive (in 1541 mode)

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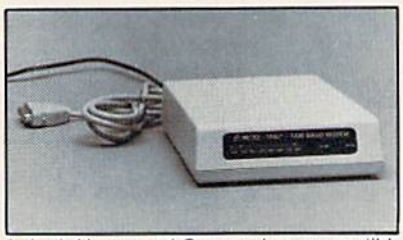

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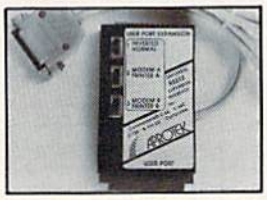

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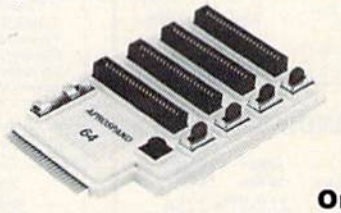

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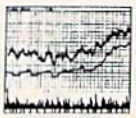

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Listing 2 continued.

```
25Ø PRINT#15,"U2";8;Ø;18;1:GOSUB
    42Ø                    :REM*124
26Ø FORT=2TO18             :REM*25
27Ø PRINT#15,"U1";8;Ø;18;T:GOSUB
    42Ø                    :REM*31
28Ø PRINT#15,"B-P";8;Ø     :REM*177
29Ø PRINT#8,CHR$(75);CHR$(1);
                           :REM*233
3ØØ FORJ=2TO255            :REM*219
31Ø PRINT#15,"B-P";8;J     :REM*85
32Ø PRINT#8,CHR$(1);       :REM*97
33Ø NEXTJ                  :REM*167
34Ø PRINT#15,"U2";8;Ø;18;T:GOSUB
    42Ø                    :REM*1Ø1
35Ø NEXTT                  :REM*11
36Ø PRINT#15,"U1";8;Ø;18;Ø:GOSUB
    42Ø                    :REM*231
37Ø PRINT#15,"B-P";8;72    :REM*231
38Ø PRINT#8,CHR$(17);CHR$(252);C
    HR$(255);CHR$(7);      :REM*175
39Ø PRINT#15,"U2";8;Ø;18;Ø:GOSUB
    42Ø                    :REM*5
4ØØ CLOSE8:CLOSE15         :REM*115
41Ø PRINT"{SHFT CLR}{CRSR DN}ADD
    FILES TO THE DATA DISK,{2 S
    PACEs}THEN RUN LISTING 3 WHE
    N FINISHED.":END       :REM*229
42Ø INPUT#15,EN,EM$,ET,ES:REM*37
43Ø IF EN THEN PRINT EN,EM$,ET,E
    S                      :REM*85
44Ø RETURN                 :REM*243
```

Listing 3. *Long Directory program 3.*

```
1Ø REM LISTING 3 LONG DIRECTORY
                           :REM*172
5Ø PRINT"{SHFT CLR}{3 CRSR DNs}I
   NSERT DATA DISK TO LINK DIREC
   TORIES."                :REM*168
6Ø PRINT"{3 CRSR DNs}PRESS ANY K
   EY TO CONTINUE."        :REM*14
7Ø GETA$:IFA$=""THEN7Ø     :REM*114
8Ø PRINT"{SHFT CLR}{4 CRSR DNs}W
   ORKING..."              :REM*234
9Ø OPEN15,8,15,"I":PRINT#15,"VØ"
   :OPEN8,8,8,"#"          :REM*178
1ØØ FORT=1TO18             :REM*88
11Ø PRINT#15,"U1";8;Ø;18;T:GOSUB
    29Ø                    :REM*Ø
12Ø PRINT#15,"B-P";8;Ø     :REM*16
13Ø GET#8,A$:IFA$=""THENA$=CHR$(
    Ø)                     :REM*56
14Ø A=ASC(A$)              :REM*38
15Ø IF A=18THEN NEXT T     :REM*44
16Ø IFA>18THENNEXTT        :REM*38
17Ø PRINT#15,"U1";8;Ø;18;T:GOSUB
    29Ø                    :REM*6Ø
18Ø PRINT#15,"B-P";8;Ø     :REM*76
19Ø PRINT#8,CHR$(19);CHR$(1);
                           :REM*132
2ØØ PRINT#15,"U2";8;Ø;18;T:GOSUB
    29Ø                    :REM*9Ø
21Ø PRINT#15,"U1";8;Ø;18;Ø:GOSUB
    29Ø                    :REM*21Ø
22Ø FORT=4TO143            :REM*146
23Ø PRINT#15,"B-P";8;T     :REM*136
24Ø PRINT#8,CHR$(Ø);       :REM*144
25Ø NEXTT                  :REM*166
26Ø PRINT#15,"U2";8;Ø;18;Ø:GOSUB
    29Ø                    :REM*5
27Ø CLOSE8:CLOSE15         :REM*241
28Ø PRINT"{SHFT CLR}{3 CRSR DNs}
    THE DIRECTORY IS LINKED.":EN
    D                      :REM*25
29Ø INPUT#15,EN,EM$,ET,ES
                           :REM*163
3ØØ IF EN THEN PRINTENEN,EM$,ET,
    ES                     :REM*245
31Ø RETURN                 :REM*113
```

■

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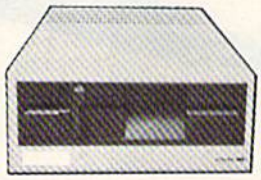

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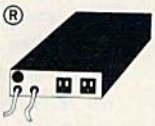

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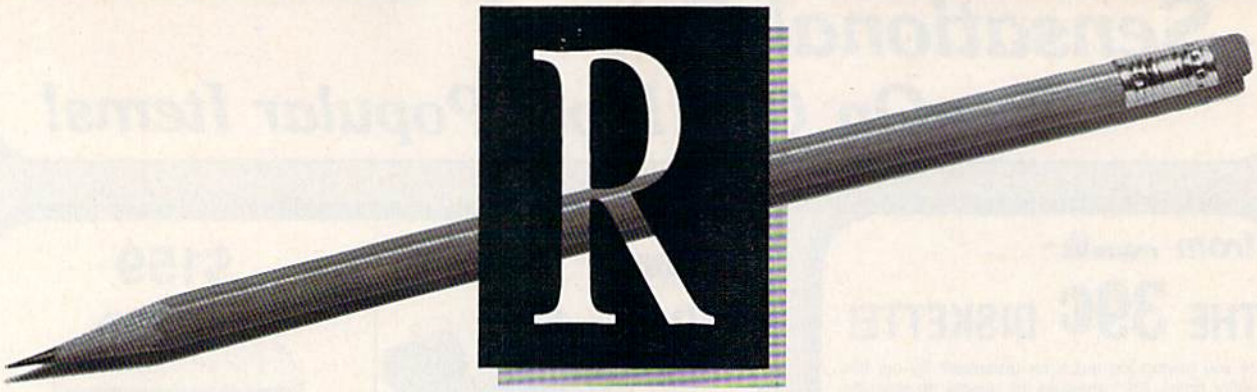

By MARGARET MORABITO

Our readers write in with information, questions and comments.

This month I'm passing along a couple of updates to past articles, an offer to share software and answers to some reader's questions.

Parent Volunteer Computer Lab

Last July I wrote about volunteers Bonnie Nebel and Susan Copp from New Berlin, Wisconsin, who started a computer lab in their local school. The lab is partly staffed by parent volunteers who set up the computers before classes arrive, load the software so teachers don't have to do it and help students with questions during the lab periods.

Nebel and Copp have received many requests for additional information on starting such a program. In answer to these requests, they've made up guidelines in an easy-to-use outline form that they've donated to *RUN* for publication. You'll find it in Table 1.

As part of the parent-volunteer program, Nebel and Copp have developed a training course for teachers and volunteers. Called Hands-On Computer Training, this course is tailored to the needs of both the teachers and volunteers and the students they'll be working with. There are two versions, one for class situations and one for self-teaching.

For more information on this tutorial software, or on the parent-volunteer program itself, you should write to Hands-On Computer Training, 19975 W. Julius Heil Drive, New Berlin, WI 53151.

Education Dealer

In the June 1986 Resource Center, *RUN* published a list of authorized Commodore education dealers. I've recently received an addition to the list—a store that was newly designated about that time. It is The Working Computer, 1320 Stony Brook Road, Coventry Commons, Suite #9, Stony Brook, NY 11790.

Physical Fitness Software

If you're involved in teaching physical fitness, nutrition or exercise physiology, you'll be interested in some C-64 programs that reader Barry Brown has created. The list includes Personalized Exercise Prescription, Nutritional Analysis, Assessment of Body Composition, Daily Energy Expenditure and Evaluation of Maximal and Submaximal Aerobic Level.

Brown wrote the software for undergraduate physical education majors, but it's also been used in high school science classes and in hospital and community wellness programs. He'll be happy to share the programs and a description of the test protocol with you. For more information, write to Barry Brown, 2431 Magnolia Drive, Fayetteville, AR 72703.

Questions and Answers

Q. Our daughter will be taking the SATs soon, and she'd like to use our C-64 to help prepare for them. Is there any SAT preparation software available for the C-64?

Stephen Bacon
Austin, TX

A. Yes, there are quite a few SAT practice packages available for the C-64. You'll find a list of some of them in Table 2. *RUN* published a review of several of these packages in the September 1985 issue.

Q. My son devotes almost all his time to his computer. He's not interested in games, but in programming and BBSs. All this is fine, except his studies have suffered. I have often thought that if software related to his schoolwork were available, he'd be an A student. Can you suggest any such software?

