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April 1988
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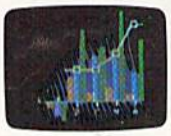

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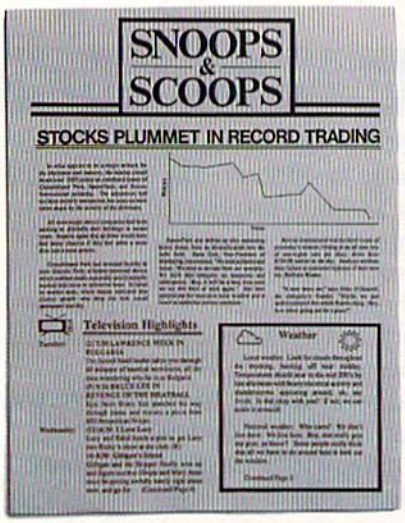


SNOOPS & SCOOPS

STOCKS PLUMMET IN RECORD TRADING

Television Highlights

Weather

ED'S WEEKLY

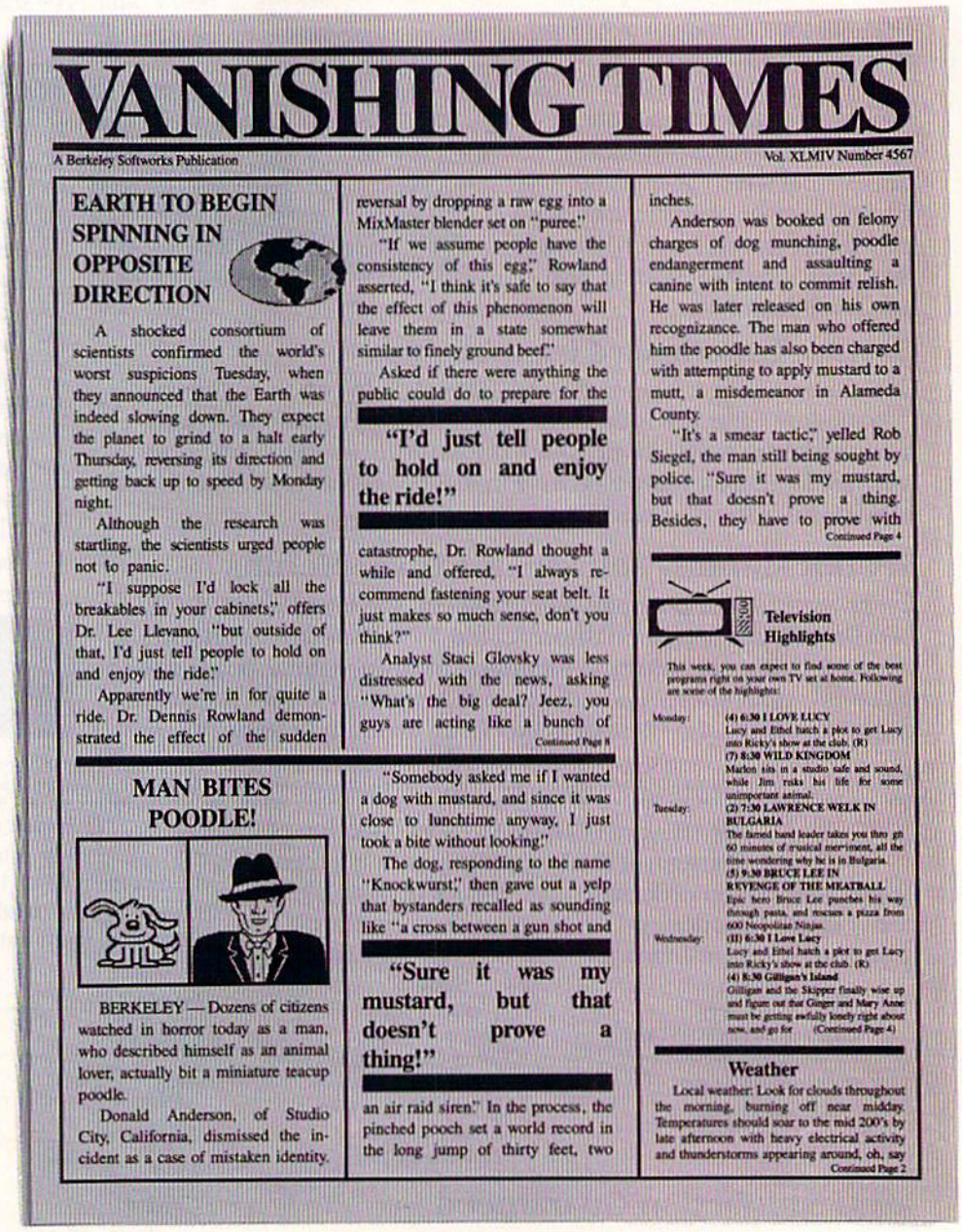
The views and news of Ed.

December 3

Basquing In The Beauty of Andorra

Weather

More people reading stuff like this!



VANISHING TIMES

A Berkeley Softworks Publication

Vol. XLMIV Number 4567

EARTH TO BEGIN SPINNING IN OPPOSITE DIRECTION

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

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

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

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

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

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

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

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

Continued Page 8

MAN BITES POODLE!

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

Donald Anderson, of Studio City, California, dismissed the incident as a case of mistaken identity.

"Somebody asked me if I wanted a dog with mustard, and since it was close to lunchtime anyway, I just took a bite without looking!"

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

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

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

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

Continued Page 4

Television Highlights

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

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

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

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

(Continued Page 4)

Weather

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

Continued Page 2

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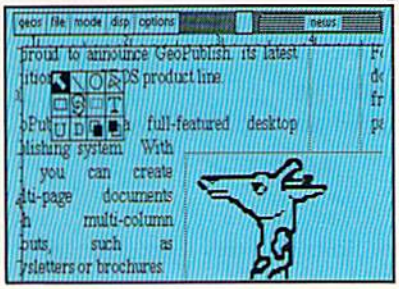

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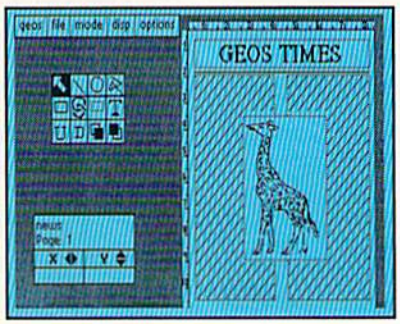

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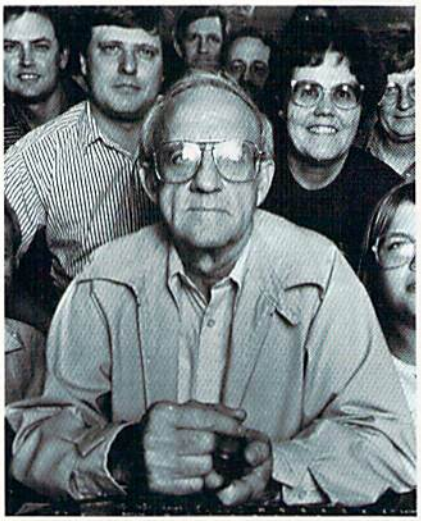

MEMBERS OF THE COMMODORE HOUSTON USER GROUP PHOTOGRAPHED BY WILL VAN OVERBEEK

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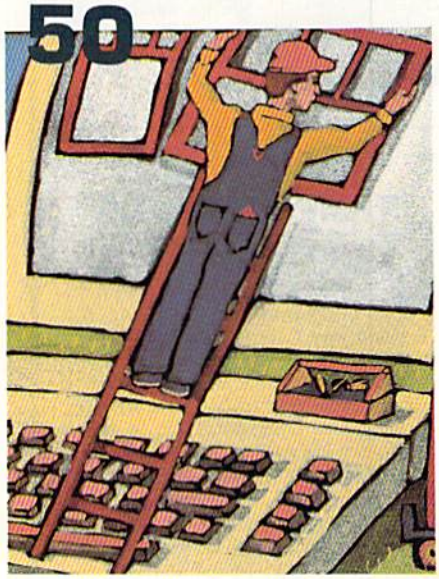

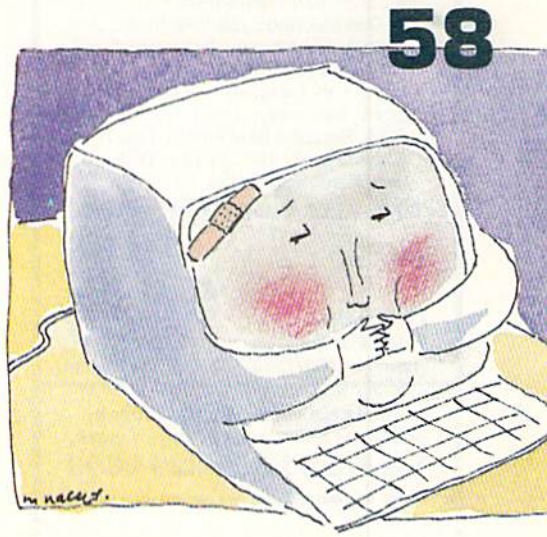

USER'S GROUP LIST—
Because of its length and magazine space constraints, we weren't able to include the promised list of U.S. and Canadian user's groups in this issue. If you'd like a list of the clubs in your state or province, please send your request and an SASE to Beth Jala, RUN Magazine, 80 Elm St., Peterborough, NH 03458.

RUN (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. Phone 603-924-9471. Second-class postage is paid at Peterborough, NH, and at additional mailing offices. Canadian second-class mail registration number is 9565. Subscription rates in U.S. are $19.97 for one year, $29.97 for two years and $41.97 for three years. In Canada, a one-year subscription is $39.97 in Canadian funds. In Mexico, the one-year subscription rate is $24.97, with U.S. funds drawn on a U.S. bank. Foreign subscriptions are $39.97 for one year, with U.S. funds drawn on a U.S. bank. Please inquire about foreign air mail subscription rates. *RUN* is nationally distributed by International Circulation Distributors. **Postmaster**: Send address changes to *RUN*, Subscription Services, PO Box 954, Farmingdale, NY 11737. (Send Canadian changes of address to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8)

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RUNning Ruminations

RUN's technical editor, Tim Walsh, returned from the land of glitz and glitter with these impressions of the 1988 winter CES.

WHILE THE GLARING LIGHTS were brightest and the din of the crowds was loudest at the massive Las Vegas Convention Center, the 1988 winter Consumer Electronics Show also infiltrated countless suites in many of the city's high-rise hotels and glitzy resorts. Making my appointed rounds through the Convention Center, I encountered a seemingly endless array of one- and two-story exhibitor booths manned by a veritable army of tireless business execs.

Since the winter CES, which follows the busiest shopping season of the year, is an exclusive show, open only to the press and the companies that are displaying their products, manufacturers use this media event to whet the public's appetite. Most of the companies represented had uncertain release dates that ranged from the first to the fourth quarters of 1988.

Surprisingly, products produced exclusively for the C-128 were virtually non-existent.

Why so Little C-128 Support?

If you're wondering why, it's primarily because most existing C-128-mode software consists of word processors and databases—not exactly programs used for entertainment purposes. And entertainment software dominated this year's show. If CES served to indicate new trends in 1988, useful software for your Commodore is definitely "out" and entertainment is most assuredly "in." Personally, I find this anti-productivity software scenario discouraging.

Now, don't get me wrong. I enjoy entertainment software and have earned a well-publicized reputation for indulging in a few shoot-'em-ups from time to time. But I do take issue with many software manufacturers who believe that if you need to perform serious computer work, then you need an IBM clone or a Macintosh. These same manufacturers also seem to feel that C-128 owners should be content with using their C-128s in 64 mode, so they accordingly tend to identify their C-64 products as "C-64/C-128" software.

Such logic flies in the face of many *RUN* readers who are aware of the C-128's potential as a capable desktop publishing computer and its inherent low cost and reliability as a small-business computer. With roughly 1.5 million C-128 owners starved for good native-mode software, I regret to report the absence of any comprehensive, competitively-priced application or utility program package for the C-128 announced at CES.

C-64 Enthusiasm Everywhere

Rest assured, though, that the versatile C-64 is still alive and stronger than ever in terms of support. PaperClip Publisher, Electronic Arts' new C-64 desktop publishing system that's due for release later in the spring of 1988, looks extremely promising. Designed along the lines of the Amiga Page Setter program, it looks fairly easy to use and has a nifty option to greatly reduce the area of the screen you're working on so that you can see exactly what it'll look like on the printed page.

MicroProse enjoyed a breathtaking view of Las Vegas from their CES headquarters in the top-story presidential suite of the Sahara Hotel. Most of the computers throughout their plushly appointed suite were displaying Red Storm Rising, which is based on the Tom Clancy novel. You guessed it—they even brought along Tom Clancy.

Software manufacturer Accolade had one of the busiest booths to be found on the floor at CES. Riding the crest of success with their 1987 releases, such as Test Drive, Accolade seems to be in high gear and is quickly becoming one of the leaders of this segment of the industry.

Cinemaware was another hot ticket present at CES. While they showcased their newest C-64 product, a super-speedy fast-loader cartridge called Warp Speed, it was their two new software titles, The Three Stooges and Rocket Ranger, that really caught my attention. Combining creative entertainment and adventure expanded to a new dimension with finely detailed graphics and superbly digitized sound, both of these programs are sure to catch a few of Cinemaware's competitors off guard. Although I saw only the Amiga versions, I was promised that versions for the C-64 will appear on store shelves in the months to come.

The people at Infocom aren't exactly resting on their laurels either. At CES they announced a new line of interactive software for the C-64, called Infocomics. By establishing a partnership with Tom Snyder Productions, Infocom has developed a way to get graphics into their text adventures.

"Where in Europe is Carmen Sandiego?," a sequel to the popular "Where in the World is Carmen Sandiego?," represents one of Broderbund Software's new releases at CES. I also can't wait to try "Arcade Game Construction Kit," another Broderbund product that is due for release later this spring.

I found hardware for Commodores, mainly in the form of printers, at both the Okidata and Star Micronics booths. Star showcased their new Commodore-compatible NX-1000C printer (a *RUN* review is forthcoming), and Okidata displayed their 15-inch, cost-reduced Microline 183 (also to be reviewed soon). The Microline 183 is not a new printer, but the fact that its price has been officially trimmed down should increase its popularity among Commodore users in need of a high-quality, low-cost, 15-inch printer.

I'm saving the best for last. Epyx, the versatile software manufacturer that everyone seems to like, deserves an award for providing the most C-64 software support at CES. They announced no fewer than 12 new C-64 programs, ranging from a serious Winter Olympics simulator to a fast-action shoot-'em-up called Death Sword. These programs, however, are not yet ready for release.

Finally, in typical Commodore fashion, the number-one manufacturer of home computers opted to skip this show for reasons (or regions) unknown. If only Commodore knew how much their fans missed them.

—Tim Walsh
Technical Editor

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MAGIC

Test your typing speed and accuracy with 64 Typing Tutor; redefine your 128 function keys for easy Data statement entry with RUN*'s Checksum program.*

Compiled by TIM WALSH

$485 Typing Hex Listings Made Easier

RUN has published several high-quality machine language programs (RUN Term 128, RUN Memo Book and RUN Copy) so far in 1988. Since their listings use a hexadecimal (base 16) format in the Data statements, you're required to enter numbers and the letters A through F. I've written a short C-128 program that redefines the C-128 function keys for easier data entry. Incidentally, there's no problem entering 64-mode programs in 128 mode using *RUN*'s Checksum.

Here's a list of the new function-key definitions:

F1 = A	F5 = C
F2 = E	F6 = DATA
F3 = B	F7 = D
F4 = F	F8 = , (comma)

I tested a variety of key assignments to determine which order is easiest to use. If pressing the shift/F8 combination is a little awkward for you, you could use the comma key with your left hand.

```
Ø REM REDEFINE C-128 F-KEYS - T. WALSH
                                        :REM*116
1Ø FORS= 1 TO 8:READ KY$:KEY(S),KY$:NEXT
                                        :REM*219
2Ø DATA A,E,B,F,C,",",D,DATA            :REM*72
3Ø SCNCLR:PRINT"FUNCTION KEYS ARE REDEFINE
   D!                                   :REM*151
```

—Tim Walsh, *RUN* Staff

$486 Eliminating Screen Jitters

If you stack your computer system's peripheral devices on shelves around your work area, you may be asking for electrical interference trouble. If a corner of the image on your video monitor begins to flicker, your disk drive or printer may be the culprit. Keeping the drive or printer on a shelf in close proximity to the monitor sometimes causes interference due to lack of shielding, especially if those units are non-U.S. specification devices.

Try turning off the disk drive and printer while leaving the rest of the system on. If the flickering disappears, try moving these peripheral devices away from the video monitor. Sometimes just relocating them a few inches is all that's necessary.

—Eric Pedersen, Wilstead, England

$488 Eliminating Disk Drive Jitters

Like any proud owner, I'm thrilled by my new C-128D. What I wasn't so thrilled about was the fact that the drive heads clatter a little each time I power up the machine in C-128 ►

TRICK OF THE MONTH

$487 Typing Tutor

Whether you're a touch or peek-and-poke typist, you'll find 64 Typing Tutor is guaranteed to improve your typing speed and accuracy. Best of all, you can run it in 64 mode or in 128 40- or 80-Column mode.

Typing Tutor 64 displays a random alpha or numeric character at the top of the screen, then moves it down at a user-selectable speed between 1 and 9. You accumulate points by pressing the corresponding key before the character reaches the bottom of the screen.

```
Ø REM 64 & 128 TYPING TUTOR - JOE CHARNET
  SKI                                   :REM*177
1Ø PRINT"{SHFT CLR}1. LETTERS{2 SPACEs}2.
    NUMBERS{2 SPACEs}3. BOTH{3 SPACEs}";:
   GOSUB9Ø:IFA$<"1"ORA$>"3"THEN1Ø:REM*218
2Ø L=57+1Ø*(A$="1"):H=65-26*(A$="2"):X=RN
   D(-TI)                               :REM*241
3Ø PRINT"{CRSR DN}SPEED (1-9){CRSR RT}";:
   GOSUB9Ø:S=VAL(A$):ON-(S<1ORS>9)GOTO3Ø:
   S=S*11:GOSUB1ØØ                      :REM*175
4Ø R=INT(RND(1)*43)+48:ON-(R>LANDR<H)GOTO
   4Ø:P$=CHR$(R):T=INT(RND(1)*38)+1:D=1
                                        :REM*33
5Ø PRINTTAB(T)"{CRSR DN}{CRSR LF}"P$"{CRS
   R UP}":GETC$:IFC$=P$THENSC=SC+1:GOSUB1
   ØØ:GOTO4Ø                            :REM*24
6Ø FORZ=STO1ØØ:NEXT:D=D+1:ON-(D<24)GOTO5Ø
   :GOSUB1ØØ:FORB=1TO1Ø:GETK$:NEXT
                                        :REM*197
7Ø PRINT"{CRSR DN}PRESS SPACE BAR TO CONT
   INUE.":GOSUB 9Ø:IFA$<>" "THENPRINT"{SH
   FT CLR}":END                         :REM*247
8Ø SC=Ø:GOSUB1ØØ:GOTO4Ø                 :REM*228
9Ø GETA$:ON-(A$="")GOTO9Ø:PRINTA$:RETURN
                                        :REM*98
1ØØ PRINTCHR$(147)"SCORE="SC:FORZ=STO2ØØ:
    NEXT:RETURN                         :REM*239
```

—Joe Charnetski, Dallas, PA

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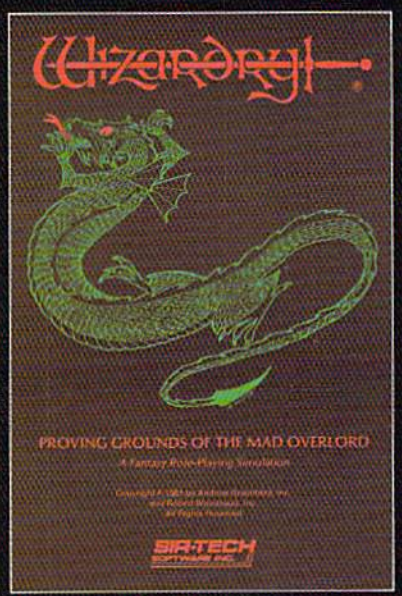

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mode. This situation is not a defect in hardware design; instead, the drive is simply trying to determine whether an autoboot disk is present in the drive. When a disk isn't in the drive, though, that clattering sounds expensive to my ears.

Not wanting to have to pay for a premature disk drive alignment, I've developed a sure-fire way to silence the drive whenever the computer is powered up. I simply keep a work disk in the drive when I turn on the computer. Result: No rattles, clatters or any other sound for that matter.

[Editor's Note: If you have a standard C-128 and are experiencing the same problems as Keith, simply turn your computer on first, then your disk drive. By making this practice a habit, your disk drive might last long enough for your grandchildren to inherit it in working order.]

—KEITH SILLS, NEW YORK, NY

$489 ESC-A AND ESC-C ON THE C-128

I'm a happily unemployed skier, and when I'm not on the slopes, I tend to sit around the house and write lots of Basic programs on my C-128. Sprites, music, games—I even type in most of *RUN*'s Magic tricks. I enjoy writing programs of my own design so much that I rarely work on less than five or six at a time.

A trick I discovered is always to press ESC-A to put the C-128 in Insert mode before writing programs or typing in listings. By keeping the C-128 in Insert mode, I never have to worry about inserting spaces if I forget to enter a character or word into an existing line—the characters are automatically shoved over. Also, the listing scrolls much slower when I want to closely examine the lines I've typed in. Furthermore, whenever I need to cancel ESC-A without cancelling the Fast mode, I just press ESC-C. Try it the next time you type in a listing. You'll find yourself using Insert mode constantly.

—HANS K. WEIZERSTEIN, VIENNA, AUSTRIA

$48A @PRINT FOR THE 64

Just when you think every conceivable interrupt-driven program has been developed for the C-64, along comes another that makes you wonder why it wasn't thought of before. My little program adds an @Print command to Basic 2.0.

After running my program, enter SYS 880 to activate it. Now, when you want to direct output to the printer, enter:

```
@PRINT"HERE IS A SAMPLE OF @PRINT"
```

Or, if you prefer,

```
@?"HERE IS A SAMPLE OF @PRINT"
```

While it is not required for normal use with the @Print command, pressing the & (ampersand) key closes logical file #4 that the @ sign automatically opens.

```
Ø REM @PRINT FOR THE 64 - RANDY PENCIN
                                        :REM*34
1Ø FORX=828 TO 915:READD:POKEX,D:CK=CK+D:N
   EXT                                  :REM*1Ø2
2Ø IFCK<>8933THENPRINT"ERROR IN DATA..."
                                        :REM*1Ø7
3Ø PRINT"SYS 88Ø TO ACTIVATE":PRINT"SYS 93
   Ø TO DEACTIVATE"                     :REM*21
4Ø DATA 16Ø,1,177,122,2Ø1,64,24Ø,7,2Ø1,38,
   24Ø,31,1Ø8,16Ø,3,32,115,Ø,169        :REM*26
5Ø DATA Ø,32,189,255,169,1,162,4,16Ø,255,3
   2,186,255,32,192,255,162,1           :REM*161
6Ø DATA 32,2Ø1,255,1Ø8,16Ø,3,32,115,Ø,32,2
   Ø4,255,1Ø8,16Ø,3,173,8,3             :REM*251
7Ø DATA 141,16Ø,3,173,9,3,141,161,3,169,6Ø
   ,141,8,3,169,3,141,9,3,96            :REM*194
8Ø DATA 173,16Ø,3,141,8,3,173,161,3,141,9,
   3,96                                 :REM*115
```

—RANDY PENCIN, WOODLAND, CA

$48B 64 HEARTS A-PLENTY

Don't wait for next Valentine's day to show that special someone in your life your true feelings. Just sit her down in front of the computer, run this program and tell her this is how your heart behaves whenever the two of you are together.

```
Ø REM 64 HEARTS A-PLENTY - JASON MUCKALA
                                        :REM*9Ø
1Ø PRINTCHR$(147):C=5328Ø:POKEC,Ø:POKEC+1,
   Ø:V=C-32:POKEV+21,4:POKEV+41,2       :REM*155
2Ø POKE 2Ø42,13:FORS=Ø TO 62:READD:POKE 83
   2+S,D:NEXT                           :REM*197
3Ø D=INT(RND(1)*255):POKE V+4,D:POKE V+5,D
   :POKE V+41,D:GOTO 3Ø                 :REM*1ØØ
4Ø DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,7,131,192,
   15,199,224,31,239,24Ø,31             :REM*244
5Ø DATA 255,24Ø,31,255,24Ø,31,255,24Ø,15,2
   55,224,7,255,192,3,255,128           :REM*12Ø
6Ø DATA 1,255,Ø,Ø,254,Ø,Ø,124,Ø,Ø,56,Ø,Ø,1
   6,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø            :REM*192
```

—JASON MUCKALA, WEST COVINA, CA

$48C ME AND MY SHADOW—ER, HIGHLIGHTER

Here's a dynamic twist to assist in editing C-64 Basic programs—a Basic line highlighter. Wherever you move the cursor, the highlighter follows. You'll notice a vast improvement in your ability to keep track of which line the cursor is on.

Should you want to change the default colors, use these Pokes with Line Highlighter:

Cursor:	POKE 53024,X
Bar:	POKE 53029,X
Screen:	POKE 53036,X

```
Ø REM 64 BAR HIGHLIGHTER - THOMAS IERNA
                                        :REM*2ØØ
1Ø FOR T=52992 TO 53Ø54: READD:POKET,D:NEX
   T                                    :REM*53
2Ø SYS 52992:PRINTCHR$(147):LIST        :REM*92
3Ø DATA 12Ø,169,13,141,2Ø,3,169,2Ø7,141,21
   ,3,88,96,165,214,1Ø1,214,1Ø1         :REM*2Ø4
4Ø DATA 214,1Ø1,214,1Ø1,214,1Ø1,214,1Ø1,21
   4,1Ø1,214,1Ø5,49,16Ø,12,14Ø          :REM*2Ø4
5Ø DATA 134,2,16Ø,1,32,51,2Ø7,1Ø5,1Ø,16Ø,Ø
   ,32,51,2Ø7,76,49,234,2Ø5,18          :REM*72
6Ø DATA 2Ø8,2Ø8,251,14Ø,32,2Ø8,14Ø,33,2Ø8,
   96                                   :REM*242
```

—THOMAS IERNA, TIERRA VERDE, FL

Continued on p. 90.