Linda Kosier
Palm Beach Gardens, FL

A. Your son is already a step ahead of his classmates by knowing something about programming and telecommunications. For other subject areas, there are hundreds of tutorial programs on the market. Contact your son's teachers to find out where he needs extra help, and then write away for educational software catalogs. Get a number of them, so you can choose programs that will best fit your son's needs.

RUN published a detailed list of sources for educational software catalogs in the December 1986 Resource Center. To get going immediately, write for the Hammett Microcomputer Catalog, Hammett Micro. Division, PO Box 545, Braintree, MA 02184.

Q. I'm looking for programs to use with the Muppet Learning Keys developed by Koala Technologies. I called Koala, but they told

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me the product had been sold to Sunburst. When I called Sunburst, they said they do offer such programs, but the price they quoted is high for me. Are there any public domain programs that work with the Muppet Learning Keys? If not, is there information available that will help me write my own programs?

George Pardi
Medford, MA

A. I'm not aware of any public domain programs made for the Muppet Learning Keys. However, I recently received information from Sunburst about software that will let you program that keyboard tool yourself. Called Muppet Learning Keys Tool Kit and priced at $35, it provides routines you can add to your programs so they'll work with Muppet Learning Keys. The package includes documentation for teachers on how to incorporate the software into an elementary curriculum.

You have to know Basic to use the Tool Kit. For more information, call Sunburst at 800-431-1934.

Q. Last January's issue of Electronic Learning *included an article that said Commodore is dropping out of the educational market, that third-party software companies are providing less educational support, and that people should therefore be reluctant to buy Commodores for educational use. I've written letters to Bill Rothenbach and Nigel Shepherd of Commodore about this, but the only response I get is a denial that it's true. I'm wondering if the Commodore cutback is because of the company's financial woes. Can you get more information from Commodore? Those of us in education who want to continue using the best small computer in town need corporate support, and lots of it.*

Jim Aspin
Flint, MI

A. First of all, Commodore isn't dropping out of the educational computing market. I don't think it could, even if it wanted to, because of user demand. I see why someone would spread that rumor, though.

Commodore quite definitely went through a financially shaky period that affected all levels of the company. While Apple, IBM and Tandy have major educational marketing and support teams, Commodore has had only one person manning that job at their Pennsylvania headquarters.

From my recent contact with Commodore, things look stable. Although I haven't heard of any new educational projects and support, the company is retaining its educational dealers and putting some marketing effort into promoting education.

There are new educational products from other manufacturers arriving at *RUN*'s editorial offices, which certainly indicates continued interest in the C-64 on the part of third-party producers.

Over the years, much of the support for educators using Commodore products has come from grass-roots efforts like The Resource Center and the thousands of teachers, like yourself, who take the time to share information and advice. I expect that this grass-roots effort will continue as the primary support mechanism for Commodore educational users in the United States.■

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

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

Margaret Morabito
The Resource Center
c/o RUN *Magazine*
80 Elm St.
Peterborough, NH 03458

Table 1. *Steps in developing a parent volunteer computer lab.*

1. The coordinator
   a. Find someone knowledgeable about computers, or at least willing to learn.
   b. Have coordinator arrange training sessions for teachers and volunteers and schedule volunteer time in the lab.

2. Volunteers
   a. Recruiting
      1. Talk with parents.
      2. Place notice in school newsletter.
      3. Send a special notice home.
      4. Teachers to recommend volunteers.
      5. Offer training.
      6. Take any offer of time, whether it's once a week or once a month.
   b. Duties
      1. Load machines with software.
      2. Help teacher oversee computer use.
      3. Help the teacher answer questions.
      4. Turn off the equipment and put away the software.
      5. Try out new software and make recommendations to teachers.
   c. Training
      1. If possible, give each volunteer her own computer to train on.
      2. If possible, give volunteers a week between lessons to practice.
      3. Hold sessions to two hours.
      4. Give the self-tutoring version of the Hands-On course to those who want to work on their own.

3. Getting money for equipment
   a. Ask administration to budget funds.
   b. Ask your school's parent organization to help with fundraising.
   c. Ask school librarian to contribute from the library budget or for advice on getting donations from elsewhere.

4. School software catalog
   a. List programs available for various grade levels and subject areas.
   b. Schedule software sampling sessions to familiarize teachers and volunteers with new software acquisitions.

Table 2.
A sampling of SAT programs for the C-64.

Mastering the SAT
CBS Software
One Fawcett Place
Greenwich, CT 06836

The Perfect Score
Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062

The Computer Study Program for the SAT
Barron's Educational Series
113 Crossways Park Drive
Woodbury, NY 11797

College Board SAT Exam Preparation Series
Krell Software Corp.
1320 Stony Brook Road
Stony Brook, NY 11790

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64c $149.95*
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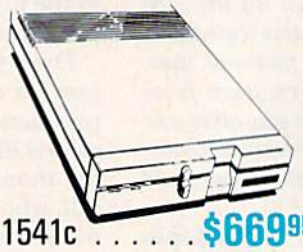

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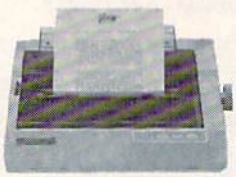
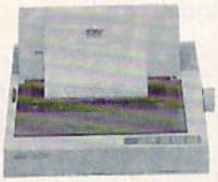
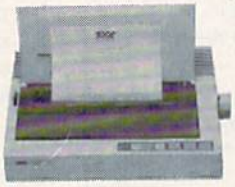


star micronics NP-10 * 139.95



star micronics NX-10 * 179.95

star micronics NL-10 * 229.95



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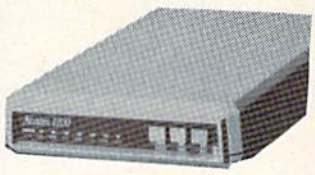

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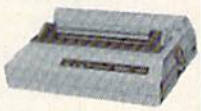

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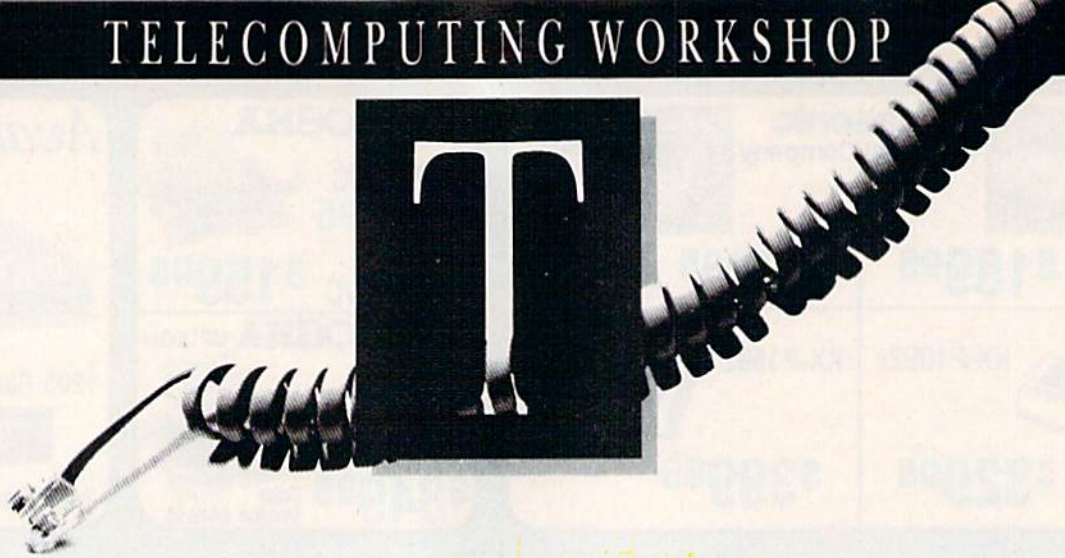

By DAVID BRADLEY

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

David Bradley
Telecomputing Workshop
c/o RUN *Magazine*
80 Elm St.
Peterborough, NH 03458

In last December's Telecomputing Workshop, on page 114, I presented a dialing program for the Mitey Mo modem. Unfortunately, it had a bug in it: The L in line 90 was supposed to be a 1. The program as printed does make the modem dial, but it dials many more times than it's supposed to. Change line 90 to:

```
90 N$=MID$(NU$,I,1)
```

I'm sorry about any inconvience this bug may have caused you.

I've been having trouble getting the software that came with my Total Telecommunications modem to work properly, and I suspect the disk is bad. Do you know how I can get in touch with the author of the program, so I can get a disk that works?

Bob Tischer
Starkville, MS

I haven't been able to find the author's address, but I'll continue to look. Meanwhile, why not try some other terminal programs for your modem? You can get a disk full of them for $5, plus $1 for postage, from Public Domain Solutions, PO Box 832, Tallevast, FL 34270. Send $3 for their catalog.

A commercial program you might also check out is called Sixth Sense. It's distributed by Prism Software, 401 Lake Air Drive, Suite D, Waco, TX 76710; 817-751-0200.

I have a C-64 and a modem, and I'd like to set up a bulletin board. Where can I find software to get started?

Clemmon Stewart, Jr.
Tacoma, WA

There are a lot of public domain, freeware and commercial BBS programs around to choose from. One way to zero in on a good one is to ask SYSOPs in your area about the software they use: what equipment it requires, its good and bad points, where he or she got it, and so on.

If this doesn't work, find as many public domain and freeware BBS programs as you can and give them all a try. (They can be found on local BBSs, national on-line systems and through suppliers such as Public Domain Solutions.) Even if you don't find a public domain program you want to use, the experience will leave you better qualified to select a commercial program to satisfy your needs.

I've recently purchased a Commodore 1200 modem to use with my C-128. It seems to function well, but it has one peculiarity that puzzles me. I keep my modem/phone connected to the user port all the time. When I'm using the computer for something unrelated to the modem, the modem still tries to answer incoming calls. Is there a way to prevent this without unplugging the modem or the incoming phone line?