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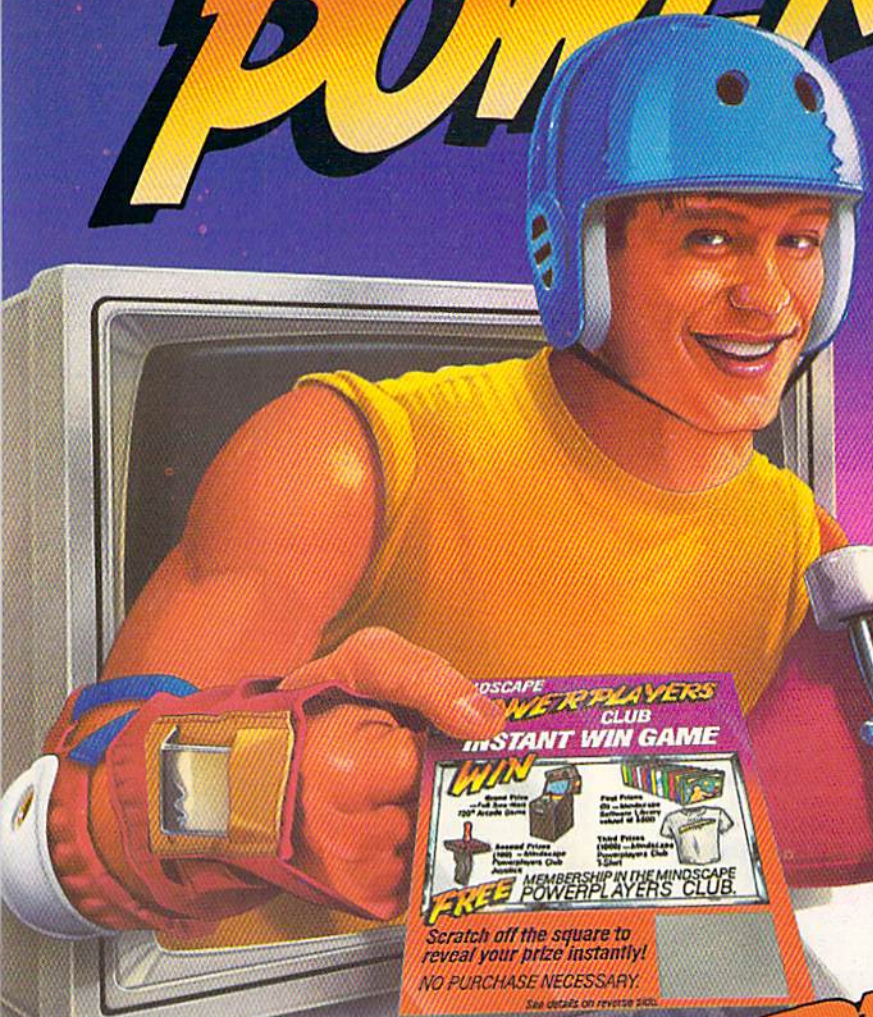

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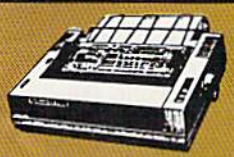

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MAIL RUN

Readers react to last January's listing-format changes and ask which is RUN's real *address.*

READER RESPONSE ON *RUN* PROGRAMS

In January and February, we presented three very lengthy program listings—RUN Term 128, RUN's *Memo Book and RUN Copy—in a new hexadecimal format to save magazine space and allow easier entry. We asked readers to let us know how they felt about the new format, which we intended to use only for extremely long listings.*

Many readers responded, and many felt our commercial-quality programs were worth the trouble of typing in, with opinion split over the format. Here's a sampling of what readers had to say.

Yes, we do want the long commercial-quality programs, and *RUN* has some very good ones. However, the new listing format is bad news to the many of us who are poor typists. Using the letter keys as well as the number keys makes it far more difficult to type and to locate mistakes after entering a line.

—RICHARD WELLER
SPENCERPORT, NY

While the new format for Data statements does save space in the publication, it adds greatly to the difficulty of typing in those statements. It's a favor to the magazine, *not* to the readers.

—T. W. MONROE, JR.
EUREKA, CA

The long Data statements are very difficult to keep straight. While commercial-quality programs might increase ReRUN disk sales, poorer folks might just switch to another magazine they feel more comfortable with. At the most, I'd suggest only one commercial-type program per issue, alternating between the C-64 and C-128.

—JEREMY A. MICHELE
BIG TIMBER, MT

To facilitate entering program listings, we're publishing in this issue a Magic trick (number $485, on page 10) that converts the C-128's function keys to enter a comma, hex letters A–F and the word "data." In conjunction with the 128 keypad, this method is a convenient way to enter listings.

—EDITORS

I believe the hexadecimal format is the better choice, because the Data statements all have the same length and structure and the quantity of data is reduced by about a third.

—A. G. DUNBAR
RICHLAND, WA

There's a give and take here. I guess we have to give up a little convenience to have more in the magazine. I just hope that only your longest programs will be in the new format, with the normal-sized ones remaining in the more familiar and easier format.

—ED MORSCH
LAFAYETTE, NJ

In my opinion, the programs are the most important part of the magazine. I really don't care what format they have or how long they are; ten, 20 or 30 pages is all right with me, as long as they're useful and of good quality.

—RONALD H. MANN
ATLANTA, GA

I think two or three long programs per year is adequate, with the balance of issues containing shorter programs. Everyone's interests must be served for a successful magazine.

—JOHN OLIVER
STETSONVILLE, WI

ANOTHER BRANCH ON THE GENEALOGY TREE

As a genealogist with 15 years research experience, I was interested in your article "All in the Family Tree" in the December issue. I've used Family Roots and Family Tree and have found problems with both. Family Roots, although providing a surprising range of sorts, was interminably slow on my C-64. Family Tree crashed several times during data input and scrambled data. To their credit, however, the distributor of Family Tree, Genealogy Software, was very supportive.

My program of choice—Personal Ancestral File (PAF), from the Church of Jesus Christ of Latter Day Saints (Mormons)—wasn't mentioned in your article. This program is available in CP/M format, so it'll run on a C-128 with two 1571s, or the equivalent. I replace a 1571 with a 1750 RAM expander, which I use as an M drive to make data input and sorts extremely fast.

PAF prints many of the standard forms recognized by genealogists. It includes data categories specific to Mormon genealogical records, but you needn't use them. PAF also provides sections for recording research and converting data to send by modem to other computers.

—PEGGY MARTIN PERKINS
BEAVER, UT

Last May, when we were beginning to pull the genealogy article together, we spoke with Lance Jacob at the Ancestral File Operations Unit of the Mormon Church in Salt Lake City. Unfortunately, he told us that they were discontinuing the CP/M version of Personal Ancestral File. While they planned to sell out their current stock, we feared that by the time our article was published, copies of the CP/M version would no longer be available.

—EDITORS

CHECKING OUR NEW CHECKSUM

I recently received my January issue of *RUN*, and much to my dismay I see you've changed the Checksum program. I've used Perfect Typist since it came out, with no problem. It's been especially easy since the addition of Michael Enders' Magic trick that places the ►

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checksum number in the home position (August 1987's Trick of the Month) and Michael Broussard's AutoNum routine (April 1986). Now you've gone and changed it!

—FRANCIS J. HUNT
LAS VEGAS, NV

The Perfect Typist program, along with its two enhancements, was a very acceptable proofreader. The new Checksum program puts me back at ground zero. It places the checksum number back on the line below the currently typed line, which interferes with the AutoNum routine and makes it difficult to recheck typed lines.

—A. B. DUNBAR
RICHLAND, WA

Magic trick $484 in last month's issue (March '88) adds the home-position feature to the new Checksum program. To get the new Checksum working with AutoNum, change line 100 in AutoNum to:

```
100  BASE = 828
```

Then the two utilities will work perfectly together.

—EDITORS

ADDRESS CONFUSION—WHICH TREE IS IT?

In some communications from *RUN*, your address is listed as 80 Pine St., but in others it's 80 Elm St. Have you moved? Do you have offices at both locations? I'm confused!

—MARY E. WILSON
CLEARWATER, FL

We can understand your confusion; we were confused for a while ourselves. At one time, most of the IDG/Peterborough operation was at 80 Pine St. Then RUN, *along with some of the other magazines, changed trees by moving to 80 Elm St. However, our common mail room was still at Pine St. Last fall, a new addition to the Elm St. building was completed, and now we're all happily together. We apologize for the inconsistencies.*

For the record, send all correspondence, except that pertaining to subscriptions, to RUN Magazine, 80 Elm St., Peterborough, NH 03458, attention Editorial, Advertising, Customer Service (for problems with advertisers), Back Issues, ReRUN, a specific column or a specific person. Send subscription correspondence to RUN Subscription Department, PO Box 954, Farmingdale, NY 11737.

—EDITORS

MEMO BOOK MEMOS

The "Memo Book" article in the January issue was confusing at times. It indicated that the Memo Book program needs 523 (664 minus 141) disk blocks, but it takes up only 13 on my master disk. The article also doesn't tell how to run the program. Finally, there's no Load Old File option in the menu. Only by loading a New Book can I get back to a previously saved one.

—JEREMY A. MICHELE
BIG TIMBER, MT

You're right, Memo Book does occupy 13 disk blocks. It's run like any other Basic program. To be able to load an old file, create and save a Memo file to disk first.

—EDITORS

JOIN A PPUG

Meeting 64/128 Users Through the Mail is a Commodore pen pal user's group for those who can't attend meetings of a local club. Right now it has 32 members from the U.S., Canada and three other countries. They range in age from high school student to senior citizen, and they come from all walks of life. We correspond with each other on a personal basis, exchanging our own and public domain programs on disk and discussing problems and ideas having to do with computing. Everyone receives a bimonthly newsletter, paid for out of the nominal $5 annual dues. All Commodore users are welcome. Write to:

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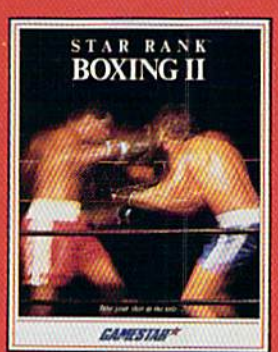

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News and New Products

With the winter CES recently concluded, this column highlights products from that show, and much more.

Compiled by HAROLD R. BJORNSEN

Three from EA

SAN MATEO, CA—Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404) featured three new C-64 games at the winter CES. Skyfox II: The Cygnus Conflict continues the original story in the air combat-action/simulation game in an outer-space battle with the enemy Xenomorphs. In the sequel's new plot, the Xenomorphs have retreated into the Cygnus constellation, where they've established starbases. With varying levels of difficulty and ten possible battle situations, you must accept the role of Federation Warpwarrior and defend the Federation with the more technologically advanced Skyfox II warpfighter. $29.95.

Dan Bunten's Sport of War, a modem game, lets players randomly generate millions of different battlefields full of hills, trees, rivers and plains. There are five increasingly complex play modes for you to try your skills at. $34.95.

Strike Fleet, a military simulation from LucasFilm Games, puts you in charge of a modern naval task force equipped with the latest in hi-tech weaponry. There are ten scenarios in which you command an entire fleet of up to 16 naval warships, including guided missile frigates, destroyers, cruisers and helicopters. $29.95.

Check Reader Service number 400.

Political Action And Intrigue

WILMINGTON, CA—Cosmi (415 North Figueroa St., Wilmington, CA 90744) will release two games for the C-64. The games retail for $24.95 each.

In Navcom 6, you're in charge of the futuristic Weapons Control Center aboard a U.S. Navy warship in a powderkeg situation in the Middle East. Your mission is to escort oil tankers through the Straits of Hormuz, detect and destroy explosive mines in the shipping lanes, defend against raids by high-speed boats and come face to face with the Ayotollah's main strike force.

In The President is Missing, you must find the missing President of the United States by unravelling mystery clues on an audio cassette that's included with the software package.

Check Reader Service number 401.

To the Future

SAN RAFAEL, CA—Broderbund Software's (17 Paul Drive, San Rafael, CA 94903) first release for 1988 is the C-64 version of Magnetron, an arcade-action shoot-'em-up. Magnetron takes you, as the pilot of a photon fighter, to the future to battle against Magnetron Generators, powerful, unpredictable magnetic-force weapons that push, pull and swirl you to doom. At the same time, you must destroy 50 alien war bases surrounding Earth. The package includes a Game Generator that lets you design additional enemy forces. Available for $24.95.

Check Reader Service number 402.

Batteries Not Included

KENILWORTH, NJ—Sunrise Computer Products (PO Box 709, Kenilworth, NJ 07033) has a computer clock for your office or home. The face of the Binary Digital Wall Clock has binary numbers in place of the usual decimal or roman numbers. Its precision quartz movement is guaranteed not to gain or lose more than two minutes per year. Power is supplied by an AA battery (not included). The clock comes in light beige with black binary digits. It's available for $34.95.

Check Reader Service number 404.

Battling Evil

WESTLAKE VILLAGE, CA—Rocket Ranger begins with an urgent message from the future, a future that sees the Nazis winning World War II. An underground group of scientists in the 21st century risk their lives to send you a rocket suit, ray gun and secret decoder wheel. With them, you can change history and save mankind. $34.95.

The Three Stooges, an interactive movie, begins with our heros stumbling upon an evil banker who is about to evict an old lady and her three beautiful daughters from their broken-down orphanage. It's up to you to help the Three Stooges raise enough money to stave off foreclosure. This package retails for $34.95. Both games are available for the C-64 from Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362.

Check Reader Service number 406.

HeartLab

ARMONK, NY—Bodylog (34 Maple Ave., Armonk, NY 10504) has released HeartLab, a heart-monitoring system for the C-64. It includes SensorBasic, which lets you program the company's sensors, including the Pulse Rate Sensor (included in the package), for your own needs. Together, the Pulse Rate Sensor and software collect heart signals and transform them into animations, video games and sounds. The package also includes a sensor adapter cable, the HeartLab disk and workbook and the SensorBasic manual. It's available for $59.95.

Check Reader Service number 408.

Ghost Bubbles

CUPERTINO, CA—In Bubble Ghost, a game for the C-64, you direct a bubble-blowing ghost through 36 hazard-filled chambers. Fans located throughout the chambers generate turbulence, and monsters try to sabotage your ghost's efforts. The price had not been set at press time. Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014.

Check Reader Service number 411.

128 Chips

LAGRANGE, IL—The Super Chips, a custom operating system for the C-128, consists of three 16K chips to replace the U33, U34 and U35 motherboard chips in the 128. The chips add new commands and functions that list a program or file to the screen without disturbing the program in memory, append a program on disk to a program ►

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You're one of the elite . . . parachuting alone behind enemy lines. The enemy controls the terrain, hidden in bunkers and machine gun nests . . . you may be surrounded. You might complete the mission if you crawl through the ravine and approach from the rear . . . or maybe a frontal attack will take them by surprise.

MicroProse has broken new ground with **AIRBORNE RANGER**, the quality action game where tactical thinking and lightning reflexes determine your fate. Your missions will vary as much as the climate and terrain. Slip silently into position to rescue prisoners trapped in "tiger pits" from a P.O.W. camp, or throw caution to the wind and try to destroy a key munitions dump in the desert. But watch out . . . enemy troops can attack from any direction.

The action is fierce as you control one soldier's battle against overwhelming odds. You'll need skill and strategy to outmaneuver your enemy, plus courage and some luck to make your escape. Along the way, search out that hidden cache of weapons and first aid supplies . . . you'll probably need them.

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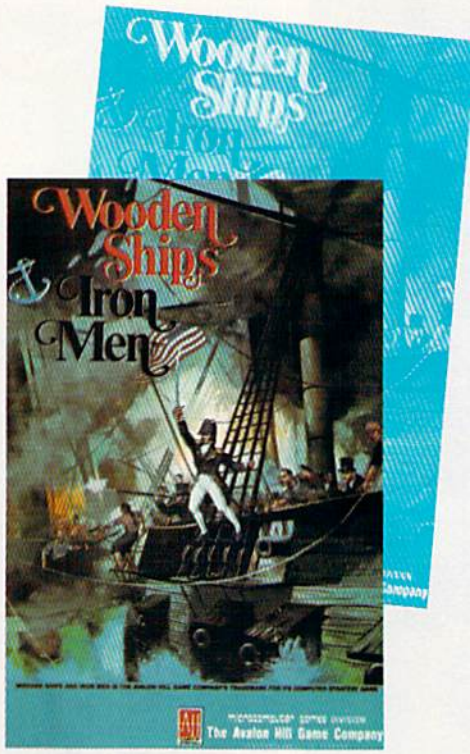

With the Dockyard program included in Avalon Hill's Wooden Ships & Iron Men, you can create your own historical ships.

in memory, merge programs without overlapping the line numbers, change all instances of a specified string to a second specified string, resurrect a Basic program after it's been New'd or after a program reset, and redefine the function keys. Super Chips is available for $49.95. Free Spirit Software, 905 W. Hillgrove, Suite 6, LaGrange, IL 60525.

Check Reader Service number 409.

Detective Directive

CAMBRIDGE, MA—Now you can be Watson, your wits as your tools, in Sherlock: The Riddle of the Crown Jewels. Infocom and Challenge Inc., in a move new and bold, announce a new series of stories of old. You take the main role, controlling the action, and direct the tale to your satisfaction. The Prime Minister was here, his face all a-glower, o'er the theft of the jewels, right out of the Tower. 'Twas Moriarty—I know it!—he mustn't go free! But you've only two days till the Queen's Jubilee.

The riddles he left at the scene of the crime—quite clever, they were, all written in rhyme. What wasn't so pretty was the message unsaid; that scoundrel, I tell you, is after my head! To throw him off guard, there's but one thing to do: In short, my good Watson, it's now up to you. This dastardly crime is yours to resolve, with me by your side as the riddles evolve. Inside of each package, you will find a tourist map, unique in kind. A handsome key fob, a *London Thames* paper are also part of this clever caper. It's available for the C-64, for $34.95 at your favorite store. Infocom, 125 Cambridgepark Drive, Cambridge, MA 02140.

Check Reader Service number 405.

Something for Everyone

CHANDLER, AZ—Sharedata (7400 W. Detroit St., Suite 170, Chandler, AZ 85226) has started off 1988 with five new games for the C-64.

Wheel of Fortune II challenges you with all-new phrases. Jeopardy! Jr. is made especially for kids ages 8–18. Each retails for $12.99.

Deathscape/Dogfight is a double feature available for $9.99. In Deathscape, you are placed in a gladiator pit, known as the Deathscape, to destroy the Varg fortresses inside. In Dogfight 2187, a hole in the space-time continuum let hordes of marauding alien invaders gain access to our universe. You must locate and reassemble the pieces of the Spatial Generator while evading the deadly aliens.

Skate Rock puts you against stiff competition. The course is set, the flags are up and the clock is ticking, so pull on your knee pads, grab your skateboard and rock 'n' roll. $9.99.

The Orion, a starship on a mission to map and explore the galaxy, has been taken over by deadly mechanical aliens. As commander, you must complete your mission before the ship's energy drains away. $9.99.

Check Reader Service number 410.

Menu List

SAN FRANCISCO—Xytec has announced the release of two new software packages. List Master, an outline processor for the C-64, maintains lists and helps organize written material. It features single-keystroke commands, file chaining, is compatible with most printers and disk drives and can hold 500 lines in memory at once. $35.

Menu Master, a companion product and upgrade to List Master, reads files created by List Master and presents them to the user in a hierarchical, menu-driven format. $25.

Both List Master and Menu Master are also available in a single package as DocuMentor for $50. Xytec, 1924 Divisadero, San Francisco, CA 94115.

Check Reader Service number 407.

Ships of Yore

BALTIMORE—Wooden Ships & Iron Men, a naval-battle game for the C-64, recreates the battles and campaigns of the Revolutionary and Napoleonic eras. Ships can grapple, crash into each other or end up in position for raking fire. Eighteen nationalities and thirteen ship types are available for your own design. The game is available from the Avalon Hill Game Company (4517 Harford Rd., Baltimore, MD 21214) for $35.

Check Reader Service number 403.

Let Yourself Go

MOUNTAIN VIEW, CA—Rampage, for the C-64, features three-dimensional graphics and arcade sounds to generate a monster movie-style action game for one or two players. Players control one of three nasty creatures on a rampage of destruction from coast to coast, with over 157 cities and skylines to destroy. Rampage carries a retail price of $34.95. Activision, PO Box 7286, Mountain View, CA 94039.

Check Reader Service number 412.

Wiz

OGDENSBURG, NY—Wizardry: Proving Grounds of the Mad Overlord, a fantasy/role-playing adventure from Sir-Tech Software (PO Box 245, Ogdensburg, NY 13669), starts you in a castle where you assemble a party of six characters, each with his or her own characteristics, to explore the magic and mystery of the ten-level 3-D maze. Under your command, the party will accumulate experience and treasures, slay dragons and foes and prepare itself for the final battle in the search for the stolen amulet. It's available for the C-64 for $39.95.

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Preview The Future!

PROJECT: STEALTH FIGHTER

Stealth aircraft . . . the hottest topic of discussion in aviation circles today. Space age technology and engineering make these aircraft virtually undetectable by enemy radar. Stealth fighters are believed to now be operating from top secret military bases, flown only on the most sensitive missions and only by the most experienced pilots.

Precise information about this next generation of Air Force jets is highly classified. But extensive research has enabled the aviation experts at MicroProse to incorporate the potential design and performance characteristics in a powerful new simulation.

Slip into the cockpit of **PROJECT: STEALTH FIGHTER** and familiarize yourself with the advanced "heads-up display"(HUD) and sophisticated 3-D out-the-cockpit view. At your disposal is a dazzling array of state-of-the-art electronics, weapons and countermeasures.

But remember, flying a stealth aircraft takes more than just fighter pilot reflexes. The real challenge is mastering the jet's electromagnetic profile to avoid enemy radar, while executing a deep-strike mission into North Africa or conducting delicate photo reconnaissance over Eastern Block seaports. Also featured are carrier and land-based takeoffs and landings, as well as land, sea, and air targets and threats.

PROJECT: STEALTH FIGHTER combines the combat action thrills of the best-selling F-15 STRIKE EAGLE with the sophisticated flight environment pioneered in GUNSHIP. Add the danger and suspense of clandestine missions in an innovative "invisible aircraft" and you have **PROJECT: STEALTH FIGHTER,** the latest flying challenge from MicroProse!

PROJECT: STEALTH FIGHTER is available from a "Valued MicroProse Retailer" (VMR) near you. Call us for locations!

For Commodore 64/128, IBM-PC/compatibles and Apple II/e/c. Call or write for specific machine availability, and for MC/VISA orders if product not found locally.

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Circle 103 on Reader Service card.

SOFTWARE GALLERY

This Spring, RUN *showers you with car and airplane racing, martial arts, programming help and plenty of pun!*

Compiled by BETH S. JALA

THE LAST NINJA ..... A+

Here's Your Chance To Live Vicariously Through Bruce Lee and Chuck Norris!

When it comes to non-educational recreational software, I'm a fan of only about ten percent of the programs. Since I'm a fan of The Last Ninja, and it is a non-educational graphics adventure game for the C-64, I guess that automatically puts it in the top ten percent of the "good stuff."

Even if it didn't possess graphics that rival some Amiga games, a multi-voiced screaming guitar soundtrack and plenty of fight action, The Last Ninja would still be a swell game. But the presence of those attributes make it stand far above the low-budget, martial arts variety of software.

What it does best is transform you from a mild-mannered home computerist into a real life, blood-thirsty Ninja, with quick death a certainty if you make a wrong move or decision. This game demands lightning-quick reflexes, coupled with methodical thinking and common sense. No scores are kept, no skill levels exist—apparently all Ninjas are created equal—and you've got three lives per game.

You are the last surviving Ninja warrior, bent on getting hold of Shogun Kunitoki after he made all your fellow Ninja buddies do a Jimmy Hoffa disappearing act. (You'll only know this piece of background information if you read the scant documentation that accompanies the software.)

If you don't like reading, just skip the manual and activate the program. A large window appears and you see a colorful garden path and a lone, finely detailed Ninja warrior, dressed from head to toe in traditional black. Using a joystick for all movements, you walk up and down the garden paths in search of treasures.

Don't expect to meet pleasant herb gatherers on any of your strolls. Most of the Samurai warriors and Shogun guards posted along the path seem to act like a violent Bruce Lee under the influence of cheap steroids. They'll slash, stab, jab, kick, punch and slice you with unabashed gusto.

Being an honorable Ninja warrior, you surely don't want the guys back at the Ninja country club wisecracking how a lowly Samurai warrior danced a Fred Astaire number on your masked face. To prevent such embarrassment and preserve your honor, it's mandatory that you learn correct joystick/fire-button maneuvers in order to do unto the Samurai before they do unto you. Moreover, you want to seek out and gather weapons like swords, numchukas and shuriken throwing stars.

Play the program a few times to know exactly where and, more importantly, how to find the weapons. Soon, you can whip any Samurai warrior or guard you encounter with minimal damage to yourself. The only problem is that there are three obstacles blocking your departure from this section of the garden—two rivers and a wasteland. Set foot in any of these and you'll die. Consequently, you usually end up killing everyone you meet, then drowning in a river or wasteland that seems impossible to cross.

While killing and maiming is The Last Ninja's solution to every problem encountered, the longer you play the game, the more clever twists are unveiled. For instance, if you execute a perfect forward flip over some opposing Samurai warriors, they'll occasionally commit hari-kari as you flee. But, perhaps the most amazing discovery you'll make after playing the game a while is the secret of easily traversing the previously unnavigable rivers and wastelands. (Hint: Use your Ninja-given abilities to do forward flips, and watch your alignment with rocks.)

The graphics are ingeniously original and are alone worth the price of the package. As you travel from path to path, the action window is updated with over 130 new, distinctly Oriental scenarios.

The loudest cheers for The Last Ninja come not from me, but from my son. He scorns many more arcade games than I do, yet became instantly absorbed into the role of a Ninja, refusing to break for lunch or let anyone interrupt his game, especially when he was busy wasting a Samurai warrior. He's fearless and ruthless in pursuit of his adversaries and shows potential with a sword and kicking accuracy. Incidentally, he turns three years old about one month after this ►

REPORT CARD

A Superb!
An exceptional program that outshines all others.

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

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

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

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

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IT'S THE NEXT BEST THING TO SKIING THERE.

Or figure skating. Or cross-country skiing. Or even luging. In short, *The Games: Winter Edition* is one game that can bring you the thrills and glories of history-making athletic competition. It was designed with the help of former U.S. Olympic Team athletes. *And it's the only computer game to earn an official license from the 1988 U.S. Olympic Team.*

Behold the gates of glory. Now watch 'em whizz by.

Find out what it's like to be a human shock absorber in the Ski Jump. Double your blood pressure shooting down the chute in the Luge. Lean into a 30-mile-an-hour turn in Oval-Track Speed Skating. And then cross your threshold of pain in the Cross-Country event.

There are seven Herculean events in all. For one, two or up to eight players. With graphics so crisp and accurate you'll be tempted to bundle up.

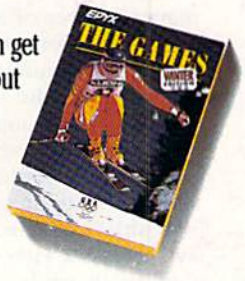
Plus, thanks to the game's unique camera angles, you can view the Downhill and the Ski Jump events from the first-person or camera-angle points-of-view. One moment you're looking over your ski tips. And the next, you're watching your performance from the sidelines.

Just you and your shadow about to pull off a double-axle sit-spin.

Switch to the camera-angle point-of-view for a new perspective.

The Games: Winter Edition. Incredible graphics. Network-style camera angles. Excellent athlete control options. And opening and closing ceremonies modeled after those at Calgary.

Now you can get the thrills without the chills.