Joseph A. Gillis
Annapolis, MD

There's a small device called a ring silencer available from Radio Shack that will prevent the ring signal from getting through to the 1670. It's part #43-127 and costs $7.95.

The following one-liner will also do the trick, but it has to be loaded or typed in every time you turn on your computer:

```
10 OPEN2,2,0,CHR$(6)+CHR$(0):
   PRINT#2,"ATS0=0"
```

I have a C-128 and an Avatex 1200 1200-baud modem (which is not fully Hayes-compatible). The terminal program I use, Simple Term 2.3, won't run my modem on the 1200-baud option. Can you suggest a terminal program that uses the Xmodem and Punter protocols and will run my modem at 1200 baud? If not, does anyone want to buy a modem?

B. J. Booth
Fremont, MI

Don't throw away your Avatex yet. The public domain terminal program

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DarkTerm 4.B will do what you're asking. You can order it from Public Domain Solutions (address above) for $5 plus $1 postage.

Recently I acquired a Volks 6480 modem with its AutoCom 64 software. This combination works fine, but I can't get the modem to work with the more flexible VIP terminal software. No matter how I set the modem, it won't dial.

Andy Zajac
Windsor, CT

I don't know of a way to make the Volks 6480 work with the VIP software, because this modem dials in an unusual way. There are some public domain programs for the 6480 that are more flexible than AutoCom, however. If you belong to an on-line service, look for one there. Otherwise, I expect Public Domain Solutions (address above) may be able to help you, and you can check with other sources of public domain software. *RUN* published a list of them on page 48 of the November 1986 issue. To get a copy of that issue, send $3.50, plus $1 for postage and handling, to *RUN* Magazine, Back Issues, 80 Elm St., Peterborough, NH 03458.

I've been using a system consisting of a C-64, a VicModem, a Datassette and a black-and-white television to access BBSs. Now I'd like to start uploading to and downloading from the BBSs. Is there a program I can use with my system for this?

John Rennie
Markham, Ontario, Canada

CXTerm, version 1.04, is what you need. This 300-baud program up- and downloads using the Xmodem and Punter protocols. I think CXTerm is available on Q-Link, but with a tape drive you can't download it from there. Public Domain Solutions (address above) will send it to you for $7.50 plus $1 postage.

In last November's Telecomputing Workshop, you stated that the Plus/4 is the best telecommunications machine Commodore has on the market. Are there any modems available that run, or could be modified to run, with the Plus/4 at 1200 and 2400 baud?

George Gakoumis
Willow Grove, PA

The Plus/4 is really better described as "the Commodore machine with the most telecommunications potential," since it's received little support. Regardless of terminology, however, any standard RS-232 modem should work with a Plus/4 and an RS-232 interface connected to the user port. Just be sure you get one that offers 1200 and 2400 baud. The Omnitronix Deluxe RS-232 interface is one possibility. It costs $49.95 and is available from Omnitronix, Inc., 760 Harrison St., Seattle, WA 98109.

I want to run C-Net BBS software on a system that includes a C-64, an Avatex 1200 modem and an RS-232C interface, and I need to know which modem setting to use. My choices are:
1. HESmodem II/Mitey Mo/1064
2. 1650/Total Tel/Westridge
3. Hayes/ProModem/1670

Kevin Brown
Hanceville, AL

I'm afraid that none of these options will let you use your Avatex with C-Net. You might look around for an update of the program or for other BBS software that will support your modem. If that fails, you'll have to get a different modem.

When planning a bulletin board system, it's best to find the software you want to use and then buy a modem that works with it. Getting the modem first, then trying to find software to go with it can be a frustrating experience.

We use four C-64s in our engineering department at work. How can I set up a network for these computers to share printers and other peripherals?

Eduardo P. Guillen
San Diego, CA

There are many hardware systems on the market that will let a number of C-64s access common peripherals. Schools often use setups like this, so I checked with some school boards. The system that came out on top in my survey is called ComSpec MicroShare. For more information about it, contact ComSpec Communications, 153 Bridgeland Ave., Toronto, Ontario, Canada M6A 2Y6; 416-787-0617.

I'd like to upgrade from my Commodore 1650 modem to a 1200-baud modem and still use my 1650-compatible terminal programs. Is there a 1200-baud modem available that would fill the bill?

Steve Heater
Sutton, Ontario, Canada

I know of only one such unit—the Pocket Modem 1200. It plugs directly into the user port and works just like a 1650 at 300 and 1200 baud. I've tested one of these modems and was impressed. For more information, contact PDQ Sales, 350 Main St. East, Milton, Ontario, Canada L9T 1P6; 416-876-1148.

Telecomputing Tips of the Month

If you have a Commodore SX-64 and are having trouble using QuantumLink, try plugging one end of a serial cable into one of the serial ports. Don't plug the other end into anything; just let it hang.

When you invest in a modem, don't let price be the determining factor in deciding which to buy. There are two basic standards for C-64-compatible modems: 1650 and Hayes. Try to stick to one of these standards, because most terminal programs, be they commercial or public domain, support them. Definitely avoid the Volks 6480 modem. I've seen a lot of Commodore users go through a lot of grief because they couldn't find an adequate terminal program to go with it.

If you're thinking of running a BBS on a C-64 or a C-128 and are looking for a hard disk drive to go with it, check out the 20-megabyte Xetec Lt. Kernal. It will load more than 110 times faster than the 1541 and, besides, it makes a great monitor stand! By the time you read this, the Lt. Kernal should be available all over North America. For more information, contact your local dealer or Xetec, Inc., 2804 Arnold Road, Salina, KS 67401; 913-827-0685.■

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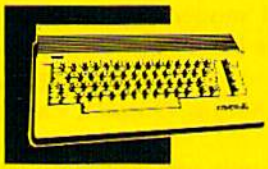

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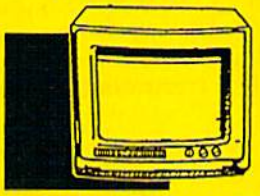

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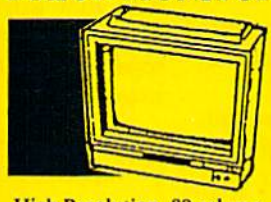

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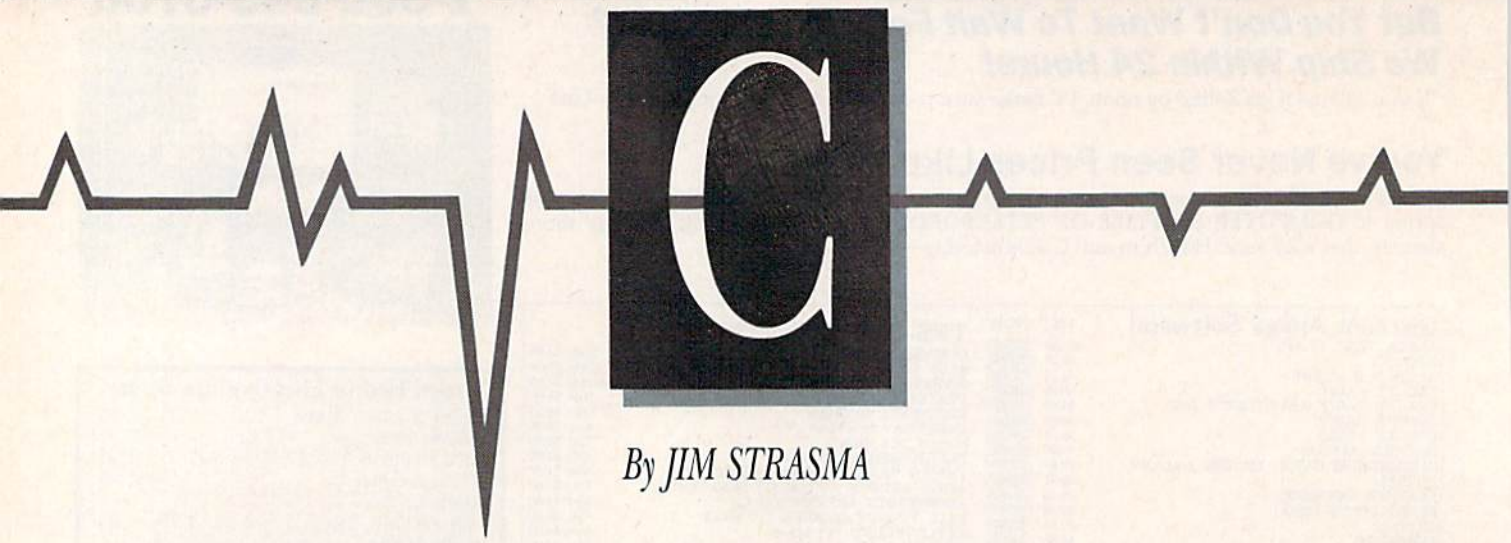

By JIM STRASMA

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

Jim Strasma
Commodore Clinic
PO Box 6100
Macomb, IL 61455-6100

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

SOFTWARE

Q: I own a C-128, and I'd like to know why Commodore and other companies don't include C-64 and C-128 versions of a program on the same disk—one side for the C-64 and the other side for the C-128 mode version.

Mike Douglass
Rochester, NY

A: One reason may be that there are some serious problems with using the second side of a C-128 disk.

Since many C-128 owners use 1541s, however, software manufacturers might consider putting both C-64 and C-128 versions of a program on the same side of a 1541 disk. All that's required is a short, initial loader program to detect which machine or mode loaded it, and then to load the appropriate main program. This can be determined either by checking the contents of a location in ROM that differs between C-64 and C-128 modes, or by noticing the address at which the loader has been stored, since that, too, differs in the two modes.