THE GAMES: WINTER EDITION

BY EPYX

Commodore 64/128, Apple II & compatibles, IBM & compatibles
AUTHORIZED PURSUANT TO 36 U.S.C., SECTION 380

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review is published! *(Activision, 2350 Bayshore Parkway, Mountain View, CA 94043. C-64/$34.95.)*

—TIM WALSH
RUN STAFF

TEST DRIVE ..... B–

Patch Out in The Dream Machine Of Your Choice

Every so often, an entertainment program comes along with a premise so unique and a concept so intriguing that you can almost forgive its shortcomings. This is the case with Accolade's Test Drive.

Test Drive attempts to recreate the feeling of what it's like to get behind the wheel of an exotic sports car and put it through its paces: rev the engine, pop the clutch and wring it out!

Although game play is built on a tried-and-true type of arcade action, this program will appeal to those who are crazier about cars than computers. These are the folks who will really appreciate the opportunity to slip behind the wheel of a Ferrari Testarossa, Lamborghini Countach, Lotus Turbo Esprit, Porsche 911 Turbo or Chevrolet Corvette and take it for a computer-simulated test drive.

After booting the program (it won't autoboot on a C-128), you're presented with a screen featuring a stunning photograph-like portrait of one of the five dream machines and a chart listing its vital statistics. The chart is composed of actual performance figures like top speed, engine power and lateral acceleration.

Moving the joystick up or down creates a wonderfully slow dissolve of the first vehicle and an equally impressive materialization of a different roadster and its spec sheet. This graphic presentation is nearly as eye-catching as the portraits of the cars and is sure to delight any auto buff.

When you've studied the performance figures of the car you'd like to test drive, you press the fire-button and within a minute or so, you're looking out over the dashboard, ready to put the car through its paces.

The perspective is almost identical to the view you'd have if you were staring straight ahead through the windshield of one of these vehicles. At eye level is a view of a winding mountain road, while the upper left- and right-hand corners of the screen reveal a radar detector and a rearview mirror, respectively.

Right below the windshield is the top half of the steering wheel and a dashboard so realistic you can almost read the instruments. I've never actually been in two of the cars featured in Test Drive, but I remember the instrument panels of the other three looking just the way they do in the program.

While the graphics are something special, the game play is not. The object is similar to countless other arcade-type driving games: You try to get from point A to point B as quickly as possible without cracking up your vehicle.

You accelerate by pushing the joystick forward, brake by pulling it back, and steer by moving it left or right. Shifting, accomplished by pressing the fire-button, is crucial to maintaining top performance and avoiding a blown engine.

That radar detector was of little use in this leg of Accolade's Test Drive.

Although the packaging seems to indicate that you have a choice of roads on which to take your test drive, you're actually limited to the one winding mountain road. An Accolade spokesperson said supplementary disks are planned to provide new roads and more automobiles.

Your test drive covers a maximum of five difficulty levels. Each time you successfully complete a leg, you find yourself in a gas station where you're awarded points based on your average speed over that stretch.

Five crashes—or one crash into a police car—on any leg and your game is over. Your point total in each car is automatically recorded, although it can't be saved permanently to disk. You won't find that last bit of information in Test Drive's instruction manual, which is a scanty three pages filled more with hyperbole than useful, factual information about the game.

As I mentioned above, the graphics of the cars are stunning, but what lies outside the windshield pales by comparison. The mountain road and oncoming cars and trucks are rather cartoon-like.

Animation during the action part of the game is also somewhat disappointing. The screen scrolls fairly smoothly, doing a pretty good job of conveying the feeling of streaking down a road; however, the illusion is weakened by the way oncoming traffic seems to hop toward you, rather than gradually getting nearer.

Perspective is a bit distorted, making it more difficult than it should be to avoid smashing into the rock wall bordering the right side of the road, running off the cliff on the left or crashing into oncoming vehicles.

These flaws also hinder the program's ability to convey the feeling of driving five very different exotic sports cars. You do get some feel for the way performance characteristics vary from car to car, but the differences in this simulation aren't quite as dramatic as you might find them to be in real life.

Nevertheless, if you're a car nut you'll probably be willing to overlook Test Drive's shortcomings. It is, after all, the best program of its kind, because there's nothing else quite like it. Give the program's designers the highest marks for premise and concept, although their execution of the idea could have been better. *(Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. C-64/$29.95.)*

—SCOTT WASSER
WILKES-BARRE, PA

AQUA'S CIRCUS; THINK BANK ..... C+

Here's a Way to Get Your Child to Interact with Your Commodore

[*Editor's note: The two software programs reviewed here are used in conjunction with the Hearsay 1000 unit. See this month's Hardware Gallery for a review of that speech-synthesis and voice-recognition device.*]

Aqua's Circus is designed to teach preschool children nine numbers and an equal number of colors and shapes. Aqua the Clown asks the young user to repeat each word twice as it appears on ►

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Photo courtesy of 4-Wheel & Off-Road Racing Magazine

FOR THOSE OF YOU WITH AN OFF-TRACK MIND.

Get ready for four of the most challenging, rugged, rump-bumping cross

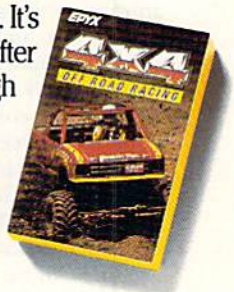
Plenty of thrills guaranteed on the following grounds: gumbo mud, packed snow, skid-sand, and the scrubbiest terrain south of the border.

country road racing courses this earth has to offer.

Fight the torturous terrain of Baja. Rocks, boulders, skid-sand, even a few spikey cactuses. And of course, heat that's hot enough to fillet any forehead. Ever had your hands stuck to the wheel? Permanently. You will when you endure the longest winter of your life in the ice, sleet and slosh of The Michigan Course. The Georgia Red Clay Course has enough mud to keep you a human fossil for 2,000 years. And then there's Death Valley. Get it. D-E-A-T-H Valley.

Start with pre-race strategy. Select and customize your personal vehicle. Your supplies. Your repair equipment. Believe us. You'll need everything. There are boulders, rivers, potholes, and mudbogs to contend with. What are mudbogs? You'll find out. (Just after you find out there's a Demon 4 x 4 chasing you all through the race. A Demon hellbent on your destruction.)

If you win enough races, collect enough points, only then will the Victor's Cup be yours. It's the least we can do. After all, you did go through hell to get there.



4x4 OFF-ROAD RACING BY EPYX

Commodore 64/128, IBM & compatibles, Amiga

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Circle 153 on Reader Service card.

the computer screen's schoolroom blackboard. This cleverly trains the computer to understand the words, and after checking them, the program asks the child which game he or she wishes to play: shapes, colors, numbers or counting. Once this choice is made, the program goes to the second scene, Aqua's Circus, where the numbers, shapes and colored objects swim and jump in a pool as three additional learning activities take place.

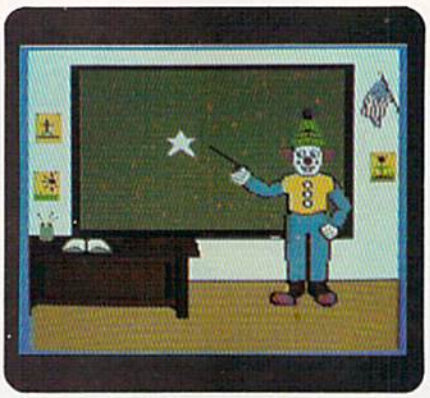
In the first activity, the object is presented and the user is asked to name it. In the second, the child chooses whatever object he wishes to see swimming in the pool. Finally, there is a "see and remember" game where the child sees a sequence of objects and then must name them in their exact order of appearance. If counting is the chosen game, the numerals 1 through 9 appear in sequence. If the number, shape or color selection game is chosen, the order is completely random in the final game.

All the objects are introduced in a logical order: the numbers 1 through 9, the shapes ranging from the simple to the more complex, and the colors beginning with the primaries. The shapes presented are the circle, square, triangle, rectangle, diamond, oval, star, heart and pentagon. The colors are red, blue, yellow, green, white, orange, gray, brown and purple. There are responses to a correct answer, but an incorrect—or misunderstood—response brings a correction or a low "boop" sound.

On the plus side, Aqua's speech, programmed directly into the Hearsay 1000's speech-synthesis and voice-recognition chip, comes through as clear and natural, without the scratchiness of digitized speech or the robotic monotone of allophone-constructed speech. Both a voice and background circus music are heard simultaneously. The child need only press the spacebar to talk to the computer and cycle though the activities, but the F1 key can be used to go on to the next activity or to return to the beginning.

On the minus side, the graphics and animation in Aqua's Circus are adequate, but unexceptional. Only the shapes, numbers and colored objects move; Aqua's arms and features do not. The large, convincing Aqua in the schoolroom scene bears only a passing resemblance to the tiny, differently dressed clown in the water circus scene. I also question Hearsay's package claim that a preschooler as young as two could use this—or any other program—without adult supervision. Further, there are several combinations of keystrokes that can crash the program.

Think Bank, a program designed to teach addition, subtraction, multiplication and division to the six-to-ten year old set, is even less graphically pleasing, but possibly more educationally useful. After loading the program, the user has the choice of training the computer to recognize the words or loading a previously saved voice. Following training, these words can be saved to disk or the program can be continued. (As with Aqua's Circus, the disk drive is not needed once the program is loaded.)



Your child can speak into the Hearsay 1000 and tell Aqua the Clown what shape is on the blackboard.

Think Bank then offers a choice between drills and games. The drills proceed from the computer reciting a problem as it's displayed, to solving for, and then filling in, a missing number or symbol. While the drill option presents the problems in ascending order of difficulty, the problems in the games option seem to be chosen randomly. Responses can be given either via keyboard or previously trained voice input, and they're limited to true/false, a multiple choice of red, yellow or blue, and the numbers 1 through 5.

Think Bank takes its name from the program's final game where the goal is to keep as much money as possible by guessing a hidden problem. This is done by choosing one of 25 possible squares on a five-by-five grid (selecting by row and column, either by voice or by keyboard) and remembering the problem or answer that's displayed. The problem is given in left-to-right order, but its elements may be in any row. Like guess-the-number games, it challenges the user to develop a strategy to minimize the number of choices. At the same time, there's an element of chance and a need to memorize what number or problem each square holds. Although the demo for Think Bank features a TV studio set with an empty podium in brown and white, the graphics are classic Commodore blue-on-blue in the version I received for review.

Aqua's Circus and Think Bank, at $29.95 each, are more visually appealing and less expensive, but also less portable, than stand-alone devices like Simon or Speak and Math (which don't respond to voice input). The instruction manuals for the two programs are brief, but well written. The reduced type of the Aqua's Circus manual is smaller than some might prefer, but legible. With regard to screen graphics, neither Aqua's Circus nor Think Bank are quite state-of-the-art compared to current non-speaking programs; however, children who enjoy computers will probably have fun with these programs as well. *(Hearsay, Inc., 1825 74th St., Brooklyn, NY 11204. C-64/$29.95 each.)*

—RICHARD H. ELDRIDGE
MIAMI, FL

RAD WARRIOR; SPY VS. SPY III; BOULDER DASH CONSTRUCTION KIT .... B+

Software Taken To the Maxx!

Opening up a new series of software, Epyx has delivered some titles on the Maxx-Out! label: Rad Warrior, Spy vs. Spy III and Boulder Dash Construction Kit. The suggested retail price of $24.95 means these games will more than likely be discounted by mail-order companies and chain stores. And that means consumers are going to be getting a good value for their money.

Rad Warrior is billed as the premiere title in the Maxx-Out! software line, which company officials say is designed to satisfy a younger, "new wave" of computer users. In this game, Tal, a champion warrior equipped only with a loin cloth and an unlimited supply of rocks, runs through the jungle in search of a radiation suit and a pair of anti-gravity boots. When he combines those, the fun really begins.

Tal uses fancy footwork to dodge falling blobs of acid rain and jungle denizens until he latches on to the suit/boots combination and heads off to the maze where the planet's alien oppressors dwell. He'll need energy packs, implosion mines and a laser to reach the generator room and destroy the power source. The ten-page in- ►

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The Wildest Multi-Event Game Ever!
SKATE OR DIE™
Mad Max on Wheels.
Two skaters square off. Play up to 8 skaters in bouts to the death. The joust is only one of 5 rad skate events.
Skate & Destroy.
Karate chop your way down the baddest alley in the neighborhood. One of two downhill events.
Smokin' the Half-Pipe.
Roar down the ramp. Go for rock 'n rolls, hand plants, railslides, even methods!
Rodney's Skate Shop.
He's rude and raunchy, but he's got the only store in town. Sign in, get a board, or just shoot the bull.
Lester.
Ugly but bionic. He rules the Jam and Joust.
FREE "Skate or Die" Lester sticker in every package.
Software by
David Bunch, Michael Kosaka, Stephen Landrum
ELECTRONIC ARTS®
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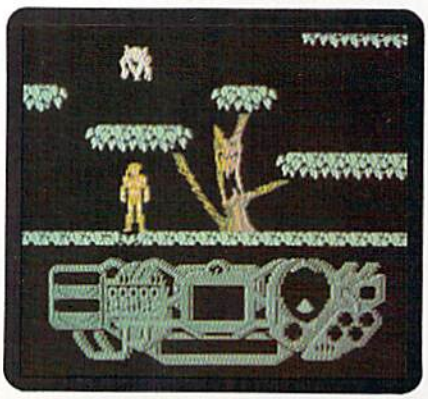
struction manual has a comic-book introduction and includes a map of the kingdom for players who have problems finding needed equipment. It has good scrolling, imaginative graphics and clearly written instructions.

Rad Warrior is new, but the other two programs are variations on two popular games. The "Arctic Antics" of Spy vs. Spy III takes the shifty Black Spy and White Spy to the ice cap where they hurl snowballs face to face and set traps for each other when their backs are turned. Except for location, volume III is much the same as volume II: A split screen simultaneously shows both spies at work (handy for watching the computer or your opponent gather needed items to get off the iceberg or to set traps); and a Trapulator board



As the Rad Warrior, Tal, you're the only one who can save the human race from alien invaders.

offers a selection of snow shoes, dynamite, saw, water bucket or other implements for doing dirty work.

Game play is similar to that of volumes I and II. The execution is impressive, and the programmers seem to have finally squeezed out all the milk that this Spy vs. Spy cow has.

Another borrowed theme is the Boulder Dash Construction Kit. Rockford's back, and, boy, is he trapped! Games are constructed cave by cave, with each creation saved. And, just to give first-time cave-creators some ideas, 12 caves and three intermissions are on the construction-kit disk. Cave screens can be as large as four monitor screens, while intermission screens are only as big as one. Rockford earns extra points by surviving an intermission.

Boulders, growing walls, butterflies and amoebas are all available to the cave builder. Remember, however, to include an exit to the next level, or Rockford will get blue in the face with no means of escape.

Rockford's cave cavortings have always been rock-solid. It's fortunate that other experienced players who have learned to Houdini their way out of the mines now have a utility to generate their own challenging caves. Caves alone would make this game less inviting, but with the extra attraction of a construction kit, the program presents a challenge for all levels. *(Epyx, 600 Galveston Drive, PO Box 8020, Redwood City, CA 94063. C-64/$24.95 each.)*

—LONNIE BROWN
LAKELAND, FL

NORD AND BERT COULDN'T MAKE HEAD OR TAIL OF IT ..... A

What Would Shakespeare Think?

A three-legged dog walks into the Long Branch Saloon in Dodge City. The saloon doors swing open, the sheriff stands in the opening. "Three-legged dog," he sternly asks, "what are you doin' here in Dodge City?"

The three-legged dog turns, stares, then slowly replies: "I'm lookin' fer the man who shot my paw."

If you think that's funny (or are terrified that something that bad could find its way into print), then add Nord and Bert Couldn't Make Head or Tail of It to your software collection.

This oddity of interactive text adventure from Infocom is, for the most part, typically un-Infocom. There is a gray background, white text, no graphics and a terrific interpreter to translate what you type into computer commands. Other than those trademarks, this adventure is Info(un)Com(mon).

Infocom fans will undoubtedly love it. But Nord and Bert should draw raves, even from those who don't like text adventures but appreciate word plays, puns, spoonerisms and other linguistic twists.

You don't need to draw an intricate map to play Nord and Bert, and you don't use compass directions to move about. Instead, a status line at the top of the screen lists reachable locations, like barn, stable, yard.

Moreover, Nord and Bert isn't just one adventure game that can take days to complete: It's eight separate scenarios. You can play any of the seven offerings, but you can't reach the eighth (Meet the Mayor) until you've completed the others.

Solving these puzzles requires the use of every cliche, pun, adage and word play you can imagine—and some you won't imagine. In that case, type "hint."

Hint? In an Infocom game? And be smitten by a sarcastic response?

Nope; there are hints here. First, you'll get a list of phrases. One will probably allude to your current predicament. Highlighting that phrase produces a clue. If that isn't enough, ask again. Another clue may be forthcoming. If not, you'll be greeted by "That's all, folks!" The clues should be enough to get the ball rolling—another great cliche for Nord and Bert.

Things are not always what they seem in the land of Nord and Bert. Typing ants when the program describes aunts turns the talking aunts into helpful ants. When you pick up one stone, you might not know what to do with it until you see two birds. (Hint: If you can't figure out by now how to use the stone, Nord and Bert may not be for you.)

That example is one of the less challenging found in the story lines. Others are more challenging and will send you running to the list of hints. There, you'll learn that lunching mobsters can be turned into munching lobsters. It's all a matter of perfect grammar.

This Infocom game is a welcome change of pace from its other products. In an hour or so, you can solve a Nord and Bert adventure. Maybe you'll even get to meet the mayor.

But not unless you take the bull by the horns, put your shoulder to the wheel and hit the broadside of a barn.

I'd tell you more. But I don't want to spill the beans. *(Infocom, 125 CambridgePark Drive, Cambridge, MA 02140. C-64/$34.95.)*

—LONNIE BROWN
LAKELAND, FL

MICRO DETECTIVE ..... B–

Constructive Criticism For Your Commodore

Regardless of your level of computing talent, if you write programs or type listings in on your Commodore, you're going to produce errors. These, in turn, cause a variety of messages to appear as fast as you type RUN and press the return key. Anxiously awaiting your first mistake and ready to jump onto your video monitor or TV screen are Syntax, Out of Data, Bad Subscript and File Not Found messages. They let you know little, other than that an error has occurred on a particular program line. While the ►

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C-128 offers the Help command to provide debugging clues, the C-64 offers very little in the way of identifying assistance.

Micro Detective improves this situation. Its primary function on both the C-64 and C-128 is to provide better error explanations. Although Micro Detective is more than just a Basic programmer's aid, using it is extremely uncomplicated because it simply adds commands and doesn't affect normal operation or existing commands.

Both the C-64 and C-128 versions share the same reference manual—a piece of documentation fraught with a lack of clarity. I think that fledgling programmers are likely to constitute most of the Micro Detective market, so clear, concise wording is necessary. With statements like "...you need to be real careful about any other Machine Language (ML) programs," the documentation becomes vague for beginners. Novice programmers might wonder exactly how one should "be real careful," while experienced users will note that the program's large size (it uses locations 27500 to 53247 on the C-64) eliminates the use of many machine language routines in your Basic programs.

In essence, Micro Detective is an extended Basic for both the C-64 and C-128. The program is aimed at Basic programmers who want to improve their programming skills and discover why programs don't work.

Micro Detective adds lots of programming niceties to your Commodore, like a Renumber routine for the C-64 and, using the cursor keys, the ability to scroll your Basic program listings up and down.

What distinguishes Micro Detective from other extended Basics is its automatic error detection. As previously mentioned, Micro Detective provides better, more elaborate descriptions of errors. Better descriptions help to determine what caused an error to occur, which provides you with insight to a correction. Also, when you make a Direct mode error with the C-128 version, the character at the end of the statement turns to a reversed video space. Another unrelated attribute of the C-128 version is that it defaults to the Micro Detective start-up screen whenever you exit the C-128's machine language monitor.

How does Micro Detective's error detection improve upon the C-64's own error detection system? Let me quote the manual: "No more cryptic '?SYNTAX' errors,. . .but rather a meaningful message like 'Expected a comma' or 'Variable must begin with a letter.' "

Micro Detective also offers a trace feature. It gives the C-64 capabilities similar to the C-128's TRON (TRace ON) statement, except on a more elaborate scale. Rather than simply display the line number that is currently being executed, Micro Detective provides a second screen that can be toggled on and off with control/s. Obviously, this type of step-by-step tracing would prove invaluable for instructors trying to teach elementary Basic programming. Thanks to this option, students could see the cause and effect of each statement.

Some introductory remarks in the C-64 version of Micro Detective.

The manual calls the trace routine by a variety of names. You'll find it referred to as a professional debugger, a bugbuster, a trace routine and even The Trace. Unless you can accurately associate all these words with a single thought, you'll probably be slightly confused.

While Micro Detective adds 31 commands to Basic, Trace mode also adds ten program options, available by pressing the control key and one of ten letters. For instance, if you need help: control/h. Want to list all program variables? Press control/v. Need to list the program? Press control/l; and so on.

Programs are traced by holding down the Commodore key to execute each statement within a program. The C-64 version traces the execution of a program by printing the lines on screen. The C-128 version, on the other hand, has a window that appears in the top half of the screen that shows exactly what lines are being executed.

An important aspect of this product is that three versions exist: two for the C-64 and one for the C-128. Earlier C-64 versions contained error-detection routines, but lacked a trace feature; later C-64 versions contained both. Only one version for the C-128 has been released so far; it contains the trace feature, but lacks the error-detection routines. Beware—this arrangement is every bit as confusing as it sounds!

An addendum to the C-64 manual accompanies Micro Detective 128, and it states that the C-128 version is missing some of the key elements found in the C-64 version. These missing options include the advanced error-detection routines. However, the C-128 version compensates for this shortcoming by automatically listing and highlighting errors whenever they occur.

Author Bennett Cookson deserves credit for his hard work in developing a good C-64 product and praise for making a C-128 specific version. Micro Detective's biggest drawback is its rather expensive pricetag. At a rather steep suggested retail cost of $49.95, Micro Detective is priced out of the range of most Basic extension programs. But, until more error-detection programs come along, no viable alternatives exist. *(American Made Software, PO Box 323, Loomis, CA 95650. C-64, C-128/ $49.95 each.)*

—TIM WALSH
RUN STAFF

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Check the ailerons, trim the tabs. Set the VOR. File a flight plan.

Hold on one minute. If you really didn't sign on to be an airline pilot, and it's good old barnstorming, seat-of-the-pants flying you seek instead, then put on the goggles and don the neck scarf. The GeeBee Air Rally awaits.

We're talking a case of Waldo Pepper derring-do here. Snoopy and his Sopwith Camel would be proud. There's not a single air-control tower in sight. The opening screen shot—a black-and-white picture of a 1930s-era "aeroplane" surrounded by curious people—sets a nostalgic mood for the game.

The rest of the game is in color, of course. Your view is solo flight, from slightly above and behind your GeeBee. You pilot it through one of 16 air courses marked off with signposts to designate the outside curves and ►

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straightaways; blue-and-white checkered boxes mark inside turns.

An air-speed indicator, altimeter and compass are visible on the lower portion of the screen, but are there mostly for show. You can't crash the GeeBee by flying too low. The main problem is getting around the other airplanes that are also flying the course. Remember, use instincts, not instruments.

Fast-scrolling graphics zip by without a jitter. You quickly move up on other racers. Go under, over or around them. When you're passing a competitor, the audio produces a Doppler effect, not unlike the rising and falling wail of a passing train's whistle. That's not the only audible; come too close, and you'll hear the clatter of wings clipping one another.

Come even closer, and your propeller flies off, sending you to the ground. Crashes cost time—you begin again from where the collision took place. If you don't complete the course in the allotted time, you get a second chance.

If you don't finish the course on the second attempt, you can add your name to the on-disk listing of the 15 highest scores. (Human players can compete only for the highest score. There's no one-on-one flying allowed in the air rally.) Completing a course early lets the player carry over some of the time into the next round. That's an important consideration in a race where every second counts.

When a crash occurs, as the unlucky pilot you're treated to a full-screen picture of the resulting bailout. You land in a pig sty, or perhaps the desert, or even in a farmyard, staring up at a farmer's daughter in scanty shorts. (This may be seen as a somewhat chauvinistic cheap-shot, for not all daredevils were male pilots. Remember Amelia Earhart?)

Stereotypes aside, these graphic intermissions, sandwiched in between crashes and the next take off, provide a breather from the hectic flying scenes. Another diversion you may enjoy is that GeeBee pilots can earn extra points by popping balloons or flying on a slalom course. (Be careful not to mistake a telephone pole for a balloon!)

When the course level is completed, another full-screen graphic appears. Perhaps the lucky pilot will be on the winner's stand having his picture taken or receiving a kiss from an admiring fan.

The Activision people have made an extra effort to preserve the illusion of turning back the calendar to the 1930s by printing the instructions as part of a four-page tabloid that recounts, with imaginary stories and advertisements, the daring days of the barnstorming heroes.

Clear! Contact! Chocks away!! *(Activision, 2350 Bayshore Parkway, Mountain View, CA 94043. C-64/$29.95.)*

—LONNIE BROWN
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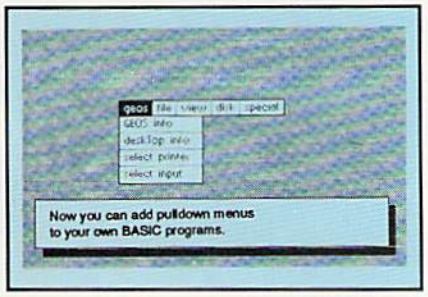

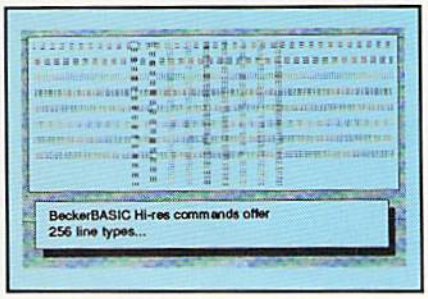

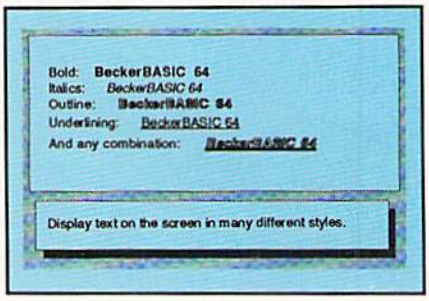

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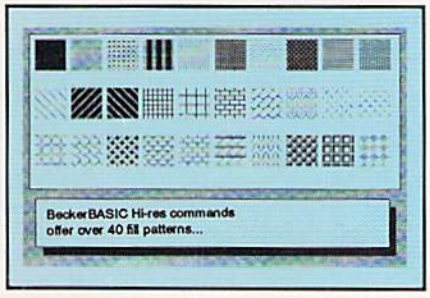

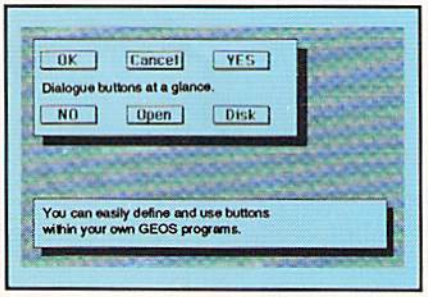

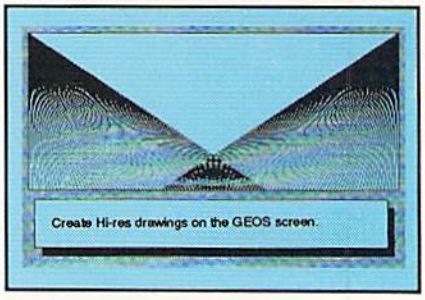

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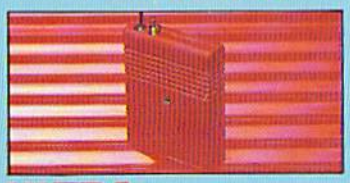

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COMPUTER CAMARADERIE

By LONNIE BROWN

Earl Dunlop said he's owned Commodore computers "ever since I can remember. I go all the way back to the VIC-20." In spite of his experience, however, when Earl's wife, Gwen, took a disk drive into a store for repair and saw a poster advertising a user's group meeting, they decided the meeting might give their computing knowledge a boost.