Q: The various ads I've seen for music software never indicate whether the programs can be used as background music in my own programs. Do you know of a music package that can do this?

E. H. McCuaig
San Mateo, CA

A: Master Composer, from Access Software, does what you ask. Once you enter this program, its songs compile into executable machine language programs that load and run separately from, but concurrently with, your programs via IRQ interrupts.

Q: Last May I received a Commodore PET 4016 with no instruction manual. I've written, visited and phoned outlets likely to stock the book, but none have copies, since the PET is no longer being manufactured. I'd be deeply grateful if you could tell me where I can purchase a manual for my PET computer.

Sister M. Davidica
Danville, PA

A: In my opinion, the best PET manual still available is the third edition of the *PET Personal Computer Guide*, from Osborne/McGraw-Hill. Order the manual from them by calling 800-227-0900. The reason I think it's so good is that my wife and I wrote it.

While we're on the subject, your plight illustrates a common problem. When computers go out of production, products for them also disappear from stores, but the machines themselves remain useful for many years.

Based on the mail I've received, though, programs and accessories for the PET and VIC that couldn't be given away two years ago can now be sold for their original list price. This is a great opportunity for anyone willing to stock and sell them. How about it, dealers?

HARDWARE

Q: I'm having difficulty understanding some of the terminology for wire and cable connections. What is a shielded conductor, a 9-pin conductor, etc.?

Eric Romero
Brooklyn, NY

A: Cables come in shielded and unshielded versions. Shielded cables are wrapped in a layer of insulation to keep its signals from either affecting or being affected by signals outside the cable. So, of course, cable TV companies use shielded cables, but electric extension cords have unshielded cables.

Cables also vary in the number of wires they contain and in the type of connectors they use to terminate the wires at each end. It's reasonable to expect a nine-pin conductor to refer to a cable with nine insulated wires, each carrying its own signal and ter-

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minating with its own metal pin in the connectors at each end. However, as is often the case, Commodore's nine-pin cables leave a couple of pins unconnected to any wire.

Q: I bought my Leading Edge Banana Gorilla printer from DAK Industries, and I want to use it with my C-64. The printer has a 25-pin female interface. Where can I buy the male counterpart?

Rodney Mullineaux
Irvine, CA

A: As I recall, DAK Industries (8200 Remmet Ave., Canoga Park, CA 91304; 800-DAK-0800) sold an interface that connected to the user port of the C-64. However, the user port is not the best place to connect a printer, because few Commodore programs support RS-232 printers via the user port.

Instead, consider the Cardco PS printer interface, now being marketed by Supra Corporation (1133 Commercial Way, Albany, OR 97321; 503-967-9075). One end connects to Commodore's serial bus like other printer interfaces; the other end provides your printer with the necessary unidirectional RS-232 port. Just be sure your Banana Gorilla can communicate at 1200 baud, since that is the only serial communication speed supported by the PS interface.

Q: My 1541 disk drive refuses to rotate Maxell disks when the air is hot and muggy. And two programs on another disk won't load, even under cool and dry conditions. I finally resorted to removing the inner, rotating part of both disks and inserting them into Elephant covers. Do you have a better solution?

Barry Ketaner
Norfolk, VA

A: A couple of years ago, Buck Buchanan, of Cardinal Software, made a study to determine the torque, or twisting force, required to rotate different brands of disks. Buck noticed definite differences, from a low of ¼ ounce for Memorex disks to a high of 1½ ounces for BASF disks. Maxell disks, however, required only half the torque of Elephant's. This suggests that the torque of one or both brands has been changed since those tests were made.

The most common cause of disk binding is from heavy weights on the disk during packing, shipping or storage, or from rough or careless handling that may smash a disk's jacket. From time to time I receive review disks that refuse to rotate because they've been pressed flat. So, your solution, removing the disk from its jacket and installing it in a new one, usually works regardless of the brand of the new jacket.

Try using a direct-drive disk unit, such as the MSD, to read the disk. The Teac drives in the MSD generate more torque than the 1541 and automatically adjust for proper rotation speed regardless of the tightness of the jacket. If this works, copy the entire contents of the disk to a new blank disk of a brand that works well for you, and use that exclusively.

Another solution is to use your computer in an air-conditioned room. That would solve both the heat and moisture problems, making both you and your computer system more comfortable.

Q: With respect to possible damage, is there any difference between physically plugging or unplugging a cartridge with the computer on and electrically switching the cartridge on or off when it's mounted on an expansion board?

William Pace
S. Charleston, WV

A: There's a huge difference! It is extremely dangerous to your system to physically connect or disconnect a cartridge with the computer on. If the cartridge doesn't mate precisely with the contacts in the cartridge port, they'll almost certainly short out and damage your computer.

To switch a cartridge on or off, either first turn off the computer and all connected accessories, or else use an expansion board with an on/off switch for the cartridge.

Q: I just received a new printer, and I'm happy with it except that it uses the same serial port on my computer as does the disk drive. I'm aware of a device that allows both a printer and a disk drive to be con-

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nected to the C-64 at the same time. Any information is appreciated.

Barry Ashworth
Tucson, AZ

A: If you look at the back of your disk drive, you'll see a second serial bus connector. To use your disk drive and printer at the same time, connect the drive to the serial port at the back of the computer, and connect the cable running from the printer to the other port on the back of the drive. This is known as daisy-chaining, which allows you to hook up several devices at once.

Q: Should Commodore keep its registered C-128 owners up to date about any enhancements and repairs to their machines?

D. N. Tjelios
St. Bruno, Quebec, Canada

A: Logically, yes, Commodore should send occasional mailings to its customers to interest them in further Commodore purchases and upgrades. In practice, however, it would be a miracle if you did hear from Commodore, particularly about an upgrade. This seems foolish and shortsighted, but it is a fault also occasionally shared by other computer manufacturers, like Apple and IBM. The best way to keep up with enhancements is to continue reading computer magazines like *RUN*.

As for specific repairs to the C-128, I've mentioned faulty cartridge slots on some of the earliest C-128s, and the faulty response to the shifted-Q key, both of which reportedly have been fixed in newer machines.

To that I now add the dangers of using the flip side of a 1571-formatted disk in C-128 mode. The most serious problems are with the drive's tendency to mix the BAMs and to corrupt files that have portions on both sides of the disk. A new ROM for the 1571 (currently called Rev 5) may be needed to fix the problems. In the meantime, ICPUG's Jim Kennedy in England and well-known author Paul Blair in Australia recommend leaving at least 664 blocks free on a double-sided, 1571 disk.

In the past, Commodore allowed owners of problem equipment to purchase the needed upgrades. Ask an authorized Commodore service center to order and install the upgrade for you.

PROGRAMMING

Q: Is it possible to write a subroutine that allows the user to create Data statements that will be included in the listing after the program is run?

William Word
Bellwood, IL

A: Yes, it's possible, and most user group libraries provide Datamaker programs to make Data statement values out of the contents of selected memory locations. This is useful in converting a machine language program into a form that's easier for non-programmers to enter.

However, apart from such specialized uses, what you propose is a self-modifying code, which is a nasty violation of good programming. It's also unnecessary. Rather than add Data statements to a listing, why not just open a file and dump your data into the file? That's what files are for, after all, and we'd all be better off if more programmers used them.

Q: What is Reverse Polish Logic?

Kam Wong
Edmonton, Alberta, Canada

A: There are three possible ways to write a mathematical expression; 1 + 2, the one all of us use every day, is one way. When the plus operator (+) is in its usual location between the two operands (1 and 2), that is known as infix notation.

A second way is Polish notation. In this form, the operator precedes the operands, and it's expressed as + 1 2. The advantage of this version is that it speeds the programs used to evaluate them, since parentheses required to describe complex expressions aren't needed.

The third way, known as Reverse Polish notation, places operands before the operator, expressed as 1 2 +. Hewlett-Packard calculators and the Forth programming language use Reverse Polish Notation because expressions are efficiently stored and retrieved with the stack operations included in the machine language instruction sets of nearly all microprocessors.

Q: I've written a program, similar to the one below, that uses a loop to print a long series of computations:

```
10 OPEN 4,4
20 CMD 4
30 FOR I = 1 TO 99
40 : PRINT A$(I)
50 : GET B$
60 : IF B$ = CHR$(20) THEN 80
70 NEXT I
80 PRINT#4
90 CLOSE 4
```

The problem is that, after printing the first item to the printer, the program resumes printing to the screen, as though it had dropped the CMD 4 command in line 20. Removing lines 50–60 eliminates the problem, but then I can't terminate the loop when necessary.

Why is this happening, and what can I do to remedy it?

John Busch
Oxon Hill, MD

A: The program is reverting to the screen output as a safety measure, triggered by the Get command in line 50, while output has been diverted from its usual device via CMD. Rewrite your program without CMD. Also change line 60 to exit the loop cleanly. This avoids overloading Basic's stack with half-finished loops. Otherwise, you might eventually run out of stack room and halt the program.

Here's the new version:

```
10 OPEN 4,4
30 FOR I = 1 TO 99
40 : PRINT#4,A$(I)
50 : GET B$
60 : IF B$ = CHR$(20) THEN I = 99
70 NEXT I
90 CLOSE 4
```

Notice that it's also two lines shorter than the version using CMD. The only time I use CMD myself is to list a program on the printer, and then only because there is no other easy way to do it.■

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RUN Amok

Item: There were several errors in the sidebar, "How To Enter RUN Script 128," on page 70 of last December's issue. In step 3 of the instructions, "then enter Listing 3" should read "then enter Listing 4," and "containing Listings 1 and 2" should read "containing Listings 1, 2 and 3." In the next paragraph (step 4), the two references to Listing 4 should both read "Listing 5," and "containing Listings 1, 2 and 3" should read "containing Listings 1, 2, 3 and 4."

Item: Also referring to "RUN Script 128" (in *RUN*, December 1986, or in the November-December 1986 ReRUN), the program requires a minor modification in order to be compatible with the Define Macros program (*RUN*, January 1987). Make the following changes in the order shown:

Listing 3 (Create ML) needs two changes. First, remove NEXT A from the end of line 90 and type in a line 95 that reads 95 NEXTA. Second, in line 120, replace P(DEC("3A76")) with P(DEC("3AF4")); then save this modified Create ML to disk before running it.

Finally, type in and run the following listing to modify the ML program. Again, be sure to save it to disk before running it.

```
1Ø REM RUNSCRIPT 128 MACRO PRINT
   ER PATCH              :REM*216
2Ø BANK 1: POKE47,DEC("5ØØØ") AN
   D 255:POKE48,DEC("5ØØØ")/256:
   CLR:REM RAISE START OF VARIAB
   LES                   :REM*156
3Ø DATA"1Ø39","1Ø","1Ø3A","AØ","
   26DC","3Ø","3AF3","9F"
                         :REM*128
4Ø PRINT"INSERT THE DISK WITH TH
   E PROGRAM "CHR$(34)"OB.RS128
   2.4Ø"CHR$(34)" ON IT, THEN PR
   ESS ANY KEY.":GETKEYA$:BLOAD"
   OB.RS128 2.4Ø",B1,P(DEC("Ø4ØØ
   "))                   :REM*168
5Ø FORA=1TO4:READA$,B$:BANK1:POK
   E DEC(A$),DEC(B$):NEXT
                         :REM*2Ø6
6Ø PRINT"INSERT THE SAVE DISK TH
   EN PRESS ANY KEY.":GETKEYA$:S
   CRATCH"OB.RS128 2.4Ø":BSAVE"O
   B.RS128 2.4Ø",B1,P(DEC("Ø4ØØ"
   ))TOP(DEC("3AF4"))    :REM*234
7Ø PRINT"FIXED OB.RS128 2.4Ø PRO
   GRAM IS SAVED."       :REM*148
```

Item: "Master Menus" (1987 Special Issue, p. 58) makes reference to lines 1365–1455, which hold the instructions for branching to sections of your program, but these lines were omitted from Listing 2. They read as follows:

```
1365 GOTO 1460 : REM CHOICE #1
1375 GOTO 1460 : REM CHOICE #2
1385 GOTO 1460 : REM CHOICE #3
1395 GOTO 1460 : REM CHOICE #4
1405 GOTO 1460 : REM CHOICE #5
1415 GOTO 1460 : REM CHOICE #6
1455 GOTO 1460 : REM CHOICE #7
```

Item: Also in the 1987 Special Issue, on page 85, line 20 in the little program at the bottom of the center column should read: INPUT#15,A,B$,C,D.

Item: The 1987 Special Issue also has an error in the third command of the "KoalaPainter to Print Shop" Magic item on page 129. It should read 4000, not 400.

Item: In the January 1987 issue, the last answer in Commodore Clinic (p. 109) states that CHR$(143) is the screen-clearing code. This is not so. It should be CHR$(147), the hexadecimal equivalent for which is $93.

Item: In order to make the program for "Retir'eze" (p. 68, February 1987) compatible with the C-64, the author replaced ELSE with the keyword GOTO in lines 650, 670, 690, 710, 730 and 750, thereby making the published checksums of those lines invalid. The checksums should be 160, 96, 134, 166, 62 and 184, respectively. 128 users can resubstitute ELSE for GOTO in those lines to get the published checksums.

Item: The program for "Break the 128 Memory Barrier" (February 1987, p. 92) can be deactivated by pressing the run-stop and restore keys simultaneously. The author, M. Garamszeghy, has modified the program to keep this from happening, and you can get the details by writing him at 67 Callender St., Toronto, Ontario, Canada M6R 2H2.

Item: April 1987's Telecomputing Workshop contains an error in the little program answering Errol Korn's question on page 78. The quotation marks in line 20 should be double, not single.■

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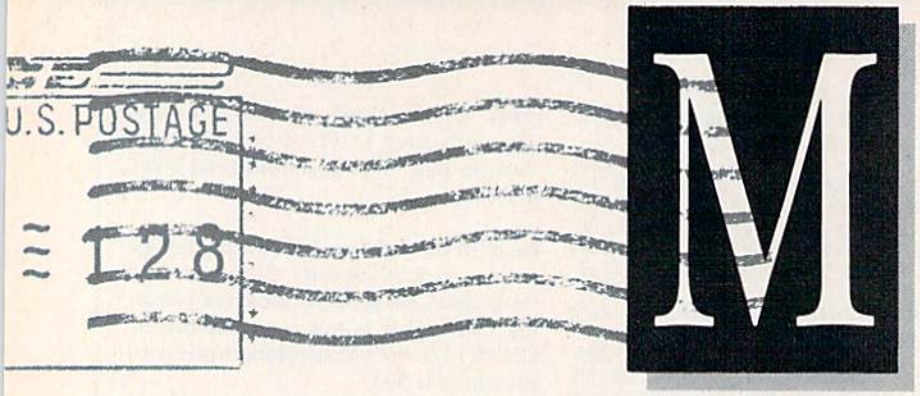

SX-64/Model 100 Hookup

I had so looked forward to connecting my SX-64 to my Radio Shack Model 100 after reading about the forthcoming article in the February 1987 issue of *RUN*. Imagine my consternation when I read that I must use ML Perfect Typist 2.0, for the C-128, to type in the data transfer program. Can you explain how I can use a typist program for the C-128 to prepare a machine language program for my SX-64?

Nathaniel F. Ireland
Marlow, NH

We're sorry for the confusion. ML Perfect Typist 2.0 works on both the C-64 and the C-128. However, in order for the checksums to come out right, you need to delete line 10 of the transfer program.

Editors

Calendar Generator Changes

Many readers have written in to say they've had trouble typing in line 300 of my Easy Applications program, Calendar Generator, in the January 1987 issue of *RUN*. To make typing in this line easier, you can split it into two separate lines as follows:

```
300 CE=(64-LEN(MO$(MO))*2-12)/
    2+9:PRINT#4
302 PRINT#4,SPC(CE)CHR$(14);MO$
    (MO)+" ";YR
```

I'd also like to thank the readers who caught an error in my logic. In writing the program, I forgot to take into account that, while all century markers are divisible by 4, they are not all leap years (1900 and 2100, for instance). Adding the following line will keep Calendar Generator from printing them out as leap years:

```
63 IF ND(2)=29 THEN IF (YR/400)-INT
   (YR/400)<>0 THEN ND(2)=28
```

Michael J. Martone
Parsippany, NJ

Update to Notepad Update

In my 64 Notepad Update program that appeared in the January 1987 issue of *RUN*, I used a Commodore-specific command that centers the program output on the page. From readers' letters, I've discovered that this command unfortunately makes non-Commodore printers print the number 20 at the beginning of each line. To correct this problem if you have a non-Commodore printer, remove the REM in line 127 of Listing 2, on page 60, and replace it with POKE MEM+103,177. The printout won't be centered, but the 20s will disappear.

Robert C. Kodadek
Aston, PA

Typing In Crosswords

I've received several letters from readers who can't get my Crosswords program on page 76 of the January 1987 *RUN* to work. They all entered the program using Perfect Typist, and their checksums wouldn't come out right. The difficulty has come from using shifted spaces—or even no spaces—to separate the graphics characters in lines 2100 and 2120. When you're typing Crosswords in, be sure to use unshifted spaces in those spots.

John M. Smyczynski
Warren, OH

More on Superbase

I'm writing in regard to Superbase 128, which was reviewed by John Premack in the October 1986 issue of *RUN*. I found a number of bugs in the initial version of the program, so I sent for the upgrade (for $10). It fixes the problems I was having, and Progressive Peripherals claims it also solves the problem, mentioned in the article, with accessing files on some 1571 disk drives.

Concerning the letter about the review from Stephan Kage in the December Mail RUN, I use a Skyles interface with my SFD-1001, and it works fine.

Now a couple of questions. Do you know of any user's groups for Superbase? Also, can the backup function of Superbase 128 be performed on two disk drives rather than on a single or dual drive?

Robert Wright
1013 N. Glendale Ave.
Glendale, CA 91206

Thanks for the tips, Robert. As to Superbase user's groups, neither I nor the folks at RUN *or Progressive Peripherals know of any. If you subscribe to QuantumLink, or any other national on-line network with an active Commodore section, you might check there. Even though you may find no*

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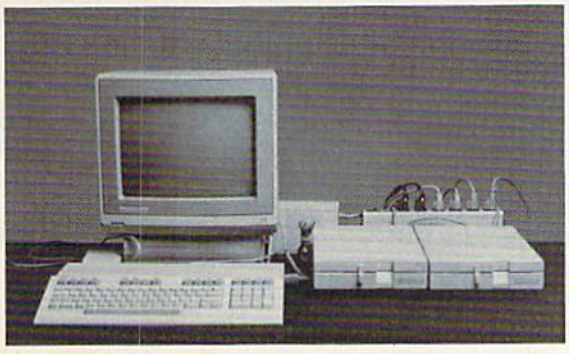

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Mail RUN

formal user's group through a network, you're sure to find plenty of experienced users. Also, your full address is appearing in Mail RUN so any readers who know of a Superbase group can contact you.