So that's how Earl, Gwen and son Jason found themselves at a Friday night meeting of the Tampa (Florida) Commodore User Group. "After three meetings, I knew we hadn't been getting all we could have from our computers," said Earl. "It's been helpful."

Something's amusing at a Nashville, Tennessee, Commodore User's Group meeting.

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Whether you're a novice or an experienced computerist, joining a user's group can expand your computing horizons.

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PHOTOGRAPH BY DAVID LUTTRELL

Such unsolicited praise brings a smile to TCUG President Lloyd R. Rankin, Jr. As a retired executive who established businesses and reorganized failing ones, Rankin is particularly proud that the struggling group he and other members took over in the spring of 1987 is now the largest organization using the Town-'n'-County Community Center.

"It used to be that if we had a dozen members at a meeting, that was a success," recalled member Lester Baumgardner, the club's sergeant-at-arms. "We've got about 50 people here tonight, and 60 members on the roster."

Rankin attributes TCUG's success to a philosophy he has about computer club meetings: "If, in three meetings, you don't learn something new, then maybe you've outgrown the club or the club isn't doing its job."

Rankin also has a variation on that theme: "If you're not learning from the meetings, maybe it's time to get involved in helping present the programs. You're computer smarter than you think," which means that although you may know nothing about the "save-replace" bug, you may have a wealth of knowledge about another facet of Commodore computing.

Club Benefits

So, students become teachers. At one meeting, a club member showed others how Computer-Eyes can be used to make pictures on T-shirts. At another, a club officer briefly explained the sound interface device (SID) chip, then demonstrated a disk of songs downloaded from QuantumLink. As Rankin said, "We want to build on one another's knowledge."

Belonging to a user's group means you don't have to reinvent the wheel. Chances are that if you encounter a problem, someone else in the group has already solved it. Say you want to make a small change in a Basic program. There's no need to learn how to program the computer; just ask for help at a meeting.

Want to print a disk directory on a mailing label to stick on the disk cover? Check the club's public domain software library. The chances are that you'll find what you're after. "We've got 1600 titles, from the simple to the sophisticated, in our public domain library," said Rankin.

Buying a game, word processor or database program? User's group members probably have experience with several and can tell you what to look for and what to avoid.

STARTING A USER'S GROUP

SO YOU'VE DECIDED to take the plunge and join your local user's group. You begin to make inquiries and discover, to your horror, that there are none! Well, don't panic, because there's a solution—start your own.

It's not all that difficult. In fact, since Commodores are still number one in personal computing, the chances are that there are many people in your community who'd welcome such an organization and be willing to help get it started.

There's no formula for setting up a user's group; the plan you adopt will depend a lot on your community. However, I can offer you the following suggestions:

- Try to find a local meeting place. This can range from someone's home (for a small group) to a room supplied by a local school, church or business. If you have a community college nearby, check with them about using a room. Most community colleges are glad to offer their classrooms to responsible members of the community. If any new members of the group are teachers, they might be able to make the arrangements.
- Go to your local Commodore dealer and/or service center, and ask if you can put up a notice that a group is forming. If you've already set the date and time of the first meeting, the poster or sign can tell when and where and give the name and phone number of a person to contact. Odds are the dealer or service center will be happy to cooperate, since a healthy user's group means a steady stream of customers for their services. After you get started, the salespeople and technicians may be a good source of information and expertise.
- Put up notices on bulletin boards at schools, grocery stores, laundromats. If your area has a computer BBS, get the SYSOP to post a message there about your new group.
- Perhaps you can get the local newspapers, radio stations and television station to give your group a plug. After all, a user's group is a community organization.
- Find out who the local Commodore experts are. Ask if they'd be interested in teaching a workshop or helping in some other way. And remember that being an expert doesn't necessarily mean a programmer. It can mean explaining how a certain word processor works, or even what word processing means. Also keep in mind that you may be an expert. If you've had your computer for even a little while, you know more about some aspect of computing than someone who just got theirs yesterday.
- When planning the agenda for the get-acquainted meeting, keep it light, but informative. Find out everyone's name, perhaps by having them introduce themselves. Ask what computers they use, so you can get an idea of the needs of the group. Ask what their skills are, as well as what they'd like to see in future meetings. You also might give a demonstration of some new computer game or application.
- At the first meeting, get volunteers to help with future meetings, whether by making arrangements or giving demonstrations or lectures. Before long, you should also get a committee together to plan elections and draw up rules and agendas. R

—LOU WALLACE

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Three serious listeners at a meeting
of the Commodore User Group of Santa Cruz, California.

Group meetings also offer a chance to see and compare a variety of monitors, disk drives, interfaces, printers and other computer accessories. You can talk to the people who own them and get a completely different perspective from that of those who are trying to sell them.

Strength in Numbers

Being a member of a user's group frequently means increased buying power. When ten users in one group recently went together to purchase ten of the same printer, delivered COD to the same address, the price was substantially below what an individual could have obtained.

On the other side of the coin, members can pool their resources to buy individual items. For instance, TCUG members purchased a MacInker. According to club president Rankin, "It wouldn't have been as feasible for a single user to purchase the re-inking machine, but as a group we could do it cheaply. Members pay to use the re-inker, and the money goes to help the club."

While you might find disks on special sale at a store, a computer club might offer them at meetings for a price even below the store special. Buying hundreds of disks at a time guarantees a low price—and that saving is passed on to club members.

Meeting Programs

Warren Mason, now a sales representative for ComputerLand in Lakeland, Florida, is past-president of a Commodore user's group in Oklahoma. "Our best-attended meetings were those in which we'd explain simple Basic programming," he noted. "When people can understand a little of that, they can use that knowledge as a stepping-stone."

"People also want to know how the computer works," he added, "and they want to know about word processors and other useful applications. Those types of programs were very successful."

Mason believes programs should be held to a half-hour or 45 minutes and shouldn't try to cover too much territory, particularly when dealing with explanations of programming. He also believes user's group fees should be reasonable—$2 to $3 a month seems common—and the group's officers should willingly supply receipts for dues and purchases, as well as a monthly accounting of the treasury.

"A good public domain library can be a big help, particularly if you're interested in programming," said Mason. "I learned a lot from looking at the ways other programmers did things, and I could always take a subroutine out of a program and use it to improve another program I was working on."

Mason finds that "In a user's group, there's usually somebody who's willing to give you some help when you get stuck on a problem." And bless them, user's group members have patience to spare! ■

Lonnie Brown is an editorial writer and computer columnist for The Ledger, *a newspaper in Lakeland, Florida. Lou Wallace, now* RUN*'s technical manager, was formerly the charter president of the Gainesville, Florida, Commodore Users Group.*

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PHOTOGRAPH BY BILL BEATTIE

A demonstration at the Gainesville, Florida, Commodore User Group.

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GET YOUR CLUB ONLINE

Add a new dimension to your user's group with an electronic bulletin board system.

By RAY ROBERTS

WHEN I BOUGHT A C-64 several years ago, I immediately joined the local Commodore user's group. Like many other clubs, we meet weekly, and I try to attend often, because the meetings are a good opportunity to see the latest in commercial software, exchange information and get public domain and shareware software. Sometimes, though, when the agenda doesn't strike my fancy, or if other obligations conflict or the trip across town just seems too much after a hard day at work, I'll skip a meeting.

Even if I don't attend, however, I remain an active member by keeping in touch with others through the club's electronic bulletin board system (BBS). In this way, I meet and make new friends, get and give programming help, communicate with disabled members who can't attend meetings, get free software, and so on. For me, it's the best service the club provides, because it fulfills so many of my needs and I can use it at my convenience.

What!? Your user's group doesn't have a BBS? Well, read on. I'll tell you what can be done with a BBS and how to set one up for your club.

The Power of a BBS

A BBS is a computer system that includes a modem for communicating over the phone line, special software to run the board and a person called the systems operator (SYSOP) who watches over the whole works. The software detects incoming phone calls, answers the phone and then lets you (the caller) give commands to the BBS computer. Once you're online and have entered your name or password, there are four BBS features you can access.

First, you can use the electronic message system—always a primary feature of a BBS. In fact, this "bulletin board" is where the BBS name originated. This is the electronic version of a combined cork bulletin board and mail system. You can post public messages and read messages that others have left, and you can make your messages private if you like (but don't forget, the SYSOP can read them!). Some BBS message systems divide the public messages into boards dedicated to specific subjects, while others have a single database of private and public messages.

A second popular feature of most BBSs is the public domain and shareware software library. Here, computer files can be transmitted (downloaded) from the BBS to your computer. To help you make choices, most BBSs allow you to download a list, with short descriptions, of the programs available. The programs are usually listed by computer type, but some BBSs also organize them by category (such as education, games, database management). I've obtained some excellent software from my local BBS library, and it's available to me 24 hours a day!

Reading text files online is another BBS activity. Text files are sequential files stored on the BBS disk that can be selected (usually from a menu), transmitted and displayed on your screen. This is a good place for the user's group to post a membership directory, a list of officers, information about future meetings and other announcements. When I was SYSOP of our BBS, we posted the entire club newsletter on the BBS every month.

A relatively new feature of BBSs is the availability of online games, such as blackjack, roulette and football. Just select a game from a menu and see if you can beat the scores of other BBS users.

Hardware

Most Commodore user's group BBSs are run on a C-64. The computer is inexpensive, reliable and sufficiently powerful to operate a sophisticated system. An inexpensive monochrome monitor is also needed (color isn't necessary).

Although it's possible to operate a BBS on a 300-baud modem, your system will be much more successful and appreciated if you can offer 1200-baud service. Make sure the modem you get is Hayes compatible, so it'll work with any BBS software. Commodore's 1670 modem isn't a good choice, because it isn't 100 percent Hayes compatible, and it also has the annoying habit of answering the phone even when the BBS software isn't online.

Perhaps the most critical piece of equipment for a BBS is the disk drive. Get the largest disk capacity you can afford. You won't need too much for a small message base, but if your BBS grows and you add a software library, text files and games, you may eventually need several megabytes (Mb) of disk capacity to accommodate it all. Our club has used a 7.5 Mb Commodore D9090 hard drive for about four years, and even with that amount of space, during the last year we've had to stop posting new ►

PHOTOGRAPH BY ACEY HARPER

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text files and do a lot of house-cleaning to accommodate new software.

Commodore has produced several disk drives that are commonly used on BBSs. Some of them are no longer in production, but can often be picked up used or as rebuilt units from mail-order suppliers. These include the SFD 1001 single-floppy drive (1 Mb), the 8050 dual-floppy drive (1 Mb), the 8250 dual-floppy drive (2 Mb), the D9060 hard drive (5 Mb) and the D9090 hard drive (7.5 Mb). All of them use the parallel bus and require an IEEE interface that plugs into the cartridge port on the computer.

A current Commodore product that has become a popular BBS disk drive is the 1581 3½-inch floppy. With a capacity of 0.8 Mb, it's adequate for maintaining a message base, some text files for announcements and a small software download library. The 1581 is a good buy at less than $200.

A BBS with a large software library requires a hard disk drive for storage. As I mentioned, our club has used a Commodore D9090 for four years, and it's proven to be a reliable work-horse. However, it's noisy (the drive motor runs constantly), and it generates a lot of heat. I measured our D9090's electrical consumption and calculated that it consumes about $10 worth of electricity per month!

When we started our BBS, the D9090 was the only choice we had, but now there are several other companies producing higher-capacity hard disk drives for the C-64 and C-128 that are quieter and more economical to operate. Table 1 lists the hard drives now in production. If you want to add a hard drive to your BBS, I suggest you write each of the companies for details about their products. You might also read the review of hard drives in the April 1987 issue of *RUN*.

Software

Selecting BBS software can be difficult, but it's extremely important. Here are a few hints and suggestions that may help you.

1. Be certain that the software supports the hardware you'll be using (or vice-versa). For example, some BBS software supports only disk drives using the IEEE parallel interface and won't work with Commodore 1541, 1571 or 1581 drives.

2. Check out the user interface carefully. I like to see a main menu after signing on that clearly tells how to get to all the main features of the system, rather than just presenting the user with a command prompt. It's helpful to have an "expert" mode, too, so experienced users don't have to fight their way through multiple menus to reach their destination.

3. Check out the message board and the editor carefully. The text editors provided for entering messages online are usually line-oriented, which makes correcting spelling and grammar more difficult than with a word processor. Look for one that's as easy to use as possible, so users won't get discouraged when trying to upload messages. A nice feature of some BBSs lets the user create messages offline with a word processor and then upload them.

Other features I like to see in a message system are a "scan" function to read just the message headers, a "new" or "global" function to read only the messages posted since the last sign-on, a "poll" function, so users can vote on issues, and a "trace" or "thread" option that groups messages with their replies, making it easier to follow conversations on the message board.

4. The organization of the download software library is also an important consideration. The BBS software should be flexible enough to catalog each file by computer type and category. Each file should also have a description associated with it that the user can read before downloading. I also like to see upload and down-

Table 1. Currently available hard disk drives compatible with the C-64 and C-128.

JCT SERIES
JCT
8550 New Hope Rd.
Grants Pass, OR 97526
503-474-5678
JCT-1000 (3.7 Mb), $495;
JCT-1005 (5 Mb), $595;
JCT-1010 (10 Mb), $695;
JCT-1020 (20 Mb), $795

LT. KERNAL SERIES
Xetec, Inc.
2804 Arnold Rd.
Salina, KS 67401
913-827-0685
20 Mb; C-64 version, $899.95;
C-128 version, $949.95

MINI-CHIEF SERIES
InConTrol, Inc. (ICT)
100 Sunset Blvd.
Chambersburg, PA 17201
717-267-1879
MC-20 (20 Mb), $795;
MC-40 (40 Mb), $1195

Table 2. C-64 and C-128 BBS software.

BBS64
Steve Punter
4342 Forest Fire Lane
Mississauga, Ontario
Canada L4W 3P4
416-896-1446—weekdays 12–5 PM, voice; weekdays 6 PM–10 AM and all day weekends, BBS
C-64, $100 U.S. funds
Supports hard drives and a BBS network

C-NET
SofTech Enterprises
PO Box 23397
Lexington, KY 40523
606-268-2283
Version 12.0, C-64, $59.95; version 2.5, C-128, $84.95
Supports hard drives and RAM expanders

COLOR 64
Greg Pfountz
14 Longdale Rd.
Bristol, VA 24201
703-466-2120, modem
C-64; $50
Supports hard drives and RAM expanders

SPENCE-XP BBS
Read/Write Media
60 St. Clair Ave. W, Suite 1
Toronto, Ontario
Canada M4V 1M7
416-694-0303, voice; 416-622-7198, modem
C-64; $10 U.S. or Canadian funds
Supports hard drives and RAM expanders

VISION BBS
Vision Software Co.
PO Box 534
Bronx, NY 10461
212-829-1538 and 718-229-5739, voice; 718-631-9065, BBS
C-64, $69.95
Supports hard drives

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load logs that show the most recently posted software and the most frequently downloaded programs.

5. How the BBS manages text files can also be important. Some systems have you input a number or letter to select text files for display from a few menus, but this arrangement is inadequate if the text file library becomes very large. A preferable system lets the SYSOP create a multilayered and branching menu system.

You won't find any BBS program that provides all these features and has no weaknesses. Your choice will depend on the hardware available for running your BBS and the features that are most important to your club. Table 2 shows some of the Commodore-compatible BBS programs and addresses where you can get more information.

If your club is interested in setting up a BBS or has already done so, you'll also find valuable information on both software and hardware in *RUN*'s monthly Telecomputing Workshop column.

Financing Your BBS

When we proposed a BBS to our user's group four years ago, many members were opposed to the idea. At that time, modems were still quite expensive, and the cost of equipment to operate the BBS totaled more than $2000. Since some felt they would never use the system, they didn't want their club dues applied to it. A compromise was finally reached by financing part of the purchase with a local computer store and "borrowing" the remainder of the money from the club. The loans were repaid by charging club members who used the BBS an extra $20 per year. The BBS has now been fully paid for, and it's open to all of our club members.

Hopefully you can garner more support for a club BBS. It should be easier these days, because modems have become less expensive and high-capacity disk drives also cost much less than a few years ago. You may even be able to find someone willing to donate equipment for the BBS. It never hurts to ask! ■

Ray Roberts is a biochemist and author of Multifinder, a shareware C-64 database manager. He is also SYSOP of the KnowledgeWare BBS in Gainesville, Florida.

CLUB CHRONICLES

Follow these guidelines to start a successful user's group newsletter or improve the one you already have.

By MIKE PROCISE

THE TIES THAT UNITE US, as Commodore users, include magazines, modems and, of course, our local user's groups. We're particularly linked by the user's group newsletter, which keeps us in contact with the club even when we can't make meetings. Ranging from one-page photocopies to glossy, saddle-stapled mini-magazines, these publications tell us the "who, what, when, where and why" of our Commodore computing world.

At its most basic, a newsletter is a "town crier," mailed out to inform members of the next club meeting. The phone number of the club contact person is usually provided for the convenience of new computer owners. Other important reasons for producing a newsletter are to recruit new members, comment on current affairs, review new products and survey the club's volunteer efforts in the community.

User's group newsletters recently entered the political arena, urging members to write the Federal Communications Commission in opposition to telecommunications rate increases. The result was a flood of letters to the FCC.

Many newsletter editors make an art form out of their publication, laying it out attractively and brightening it up with eye-catching and informative graphics. These are the newsletters nobody wants to miss!

If you have a computer, word processor and printer, you can produce a newsletter for your club. To help you get started, this article presents some guidelines I've developed over my years as a newsletter editor. If your publication is already established, these pointers should make the job go more smoothly. As you gain experience, you and your staff may want to add guidelines of your own. Just remember not to cast them in stone. Adhere to guidelines, yes; become a slave to them, no.

Get Help

It's important to develop a core group of solution-oriented people who can put in some time helping with the newsletter. I'm not talking about forty-hour weeks, but ►

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The younger generation gets involved at Morningside Nursing Home in Foxboro, Massachusetts.

you need people to call on who are interested in writing or soliciting articles, reviewing other newsletters for reprintable information or typing. Even if you're the most willing worker, without help and encouragement, you may burn out. Nobody will blame you when the newsletter decays or you quit the job, but the whole club will suffer.

Separate the Power

Cooperation between the newsletter and other special interest groups within your club should be promoted. At the same time, the newsletter needs some independence. One of our first, and best, decisions as a user's group was to set aside a portion of each membership fee for newsletter production. The money is administered by the editor with the understanding that it has to last all year. Earn the confidence of your club, and then get the authority and means to carry on!

PEEK & POKE

THE *PEEK & POKE* NEWSLETTER originated with the Peek & Poke Graphics Group in Westbrook, Maine, but has become the official voice of the New England section of MARCA (Mid-Atlantic Regional Commodore Associations). While primarily aimed at New Englanders, it circulates to groups throughout the U.S.

***Peek & Poke* has grown from 50 copies of the first issue, in October 1983, to 2200 copies last December. Each newsletter contains 14 or more 8½ by 11 pages, stapled at the corner. They're distributed free through user's groups, newsstands and computer stores.**

Seven people make up the core staff of *Peek & Poke*, but the efforts of a dozen individuals, from rank beginners to computer veterans, are represented in each issue. One writer, Dave Loomis, has produced over fifty interesting articles in the past three years; many other fine articles have been written by newcomers.

***Peek & Poke* is now supported entirely by paid advertising from vendors. With these revenues, the staff has been able to purchase a tabletop offset printing press and enough computer equipment to serve 91 user's groups in New England's Commodore community.** Ⓡ

Sound Positive

Keep the newsletter *upbeat*, for it's the window through which the outside world views your user's group. I suggest that complaining articles be rejected 90 percent of the time, so you don't sound like a "losers" group.

For instance, don't print the treasurer's sour comments about the state of the finances. That will make your club look tacky. If you're having a problem with some product or vendor, get on the phone, obtain some answers and turn the negative experience into a positive article. Remember, solutions are important.

Explore New Frontiers

Don't use reprints from other newsletters any more than necessary to publish needed information. Print the kind of news that will make your readers afraid to miss the next issue!

Be Responsible

Even if you publish a disclaimer to the contrary, as editor you're responsible for the entire newsletter—and your readers know it! This is a learning experience, so it's OK if you get some criticism. On the other hand, don't be too modest to accept praise.

Solve Problems Creatively

If you don't have enough money to print extra newsletters for the local computer store, have a member of your club who does a lot of business there solicit an advertisement from them. If a meeting was poorly attended because the newsletter came out late, delegate someone to give you an up-to-date preformatted list of club functions each month—and make sure it's in your hands a month in advance. Get everyone to help turn problems into solutions, and your newsletter efforts will be successful!

Cultivate Writers

Wherever you go, be on the lookout for people with good verbal skills, and ask them to write about some computing experience that was significant to them. Remember, sharing is the real issue here, so wait until after you've established their willingness before you address details of topic, length and style.

New writers may feel exposed to criticism and ridicule. If it would help, offer to print an article without the author's name.

Don't impose on your authors the kind of strict author guidelines that professional publishers use; it'll only discourage new contributors. Instead, remove as many obstacles as possible, so your readers can easily become writers.

Work with your writers by answering every question they have. A feeling of teamwork will develop; then, when you have a disagreement over content or style, it won't be too painful. And feel free to help writers by editing their rambling prose, no matter who the author is.

Remember the Beginners

Newcomers are your raw material, and they're ready givers. If they're new to computers and need keyboard practice, ask them to help type in material. You can also encourage them to write. Help them get started with their computer; then, when they begin to feel confident, pop the big question—"Would you write something for the newsletter?"

Be Flexible

Files sent on disk or transmitted by modem are convenient, but gather material any way you can. I take information by phone, scribble notes on napkins in the donut shop and even print items shouted out the window of passing cars. After all, news is news! ■

Mike Procise, a member of the Peek & Poke Graphics Group in Westbrook, Maine, has been editor of the Peek & Poke *newsletter since its inception. He also belongs to the New England Computer Pioneers, an organization devoted to helping user's groups. Professionally, Mike is a computer consultant.*

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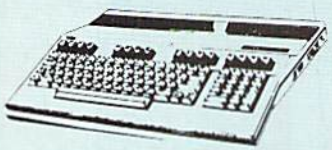

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128D..... $429.95*
C64... Refurbished... $99.95*
*package pricing

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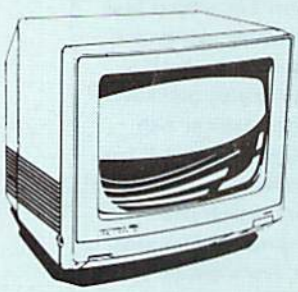
1581 ..... $179.95
SFD 1001 (1 Meg)..... $Call
1571 ..... $219.95
RF500C $209.95



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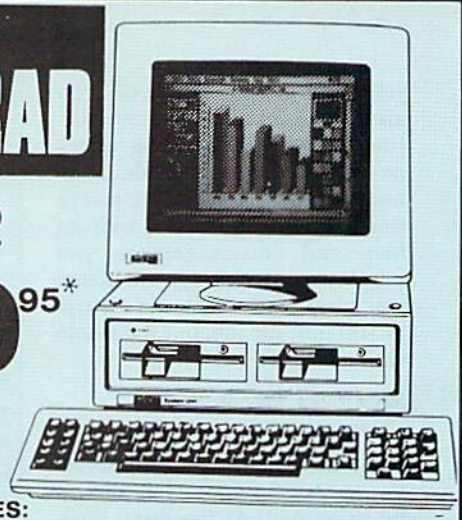

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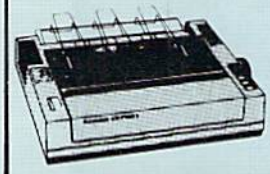

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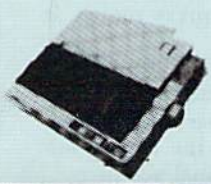

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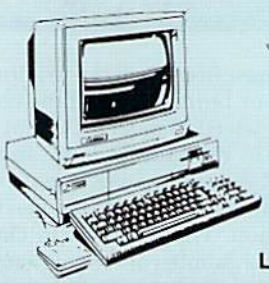

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Window Construction Set

You can add the wonder of windows as you create C-64 programs.

By JOHN RYAN

Pop-up windows and menus are often used in a program to spice up what would otherwise be drab displays. Designing windows, however, can be a tedious and time-consuming task—even for the advanced programmer. My program, Window Construction Set (WCS), makes the job easy and offers several advantages over other window utilities currently available.

First and foremost, it requires no programming. All you need to do to create a colorful, three-dimensional pop-up window is choose the window's style and color, type in your text and specify the location of the window on the screen. The computer does all the rest.

You can use WCS to creatively display everything from menus to program instructions, and blank windows are great for user input. Also, by placing several windows in the same screen position, you can rapidly "flip" through a lot of information without having windows scattered all over the screen.

WCS is a full-featured, menu-driven editor that's written entirely in machine language for fast and efficient operation. You can build several files, saving up to nine windows in each file, so you'll have a wide choice to use in your own programs.

Preliminaries

Type in and save Listing 1 under any filename and run it. It takes a few moments for the Data statements to slip into memory; then the program automatically saves a small machine language file, named WCS, to disk. This is the file you'll need to load, using LOAD "WCS",8,1:NEW, to place the editor in memory. Then you can access it by typing SYS 49152, which brings up the main menu.

If you're creating a new window file, you must first select the window type—plain or bordered—and the color. The latter selection determines not only the color of the window body and border, but of the text as well. Press T to toggle the window type and C to make a color selection. Then press N to choose the window number (1–9) you want to edit.

The Editor

The edit option is for creating new windows only. I'll describe later how to revise existing windows.

Press E to edit the window you selected. This brings to the screen a blank text area, measuring 16 columns across by 10 rows down and sporting the characteristics you assigned. This area contains a flashing cursor, and, as you'll see after you enter some text, it's surrounded by a one-row/one-column frame, for a total window area of 18 columns by 12 rows.

Type your text, positioned with the cursor keys, within the window. The return key is reserved for processing the window, so don't press return at this time.

The editor won't let you type past the window borders, and persistently trying to do so may corrupt part of a border. However, don't worry, the corruption won't show up in the final product.

The insert/delete key is disabled in the editor, as is the shift/return combination. You should also avoid pressing clear/home, or you'll erase the editing screen and have to press return to start again.

Pressing return processes your new window and takes you back to the main menu. There you can repeat the editing process to create as many windows as you need.

Positioning Your Creations

Don't save your file yet; you still have to fix the position of your windows on ►

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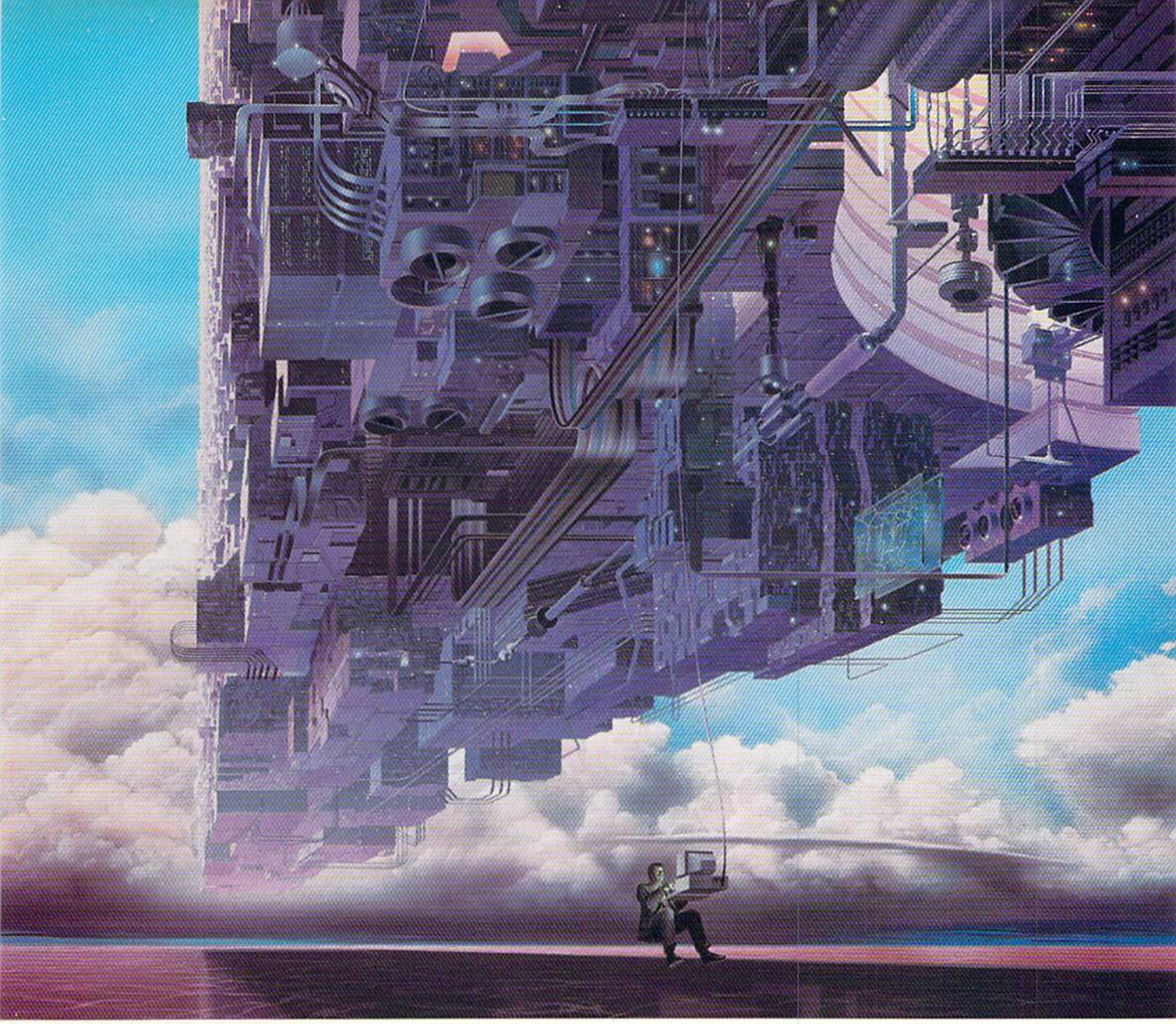

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the screen so the computer will know where to place them in your own programs. Press N to select a window and P for positioning, then use the cursor keys to place the small, black cursor where the upper-left corner of the window should be. The editor restricts cursor movement to an area in the upper-left region of the screen that's determined by the 18-column by 12-row size of the window and the fact that the cursor represents the upper-left corner of the window. While you're placing the cursor, the main menu remains on-screen as a location reference.

When you've found a location that looks good, press the return key to fix it and make the window appear. If the placement doesn't look right, press P again and move the cursor to another spot (the editor remembers only the most recent). When that window is all set, position the rest of your windows by cycling between the N and P keys; then save the window file and press the Commodore key to erase the screen and return to the main menu.

Saving and Revising

Press the F key to begin the save sequence; then, at the prompt, enter a filename of 16 characters or less. The Save and Load commands default to device 8, but the device number can be changed before you enter the editor with a POKE 51539, <device number>.

The revise option works exactly like the edit option, except it's for use on windows you've already created. Remember, pressing E completely erases any work you've done on a window, while R preserves your efforts. To load a WCS file so you can work on windows you've saved, press the L key and respond to the prompt.

When your windows are all set, but before including them in your own program, you should test them out with the small demo program in Listing 2. Load the demo, enter a WCS filename at the prompt, then press the space bar to cycle through the windows. If they don't look the way you envisioned, then reaccess the editor, load the file, revise and replace the offending windows, resave the file and test it again. It's that easy.

Using Windows

To include the windows in a program of your own, insert the following lines at the beginning of your Basic listing:

```
10 IF FLAG = 1 THEN GOTO 40
20 IF FLAG = 2 THEN 50
30 FLAG = 1:LOAD "WCS",8,1 :REM LOAD
   IN MAIN PROGRAM
40 FLAG = 2:LOAD "<filename>",8,1 :REM
   LOAD IN YOUR FILE
50 REM YOUR PROGRAM GOES HERE
```

If you need more than nine windows, just add a line between lines 20 and 30 with the entry IF FLAG = 3 THEN GOTO <line number>; then follow the load format in line 30.

To call a window to the screen, use

```
POKE 820, <window number (1-9)>: SYS
49155
```

Whenever a window is called, WCS preserves the current screen in memory, to be restored with

```
POKE 820,0: SYS 49155
```

when you're ready to move on. You can study the demo program to see how to use this statement.

Note that you mustn't press the run-stop/restore combination before the screen has been restored, because it would confuse the pointer that keeps track of screen restoration. If for some reason your program needs to move on without restoring the screen, use the statement

```
POKE 821,0
```

This initializes the pointer, so the next time a window is called, the program will still know which screen should be restored.

Programming Notes

Machine language programmers must resort to the Kernal load routines to access WCS files. WCS occupies memory from $C000 to $C954. It also uses storage memory from $CA00 to $CFD2 and Basic ROM memory from $B000 to $B800 for screen and color RAM storage. (The window storage area is initialized each time you access the editor via SYS 49152.) Basic ROM is switched out periodically, but this shouldn't present a problem to machine language programs as long as WCS is used as a subroutine. If you plan to incorporate WCS into any development programs, be aware that the main editor steals the IRQ vector at $0314.

Play with Window Construction Set and see what it can do for you. It's easy, it's fun, and it takes the headaches out of creating windows. R

John Ryan is an air traffic control instructor. An advanced machine language programmer, he is experienced on a number of computer systems, including, of course, the Commodore.

Listing 1. Window Construction Set program.

```
10 REM 64 WINDOW CONSTRUCTION S
   ET - JOHN RYAN        :REM*236
20 PRINT CHR$(147):PRINT:PRINTT
   AB(12)"PLEASE WAIT..."
                         :REM*48
30 I=49152:X=0           :REM*220
40 READ A:IF A=256 THEN 60
                         :REM*153
50 POKE I,A:I=I+1:X=X+A:GOTO 40
                         :REM*23
60 IF X<>287454 THEN PRINT:PRIN
   TTAB(8)"ERROR IN DATA STATME
   NTS":END              :REM*124
70 PRINT:PRINTTAB(13)"SAVING WC
   S":PRINT              :REM*220
80 SYS 57812"WCS",8,1:POKE 193,
   0:POKE 194,192        :REM*1
90 POKE 174,84:POKE 175,201:SYS
    62957                :REM*98
100 PRINT"SAVE COMPLETE -- CHEC
    K DRIVE FOR ERRORS.":REM*52
110 DATA 76,110,195,173,134,2,1
    41,55,3,173,53,3,208,6,238,
    53,3,32,67,192,173 :REM*198
120 DATA 52,3,208,4,32,123,192,
    96,141,210,199,170,202,189,
    197,200,170,189     :REM*111
130 DATA 178,207,133,251,133,25
    3,232,189,178,207,133,252,2
    32,189,178,207      :REM*252
140 DATA 133,254,32,99,196,173,
    55,3,141,134,2,96,162,255,1
    89,0,4,157,0,176    :REM*168
150 DATA 189,0,5,157,0,177,189,
    0,6,157,0,178,189,0,7,157,0
    ,179,189,0,216      :REM*70
160 DATA 157,0,180,189,0,217,15
    7,0,181,189,0,218,157,0,182
    ,189,0,219,157,0    :REM*83
170 DATA 183,202,224,255,208,20
    3,96,32,26,198,162,255,189,
    0,176,157,0,4       :REM*94
180 DATA 189,0,177,157,0,5,189,
    0,178,157,0,6,189,0,179,157
    ,0,7,189,0,180      :REM*177
190 DATA 157,0,216,189,0,181,15
    7,0,217,189,0,182,157,0,218
    ,189,0,183,157,0    :REM*186
200 DATA 219,202,224,255,208,20
    3,32,33,198,169,0,141,53,3,
    96,160,0,32,71      :REM*219
210 DATA 193,169,67,160,201,32,
    30,171,160,15,32,71,193,160
    ,0,32,207,255       :REM*181
220 DATA 153,228,200,200,201,13
    ,208,245,136,140,226,200,96
    ,169,0,32,144       :REM*121
230 DATA 255,238,33,208,169,0,1
    74,83,201,172,227,200,32,18
    6,255,173,226       :REM*163 ►
```

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```
24Ø DATA 2ØØ,162,228,16Ø,2ØØ,32
    ,189,255,96,169,Ø,133,155,1
    69,2Ø2,133,156      :REM*213
25Ø DATA 162,21Ø,16Ø,2Ø7,169,15
    5,32,216,255,2Ø6,33,2Ø8,165
    ,144,2Ø8,13,16Ø     :REM*23
26Ø DATA Ø,32,71,193,169,26,16Ø
    ,2Ø1,76,3Ø,171,96,16Ø,2,32,
    71,193,169,244      :REM*189
27Ø DATA 16Ø,2ØØ,32,3Ø,171,56,9
    6,169,Ø,162,Ø,16Ø,2Ø2,32,21
    3,255,8,2Ø6,33      :REM*54
28Ø DATA 2Ø8,4Ø,176,2,24,96,76,
    19,193,24,162,Ø,32,24Ø,255,
    96,189,51,199       :REM*2Ø4
29Ø DATA 133,251,133,253,232,18
    9,51,199,133,252,232,189,51
    ,199,133,254,96     :REM*132
3ØØ DATA 142,173,2,16Ø,Ø,14Ø,17
    4,2,56,165,251,237,173,2,13
    3,251,165,252       :REM*31
31Ø DATA 237,174,2,133,252,56,1
    65,253,237,173,2,133,253,16
    5,254,237,174,2     :REM*62
32Ø DATA 133,254,96,173,21Ø,199
    ,2Ø1,9,2Ø8,8,169,1,141,21Ø,
    199,76,155,193      :REM*27
33Ø DATA 238,21Ø,199,76,234,194
    ,142,173,2,16Ø,Ø,14Ø,174,2,
    24,165,251,1Ø9      :REM*143
34Ø DATA 173,2,133,251,165,252,
    1Ø9,174,2,133,252,24,165,25
    3,1Ø9,173,2,133     :REM*217
35Ø DATA 253,165,254,1Ø9,174,2,
    133,254,96,162,Ø,16Ø,Ø,173,
    2Ø7,2ØØ,2Ø8,6       :REM*84
36Ø DATA 189,15,199,76,214,193,
    169,16Ø,145,251,173,172,2,1
    45,253,232,2ØØ      :REM*1Ø1
37Ø DATA 192,18,2Ø8,23Ø,162,4Ø,
    16Ø,Ø,32,158,193,162,1Ø,16Ø
    ,Ø,173,2Ø7,2ØØ      :REM*157
38Ø DATA 2Ø8,5,169,1Ø1,76,25Ø,1
    93,169,16Ø,145,251,173,172,
    2,145,253,16Ø,17    :REM*61
39Ø DATA 173,2Ø7,2ØØ,2Ø8,5,169,
    1Ø3,76,15,194,169,16Ø,145,2
    51,173,172,2,145    :REM*198
4ØØ DATA 253,32,166,193,2Ø2,2Ø8
    ,2Ø8,16Ø,Ø,173,2Ø7,2ØØ,2Ø8,
    6,185,33,199,76     :REM*163
41Ø DATA 43,194,169,16Ø,145,251
    ,173,172,2,145,253,2ØØ,192,
    18,2Ø8,231,96       :REM*59
42Ø DATA 162,4Ø,142,173,2,16Ø,Ø
    ,14Ø,174,2,162,11,177,251,9
    ,128,145,251,169    :REM*8Ø
43Ø DATA Ø,145,253,32,166,193,2
    Ø2,2Ø8,24Ø,177,251,9,128,14
    5,251,169,Ø,145     :REM*83
44Ø DATA 253,2ØØ,192,18,2Ø8,241
    ,96,169,4Ø,141,173,2,169,Ø,
    141,174,2,162,1Ø    :REM*63
45Ø DATA 16Ø,Ø,173,2Ø7,2ØØ,2Ø8,
    5,169,32,76,126,194,169,16Ø
    ,145,251,173,172    :REM*178
46Ø DATA 2,145,253,2ØØ,192,16,2
    Ø8,232,32,166,193,2Ø2,2Ø8,2
    24,96,174,176,2     :REM*38
47Ø DATA 172,177,2,24,32,24Ø,25
    5,96,169,7,141,134,2,162,1Ø
    ,142,175,2,169,9    :REM*7Ø
48Ø DATA 141,176,2,169,Ø,141,17
    7,2,32,145,194,16Ø,Ø,185,63
    ,199,2Ø1,64,24Ø     :REM*14Ø
49Ø DATA 7,32,21Ø,255,2ØØ,76,18
    1,194,152,72,238,176,2,32,1
    45,194,1Ø4,168      :REM*51
5ØØ DATA 2ØØ,2Ø6,175,2,2Ø8,226,
    96,162,Ø,32,78,193,32,197,1
    93,162,3,32,78      :REM*3Ø
51Ø DATA 193,32,56,194,162,6,32
    ,78,193,96,169,7,141,134,2,
    16Ø,14,162,5,24     :REM*63
52Ø DATA 32,24Ø,255,169,2ØØ,16Ø
    ,199,32,3Ø,171,169,Ø,174,21
    Ø,199,32,2Ø5,189    :REM*191
53Ø DATA 96,169,7,141,134,2,162
    ,21,16Ø,9,24,32,24Ø,255,169
    ,211,16Ø,199,76     :REM*128
54Ø DATA 3Ø,171,162,1,142,176,2
    ,2Ø2,142,177,2,32,145,194,1
    69,2,16Ø,2ØØ,32     :REM*129
55Ø DATA 3Ø,171,173,2Ø7,2ØØ,24Ø
    ,1Ø,169,244,16Ø,199,32,3Ø,1
    71,76,68,195,169    :REM*1Ø4
56Ø DATA 251,16Ø,199,32,3Ø,171,
    162,2,142,176,2,32,145,194,
    169,15,16Ø,2ØØ      :REM*176
57Ø DATA 32,3Ø,171,162,Ø,189,29
    ,2ØØ,2Ø5,172,2,24Ø,4,232,76
    ,85,195,232,189     :REM*124
58Ø DATA 29,2ØØ,48,6,32,21Ø,255
    ,76,97,195,96,169,2,141,32,
    2Ø8,141,33,2Ø8      :REM*154
59Ø DATA 32,226,198,162,1,142,1
    72,2,2Ø2,142,2Ø7,2ØØ,169,12
    8,141,138,2,169     :REM*1Ø1
6ØØ DATA 7,141,216,2ØØ,169,18,1
    41,217,2ØØ,169,11,141,218,2
    ØØ,169,28,141       :REM*2Ø5
61Ø DATA 219,2ØØ,169,142,32,21Ø
    ,255,169,147,32,21Ø,255,32,
    156,194,32,234      :REM*174
62Ø DATA 194,32,27,195,173,141,
    2,2Ø1,2,2Ø8,7,173,142,2,2Ø1
    ,2,2Ø8,189,32       :REM*1Ø7
63Ø DATA 228,255,2Ø1,69,2Ø8,6,3
    2,157,196,76,121,195,2Ø1,67
    ,2Ø8,3,76,25Ø       :REM*78
64Ø DATA 196,2Ø1,84,2Ø8,3,76,23
    6,196,2Ø1,82,2Ø8,6,32,143,1
    96,76,121,195       :REM*1Ø
65Ø DATA 2Ø1,83,2Ø8,3,76,131,19
    6,2Ø1,8Ø,2Ø8,6,32,63,196,76
    ,174,195,2Ø1,78     :REM*14
66Ø DATA 2Ø8,6,32,137,193,76,17
    4,195,2Ø1,7Ø,2Ø8,17,32,19Ø,
    192,169,255,141     :REM*185
67Ø DATA 227,2ØØ,32,225,192,32,
    255,192,76,174,195,2Ø1,76,2
    Ø8,19,32,19Ø,192    :REM*195
68Ø DATA 169,Ø,141,227,2ØØ,32,2
    25,192,32,5Ø,193,176,137,76
    ,121,195,2Ø1,133    :REM*133
69Ø DATA 2Ø8,13Ø,169,147,32,21Ø
    ,255,169,6,141,33,2Ø8,169,1
    4,141,32,2Ø8,141    :REM*2Ø3
7ØØ DATA 134,2,96,169,Ø,141,223
    ,2ØØ,141,224,2ØØ,32,18,197,
    174,21Ø,199,2Ø2     :REM*Ø
71Ø DATA 189,197,2ØØ,17Ø,165,25
    1,157,178,2Ø7,232,165,252,1
    57,178,2Ø7,232      :REM*2Ø
72Ø DATA 165,254,157,178,2Ø7,23
    8,225,2ØØ,32,14Ø,198,32,197
    ,193,32,2Ø8,196     :REM*7
73Ø DATA 162,41,32,158,193,32,1
    4Ø,198,32,2Ø8,196,162,39,32
    ,158,193,32,56      :REM*138
74Ø DATA 194,96,238,32,2Ø8,173,
    32,2Ø8,141,33,2Ø8,76,174,19
    5,162,6,32,78       :REM*217
75Ø DATA 193,32,14Ø,198,32,212,
    194,76,163,196,32,212,194,3
    2,1ØØ,194,32,7      :REM*192
76Ø DATA 195,162,8       :REM*42
77Ø DATA 16Ø,12,24,32,24Ø,255,1
    73,172,2,141,134,2,32,165,1
    97,32,2Ø7,255       :REM*119
78Ø DATA 12Ø,173,178,2,141,143,
    2,173,179,2,141,144,2,88,16
    9,Ø,133,199,32      :REM*69
79Ø DATA 71,198,96,174,21Ø,199,
    2Ø2,189,197,2ØØ,17Ø,189,178
    ,2Ø7,133,251,133    :REM*97
8ØØ DATA 253,232,189,178,2Ø7,13
    3,252,232,189,178,2Ø7,133,2
    54,96,173,2Ø7       :REM*93
81Ø DATA 2ØØ,73,128,141,2Ø7,2ØØ
    ,32,27,195,76,174,195,173,1
    72,2,2Ø1,15,176     :REM*133
82Ø DATA 9,238,172,2,32,68,195,
    76,174,195,169,Ø,141,172,2,
    76,4,197,162,9      :REM*26
83Ø DATA 32,78,193,16Ø,Ø,177,25
    1,141,22Ø,2ØØ,177,253,141,2
    22,2ØØ,169,16Ø      :REM*175
84Ø DATA 145,251,169,Ø,145,253,
    32,228,255,24Ø,251,2Ø1,29,2
    4Ø,3Ø,2Ø1,157       :REM*6Ø
85Ø DATA 24Ø,5Ø,2Ø1,17,24Ø,65,2
    Ø1,145,24Ø,82,2Ø1,13,2Ø8,23
    1,96,16Ø,Ø,173      :REM*86
86Ø DATA 22Ø,2ØØ,145,251,173,22
    2,2ØØ,145,253,96,173,223,2Ø
    Ø,2Ø1,2Ø,24Ø,14     :REM*127
87Ø DATA 32,69,197,162,1,32,158
    ,193,238,223,2ØØ,76,23,197,
    76,43,197,173       :REM*193
88Ø DATA 223,2ØØ,24Ø,248,2Ø6,22
    3,2ØØ,32,69,197,162,1,32,98
    ,193,76,23,197      :REM*136
89Ø DATA 173,224,2ØØ,2Ø1,11,24Ø
    ,227,32,69,197,238,224,2ØØ,
    162,4Ø,32,158       :REM*111
9ØØ DATA 193,76,23,197,173,224,
    2ØØ,24Ø,2Ø8,32,69,197,2Ø6,2
    24,2ØØ,162,4Ø,32    :REM*156
91Ø DATA 98,193,76,23,197,12Ø,1
    73,143,2,141,178,2,173,144,
    2,141,179,2,169     :REM*2Ø2
92Ø DATA 19Ø,141,143,2,169,197,
    141,144,2,88,96,72,152,72,1
    38,72,8,165,2Ø3     :REM*5Ø
93Ø DATA 24Ø,11,2Ø1,1,2Ø8,15,17
    3,141,2,2Ø1,1,2Ø8,8,169,Ø,1 ►
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    33,198,169,64        :REM*53
94Ø DATA 133,2Ø3,169,Ø,133,199,
    173,2Ø7,2ØØ,24Ø,4,169,1,133
    ,199,56,32,24Ø       :REM*191
95Ø DATA 255,236,216,2ØØ,2Ø8,14
    ,232,24,32,24Ø,255,4Ø,1Ø4,1
    7Ø,1Ø4,168,1Ø4       :REM*83
96Ø DATA 1Ø8,178,2,236,217,2ØØ,
    2Ø8,4,2Ø2,76,242,197,2Ø4,21
    8,2ØØ,2Ø8,4,2ØØ      :REM*2Ø
97Ø DATA 76,242,197,2Ø4,219,2ØØ
    ,2Ø8,224,136,76,242,197,165
    ,1,41,254,133,1      :REM*87
98Ø DATA 96,165,1,9,1,133,1,96,
    174,21Ø,199,169,Ø,133,247,1
    69,2Ø2,133,248       :REM*244
99Ø DATA 2Ø2,24Ø,16,24,165,247,
    1Ø5,162,133,247,165,248,1Ø5
    ,Ø,133,248,2Ø2       :REM*229
1ØØØ DATA 2Ø8,24Ø,96,32,4Ø,198,
    16Ø,Ø,173,172,2,145,247,2Ø
    Ø,173,2Ø7,2ØØ,145    :REM*4
1Ø1Ø DATA 247,2ØØ,14Ø,22Ø,2ØØ,1
    62,6,32,78,193,169,4Ø,141,
    173,2,169,Ø,141      :REM*24Ø
1Ø2Ø DATA 174,2,162,1Ø,16Ø,Ø,17
    7,251,14Ø,221,2ØØ,172,22Ø,
    2ØØ,145,247,238      :REM*188
1Ø3Ø DATA 22Ø,2ØØ,238,221,2ØØ,1
    72,221,2ØØ,192,16,2Ø8,233,
    32,166,193,2Ø2       :REM*112
1Ø4Ø DATA 2Ø8,225,96,32,4Ø,198,
    16Ø,Ø,177,247,141,172,2,14
    1,134,2,2ØØ,177      :REM*136
1Ø5Ø DATA 247,141,2Ø7,2ØØ,173,2
    25,2ØØ,24Ø,4,2Ø6,225,2ØØ,9
    6,2ØØ,14Ø,22Ø        :REM*218
1Ø6Ø DATA 2ØØ,169,4Ø,141,173,2,
    169,Ø,141,174,2,141,221,2Ø
    Ø,162,1Ø,172,22Ø     :REM*215
1Ø7Ø DATA 2ØØ,177,247,2ØØ,14Ø,2
    2Ø,2ØØ,172,221,2ØØ,145,251
    ,173,172,2,145       :REM*227
1Ø8Ø DATA 253,2ØØ,14Ø,221,2ØØ,1
    92,16,2Ø8,229,16Ø,Ø,14Ø,22
    1,2ØØ,32,166,193     :REM*215
1Ø9Ø DATA 2Ø2,2Ø8,218,96,169,Ø,
    133,165,169,2Ø2,133,166,16
    9,21Ø,133,167        :REM*88
11ØØ DATA 169,2Ø7,133,168,169,3
    2,16Ø,Ø,166,166,228,168,14
    4,8,2Ø8,16,166       :REM*78
111Ø DATA 165,228,167,176,1Ø,14
    5,165,23Ø,165,2Ø8,236,23Ø,
    166,2Ø8,232,96       :REM*199
112Ø DATA 79,119,119,119,119,11
    9,119,119,119,119,119,119,
    119,119,119,119      :REM*51
113Ø DATA 119,8Ø,76,111,111,111
    ,111,111,111,111,111,111,1
    11,111,111,111       :REM*1Ø2
114Ø DATA 111,111,111,122,35,5,
    217,74,5,217,76,5,217,41,4
    ,216,4Ø,69,41,68     :REM*39
115Ø DATA 73,84,32,78,69,87,32,
    87,73,78,68,79,87,64,4Ø,67
    ,41,79,76,79,82      :REM*7
116Ø DATA 64,4Ø,84,41,89,8Ø,69,
    64,4Ø,83,41,67,82,69,69,78
    ,32,67,79,76,79      :REM*37
117Ø DATA 82,64,4Ø,8Ø,41,76,65,
    67,69,32,87,73,78,68,79,87
    ,64,4Ø,78,41,85      :REM*34
118Ø DATA 77,66,69,82,64,4Ø,82,
    41,69,86,73,83,69,47,82,69
    ,86,73,69,87,32      :REM*29
119Ø DATA 87,73,78,68,79,87,64,
    4Ø,7Ø,41,73,76,69,32,83,65
    ,86,69,64,4Ø,76      :REM*97
12ØØ DATA 41,79,65,68,32,7Ø,73,
    76,69,64,4Ø,7Ø,49,41,69,88
    ,73,84,32,84,79      :REM*46
121Ø DATA 32,66,65,83,73,67,64,
    87,73,78,68,79,87,32,35,58
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Circle 37 on Reader Service card.

```
      ,0,1,80,82,69,83    :REM*75
1220 DATA 83,32,82,69,84,85,82,
      78,32,84,79,32,80,82,79,67
      ,69,83,83,0,0,0     :REM*188
1230 DATA 0,0,0,0,0,0,0,0,83,72,6
      5,68,69,68,0,79,80,69,78,3
      2,32,0,87,73,78     :REM*202
1240 DATA 68,79,87,32,84,89,80,
      69,58,0,87,73,78,68,79,87,
      32,67,79,76,79      :REM*52
1250 DATA 82,58,0,0,66,76,65,67
      ,75,32,32,32,32,32,255,1,8
      7,72,73,84,69       :REM*22
1260 DATA 255,2,82,69,68,32,32,
      32,32,32,32,32,32,32,32,32
      ,32,32,255,3,67     :REM*29
1270 DATA 89,65,78,255,4,80,85,
      82,80,76,69,255,5,71,82,69
      ,69,78,32,32,32     :REM*215
1280 DATA 32,32,255,6,66,76,85,
      69,32,32,32,32,32,32,32,32
      ,32,255,7,89,69     :REM*250
1290 DATA 76,76,79,87,255,8,79,
      82,65,78,71,69,255,9,66,82
      ,79,87,78,32,32     :REM*226
1300 DATA 32,32,32,255,10,76,84
      ,46,32,82,69,68,255,11,71,
      82,69,89,49,32      :REM*157
1310 DATA 32,32,32,32,255,12,71
      ,82,69,89,50,255,13,76,84,
      46,32,71,82,69      :REM*65
1320 DATA 69,78,255,14,76,84,46
      ,32,66,76,85,69,32,255,15,
      71,82,65,89,51      :REM*144
1330 DATA 32,32,32,32,32,255,0,
      3,6,9,12,15,18,21,24,27,0,
      0,0,0,0,0,0,0,0     :REM*70
1340 DATA 7,18,11,28,0,0,0,0,0,0,
      0,0,0,0,0,0,0,0,0,0,0,0,0,0,
      0,0,0,0,0,0,45      :REM*46
1350 DATA 45,45,62,32,68,73,83,
      75,32,69,82,82,79,82,32,45
      ,32,80,82,69,83     :REM*136
1360 DATA 83,32,67,77,68,82,32,
      75,69,89,32,60,45,45,45,0,
      45,45,45,62,32      :REM*154
1370 DATA 83,65,86,69,32,67,79,
      77,80,76,69,84,69,32,45,32
      ,80,82,69,83,83     :REM*200
1380 DATA 32,67,77,68,82,32,75,
      69,89,32,60,45,45,45,0,69,
      78,84,69,82,32      :REM*252
1390 DATA 70,73,76,69,78,65,77,
      69,58,0,8,256       :REM*177
```

Listing 2. Demo program.

```
0 REM WINDOW CONSTRUCTION PRG.
  2 - JOHN RYAN           :REM*69
5 REM --> LISTING #2 DEMO PROGR
  AM <--                  :REM*79
10 IF FLAG=1 THEN INPUT"FILENAM
   E";NM$:GOTO40          :REM*54
20 IF FLAG=2 THEN 60      :REM*236
30 FLAG=1:LOAD "WCS",8,1:REM*87
40 FLAG=2:LOAD NM$,8,1    :REM*43
50 :                      :REM*108
60 PRINT"{SHFT CLR}":FOR A=1 TO
    184:PRINT"DEMO ";:NEXT
                          :REM*134
70 A=1                    :REM*124
80 POKE 820,A:SYS 49155:REM*253
90 A=A+1:IFA=10 THEN A=0:REM*86
100 POKE198,0:WAIT 198,1
                          :REM*231
110 GOTO 80               :REM*246
```

■

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Troubleshooting Tips

Before you ship your Commodore out for expensive maintenance, maybe there's an easy fix you can do yourself.