In answer to your second question, since Superbase's built-in, single-drive backup function is little more than a buffer-type copier, most users are better off using one of the disk backup utilities available both commercially and in the public domain. Unfortunately, because your files are on double-sided, double-density SFD 1001 disks, a disk copier may not work.

However, you can probably use Jim Butterfield's Copy-All (64 mode). This old standby lets rapid file-by-file transfer proceed without operator intervention until the target disk is full. Since Copy-All can transfer files between devices of different capacity, you should even be able to back up data from your 1001 to several 1541 or 1571 floppies. I use Copy-All to back up a CBM 9060 hard disk to SFD 1001 floppies with no difficulty.

John Premack

More Software Salvos

I'd like to make a couple of comments regarding your article "The Software War" in the January 1987 issue of *RUN*. First, most software is overpriced. When the publishers want $40–$60 for a program, and yet they can sell it to discount houses low enough that the discount houses can sell it for $20–$25 less, and both the publisher and the discount house can make a profit, then the original publisher's price has to be too high.

The $10 some companies charge for a backup copy is also too high. I'm sure $5 would cover their postage and "handling." Batteries Included has the right idea. They include a dongle that lets you run the program on only one computer, yet it allows you to make an archival backup copy.

E. H. McCuaig
San Mateo, CA

Why don't manufacturers include a backup copy of their software with every disk? Sure, it would cost a little, but certainly not enough to price the program out of sight. That would make honest fellows out of a lot of technical crooks.

On a slightly different note, I end up using only about half the software I buy. The reason is twofold. Part of the time, the programs just don't live up to the advertisements. More serious are the cases where the programs are obviously good, but the instructions aren't as complete and specific as they should be. Users like me who aren't hackers have to be led by the hand. Trying to get the manufacturers to help does no good—I've beat my head against that stone wall until it's bloody.

J. M. Kinabrew, Jr.
New Orleans, LA

I've been stung too many times buying software only to find it doesn't live up to the manufacturers' claims, or that I need a program that operates differently. All these disappointments could have been avoided if I'd had access to the documentation before buying the program. Since I didn't, I tried out pirated copies, then bought originals of the programs I wanted to use.

I believe software manufacturers could discourage piracy by making documentation available separately from the program, for whatever price would cover the printing and distribution costs. Such distribution should be promoted as aggressively as the software, and the documentation should be available for direct ordering by consumers. It would also be nice if hotline services were extended to include questions on documentation from prospective buyers.

Mary D. Butcher
Hacienda Heights, CA

The C-64 and the Mentally Handicapped

I'm an audio-visual designer in an institution for mentally handicapped people and have just obtained a C-64 to use in my work. I'd like to hear from other people who might be using the C-64 to work with mentally handicapped children or adults, especially those who are profoundly or severely handicapped. I have no information about such usage here.

Susan Fallon
Helsingin Keskuslaitos
Sofianlehdonkatv 8
00610 Helsinki 61
Finland

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Perhaps the Resource Center column about Commodores and the handicapped in the February 1987 issue of RUN *would be helpful to you. It describes the work being done by Don Peterson of Tempe, Arizona, in developing input devices and various kinds of software for the physically and mentally disabled. He is making his software available free on disk and on-line through QuantumLink. We're also publishi g your full address so other* RUN *readers who are working with the handicapped can contact you. Good luck!*

Editors

Fastfile Review

The Fastfile review in the February 1987 Software Gallery contains some inaccuracies. Fastfile is targeted for small businesses, as well as the home. Also, leading zeroes aren't needed to ensure that each numeric field contains the same number of digits for sort and find specifications.

Partial string searches aren't limited to the asterisk as a wild card and the question mark for unknown characters. Fastfile also does fast searches using the >=, <= and <> commands and a Total command. The prompts for these designators appear on all search specification screens.

Fastfile does offer prompts during sort specification entry. When you type in the field number, the field name is automatically displayed. After you've input all field specifications, the program automatically provides an opportunity to edit.

Finally, Fastfile and word processors share similar power failure and operator error risks, and the 85 percent money-back guarantee lets the buyer try the software without risking the entire purchase price. All our dealers have agreed to abide by this policy.

R. D. Benham
Interactive Mini Systems
Kennewick, WA

A Call to Readers

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

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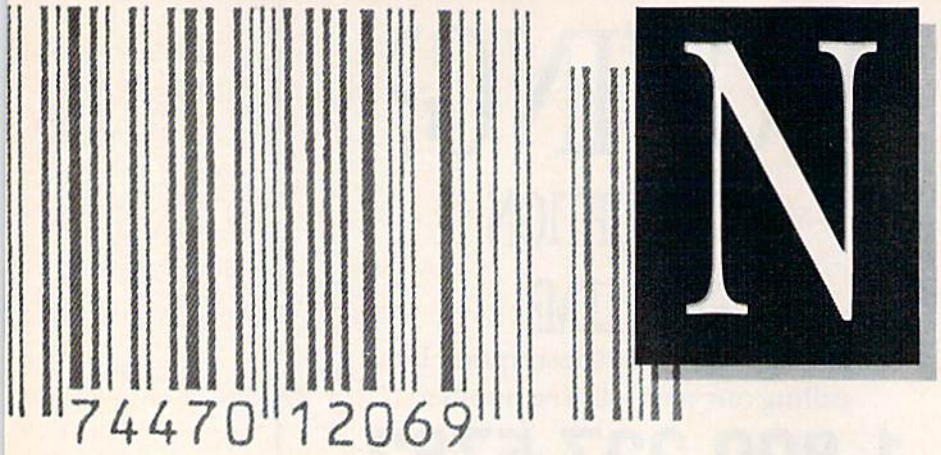

Compiled by HAROLD R. BJORNSEN

Get 80-Column Displays on Your Composite Monitor

Innovative Computer Accessories (PO Box 789, Imperial Beach, CA 92032) sells two cables for the C-128 that produce monochrome, 80-column displays on your composite monitor with RCA jacks. The 80-Column Mono Cable ($9.95) is made for the Commodore 1701 and 1702 monitors. The 40/80 Column Switch Cable ($23.95) is for all other monitors; it lets you toggle between 40- and 80-Column modes.

Check Reader Service number 400.

Date- and Time-Stamp Your Programs

Time-DOS, a date- and time-stamping system for the C-64 and C-128 and the 1541, 1571 and compatible disk drives, is RAM-resident and transparent to any program where there's no conflict in memory usage. It date- and time-stamps program files automatically, but you may stamp all file types manually. Date- and time-stamp data for each file is displayed in the directory, along with the usual information. A software-driven real-time calendar clock is included. Available for $19.95 from Family Software, 3164 Surrey Lane, Aston, PA 19014.

Check Reader Service number 401.

Load Programs Instantly From Cartridge

The 16K Quick Brown Box, a battery-backed RAM program-storage cartridge from Brown Boxes (26 Concord Road, Bedford, MA 01730), loads any C-64 and C-128 program and stores it indefinitely for immediate accessibility. The box contains loader utilities to let you transfer Basic and machine language programs from disk to cartridge and incorporates a switch to toggle between 64 and 128 modes. Available for $59 plus $3 postage and handling.

Check Reader Service number 402.

Simplify Math Operations

Dynacomp (1064 Gravel Road, Webster, NY 14580) has added six new C-64 software packages to its line of science and math programs.

Multiple Integration ($19.95) computes integrals of any order based on integrand functions that you supply. Functions ($29.95) produces hi-res plots of functions. Linear Algebra ($29.95) solves simultaneous linear equations. Regression Analysis II ($39.95) performs bivariate and multivariate linear and nonlinear regressions and produces hi-res scatter plots. Nonlinear Systems ($39.95) solves simultaneous nonlinear equations. Linear Ordinary Differential Equations ($29.95) solves boundary value problems involving linear ordinary differential equations.

Check Reader Service number 403.

Subscribe to a Magazine

Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404) has launched *Farther*, a quarterly magazine to inform consumers about the company's activities. In addition to feature articles, the publication includes columns about the personalities of software developers, information on the company's programs and a forum for discussing its products. To subscribe, fill out the warranty card included with any Electronic Arts product and return it to the company. Registered owners will receive a complimentary, one-year subscription.

Check Reader Service number 405.

Play the Links at Augusta and Pinehurst

Access Software (2561 South 1560 West, Woods Cross, UT 84087) presents Famous Courses of the World (Augusta and Pinehurst), a golf accessory program for the C-64. The program reproduces the distances, traps, water hazards and roughs for every hole in these courses, and every shot and decision you make tests your golfing skills. It's available for $19.95 and requires the manufacturer's Leader Board golf simulation and a joystick.

Check Reader Service number 404.

Write Artificial Intelligence Programs

Lips Lisp (List Processing Software, PO Box 3422, Rapid City, SD 57702), a beginning Lisp interpreter for the C-64, includes over 50 common Lisp commands for writing your own ar-

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tificial intelligence programs. A 140-page manual, a tutorial and sample programs come in the package. Also, a compiled, executable version of the interpreter on the disk lets you immediately begin writing Lisp programs. The price is $39.95.

Check Reader Service number 415.

Fight in the South Pacific

War in the South Pacific, a semi-real-time campaign game set in World War II, features three scenarios: The Battle of the Coral Sea, May 1942; the invasion of Guadalcanal by the Marines, August 1942; and the Japanese attempt at counterattack on Guadalcanal, October 1942. The firepower of over 400 ships, 17 types of aircraft and numerous infantry units are at your disposal for engaging in one-, four- and eight-hour modes against your C-64 or a friend. Available for $59.95 from Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94043.

Check Reader Service number 408.