By ERIC WENDT

When your C-64 breaks down, is your first impulse to send it in for repairs? Wait! You may be able to save time and money by doing a few simple tests and repairs at home.

The Forgotten Power Supply

The most commonly overlooked trouble spot is the power supply, but it also can be the easiest to diagnose. If your supply goes bad in a way that doesn't damage your computer, connecting the computer to a different supply will bring it back to life. This simple step can save a costly diagnosis fee at the service center.

Be careful here, though! If you suspect your supply may be bad, *don't* hook it up to someone else's computer to test it. One common power supply problem is for the unit to start putting out too much voltage, which could damage your friend's computer as well.

The Misalignment Myth

The most frequently reported failure of Commodore equipment is in the alignment of the disk drive. However, this is also one of the biggest myths. Early 1541s had real problems with alignment, and copy-protection schemes involving excessive head bumping were the leading cause. However, as soon as the alignment problem became apparent, Commodore corrected it. Their Newtronics-type drives (with the rotating lever, as opposed to the push-up door) seldom go out of alignment. Our service center receives hundreds of Newtronics-type drives for alignment, but usually the only ones that need it are those someone else has tried to align. The same goes for the 1571s and 1541Cs.

When a drive exhibits the classic misalignment symptoms and is one of these models, clean the heads instead. If that doesn't work, then you have a more serious problem.

Should you want to try aligning your own drive, keep in mind that align-it-yourself programs aren't always accurate. To make sure you do it right, use an oscilloscope. Also, *don't* adjust the head stop unless you know what you're doing. An improperly positioned stop does more harm than good and can quickly turn an inexpensive alignment into a costly repair.

Keyboard Notes

Keyboard problems are common with C-64s, and they fall into two basic categories. In the first, numerous keys, usually in a diagonal pattern or every other one, don't function at all. This is caused by a defective chip in the board. In the second category, certain keys have to be pushed excessively hard to register—a sign of a dirty or worn keyboard.

To clean your keyboard, remove the back plate using a small Phillips screwdriver and gently wipe the contacts with an ordinary cleaner. If the problem persists, your keystems are worn and the keyboard should be replaced.

One note: When having keyboard problems, remove your joystick from the computer. A defective joystick can cause keys to stop working or to give the wrong response.

Many people add a plastic keyboard cover to their C-64 to help keep the computer clean, but these covers are easily damaged in shipping. If you're sending your computer anywhere, remove the cover; it probably just unhinges at the top.

Integrated Circuit Detection

If you're brave enough to try repairing your own computer board, the following tips should help:

First of all, a visual inspection of the ICs may suggest which ones are defective. For instance, after keeping records on thousands of C-64s with defective PLA chips (part #906114-01 in location U17), we discovered that over half of them had date codes between 0583 and 4383. Commodore has never acknowledged a relationship between the date and a high failure rate, but one does appear to exist.

Again on the subject of markings, some 64s contain chips having a white splotch that looks like thin paint—usu- ►

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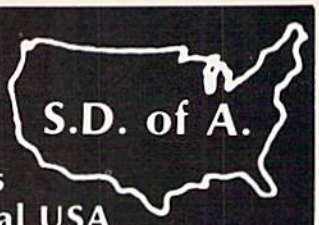

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ally toward the top of the chip. In units we've seen that had defects not caused by outside forces, over half failed because of a bad chip bearing this mark. This proves nothing, but is suggestive.

RAM chips are another common trouble spot in C-64s. When a power supply fails in such a way that the 5-volt line is pushed too high, RAMs are the first to go, so anytime more than one RAM is defective, you should replace your power supply. Don't expect to confirm the failure with meter readings, because sometimes the voltage spikes are only slightly high, or occur infrequently or only under the load of a computer, so they're difficult to detect.

Different brands of chips can also affect diagnosis. Commodore used many different brands of RAMs when producing the 64s, and when a power supply is putting out, for example, 5½ volts, it will damage some brands but not others. Without statistical proof, it would be unfair to advise you against certain brands, but I use Motorola.

There are cases when every RAM in the 64 goes bad at once, but not necessarily because of a bad power supply. If you have a supply with only four pins on the end that goes into the computer, great care should be taken when inserting it, for it's easy to turn it sideways by 90 degrees. This may short the ac to the 5-volt line and burn out every RAM almost instantly.

Another all-too-common source of board problems is careless desoldering in the course of replacing ICs. Doing it yourself is fine if you're good at soldering, but these boards are very picky about heat. Heating too long makes the pads lift up, and you can break traces without even noticing. Physical damage is the hardest to repair and can lead to extraordinary repair bills at some service centers.

Finally, a note on replacing boards. If your computer hasn't been physically damaged or hit by lightning, there's *no* reason to replace the board, even if it's easier and the labor cheaper. In fact, there are good reasons not to replace the board. C-64s are repaired easily enough on the component level, and no individual component costs more than a board.

Also, with new boards come new problems. If your computer has run for two years and failed only once, your chips have thousands of hours of testing. "Infant mortality"—new chips failing right away—is more common than failure later down the line. Why put yourself at the mercy of new chips when yours have worked so well?

It may seem that Commodore equipment is loaded with problems, but it's important to remember how many C-64s and C-128s there are in the world. Every common problem found in a series of units has been corrected in the next. Commodore really does try to correct their mistakes, and most of the executives really seem to care about their customers. ■

Eric Wendt is a technician with TPI Service in Batavia, Illinois, an authorized Commodore service center. He wrote this article out of thousands of hours of experience.

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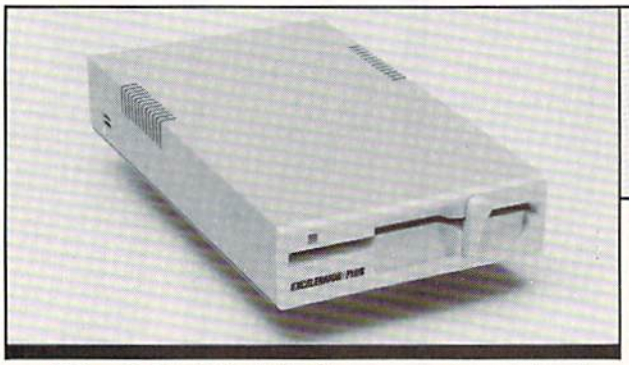

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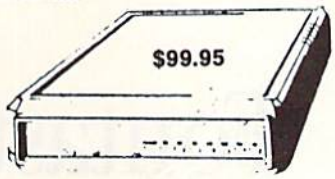

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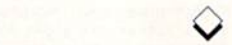

By KENNY LAWSON

Do you feel stifled by the lack of text fonts available for 64 Basic? Do you wish you could add a little creativity to your video screen? Well, this "fontastic" program for the 64 will let you do just that.

It gives you a choice of nine different text fonts to replace the blah-looking set that comes with your computer. For example, you can choose underlined, cursive, all-caps, computer-style, thin-lettered and other texts.

Font Descriptions

Blockfont—changes all of the normal text letters to block letters, without affecting the graphics.

Capsfont—gives you all capital letters in large and small sizes.

Compufont—changes letters and numbers to early-computer-style letters, like the numerals you see on your bank checks.

Cursifont—displays an upper- and lowercase set of letters in cursive handwriting, but you lose some of your graphics symbols, just as with Capsfont.

Diamondset—a set of letters I designed to look diamond-shaped.

Dotfont—uses dots to form the letters.

Stencilfont—creates letters and numbers that look like they were drawn with an old-fashioned stencil, like the B on the Boston Red Sox caps (Go Sox!).

Thinfont—creates letters, numbers and some symbols that are only one pixel wide in most dimensions.

Underfont—creates an entire set of alphanumerics and symbols (including spaces) that are underlined.

All the fonts also support reversed characters.

Using the Programs

It is easy to add these fonts to your repertoire.

First, type in the program listings (1–12) accompanying this article and save them on one disk. Then load and run the Charset Creator program (Listing 1). Next, load and run each "creator" set (Listings 4–12). Each program opens a file to disk with its own filename and writes either data items or character ROM peeks to the file. Then it closes the file and resets the disk drive.

Figure 1. Examples of the fonts.

THIS IS BLOCK FONT.

THIS IS CAPS FONT.

THIS IS COMPU FONT.

This is Cursive font.

THIS IS DIAMOND FONT.

THIS IS DOT FONT.

THIS IS STENCIL FONT.

THIS IS THIN FONT.

THIS IS UNDER FONT.

To use your font disk, which now has nine binary files containing nine new character sets, first reset your computer by turning it off and back on again. Load the Boot Charset program (Listing 2), which automatically loads the Font Menu program (Listing 3). Once this is done, the menu page will appear on the screen. Use the cursor up/down key to highlight your choice of fonts and press the return key to load that font.

The screen will clear and the familiar cold-start screen (in the new font you selected) will appear. Note that you now have 36861 Basic bytes of memory available. You can load, save and run just about any program, except programs such as some word processors, spreadsheets, etc., that use locations 2048 to 4095. Also, if you have to hit the run-stop/restore key, just enter, in Immediate mode, SYS 755 to restore your new character set.

Now you are ready to use these new fonts in your own programs. Just be sure to save these font programs on your programming disks.

With this background on custom character sets, try designing and creating your own fonts. R

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

Listing 1. Charset Creator program.

```
10 REM CHARACTER SET CREATOR -
   KENNY LAWSON            :REM*64
20 X=828:PRINTCHR$(142) :REM*12
30 READA:IFA=-1THEN50  :REM*177
40 POKEX,A:X=X+1:GOTO30:REM*239
50 PRINT"{SHFT CLR}POKE44,16:PO
   KE4096,0:NEW"           :REM*7
60 PRINT:PRINT:PRINT"SYS828"
                          :REM*117
70 POKE631,19:POKE632,13:POKE63
   3,13:POKE198,3:NEW  :REM*132
80 DATA 173,14,220,41,254,141,1
   4,220,165,1,41,251,133,1,169
   ,0,133,251,133          :REM*86
90 DATA 253,169,8,133,252,169,2
   08,133,254,162,0,160,0,177,2
   53,145,251,200          :REM*111
100 DATA 208,249,230,252,230,25
   4,232,224,8,208,238,165,1,9
   ,4,133,1,173,14     :REM*205
110 DATA 220,9,1,141,14,220,173
   ,24,208,41,240,9,2,141,24,2
   08,96,-1                :REM*61
```

Continued on p. 84. ►

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Circle 98 on Reader Service card.

Creating Windows

Installing windows is easy on the C-128; here are some tips for doing a neat job.

By J. C. VOLLMER

This article brings you some useful techniques for manipulating windows on the C-128. The 128's window statement is controlled by five parameters and has the following syntax:

```
WINDOW <top-left col,top-left row,bottom-
right col,bottom-right row,clear flag>
```

To define a window, you must provide the coordinates of the top-left and bottom-right corners, in terms of the row and column numbers of those two points.

The column values must be in the range of 0–39 in 40-Column mode, and 0–79 in 80-Column mode. The row values must be in the range 0–23 for both modes. The optional clear flag blanks the window when it's set to one.

You can also create a window by moving the cursor to the desired top-left corner of the window and pressing the escape and T keys in sequence. Then move the cursor to where you want the lower-right corner and press the escape and B keys in sequence.

To clear the window, type in the following line:

```
WINDOW 0,0 RWINDOW(2) - 1,23,0
```

The program in Listing 1 is a demo for creating windows on both the 40- and 80-column screens. It's written for the 80-column screen, but will work in 40-Column mode if you change line 30 to the following:

```
30 UC = INT(RND(0)*20) + 1:
   LC = 37 - INT(RND(0)*18)
```

If you use your C-128 in 80-Column mode, try adding the lines below and see how they alter the windows:

```
85 IFINT(RND(0) + .5)
   THENPRINTCHR$(14);:
   ELSEPRINTCHR$(142);
86 IFINT(RND(0) + .5)
   THENPRINTCHR$(15);:
   ELSEPRINTCHR$(143);
87 IFINT(RND(0) + .5)THENPRINTCHR$(2);:
   ELSEPRINTCHR$(130);
```

Line 85 toggles between Uppercase/Graphics mode and Upper-Lowercase mode. Line 86 toggles the 8563 chip's flash feature, which, in this case, lets you set one window to flashing while another remains normal. Line 87 turns the underlining feature on and off. The latter two lines have no effect in 40-Column mode.

Borders and Titles

Lines 6000–6070 of the program create titles and borders for the windows. You can use them as a subroutine to give you windowing control. Eight variables within these lines define the following parameters:

UC—Upper-left column
UR—Upper-left row
LC—Lower-right column
LR—Lower-right row
CL—Clear flag
BC—Border color
B$—Border character
T$—Title of window

When defining a window with this subroutine, leave space between the window and the edge of the screen for the window's border, and set T$ to null (T$ = "") if you don't want to have a title. Also, make sure the title is no longer than the width of the window or it'll get truncated. R

Listing 1. Window Demo program.

```
Ø REM 8Ø-COLUMN WINDOWS - VOLLM
  ER                          :REM*85
1Ø COLORØ,1                   :REM*155
2Ø UR=INT(RND(Ø)*11)+1:LR=21-IN
  T(RND(Ø)*11)                :REM*75
3Ø FAST:UC=INT(RND(Ø)*4Ø)+1:LC=
  77-INT(RND(Ø)*36)           :REM*22
4Ø B$=CHR$(32):T$="WINDOW"+STR$
  (B+1)+":"                   :REM*193
5Ø BC=INT(RND(Ø)*6)+2         :REM*78
6Ø CL=1                       :REM*242
7Ø GOSUB6ØØØ                  :REM*124
8Ø IFINT(RND(Ø)+.5)THENPRINTCHR
  $(18);:ELSEPRINTCHR$(146);
                              :REM*149
85 IFINT(RND(Ø)+.5)THENPRINTCHR
  $(14);:ELSEPRINTCHR$(142);
                              :REM*2Ø5
86 IFINT(RND(Ø)+.5)THENPRINTCHR
  $(15);:ELSEPRINTCHR$(143);
                              :REM*24
87 IFINT(RND(Ø)+.5)THENPRINTCHR
  $(2);:ELSEPRINTCHR$(13Ø);
                              :REM*62
9Ø FORZ=1TO5Ø:FORA=65TO9Ø:PRINT
  CHR$(A);:NEXTA:NEXTZ:REM*188
1ØØ B=B+1                     :REM*1Ø7
11Ø GOTO2Ø                    :REM*234
6ØØØ GOSUB64Ø                :REM*163
6Ø1Ø COLOR5,BC:WINDOWØ,Ø,RWINDO
  W(2)-1,23,Ø:PRINTCHR$(142)
                              :REM*118
6Ø2Ø CHARØ,UC-1,UR-1,TB$,1:FORY
  =URTOLR:CHARØ,UC-1,Y,B$,1:
  CHARØ,LC+1,Y,B$,1:NEXTY:CH
  ARØ,UC-1,LR+1,BB$,1:WINDOW
  UC,UR,LC,LR,CL:RETURN
                              :REM*142
64Ø TB$="":BB$="":TB$=T$:IFCLT
  HENCL=1                     :REM*52
65Ø IF(LC-UC)<LEN(T$)THENTB$=L
  EFT$(TB$,LC-UC+2)           :REM*164
66Ø FORX=UC+LEN(T$)TOLC+2:TB$=
  TB$+B$:NEXTX                :REM*19
67Ø FORX=UCTOLC+2:BB$=BB$+B$:N
  EXTX:RETURN                 :REM*35 ■
```


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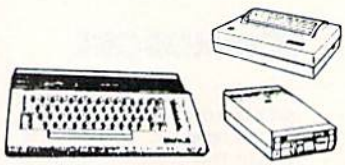

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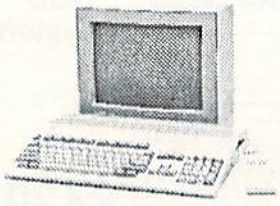

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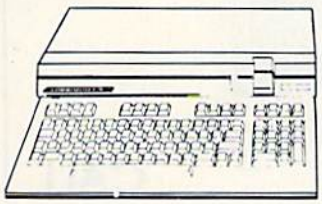

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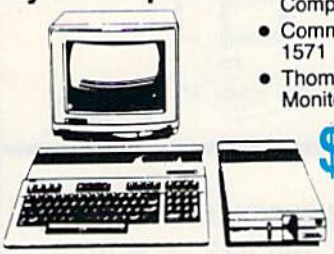

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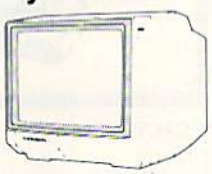

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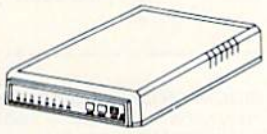

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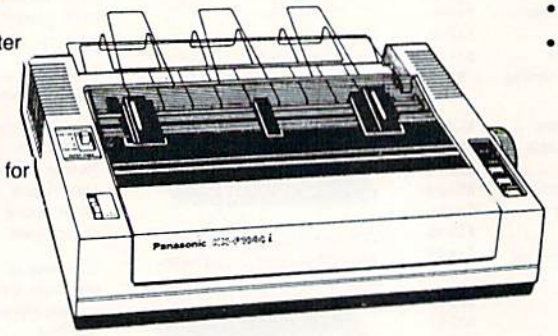

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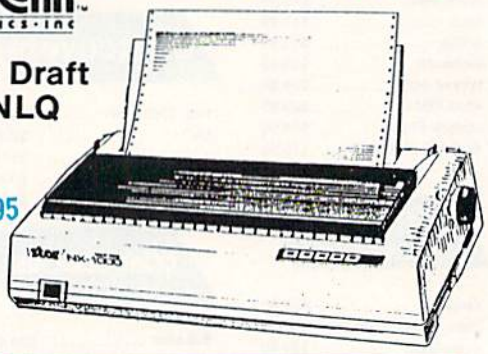

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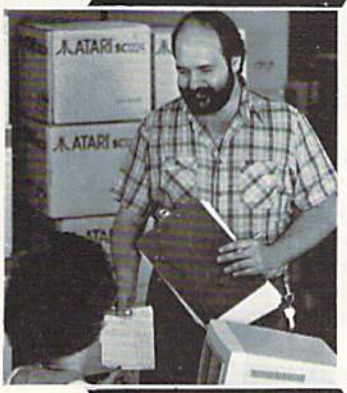

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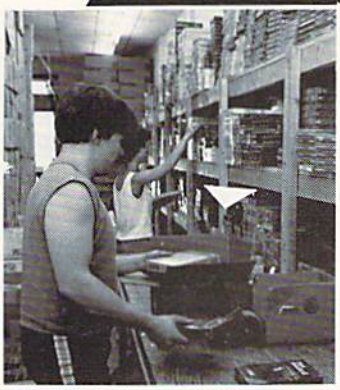

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TELECOMPUTING WORKSHOP

Find out where to get public domain software, including terminal programs—and no foolin'!

By DAVID BRADLEY

WELCOME AGAIN to the wonderful world of telecommunications. Whether you're new to Telecomputing Workshop or a regular, fetch a tall, cool glass of your favorite beverage, pull up a chair and put up your feet, then learn and enjoy. As usual, this month I'll start with a few telecommunications notes and some news.

THE NOTES

One thing I've found out the hard way is not to use an SX-64 computer with a Commodore-specific modem that gets its power from the computer (modems such as the Commodore 1600, 1650, 1660, 1670 and 6480, the Westridge and the Total Telecommunications). My BBS was running fine on my SX-64, until one day everything stopped and the entire computer appeared to be dead. I discovered the power supply had burned out; it just wasn't built to handle long-term modem use.

If you're going to use a modem on an SX-64 for any more than an hour or two, make sure it's one that has an external power supply. Such modems usually require an interface, but that's cheaper than getting your power supply fixed or replaced.

I think Commodore has a great talent for producing computers that have plenty of ports with lots of potential. It's a shame they had to go cheap on the power supply. I don't know anybody who hasn't had to replace a 64 power supply at one time or another.

THE NEWS

Three special announcements have come in, just in time for this April column. First, there's good news for people who have a C-64 and want to use baud rates of 2400 or more. On April 1st, Commodore will release a new version of the 64—the 64 Turbo/BS. This sophisticated machine works just like a normal 64 and has all the same chips, except that they're much closer together on the circuit board, allowing higher speeds.

Second, QuantumLink has instituted a no-smoking policy. They found so many people were smoking while online that nonsmokers were complaining they couldn't read their screens through the haze. So, do your bit (no pun intended) and butt out before you go on QuantumLink.

Finally, another bit of technical information has just been released by Commodore. They suggest that, if you spill Coca-Cola on your computer, you should immediately pour on 7-Up as an antidote—their reasoning being that 7-Up is the un-cola.

So much for the news...

Q *What's the advantage of having a modem with LEDs, like the Trans Com TCM-1200H or the Mercury? What are all the LED's for?*

—ANDREW OBERWEGER
SARASOTA, FL

A The LEDs (light-emitting diodes) let you monitor what the modem is doing. Figure 1 is a diagram of the LEDs on the TCM-1200H. Those on the Mercury are the same, except Power On is called Modem Ready, and they're arranged differently.

With a TCM-1200H, Mercury or other LED modem, if you're connected to an online system and everything stops, you can quickly check the carrier-detect LED and see if you've lost the carrier and need to call the system back. During an upload, you can glance at the receive-data and send-data indicators to make sure data is still being transferred.

Figure 1. LEDs on a sample LED modem, the Trans Com TCM-1200H.

POWER ON	RECEIVE DATA	SEND DATA	CARRIER DETECT	HIGH SPEED	OFF HOOK	AUTO ANSWER	TERMINAL READY
●	●	●	●	●	●	●	●

Q *I own a C-128, a 1571 disk drive and an Avatek modem and use MultiTerm with them. When I download C-64 programs from local BBSs, the computer is in 128 mode. My question is, will I have any problems running those C-64 programs?*

—ROLANDO ALMAGUER
JACKSONVILLE, FL

A When a program is transferred from a BBS or large system like PeopleLink, it arrives on your disk just the way it was sent. The transfer protocols don't interpret any of the information or try to run the program. In other words, the C-64 programs you download in C-128 mode should work all right in 64 mode.

Q *I have a C-64 and a 300-baud autodial Westridge modem, and I want to be able to access BBSs. Where can I find a terminal program that will work with my system and support the Punter and Xmodem protocols?*

—L. STRICANSKY
DETROIT, MI

A Refer to Table 1 for a list of five sources of public domain software available for Commodore computers. They should all have terminal programs for your modem.

Q *Is there a 2400-baud modem available for the C-64/C-128 and the Amiga? I've noticed that a lot of BBSs are going to that speed.*

—NELSON PUTNAM
CARLSBAD, NM

A I know of no Commodore-specific (plugs directly into the C-64/C-128)

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Table 1. Some sources of public domain Commodore software.

Public domain programs aren't copyrighted. Therefore, they may be freely duplicated and are available without charge or at very low cost. Distributors include user's groups, both local and nationwide; online bulletin board systems and networks; and commercial concerns. The list below includes user's groups and commercial sources.

JLH Co.
Dept. 4
PO Box 67021
Topeka, KS 66667
913-478-4979

JLH offers programs for the C-64 and C-128. One program costs $1.50, with a minimum order of five ($7.50), and there's a charge of $2.50 per order for shipping and handling. They include a free disk of programs with each order. Send an SASE for a list of the programs available. No credit cards.

Lightspeed Software
PO Box 7037
Chesapeake, VA 23323

Lightspeed has programs for the C-64 and C-128, including CP/M mode. They charge $5 per ready-made disk and $10 for a disk full of programs you specify from their catalog. They also offer a locate service and a Disk-of-the-Month Club. Postage and handling is $1 on orders under $30. No credit cards.

M.U.G.S. (Muscatine User Group Support)
1836 Hershey Ave.
Muscatine, IA 52761
319-262-8279

M.U.G.S. provides C-64 and C-128 disks for $1.25 each, plus a $5 deposit per order for shipping and handling. Any of the $5 not used is returned in the form of blank disks at the rate of 35 cents per disk. M.U.G.S. also sends programs in printout form. Their catalog costs $2.

Public Domain Solutions
PO Box 832
Tallevast, FL 34270
For orders, 800-634-5546; for help, 813-378-2394

PDS distributes software for Commodores, including the PET, VIC-20, Plus/4, C-64 and C-128. They have one CP/M disk for the C-128. Their disks cost $7.95 for one, but less per disk for larger quantities. Shipping and handling is $1 per order. They also have a Disk-of-the-Month Club. Write or call for a free brochure, or send $3 for a disk catalog. Credit cards accepted.

TPUG (Toronto PET User's Group)
5300 Yonge St.
Toronto, Ontario
Canada M2N 5R2
416-733-2933

The TPUG library includes programs for PET, VIC-20, C-64, C-128 (including CP/M) and Amiga computers. Members can purchase disks for $8 and can join the Disk-of-the-Month Club. Nonmembers must pay $12 per disk. All orders require $3 shipping and handling. A disk catalog comes free with membership; nonmembers may order a printed catalog for $1. All prices are quoted in U.S. funds. Credit cards accepted.

2400-baud modem, but you should be able to use any 2400-baud Hayes-compatible modem connected to the computer with the appropriate cable or interface. The C-64/C-128 needs an RS-232 interface, such as the universal RS-232 interface available from Aprotek, 1071-A Avenida Acaso, Camarillo, CA 93010. The Amiga needs an RS-232 cable to go from its RS-232 port to the RS-232 port on the modem.

Bradley BBS Commandments

If you're online with a BBS and you become aware of an error, or you see something doesn't seem to be working right, or if a file appears to be missing, take the time to leave the SYSOP a message, because it's possible that he or she may not be aware of the trouble. It's helpful to include in the message exactly what you did just prior to the error's appearance, so the problem will be easier to find. All in all, do whatever you can to help make the system run smoothly!

As a security precaution, it's wise to use a different password for each BBS you log onto. Then, if anyone ever discovers your password, you'll have only one to change. In the same spirit, don't use passwords that have an obvious connection to you and would be easy for others to guess. ■

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

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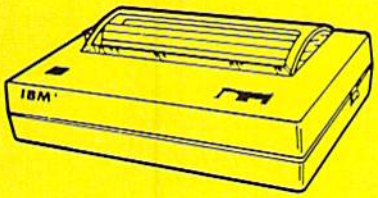

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RUN's Checksum

By BOB KODADEK

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

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

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

Listing 1. *RUN*'s Checksum program.

```
10 REM RUN'S CHECKSUM 64/128 - WRITTEN BY
   BOB KODADEK
20 MO=128:SA=3328:IF PEEK(4096)THEN MO=64
   :SA=49152
30 FOR I=0TO140:READ B:CK=CK+B:POKE SA+I,B
   :NEXT
40 IFCK<>16951 THENPRINT"DATA ERROR!":END
50 PRINTCHR$(147)STR$(MO)" RUN CHECKSUM":
   PRINT
60 PRINT"TO TOGGLE ON OR OFF, SYS"SA:IF MO
   =128 THEN 90
70 POKESA+13,124:POKESA+15,165:POKESA+25,1
   24:POKESA+26,165
80 POKESA+39,20:POKESA+41,21:POKESA+123,20
   5:POKESA+124,189
90 POKESA+4,INT(SA/256):SYS SA:NEW
100 DATA 120,162,24,160,13,173,4,3,201,24,
    208,4,162,13,160,67,142,4,3,140
110 DATA 5,3,88,96,32,13,67,152,72,169,0,1
    41,0,255,133,176,133,180,166,22
120 DATA 164,23,134,167,132,168,170,189,0,
    2,240,58,201,48,144,7,201,58,176
130 DATA 3,232,208,240,189,0,2,240,42,201,
    32,208,4,164,180,240,31,201,34
140 DATA 208,6,165,180,73,1,133,180,230,17
    6,164,176,165,167,24,125,0,2,133
150 DATA 167,165,168,105,0,133,168,136,208
    ,239,232,208,209,169,42,32,210
160 DATA 255,165,167,69,168,170,169,0,32,5
    0,142,169,32,32,210,255,32,210
170 DATA 255,169,13,32,210,255,104,168,96■
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HARDWARE GALLERY

This Hardware Gallery lets you in on a gabfest: A cable that lets two Commodores talk to each other and a device that lets you speak to your Commodore.

Compiled by BETH S. JALA

HEARSAY 1000 ..... B–

Do You Hear What I Hear?

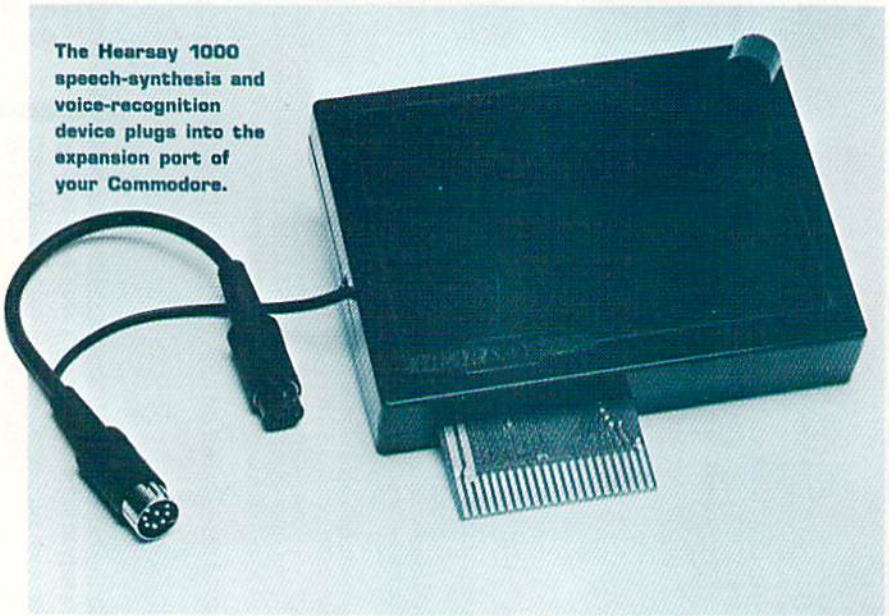
Hearsay 1000 is the latest generation of speech-synthesis and recognition devices. Based on General Instruments' SP-1000 speech-synthesis and voice-recognition chip, it fits into the expansion port of a C-64, 64C, C-128 or SX-64. Two 9-pin DIN connectors patch between the computer's Audio/Video port and the monitor. There is a micro socket that accommodates the jack found on most cassette player microphones, but this didn't work for me; luckily, the Hearsay 1000 has a good built-in mike.

An instruction manual and a demonstration disk come packaged with the hardware. The demo contains six options, including a look at software programs sold separately by Hearsay, Inc. (see this month's Software Gallery for reviews of two), an illustration of how Hearsay 1000 can be used with software from other manufacturers, and the how-to's of changing the voice, pitch and speed of Hearsay 1000's synthesized speech.

Hearsay 1000 produces speech in two ways. First, recorded on its chip are 63 allophones, or distinct sounds, that can be assembled into words. Second, there are approximately 100 separately recorded words and phrases that can be accessed with Hearsay programs. Speech recognition is accomplished when the user digitally saves a spoken word or phrase, thus training the computer, which then compares that with the latest voice input. If the utterances match, the computer executes the operation called for by the program.

The allophone-based speech is somewhat robotic, but intelligible. It sounds much like S.A.M., the software-based synthesizer, but without the Scandinavian accent or the taxicab-radio scratchiness of unedited digitized speech.

Up to 64 words or abbreviations can be loaded into a dictionary file. The catch is that only 64 words can be input by voice and loaded on each file at one time. A RAMdisk feature would enhance all speech-synthesis and voice-recognition capabilities. (It's unfortunate that planned C-128 and RAM expansion versions of speech-recognition devices seem to have been shelved as companies direct their development skills toward the MS/DOS-PC clone market.)



The Hearsay 1000 speech-synthesis and voice-recognition device plugs into the expansion port of your Commodore.

Difficulties in speech recognition can be frustrating with Hearsay 1000, as when one clearly says "two" while using Hearsay's Aqua's Circus software program, and hears Aqua reply "No, that was a two." The natural reaction when not understood, of course, is to say the word louder, which often diminishes Hearsay's chances of comprehension.

To be fair, I found the recognition capability of the Hearsay 1000 to be on a par with my Covox, which is accurate between 85 and 90 percent of the time. I have found that using words as distinct as possible—for example, able-baker-charlie rather than a-b-c—greatly improves the accuracy of voice recognition.

Clearly, Hearsay 1000's potential could be better realized if the rather sparse documentation were more complete. What is provided is uncomplicated and well organized, but less than adequate in light of the device's capabilities. I found that only three keypresses were needed for it to read Easy Script word processor files and disk directories from the screen. However, the documentation doesn't make any suggestions as to how a user could set it up to work most effectively with any type of application or game. Nor is it stated how a headset microphone might be used. Particularly welcome would be examples of how to write programs in Basic, and how to use the words individually programmed into its chips in one's own applications.

I would rank user support as better than average: My first Hearsay 1000 did not work, but after a call to the manufacturer, I soon had a newer version that worked with all the demo items as well as with the two programs reviewed in Software Gallery.

The Hearsay 1000's most useful feature may be its ability to work with existing software. The company claims that it can be used with the "off-the-shelf" software of at least 27 manufacturers, including Broderbund, Epyx, Infocom, Mindscape and Timeworks. The package is a good value for its price— ►

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it's a versatile piece of hardware with a lot of promise for innovative uses in the educational and gaming arenas. *(Hearsay, Inc., 1825 74th St., Brooklyn, NY 11204. $79.95.)*

—RICHARD H. ELDRIDGE
MIAMI, FL

SERIAL DATA LINK CABLE ... A *The Commodore's Connected to the Commodore...*

Have you ever tried to connect two computers together so that you could transfer data, test telecommunications software or play a two-person game? If so, you've already discovered how difficult this simple-sounding task can be, especially if you contrived to convince a pair of modems to talk to each other without actually making a phone call.

Micro Development's Serial Data Link Cable simplifies this task by letting you connect two Commodore 64s, two C-128s or a C-64 and a C-128 without additional hardware. The ten-foot shielded cable plugs into the user port of each computer and acts as a null modem. It simulates the presence of an RS-232 device and effectively replaces two modems and a telephone line.

Data can be transferred under the control of telecommunications software or by simple Basic subroutines like those included in the accompanying operations guide. Micro Development recommends a maximum transfer rate of 300 baud. While Basic programs might execute too slowly for higher speeds to be practical, I found terminal software written in machine language functioned well at 1200 bps.

Only four pins of each computer's user port (Flag 2, PB0, PA2 and ground) are required to provide I/O lines for data transfer, as well as the necessary handshaking. Because of this, the plugs at either end of the cable contain only four gold-plated signal contacts. Dedicated hardware hackers who might have other applications in mind for this relatively difficult-to-find edge connector will have to supply their own contacts in order to access any of the other 17 signals available at the user port.

The Serial Data Link Cable is a passive device that contains no electronic components. If you think you might have a use for this accessory, remember that a null modem or serial data cable can only be used between two Commodore computers. Communication and/or data transfers between your Commodore and an Apple, PC or other microcomputer still requires an electronic RS-232 adapter to convert Commodore's nonstandard RS-232 voltages.

While many users may never need to interconnect two Commodore computers, those who do will find Micro Development's Serial Data Link Cable a simple, inexpensive, dependable and potentially indispensable accessory. *(Micro Development Co., PO Box 5872, Cleveland, OH 44101. $25.)*

—JOHN PREMACK
LEXINGTON, MA ■

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Learn To Walk Before You RUN

We receive many letters from new Commodore owners who want to type in program listings from *RUN* and need help in getting started. To answer many of the questions novice users have, we present the following guidelines.

1. First, keep in mind that as a beginner you should enter only short Basic programs. Avoid machine language listings and lengthy Basic programs until you get the hang of what you're doing.

2. To help you catch mistakes in typing in listings, we publish two checksum programs each month, called 64 Perfect Typist and 128 Perfect Typist. (Follow the directions in How To Type *RUN* Listings, elsewhere in this issue.)

3. If you intend to save the program you're typing in on a brand new disk, you must format that disk. To do this, insert the disk in your drive and type:

```
OPEN15,8,15 <press return>
PRINT#15,"N0:NAME,##" <press return>
```

The ## is a two-character identifier that can be any combination of letters or digits. NAME can be any title for the disk that you choose, as long as it's 16 characters or less.

After entering the above lines, wait for a few minutes while the disk spins inside the drive. When the disk stops, the formatting is done. Then type:

```
CLOSE15 <press return>
```

In 128 mode on a C-128, you can shorten this procedure by typing:

```
HEADER "NAME,##" <press return>
```

Caution: The formatting process erases any material already on the disk, so if you're formatting a used disk, make sure it doesn't contain any programs you want to keep. See item 11 below, on reading the disk directory, if you need to find out what's on the disk.

4. Before you start typing in a program listing, your computer's memory needs to be empty. To make sure it is, turn the computer off, wait a few seconds, and turn it on again.

5. As you type in the listing, remember to press the return key after each line. The return enters the line into memory.

6. If you want to review what you've entered, type LIST and press the return key; all the lines you've entered will scroll by. You can slow the scrolling on the C-64 by holding down the control key, and on the C-128 by pressing the no scroll key. To view certain specific lines, type LIST, followed by the line numbers you want; then press the return key. For example, LIST 10–50 displays lines 10 through 50, and LIST 20 displays only line 20.

7. If you find an error in a line, delete the incorrect characters with the insert-delete key, then retype that portion and press return to enter the new line in memory.

8. Be sure to save the program to disk fairly often during the typing process. Otherwise, you could lose all your work if a power glitch wipes out your computer's memory. To save a partial or complete Basic program listing, type:

```
SAVE "NAME",8 <press return>
```

In 128 mode on a C-128, you can press F5, type in NAME and press the return key. Here, NAME is the filename you want the program to have, not the disk name you used when formatting.

Each time you save a revised program to the same disk, you must change its filename, or a disk error will occur, even if only one character is changed. An easy way to vary the filename is by adding version numbers to the end of the basic name (Program.1 and Program.2, for example). The numbers will also tell you which version is the latest.

9. If you wish to erase (scratch) unwanted programs from a disk, type:

```
OPEN15,8,15 <press return>
PRINT#15,"S0:filename" <press return and wait a few seconds>
CLOSE15 <press return>
```

In 128 mode on a C-128, you can type:

```
SCRATCH "NAME" <press return>
```

Be sure not to erase the final version!

10. Always save the final version of a program to two disks, so you have a backup copy in case one of the disks gets damaged. When saving to two different disks, you can use the same program name in each case.

11. To view a complete list of the filenames on a disk (i.e., read the disk directory), type:

```
LOAD "$",8 <press return>
LIST
```

In 128 mode on a C-128, you can just press F3.

12. When you know what program you want to load, next make sure you know *exactly* how its filename is spelled in the disk directory, including punctuation, special characters and spaces. A mistake in the filename will keep the load from working.

If the disk directory is still on the screen when you enter the Load command, you can refer to that for the spelling. If the directory will be gone from the screen by the time you enter the Load command, jot down the exact spelling of the filename for reference. Once you're sure of the filename, load the program by typing:

```
LOAD "NAME",8 <press return>
```

In 128 mode on a C-128, you can just press F2, type in the filename and press the return key.

13. After you've loaded the program, enter RUN to use it. ■

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COMMODORE CLINIC

Is there any software support for the 1581 disk drive? Is it safe to use single-sided disks for double-sided storage? Having problems with RUN*'s new Checksum?*

By LOU WALLACE

SOFTWARE

Q *I purchased my 1541 disk drive from a store that was using it as a display model. I never received a demo disk with it and have not been having a problem, but I keep seeing it referred to in the magazine. Where can I get the demo disk and instructions for its use in case a problem should come up?*

—J. VOGEL
WOBURN, MA

A I suggest you contact the dealer you bought the disk drive from. He should be able to give you a copy of the disk. Or you can drop in on the next meeting of your local user group, where you will undoubtedly find many members with the disk you need.

Q *Is any C-64 software available specifically for video stores?*

—STEPHEN L. SMITH
WOODSTOCK VALLEY, CT

A I'm afraid not. But it seems to me that a good database should do the trick. I would suggest one like Superbase, from Progressive Peripherals and Software (464 Kalamath St., Denver, CO 80204). With it, you can tailor-make a database application, as well as other applications, as the need arises.

Q *I have a 128 and GEOS 64. Is there any way to update to GEOS 128 without spending another $60?*

—DAVID BERCOVICH
HOUSTON, TX

A If you've sent in your registration card for GEOS 64, you should have gotten information about the update policy from Berkeley Softworks, the company that makes GEOS products. Berkeley allows GEOS 64 owners to upgrade to the 128 version for $22, plus $2.50 for shipping and handling. There are varying prices for updating other GEOS applications to the 128. For specific information, call their customer support line at 415-644-0890.

Q *I've been searching for a Fortran compiler to use with my C-128, but have not found one. Does such a compiler exist?*

—ROB WHEELER
AMHERST, MA

A As far as I know, there is no Fortran compiler for the C-128. There was at one time a CP/M Fortran compiler for the C-64 called Nevada Fortran. I don't know if it's still available, or even if it would work with the C-128 CP/M system. I suggest you check with your local dealer, or better yet, perhaps one of the CP/M user groups can help. One of the largest is the Foghorn CP/M User Group. Write to them at PO Box 3474, Daly City, CA 94015.

Q *I recently bought a 1581 disk drive for my C-128. The drive is great, very fast and has a huge storage capacity (808K). The problem is, there seems to be no software support from any manufacturer of Commodore software. Do you know of any such software in 1581 format?*

—LARRY EVENS
MEMPHIS, TN

A You have a good point, because, even though it is a great disk drive, if you don't have software support, it's of limited use. And while you can copy many programs from 5¼-inch format to the 1581 drive, it would be nice to find software in that format. The good news is that there are some companies supporting the 1581. One that's doing a great job is Abacus Software. All of their unprotected C-64/C-128 programs (80 percent of their titles are unprotected, and the list is growing) are available in 1581 format. You must request 1581 format when you order; otherwise it will be shipped on 5¼-inch disks. You can get a catalog from Abacus by calling 616-698-0325. And if the rumors of a 64D computer (with a fast 1581 built in) are true, you can expect to find a steady stream of software in 3½-inch format in the near future.

Q *I've received some programs that use the Simons' Basic cartridge for the C-64. Does anyone still sell this cartridge? I need one desperately.*

—BRENT CARLSON
VIRGINIA, MN

A Simons' Basic is no longer being produced or distributed by Commodore. However, it is very likely still available in some stores and from smaller mail order houses, so call around and check. Even a member of a local user group might have one they want to sell.

Q *I've been using the C-64 for three years now, as well as an IBM PC. I've tried to write programs that can read a file from an IBM-formatted disk, but have had no success. Is there such a program available commercially?*

—DAVID WHITAKER
HAZARD, KY

A No, but there is an excellent one for the C-128 that I use all the time. It's called The Big Blue Reader and is available from S.O.G.W.A.P. Software (115 Belmont Rd., Decatur, IN 46733). Keep it in mind if you ever decide to get a C-128.

Q *My C-128 and 1571 disk drive, both not upgraded, and all of my software were recently destroyed in a house fire. I've upgraded my system to a C-128D and now wish to back up my software to avoid any such future disaster. I'm using Disector version 3.0. A problem occurs when the program tries to read a disk. On the attempt, everything stops! I tried using a friend's disk drive, which* ►

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Finally, there's a beauty contest that any GEOS owner can win—provided you have the right tools. The GEOS Desktop Publishing Contest. All you need to win is your Commodore, your trusty GEOS applications (like geoWrite, geoPublish, Graphics Grabber, etc.) and your own imagination to win in any four categories and walk away with all kinds of prizes.

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And each prize consists of lots more prizes.

So boot up and get down to designing your best layout. Then send it in with the information required below. You could win fortune—and fame, because the winners will be printed on these very pages this Fall.

Categories

FLYER—Any one-page advertisement, handbill or data sheet. Two divisions: Dot Matrix and Laser Printer.

NEWSLETTER—Two or more pages, including newsletters, brochures, reports. Two divisions: Dot Matrix and Laser Printer.

POSTER—One page, enlarged at least 200%. Laser Printer only.

OPEN DESIGN—Anything goes! No page limitation. Best use for desktop publishing. Two divisions: Dot Matrix and Laser Printer.

Seven First Prizes!

- $1,000 cash
- Publication of your entry in RUN Magazine
- Complete library of C64 or C128 GEOS applications from Berkeley Softworks
- Commodore peripherals: 1670 1200 Baud Modem, 1351 Mouse and your choice of a 1764 or 1750 RAM Expansion Module
- Six month subscription to Q-Link, the telecommunications service from Quantum Computer Services
- Twenty five pages of laser printed output from Laser Direct
- Twelve month subscription to RUN magazine

Seven Second Prizes!

- Complete library of C64 or C128 GEOS applications from Berkeley Softworks
- Commodore peripherals: 1670 1200 Baud Modem and your choice of a 1764 or 1750 RAM Expansion Module or 1351 Mouse
- Three month subscription to Q-Link, the telecommunications service from Quantum Computer Services.
- Ten pages of laser printed output from Laser Direct
- Twelve month subscription to RUN magazine

Seven Third Prizes!

- Your choice of any five C64 or C128 GEOS applications from Berkeley Softworks
- Commodore peripherals: 1670 1200 Baud Modem and your choice of a 1764 or 1750 RAM Expansion Module or 1351 Mouse
- Three month subscription to Q-Link, the telecommunications service from Quantum Computer Services.
- Five pages of laser printed output from Laser Direct
- Twelve month subscription to RUN magazine

Official Rules

1. Employees of Berkeley Softworks, Quantum Computer Services, Laser Direct, RUN Magazine, their advertising and promotional agencies and their immediate families are not eligible to enter the contest.

2. Each entry must be wholly the product of the developer in whose name the entry has been submitted. The entry may not have been published prior to this contest. Copyrighted images are ineligible.

3. Entries must be produced with GEOS or GEOS based applications (e.g. geoWrite, geoWrite Workshop, geoPaint, geoPublish, etc.).

4. Entries must be submitted in both printed output form (dot matrix or laser printed) and disk in 1541/1571 format. The following should be clearly marked on both the printout and the disk:
   A. Contestant's name, address and phone number
   B. Occupation (optional)
   C. The GEOS based application package(s) used to create the entry
   D. Intended use for the entry, if other than just for this contest (e.g. user newsletter, school, business, group etc.)

5. Entries become the property of Berkeley Softworks, which reserves the right to adapt, use or publish all entries received. No disks will be returned, so be sure to make a copy of your entry before you submit it to the contest.

6. Deadline for entries is June 30, 1988. Mail entries to Berkeley Softworks, 2150 Shattuck Avenue, Berkeley, CA, 94704 Attn: GEOS Desktop Publishing Contest.

7. Contestants may enter multiple categories, but may only submit one entry per category per division (e.g. one entry in the Flyer category, Dot Matrix division *and* one entry in the Flyer category, Laser Printer division). Regardless of the number of categories you enter, you will only be eligible to win one prize.

8. Final judging will be performed by the staff of RUN Magazine. The decisions of the judges are final in all respects. This includes decisions regarding creativity, similarity among entries and general suitability.

9. This contest is void where prohibited by law. All federal, state and local taxes are the sole responsibility of the winners.

General Conditions

- Entries will be judged on creativity, originality, composition, layout, content and overall design.
- Make sure your mailer will protect your printout and disk from damage. Affix sufficient first class postage. Mail your printout, disk and official entry blank to the above address in time to reach RUN Magazine before the June 30, 1988, deadline.
- Winners will be announced by September, 1988.

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he had recently upgraded, and the same thing happened. But if I use another friend's disk drive (not upgraded), then everything works fine. Is there something in the upgraded 1571 ROM that prevents this program from running? Any answer to this perplexing problem would be greatly appreciated.

—WILLIAM C. YOUNG, JR.
WEST MIDDLESEX, PA

A Some copy programs won't work on the C-128D's built-in 1571 due to changes in the 1571 ROMs. The same is true for ROM-upgraded 1571 drives. The reasons are complex, but according to my technical sources at Commodore, the reason those programs don't work properly is that the programmers did not follow the established guidelines when programming for the original 1571. So when small changes are made to the ROMs, it can play havoc with both copy busting as well as some copy-protected software. My solution is to use only unprotected software. It's not always possible, but it certainly helps you avoid this hassle.

HARDWARE

Q *I always buy single-sided disks to save money. When I want a double-sided disk, I make a little notch on the left side of the disk (from the front viewpoint) with an ordinary hole-puncher. Is this safe? If not, then what can I use to make a notch?*

—WILLIAM A. ELLERBE
DALTON, MA

A Using a hole puncher to notch a disk is fine, so you don't need a special gadget. But I wouldn't recommend what you are doing. When a disk is manufactured, both sides of the sheets are graded as to their quality. Only if a disk passes the standards for double-sided media is it used as a double-sided disk. The single-sided disk you're using is probably made from a batch that failed the quality standards for double-sided media, and is only reliable when the proper side is used. While you may be able to use many disks this way, sooner or later you'll lose some valuable data or programs. Since disks are now relatively inexpensive, it doesn't pay to take chances.

Q *What is the best disk drive to use as a second drive?*

—M. R. HAUGE
SIERRA MADRE, CA

A It depends on your needs and your pocketbook. If you have a C-64 with a 1541 drive or a C-128 and a 1571, I would seriously consider the 1581 3½-inch drive. For less than $200, it stores over 800K and in 128 mode is very fast. If you want to stay with 5¼-inch drives, then a second 1541 or 1571 may be what you need. Or, if you have the money, you could get a hard drive.

Q *My present computer system consists of a C-64, a 1571 drive, a Sakata SC-100 monitor and a Star SL-10C printer. I want to move up to a C-128, a 1571 and a 2002 monitor, but out of financial necessity I can buy them only a unit at a time. I want to buy units that will work with some of the units I now own. What should I buy first? Will I be able to keep my SL-10C?*

—ARNOLD MUNIZ
SAN ANTONIO, TX

A Get the 128 first. It can use your present drive, printer and monitor. Then I would go for the 2002 (or a 1084) monitor. If the printer you have serves your needs, there is no need to change, and of course the 1571 is made for the C-128. You might want to eventually add a 1750 RAM expansion and a 1351 mouse. Then you'll have the ultimate C-128 system!

Q *In the November 1987 issue of* RUN, *you ran a review on the software Basic 8. Reviewer John Premack states, "Upgrading to 64K requires swapping your machine's 4416 or 4164 RAM chips for a pair of 4464s." To me, this statement is confusing because there are two rows of 4164 RAM chips, not just a pair of chips. If only a pair of chips is to be replaced, then which pair? I'm interested in buying this software, but I'd also like to upgrade my C-128 at the same time. I think your articles should be a bit more technically accurate. Thanks for your help.*

—FRANCIS J. NAPERSKY
OWINGS, MD

A The 4164 RAMs John was referring to in his review of Basic 8 are those for the 8563 80-column video display chip. They're inside the small silver box on the motherboard (which also has the 8563 and Vic-II graphic chips). Please be aware that, since the chips are soldered to the motherboard, removing them and installing the two 4464 RAMs is not a job for the casual user, even if you've done soldering before. If you want the 64K for Basic 8 (and I recommend it), take the chips and sockets to a local Commodore service center. It shouldn't cost you more than $35 to install. Doing it yourself can lead to a damaged computer. (Note: C-128Ds already have the 64K of VDC RAM as well as the latest ROM chips. I've heard of people "upgrading" their C-128Ds when there is no need to do so.)

PROGRAMMING

Q *I just bought the January 1988 issue of* RUN, *and I ran into difficulty trying to use the new checksum. I get an Out of Data error in line 30. I checked each line to see if I'd made any typing errors but could find none.*

Please advise me, as I would like to type in the Calendar Maker program, among others in your magazine.

—JANIS SUNKEN
NEVADA, IA

A You probably made an error in typing, as *RUN*'s new Checksum program works very well. But, just to be sure, I typed it in myself from the listing in the January '88 issue. No problem! It worked as it should. Since I don't have a copy of your listing, I can't be sure what is wrong. But the computer has given us a good hint with the "Out Of Data error in line 30" message. That tells us the program was trying to read a value from the Data statements and ran out of data to read, which in turn means you left out a portion of a Data statement. That could be a missing comma, a period used in place of a comma, or perhaps even a complete line. Check the listing again carefully; I'm sure you will discover the problem.

Editor's note: On page 86 of the February 1988 issue, Commodore Clinic made an error in the telephone number to call for ordering any ReRUN disk, including Productivity Pak III. The correct number is 1-800-343-0728. ■

Do you have a problem or question about your Commodore computer system, software or programming? Commodore Clinic can help. Just send your questions to:

Commodore Clinic
RUN Magazine
80 Elm St.
Peterborough, NH 03458

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

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FONTASTIC 64

From p. 62.

Listing 2. Boot Charset program.