Collect Five Arcade Games

Mindscape (3444 Dundee Road, Northbrook, IL 60062) has released five new arcade games for the C-64 at $29.95 each. Fight off a squadron of enemy ships that are depleting your galactic sector's mineral resources in Uridium; run a series of soccer ball races through hyperspace networks of changing color grids in Trailblazer; thwart an alien attack against Earth in Parallax; practice major judo throws in Uchi Mata; marshall your kung fu skills to defeat mighty enemies in Fist: The Legend Continues.

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Analyze Spectrums and Signals

The Fast Fourier Transform Spectrum Analyzer, a spectrum and signal analyzer program for the C-64, features amplitude and phase spectrum plots; Hamming and Hanning window functions; a data entry program; printing of magnitude and phase or real and imaginary values of component frequencies; and built-in functions of AM, FM, triangular, sine and pulse waveforms. A Simons' Basic cartridge is required. The disk and manual are available for $49 from Sofcad Electronics, Inc., PO Box 21845, Columbus, OH 43221.

Check Reader Service number 413.

Get a Modem and Q-Link Starter Kit

The TCM-1200H Hayes-compatible modem for the C-64 and C-128 features autoselect 300/1200 baud, originate and answer modes, eight LED status indicators and eight dip switches, including an autoanswer disable switch. The unit has a speaker with level control and offers a choice

Trans Com's TCM modem.

of tone or pulse dialing. Software for both Commodore systems is included, along with a QuantumLink starter kit. The modem is available for $179.95 from Trans Com, Inc., 703-13 Annoreno Drive, Addison, IL 60101.

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Log Your Dives

PC Fuel Co. (PO Box 3294, San Mateo, CA 94403) introduces the Computer Diver's Log for scuba- and skindivers with C-64s. You can search through 132 dives on your logdisk by location, review and print out all or part of the log and transmit Dive Log files via modem. The price is $27.95.

Check Reader Service number 407.

Help Students Build Spatial Perception

Building Perspective, a game of spatial perception from Sunburst (39 Washington Ave., Pleasantville, NY 10570), challenges students from the fourth grade up to predict how an array of buildings of different heights would appear if seen from above as they observe them from street level. Students check the views from all four sides and rethink the problem as they gather new information walking around the block. The Building Perspective package, for the C-64, costs $59 and includes a disk, backup and teacher's guide.

Check Reader Service number 414.

How to Get the Most Out of GEOS

This 320-page book features hints and reference material to help you better understand the GEOS operating system, paying special attention to the ambiguities and omissions of the *GEOS Users Guide*. It includes type-in utilities to import text files from several popular word processors; to import graphics files from Doodle!, Flexidraw and KoalaPad; and to transmit GEOS applications files via modem. Available for $14.95 from The Midnite Press/Midnite Software Gazette, PO Box 1747, Champaign, IL 61820.

Check Reader Service number 410.

Increase Your Programming Power

System M2000, Version 2.0, a C-64 macro assembler package for beginning and advanced assembly language programmers, features standard 6502/6510 mnemonics, full macro capabilities, a full symbol-table dump and complete diagnostic information. The monitor traces a program through execution, moves and relocates programs and loads and saves binary files to disk. Available for $49.95 from Micol Systems, 9 Lynch Road, Willowdale, Ontario, Canada M2J 2V6.

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Develop Your Muscles the Fun Way

The C-64 Computerized Muscle Exerciser and Trainer, called Comet, develops your muscle strength and tone by having you use isometric exercises to keep a helicopter on the screen from crashing. The harder you push or pull the Comet exerciser, the higher the helicopter flies. The documentation includes a guide that shows you how to do the exercises properly and explains which muscles each exercise develops. Available for $79.95 from BodyLog, 34 Maple Ave., Armonk, NY 10504.

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How to Type *RUN* Listings

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

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

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

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

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

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

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

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

Listing 1. *64 Perfect Typist program.*

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


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```
   ************************"
9Ø SYS ML:PRINT "{CRSR RT}** 64 PERFECT TY
   PIST IS NOW ACTIVE{2 SPACEs}**"
1ØØ PRINT "{CRSR RT}** SYS"ML"=ON{5 SPACEs
    }SYS"ML+3Ø"=OFF **"
1Ø1 PRINT"{CRSR RT}**********************
    ***************":NEW
11Ø DATA 173,Ø05,ØØ3,2Ø1,ØØ3,2Ø8,ØØ1,Ø96
12Ø DATA 141,1Ø5,ØØ3,173,ØØ4,ØØ3,141,1Ø4
13Ø DATA ØØ3,162,1Ø3,16Ø,ØØ3,142,ØØ4,ØØ3
14Ø DATA 14Ø,ØØ5,ØØ3,Ø96,234,234,173,1Ø4
15Ø DATA ØØ3,141,ØØ4,ØØ3,173,1Ø5,ØØ3,141
16Ø DATA ØØ5,ØØ3,Ø96,Ø32,124,165,132,Ø11
17Ø DATA 162,ØØØ,142,24Ø,ØØ3,142,241,ØØ3
18Ø DATA 189,ØØØ,ØØ2,24Ø,Ø51,2Ø1,Ø32,2Ø8
19Ø DATA ØØ4,164,212,24Ø,Ø4Ø,2Ø1,Ø34,2Ø8
2ØØ DATA ØØ8,Ø72,165,212,Ø73,ØØ1,133,212
21Ø DATA 1Ø4,Ø72,238,241,ØØ3,173,241,ØØ3
22Ø DATA Ø41,ØØ7,168,1Ø4,Ø24,Ø72,Ø24,1Ø4
23Ø DATA Ø16,ØØ1,Ø56,Ø42,136,Ø16,246,1Ø9
24Ø DATA 24Ø,ØØ3,141,24Ø,ØØ3,232,2Ø8,2ØØ
25Ø DATA 173,24Ø,ØØ3,Ø24,1Ø1,Ø2Ø,Ø24,1Ø1
26Ø DATA Ø21,141,24Ø,ØØ3,169,Ø42,Ø32,21Ø
27Ø DATA 255,169,ØØØ,174,24Ø,ØØ3,Ø32,2Ø5
28Ø DATA 189,162,ØØ3,189,211,ØØ3,Ø32,21Ø
29Ø DATA 255,2Ø2,Ø16,247,164,Ø11,Ø96,145
3ØØ DATA Ø13,Ø32,Ø32
```

Listing 2. *128 Perfect Typist program.*

```
1 REM 4Ø/8Ø COL C128 PERFECT TYPIST
2 REM BY: JAMES E BORDEN
1Ø FORX=512ØTO5379:READD:T=T+D:POKEX,D
2Ø NEXT:IFT<>28312 THENPRINT"{2 CRSR DNs}E
   RROR IN DATA...":END
25 A$="":IFPEEK(215) THENA$="{2Ø SPACEs}"
3Ø PRINT"{SHFT CLR}"A$" ****************
   ********************"
4Ø PRINTA$" ** 128 PERFECT TYPIST IS NOW A
   CTIVE **"
5Ø PRINTA$" **{2 SPACEs}SYS 512Ø=ON{7 SPAC
   Es}SYS 515Ø=OFF{2 SPACEs}**"
6Ø PRINTA$" ****************************
   ********":SYS512Ø:NEW
7Ø DATA 173,5,3,2Ø1,2Ø,2Ø8,1,96,141,45,2Ø,
   173,4,3,141,44,2Ø,162,43,16Ø,2Ø
8Ø DATA 142,4,3,14Ø,5,3,96,234,234,173,44,
   2Ø,141,4,3,173,45,2Ø,141,5,3,96
9Ø DATA 32,13,67,14Ø,255,19,162,Ø,142,252,
   19,142,253,19,142,254,19,189,Ø,2
1ØØ DATA 2Ø1,32,24Ø,8,2Ø1,48,144,7,2Ø1,58,
   176,3,232,2Ø8,238,189,Ø,2,24Ø,54
11Ø DATA 2Ø1,32,2Ø8,5,172,254,19,24Ø,42,2Ø
   1,34,2Ø8,1Ø,72,173,254,19,73,1
12Ø DATA 141,254,19,1Ø4,72,238,253,19,173,
   253,19,41,7,168,1Ø4,24,72,24,1Ø4
13Ø DATA 16,1,56,42,136,16,246,1Ø9,252,19,
   141,252,19,232,2Ø8,197,173,252
14Ø DATA 19,24,1Ø1,22,24,1Ø1,23,141,252,19
   ,169,42,32,241,2Ø,32,188,2Ø,16Ø
15Ø DATA 2,185,185,2Ø,32,241,2Ø,136,16,247
   ,165,116,2Ø8,9,165,117,2Ø8,5,169
16Ø DATA 145,32,241,2Ø,172,255,19,96,13,32
   ,32,162,Ø,173,252,19,232,56,233
17Ø DATA 1ØØ,176,25Ø,1Ø5,1ØØ,2Ø2,24Ø,3,32,
   232,2Ø,2Ø1,1Ø,176,5,2Ø5,252,19
18Ø DATA 24Ø,15,162,Ø,232,56,233,1Ø,16,25Ø
   ,24,1Ø5,1Ø,2Ø2,32,232,2Ø,17Ø,72
19Ø DATA 138,9,48,32,241,2Ø,1Ø4,96,17Ø,173
   ,Ø,255,72,169,Ø,141,Ø,255,138,32
2ØØ DATA 21Ø,255,1Ø4,141,Ø,255,96
```

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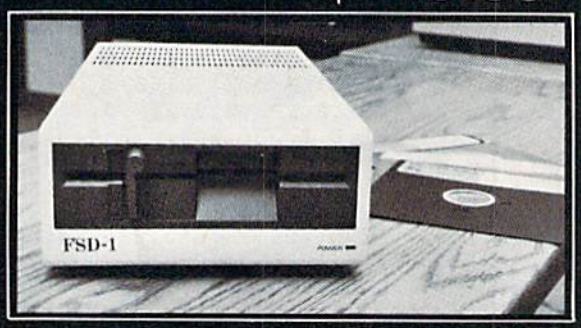

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From p. 74.

```
    ,2Ø1,64,24Ø,3,76,243,128,16Ø,Ø  :REM*79
32Ø DATA 173,5,192,133,251,173,6,192,133,25
    2,177,251,32,21Ø,255,238,5,192 :REM*177
33Ø DATA 2Ø8,3,238,6,192,173,5,192,2Ø1,64,2
    Ø8,224,173,6,192,2Ø1,198,2Ø8    :REM*19
34Ø DATA 217,169,13,32,21Ø,255,238,9,192,17
    3,9,192,2Ø1,29,24Ø,3,76,211,128 :REM*81
35Ø DATA 96,Ø,-1                    :REM*211
```

Listing 3. *Sprite-creation program.*

```
Ø REM JOE THE SPRITE, CREATED BY MARK JORDA
  N (RUN 1/85)                      :REM*9Ø
1Ø POKE53281,1:POKE5328Ø,1: N=1:SC=167Ø:CC=
   55942:POKE252,25:POKE254,5       :REM*172
3Ø FORT=12288TO1267Ø:READA:POKET,A:NEXT
                                    :REM*1ØØ
4Ø FORT=49152TO49215:READA:POKET,A:NEXT
                                    :REM*8
5Ø V=53248:POKEV+27,255:POKEV+29,25:POKEV+2
   3,24:O=V+21                      :REM*116
6Ø FORT=ØTO7:POKEV+T+39,14:POKET+2Ø4Ø,T+192
   :NEXT                            :REM*224
7Ø POKEV,7Ø:POKEV+2,52:POKEV+4,52:POKEV+6,1
   Ø:POKEV+8,42:POKEV+1Ø,62         :REM*9Ø
8Ø POKEV+1,13Ø:POKEV+3,162:POKEV+5,183:POKE
   V+7,64:POKEV+9,183:POKEV+11,166  :REM*192
9Ø POKESC,16Ø:POKECC,1              :REM*15Ø
95 PRINT"{SHFT CLR}{2Ø CRSR DNs}HI, I'M SMO
   KING JOE!":POKEO,7:END           :REM*123
1ØØ DATA 3,57,224,28,198,24,32,Ø,6,78,7,1,7
    3,2Ø,245,73,84,133,142,86,2Ø1   :REM*32
11Ø DATA 136,84,137,136,84,129,72,96,145,64
    ,Ø,6,6Ø,24,56,2,39,192,3,192,Ø  :REM*254
12Ø DATA Ø,6,Ø,Ø,9,Ø,Ø,6,Ø,Ø,Ø,Ø,Ø,Ø,48,Ø,Ø,7
    2,Ø,Ø,48,Ø,1Ø3,15,224,Ø,6Ø,248  :REM*168
13Ø DATA Ø,113,255,56,255,255,252,234,255,2
    52,191,16Ø,32,255,134,112,255   :REM*224
14Ø DATA 2ØØ,16,243,195,56,225,192,16,225,1
    28,8,225,128,132,97,128,66,124  :REM*23Ø
15Ø DATA Ø,62,112,Ø,8,232,Ø,248,8,128,24,4,
    96,44,2,24,198,1,7,3,Ø,129,Ø    :REM*13Ø
16Ø DATA 1Ø3,3,255,128,4,Ø,32,8,32,16,16,32
    ,16,31,192,16,16,64,112,16,64    :REM*248
17Ø DATA 144,16,128,144,21,Ø,144,17,Ø,8Ø,17
    ,Ø,8Ø,17,255,16Ø,8,247,16Ø,7     :REM*222
18Ø DATA 247,192,3,239,Ø,3,2Ø7,Ø,3,2Ø7,Ø,3,
    2Ø7,Ø,3,199,Ø,3,252,248,3,254     :REM*8
19Ø DATA 252,1Ø3,Ø,1,224,Ø,7,32,Ø,29,32,Ø,2
    1,32,15,245,32,15,255,224,15     :REM*112
2ØØ DATA 255,224,15,255,224,15,255,224,15,2
    55,224,15,255,224,15,255,224,15:REM*244
21Ø DATA 255,224,15,255,224,15,255,224,15,2
    55,224,15,255,224,15,255,224,15:REM*254
22Ø DATA 255,224,15,255,224,Ø,Ø,Ø,255,127,2
    55,254,252,56,127,24Ø,16,31,224:REM*122
23Ø DATA 16,15,224,16,15,224,56,15,224,56,1
    5,224,56,15,24Ø,124,31,248,124  :REM*124
24Ø DATA 63,252,254,127,255,255,255,192,Ø,3
    ,192,Ø,3,2Ø2,Ø,3,2Ø2,114,83,2Ø2 :REM*14
25Ø DATA 87,83,196,1Ø1,35,2Ø2,87,35,2Ø2,85,
    35,2Ø2,Ø,3,16Ø,Ø,Ø,Ø,Ø,Ø,6,Ø,Ø  :REM*114
26Ø DATA 25,Ø,Ø,18,Ø,Ø,12,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø
    ,Ø,Ø,Ø,Ø,Ø,1Ø,Ø,Ø,18,Ø,Ø,12,Ø,Ø:REM*145
27Ø DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,96,Ø,Ø,64,Ø,Ø,Ø,Ø,Ø,Ø,
    28,Ø,Ø,12,Ø,Ø,4,Ø,Ø,12Ø,169,13  :REM*1Ø1
28Ø DATA 141,2Ø,3,169,192,141,21,3,88,96,23
    8,6,2Ø8,198,253,165,253,2Ø8,7   :REM*81
29Ø DATA 2Ø6,1,2Ø8,165,254,133,253,198,251,
    165,251,2Ø8,26,24,173,1Ø,2Ø8,74 :REM*63
3ØØ DATA 176,9,238,1Ø,2Ø8,2Ø6,11,2Ø8,76,57,
    192,2Ø6,1Ø,2Ø8,238,11,2Ø8,165   :REM*27
31Ø DATA 252,133,251,76,49,234      :REM*41
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June

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● **THE EXPANDING UNIVERSE OF GEOS**—The enhancements keep coming for GEOS, Berkeley Softworks' alternative operating system for the C-64. In the June issue, read about the latest GEOS offerings, including Writer's Workshop, a group of programs for desktop publishing; a desktop accessory called geoDex; a file utility called geoFile; and geoCalc, a full-featured spreadsheet.

● **R FOR AN AILING COMPUTER**—When your Commodore is under the weather, you might save money by making minor repairs yourself. Learn how to identify which part of your system contains the problem.

● **SPECIAL FOCUS ON EDUCATION**—Commodores in education is the theme of several articles scheduled for the June issue. Software Gallery will assess a number of the latest educational software packages on the market; The Resource Center will help teachers select gradebook programs; and a type-in program called Robotgraph will reinforce elementary students' mathematics skills.

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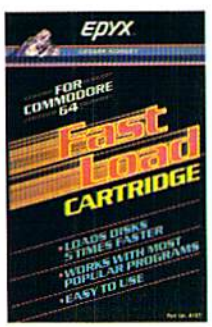

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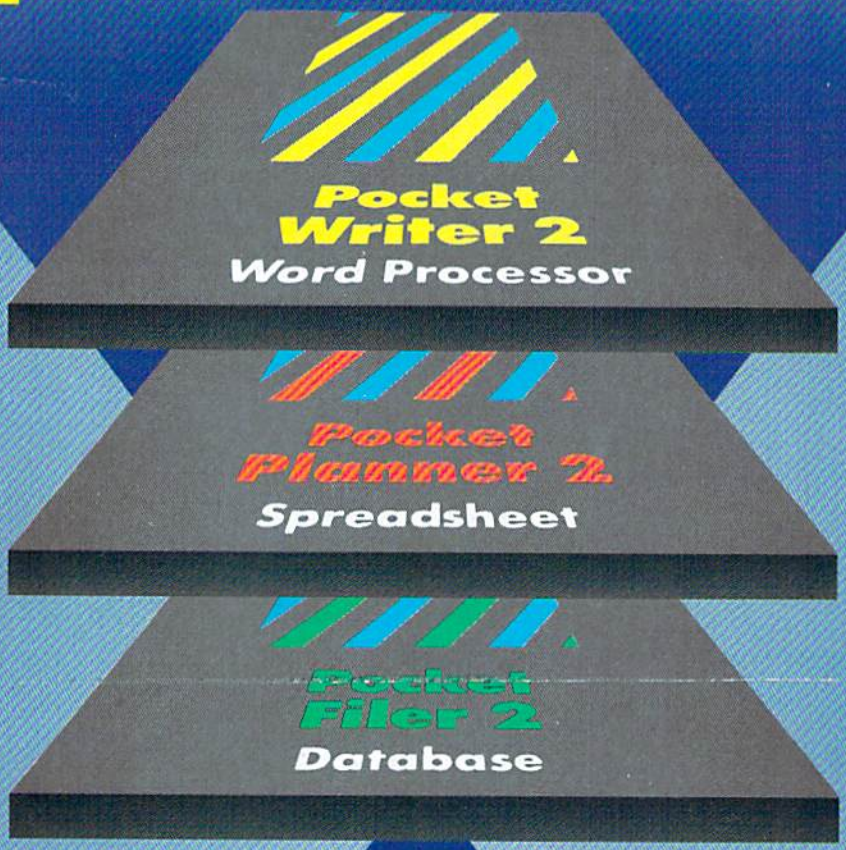

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