```
10 REM BOOT CHARSET - KENNY LAW
   SON                        :REM*254
20 REM SYS 682 TO RESET CHARACT
   ERS TO DEFAULT             :REM*53
30 REM SYS 755 TO RESTORE CHARA
   CTER SET AFTER RUN/STOP REST
   ORE                        :REM*73
40 FORX=682TO765:READA:POKEX,A:
   NEXT                       :REM*11
50 DATA 173,14,220,41,254,141,1
   4,220,165,1,41,251,133,1
                              :REM*119
60 DATA 169,0,133,251,133,253,1
   69,8,133,252,169,208,133,254
                              :REM*244
70 DATA 162,0,160,0,177,253,145
   ,251,200,208,249,230,252,230
   ,254                       :REM*105
80 DATA 232,224,8,208,238,165,1
   ,9,4,133,1,173,14,220
                              :REM*153
90 DATA 9,1,141,14,220,173,24,2
   08,41,240,9,2,141,24,208,96
                              :REM*58
100 DATA 173,24,208,41,240,9,2,
    141,24,208,96             :REM*228
110 POKE53280,14:POKE53281,6:PO
    KE646,6                   :REM*54
120 PRINT"{SHFT CLR}POKE44,16:P
    OKE4096,0:NEW":PRINT:PRINT:
    PRINT"SYS682"             :REM*215
130 PRINT:PRINT:PRINT"LOAD"CHR$
    (34)"FONT MENU"CHR$(34)",8"
                              :REM*187
140 PRINT:PRINT:PRINT:PRINT:PRI
    NT"RUN"                   :REM*143
150 POKE631,19:POKE632,13:POKE6
    33,13:POKE634,13:POKE635,13
    :POKE198,6                :REM*28
```

Listing 3. Font Menu program.

```
10 REM FONT MENU - KENNY LAWSON
                              :REM*219
20 POKE646,14:POKE657,128
                              :REM*120
30 OS$=CHR$(17):OT$=CHR$(145):I
   FTTTHEN240                 :REM*72
40 PRINT"{SHFT CLR}";:FORX=1TO9
   :READA$:NF$(X)=A$:NEXT
                              :REM*64
50 DATA BLOCKFONT,CAPSFONT,COMP
   UFONT,CURSIFONT,DIAMONDFONT
                              :REM*60
60 DATA DOTFONT,STENCILFONT,THI
   NFONT,UNDERFONT            :REM*109
70 A1$="{13 SPACEs}":A2$=CHR$(1
   8)+A1$+"{2 SPACEs}":A3$="{CT
   RL 9} {CTRL 0}"+A1$+"{CTRL 9
   } {CTRL 0}"                :REM*80
80 A4$=A1$+"{2 CRSR RTs}":A5$=C
   HR$(18)                    :REM*226
90 PRINT:PRINTA1$A2$:FORX=1TO19
   :PRINTA1$A3$:NEXT          :REM*103
100 PRINTA1$A2$"{HOME}{2 CRSR D
    Ns}":FORX=1TO9            :REM*43
110 PRINTA4$NF$(X)CHR$(17):NEXT
    :PRINT:PRINT              :REM*173
120 PRINT"USE {CTRL 9}CURSOR{CT
    RL 0} UP/DOWN KEY TO SELECT
     A FONT"                  :REM*208
130 PRINT"PRESS THE {CTRL 9}RET
    URN{CTRL 0} KEY TO LOAD THA
    T FONT{HOME}{2 CRSR DNs}"
                              :REM*175
140 PRINTA4$A5$NF$(1); :REM*230
150 GETA$:IFA$=""THEN150:REM*57
160 RO=PEEK(214):NF=INT(RO/2):I
    FRO=3THEN300              :REM*86
170 IFRO=19THEN350            :REM*174
180 IFA$=OS$THENPRINT"{CRSR UP}
    ":PRINTA4$NF$(NF):PRINT:PRI
    NTA4$A5$NF$(NF+1);:GOTO150
                              :REM*149
190 IFA$=OT$THENPRINT"{CRSR UP}
    ":PRINTA4$NF$(NF)"{3 CRSR U
    Ps}":PRINTA4$A5$NF$(NF-1);:
    GOTO150                   :REM*167
200 IFA$<>CHR$(13)THEN150
                              :REM*218
210 REM LOAD A PROGRAM :REM*151
220 PRINT"{SHFT CLR}":POKE646,6
                              :REM*161
230 IFTT=0THENTT=1:LOADNF$(NF),
    8,1                       :REM*185
240 FORX=1TO3000:NEXT:POKE646,1
    4                         :REM*139
250 IFNF=2ORNF=4THEN280 :REM*72
260 PRINT"{SHFT CLR}{CRSR DN}{4
     SPACEs}**** COMMODORE 64 B
    ASIC V2 ****"             :REM*25
270 PRINT"{CRSR DN} 64K RAM SYS
    TEM{2 SPACEs}36861 BASIC BY
    TES FREE":NEW             :REM*150
280 PRINT"{SHFT CLR}{CRSR DN}{4
     SPACEs}**** {SHFT C}OMMODO
    RE 64 {SHFT B}ASIC {SHFT V}
    2 ****"                   :REM*30
290 PRINT"{CRSR DN} 64{SHFT K}
    {SHFT R}AM {SHFT S}YSTEM{2
    SPACEs}36861 {SHFT B}ASIC {
    SHFT B}YTES {SHFT F}REE":NE
    W                         :REM*226
300 REM CURSOR ON TOP LINE
                              :REM*180
310 IFA$=CHR$(13)THEN210:REM*14
320 IFA$<>CHR$(17)ANDA$<>CHR$(1
    45)THEN150                :REM*197
330 IFA$=CHR$(17)THEN180
                              :REM*147
340 PRINT"{CRSR UP}":PRINTA4$NF
    $(1):POKE214,18:PRINT:PRINT
    A4$A5$NF$(9);:GOTO150
                              :REM*98
350 REM CURSOR ON BOTTOM LINE
                              :REM*231
360 IFA$=CHR$(13)THEN210:REM*88
370 IFA$<>CHR$(17)ANDA$<>CHR$(1
    45)THEN150                :REM*179
380 IFA$=CHR$(145)THEN190
                              :REM*227
390 PRINT"{CRSR UP}":PRINTA4$NF
    $(9):PRINT"{HOME}{2 CRSR DN
    s}":PRINTA4$A5$NF$(1);:GOTO
    150                       :REM*180
```

Listing 4. Block Set program.

```
10 REM BLOCK SET - KENNY LAWSON
                              :REM*4
20 OPEN8,8,8,"BLOCKFONT,P,W":PR
   INT#8,CHR$(0);CHR$(8);
                              :REM*53
30 FORX=1TO216:READA:PRINT#8,CH
   R$(A);:NEXT:RESTORE        :REM*55
40 FORX=2264TO3071:PRINT#8,CHR$
   (PEEK(X));:NEXT            :REM*145
50 FORX=1TO216:READA:PRINT#8,CH
   R$(255-A);:NEXT            :REM*68
60 CLOSE8:OPEN15,8,15,"I0":CLOS
   E15:END                    :REM*247
70 DATA 126,126,102,110,96,126,
   126,0,126,126,126,110,126,11
   0,110,0,124,126            :REM*3
80 DATA 108,120,108,126,124,0,1
   26,126,126,96,126,126,126,0,
   124,126,126,110            :REM*204
90 DATA 126,126,124,0,126,126,1
   12,126,112,126,126,0,126,126
   ,112,120,120,112           :REM*71
100 DATA 112,0,126,126,114,112,
    118,124,118,0,110,110,126,1
    26,126,110,110,0          :REM*83
110 DATA 126,126,24,24,24,126,1
    26,0,30,30,30,30,94,94,126,
    0,118,118,118             :REM*145
120 DATA 120,118,118,118,0,112,
    112,112,112,126,126,126,0,9
    8,118,126,106,98          :REM*235
130 DATA 98,98,0,102,118,126,12
    6,110,102,102,0,126,126,126
    ,110,126,126,126          :REM*231
140 DATA 0,126,126,126,110,126,
    96,96,0,124,124,124,108,124
    ,126,126,0,126            :REM*222
150 DATA 126,126,110,126,108,10
    2,0,126,126,96,126,14,126,1
    26,0,126,126,126          :REM*78
160 DATA 24,24,24,24,24,0,110,110,
    110,110,110,126,126,0,110,1
    10,110,110,110            :REM*180
170 DATA 60,24,0,98,98,98,98,98
    ,106,118,0,66,102,60,24,60,
    102,66,0,102,126          :REM*196
180 DATA 60,24,24,24,24,0,126,1
    26,14,56,96,126,126,0
                              :REM*130
```


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MANY PROGRAMS THAT RUN on Commodore computers have been placed in the public domain, which means they're not copyrighted and can be freely duplicated. For this reason, they're available without charge or at very low cost. You can get them on disk from most user's groups and some commercial sources, and online from bulletin boards and networks.

Public domain software includes a wealth of utility, productivity, entertainment and education programs. There's a range of quality, but many of the programs are excellent.

Below is a list of sources you can contact, in addition to your local user's group, BBSs and online services. All of these organizations have substantial offerings and will send you a catalog. We hope to update this list periodically, so we invite additional entries.

USER'S GROUPS:

M.U.G.S. (Muscatine User Group Support)
1836 Hershey Ave.
Muscatine, IA 52761
319-262-8279

M.U.G.S. provides C-64 and C-128 disks for $1.25 each, plus a $5 deposit per order for shipping and handling. Any of the $5 not used is returned in the form of blank disks at the rate of 35 cents per disk. M.U.G.S. also sends programs in printout form. Their catalog costs $2.

FOG
PO Box 3474
Daly City, CA 94015
415-755-2000

FOG distributes CP/M software for the C-128. Its disks are available to members for $4 each; nonmembers must pay $8 per disk. FOG programs also can be downloaded from their Roundtable on GEnie and from their 40 bulletin boards around the country. You can order FOG's two catalog disks for $4 each, and the catalog can be accessed on GEnie and the BBSs. They will format programs for your system if needed. Credit cards accepted.

TPUG (Toronto PET User's Group)
5300 Yonge St.
Toronto, Ontario
Canada M2N 5R2
416-733-2933

The TPUG library includes programs for PET, VIC-20, C-64, C-128 (including CP/M) and Amiga computers. Members can purchase disks for $8 and can join the Disk-of-the-Month Club. Nonmembers must pay $12 per disk. All orders require $3 shipping and handling. A disk catalog comes free with membership; nonmembers can order a printed catalog for $1. All prices are quoted in U.S. funds. Credit cards accepted.

COMMERCIAL SOURCES:

Elliam Associates
1230 Bayview Heights Drive
Los Osos, CA 93402

Elliam offers CP/M software at $10 per disk or three disks for $25, plus $2.50 shipping and handling per order. They'll send a six-page flyer without charge or their complete catalog for $1; the catalog also comes free with an order. Elliam will reformat CP/M programs you send them to work with your system. Credit cards accepted.

JLH Co.
Dept. 4
PO Box 67021
Topeka, KS 66667
913-478-4979

JLH offers programs for the C-64 and C-128. One program costs $1.50, with a minimum order of five ($7.50), and there's a charge of $2.50 per order for shipping and handling. They include a free disk of programs with each order. Send an SASE for a list of the programs available. No credit cards.

Lightspeed Software
PO Box 7037
Chesapeake, VA 23323

Lightspeed has programs for the C-64 and C-128, including CP/M mode. They charge $5 per ready-made disk and $10 for a disk full of programs you specify from their catalog. They also offer a locate service and a Disk-of-the-Month Club. Postage and handling is $1 on orders under $30. No credit cards.

Public Domain Solutions
PO Box 832
Tallevast, FL 34270
For orders, 800-634-5546; for help, 813-378-2394

PDS distributes software for Commodores, including the PET, VIC-20, Plus/4, C-64 and C-128. They have one CP/M disk for the C-128. Their disks cost $7.95 for one, less per disk for larger quantities. Shipping and handling is $1 per order. They also have a Disk-of-the-Month Club. Write or call for a free brochure, or send $3 for a disk catalog. Credit cards accepted.

Poseidon Electronics
103 Waverly Place
New York, NY 10011
212-777-9515

Poseidon sells CP/M software for the C-128 at $16 per disk. They'll send you a complete catalog for $2 if you mail them an SASE with 90 cents postage. Poseidon accepts checks payable to Ralph S. Lees. ■

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Listing 5. Caps Set program.

```
10 REM CAPS SET - KENNY LAWSON
                              :REM*125
20 OPEN8,8,8,"CAPSFONT,P,W":PRI
   NT#8,CHR$(0);CHR$(8);:REM*56
30 FORX=2048TO2055:PRINT#8,CHR$
   (PEEK(X));:NEXT            :REM*99
40 GOSUB80:FORX=2264TO2567:PRIN
   T#8,CHR$(PEEK(X));:NEXT:GOSU
   B80                        :REM*166
50 FORX=2776TO3079:PRINT#8,CHR$
   (PEEK(X));:NEXT:RESTORE
                              :REM*129
60 GOSUB90:FORX=3288TO3591:PRIN
   T#8,CHR$(PEEK(X));:NEXT:GOSU
   B90                        :REM*207
70 CLOSE8:OPEN15,8,15,"I0":CLOS
   E15:END                    :REM*253
80 FORX=1TO208:READA:PRINT#8,CH
   R$(A);:NEXT:RETURN         :REM*220
90 FORX=1TO208:READA:PRINT#8,CH
   R$(255-A);:NEXT:RETURN
                              :REM*141
100 DATA 0,0,60,102,126,102,102
    ,0,0,0,124,98,124,98,124,0,
    0,0,60,98,96,98            :REM*227
110 DATA 60,0,0,0,0,124,98,98,
    124,0,0,0,126,96,124,96,126
    ,0,0,0,126,96              :REM*107
120 DATA 124,96,96,0,0,0,62,96,
    110,100,58,0,0,0,102,102,12
    6,102,102,0,0,0            :REM*123
130 DATA 126,24,24,24,126,0,0,0
    ,30,12,12,76,56,0,0,0,102,1
    08,120,108,102,0           :REM*173
140 DATA 0,0,96,96,96,96,126,0,
    0,0,102,90,66,66,66,0,0,0,9
    8,114,90,78,70,0           :REM*247
150 DATA 0,0,60,102,102,102,60,
    0,0,0,124,98,124,96,96,0,0,
    0,60,98,106,100            :REM*9
160 DATA 58,0,0,0,124,98,124,10
    8,102,0,0,0,60,96,60,6,60,0
    ,0,0,126,24,24             :REM*123
170 DATA 24,24,0,0,0,102,102,10
    2,102,58,0,0,0,102,102,102,
    36,24,0,0,0,66             :REM*229
180 DATA 66,66,90,102,0,0,0,66,
    36,24,36,66,0,0,0,66,36,24,
    24,24,0,0,0,126            :REM*234
190 DATA 12,24,48,126,0,60,102,
    102,126,102,102,102,0,124,9
    8,100,120,100,98           :REM*98
200 DATA 124,0,60,98,96,96,96,9
    8,60,0,124,98,98,98,98,1
```

Listing 6. Compu Set program.

```
10 REM COMPU SET - KENNY LAWSON
                              :REM*132
20 OPEN8,8,8,"COMPUFONT,P,W":PR
   INT#8,CHR$(0);CHR$(8);:REM*1
30 FORX=1TO216:READA:PRINT#8,CH
   R$(A);:NEXT                :REM*174
40 FORX=2264TO2431:PRINT#8,CHR$
   (PEEK(X));:NEXT            :REM*156
50 FORX=1TO80:READA:PRINT#8,CHR
   $(A);:NEXT:RESTORE         :REM*219
60 FORX=2512TO3071:PRINT#8,CHR$
   (PEEK(X));:NEXT            :REM*152
70 FORX=1TO216:READA:PRINT#8,CH
   R$(255-A);:NEXT            :REM*56
80 FORX=3288TO3455:PRINT#8,CHR$
   (PEEK(X));:NEXT            :REM*250
90 FORX=1TO80:READA:PRINT#8,CHR
   $(255-A);:NEXT:CLOSE8:OPEN15
   ,8,15,"I0":CLOSE15         :REM*56
100 DATA 62,34,42,46,96,98,126,
    0,62,34,34,126,98,98,98,0,1
    20,68,68,124,102           :REM*167
110 DATA 102,126,0,126,66,64,96
    ,96,98,126,0,124,70,70,102,
    102,102,126,0,62           :REM*27
120 DATA 32,32,124,96,96,126,0,
    62,32,32,124,96,96,96,0,62,
    34,32,110,102              :REM*143
130 DATA 102,126,0,34,34,34,126
    ,98,98,98,0,24,24,24,56,56,
    56,56,0,4,4,4,6            :REM*193
140 DATA 6,102,60,0,68,68,72,12
    6,102,102,102,0,32,32,32,96
    ,96,96,126,0,62            :REM*99
150 DATA 42,42,106,98,98,98,0,3
    4,50,42,106,102,98,98,0,126
    ,66,66,98,98,98            :REM*84
160 DATA 126,0,60,34,34,124,96,
    96,96,0,126,66,66,98,106,10
    0,122,0,124,68             :REM*247
170 DATA 68,126,102,102,102,0,1
    26,98,96,126,6,70,126,0,126
    ,16,16,24,24,24            :REM*119
180 DATA 24,0,38,38,38,102,102,
    102,126,0,38,38,38,102,102,
    36,24,0,36,36,42           :REM*163
190 DATA 106,106,106,126,0,102,
    102,36,24,36,102,102,0,102,
    102,102,24,24,24           :REM*17
200 DATA 24,0,126,66,4,24,96,98
    ,126,0,62,38,38,106,106,106
    ,126,0,24,24,24            :REM*165
210 DATA 56,56,56,56,0,60,70,6,
    126,96,96,126,0,126,6,6,30,
    14,14,126,0,102            :REM*87
220 DATA 102,102,126,14,14,14,0
    ,126,102,96,126,14,14,126,0
    ,126,102,96,126            :REM*36
230 DATA 114,114,126,0,126,98,4
    ,8,24,24,24,0,60,52,52,60,1
    18,118,126,0,126           :REM*166
240 DATA 70,70,126,14,78,126,0
                              :REM*218
```

Listing 7. Cursive Set program.

```
10 REM CURSIVE SET - KENNY LAWS
   ON                         :REM*71
20 OPEN8,8,8,"CURSIFONT,P,W":PR
   INT#8,CHR$(0);CHR$(8);:REM*4
30 FORX=2048TO2055:PRINT#8,CHR$
   (PEEK(X));:NEXT            :REM*99
40 GOSUB80:FORX=2264TO2567:PRIN
   T#8,CHR$(PEEK(X));:NEXT:GOSU
   B80                        :REM*166
50 FORX=2776TO3079:PRINT#8,CHR$
   (PEEK(X));:NEXT:RESTORE
                              :REM*129
60 GOSUB90:FORX=3288TO3591:PRIN
   T#8,CHR$(PEEK(X));:NEXT:GOSU
   B90                        :REM*207
70 CLOSE8:OPEN15,8,15,"I0":CLOS
   E15:END                    :REM*253
80 FORX=1TO208:READA:PRINT#8,CH
   R$(A);:NEXT:RETURN         :REM*220
90 FORX=1TO208:READA:PRINT#8,CH
   R$(255-A);:NEXT:RETURN
                              :REM*141
100 DATA 0,0,56,72,84,163,0,0,1
    6,40,40,48,100,155,0,0,0,0,
    56,68,64,191,0,0           :REM*117
110 DATA 8,8,56,72,72,191,0,0,0
    ,0,16,40,40,255,0,0,16,40,4
    0,40,112,167,56            :REM*129
120 DATA 0,0,0,24,36,60,199,28,
    0,16,40,40,48,104,167,0,0,2
    4,0,24,24,36,195           :REM*5
130 DATA 0,0,24,0,24,24,40,207,
    24,0,16,40,40,48,40,231,0,0
    ,16,40,40,40,16            :REM*234
140 DATA 239,0,0,0,0,40,84,84,2
    15,0,0,0,0,24,52,84,151,0,0 ►
```

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RUN AMOK

Item: Magic trick $44D (November 1987, p. 124) will not run correctly unless the following lines are changed to read as shown here:

```
4 DIML$(146):OPEN1,8,Ø,"$":GET#1,A$,B$
1Ø IFN>1THENL$(N)=LEFT$(C$,27):GOTO5
11 L$(N)="Ø{2 SPACEs}"+MID$(C$,4):GOTO5
15 INPUT"{CTRL 9}1-2-PRINT 3-DISPLAY
   4-END";A:ONA+1GOTO15,16,16,17:END
18 FORI=1TOX:PRINTL$(I)SPC(7)L$(X+I)
19 NEXT:IFN=X+ITHENPRINTSPC(34)L$(N)
```

Item: Also in November, in the Magic Trick of the Month ($43E, on p. 12), the line you should add to save to tape obviously cannot be numbered 25. Number it 23, or 24, or some other line number that is not already in the program.

Item: There was an error in the PO Box number of Bear Graphics, publisher of Bucks!, when that game was reviewed in Software Gallery for December 1987 (p. 32). It should have read: PO Box 12206.

Item: In Commodore Clinic for February 1988, the telephone number that appears in the last line of the first paragraph in the second column of p. 86 has been changed. The new number is 1-800-343-0728. ■

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```
    ,Ø,Ø,24,39,1ØØ       :REM*2Ø
15Ø DATA 152,Ø,Ø,Ø,Ø,16,4Ø,12Ø,
    175,32,Ø,Ø,Ø,16,4Ø,88,139,1
    2,Ø,Ø,16,28,2Ø       :REM*2Ø8
16Ø DATA 36,195,Ø,Ø,Ø,4,12,2Ø,3
    6,22Ø,Ø,Ø,Ø,16,56,16,4Ø,199
    ,Ø,Ø,Ø,Ø,4Ø,4Ø       :REM*254
17Ø DATA 1Ø4,159,Ø,Ø,Ø,Ø,4Ø,44,
    1Ø6,145,Ø,Ø,Ø,Ø,84,86,85,16
    8,Ø,Ø,Ø,Ø,2Ø,1Ø4     :REM*113
18Ø DATA 148,35,Ø,Ø,Ø,Ø,4Ø,1Ø4,
    159,8,56,Ø,Ø,Ø,56,68,152,4,
    27,Ø,8,2Ø,36,1ØØ     :REM*74
19Ø DATA 164,37,27,Ø,56,1ØØ,184
    ,56,36,37,58,Ø,12,3Ø,34,96,
    16Ø,35,3Ø,Ø,56       :REM*72
2ØØ DATA 1ØØ,164,36,36,47,122,Ø
    ,24,1ØØ,16Ø,24,56,67,6Ø,Ø,6
    Ø,68,4,3Ø,4,37       :REM*1Ø9
21Ø DATA 3Ø,Ø,36,124,164,4,116,
    79,56,Ø,36,1ØØ,164,6Ø,38,37
    ,36,Ø,16,4Ø,36       :REM*21Ø
22Ø DATA 36,164,89,54,Ø,12,2Ø,2
    Ø,12,54,73,48,Ø,36,1Ø4,176,
    48,4Ø,37,34,Ø,8      :REM*2Ø
23Ø DATA 2Ø,124,16,8Ø,161,94,Ø,
    84,25Ø,9Ø,9Ø,9Ø,9Ø,89,Ø,44,
    114,162,34,34,34     :REM*167
24Ø DATA 33,Ø,24,36,228,38,37,3
    6,24,Ø,56,1ØØ,162,56,32,32,
    32,Ø,56,68,196       :REM*11
25Ø DATA 68,84,77,62,Ø,6Ø,98,16
    2,6Ø,4Ø,37,34,Ø,24,36,36,24
    ,48,73,182,Ø,6Ø      :REM*234
26Ø DATA 68,4,4,4,37,26,Ø,72,2Ø
    Ø,72,72,72,73,54,Ø,34,1ØØ,1
    62,34,34,21,8,Ø      :REM*161
27Ø DATA 34,1Ø6,17Ø,42,42,43,2Ø
    ,Ø,68,168,4Ø,16,4Ø,69,7Ø,Ø,
    36,1ØØ,164,36,28     :REM*78
28Ø DATA 4,56,Ø,56,68,152,4,2Ø,
    45,26,Ø              :REM*114
```

Listing 8. Diamond Set program.

```
1Ø REM DIAMOND SET - KENNY LAWS
   ON                    :REM*38
2Ø OPEN8,8,8,"DIAMONDFONT,P,W":
   PRINT#8,CHR$(Ø);CHR$(8);
                         :REM*221
3Ø FORX=2Ø48TO2Ø55:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*99
4Ø FORX=1TO2Ø8:READA:PRINT#8,CH
   R$(A);:NEXT:RESTORE   :REM*4
5Ø FORX=2264TO3Ø71:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*1Ø2
6Ø FORX=3Ø72TO3Ø79:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*1Ø
7Ø FORX=1TO2Ø8:READA:PRINT#8,CH
   R$(255-A);:NEXT:RESTORE
                         :REM*58
8Ø CLOSE8:OPEN15,8,15,"IØ":CLOS
   E15:END               :REM*139
9Ø DATA 24,36,66,126,66,36,36,Ø
   ,16,4Ø,68,12Ø,68,4Ø,16,Ø,24,
   36,66,64,66,36        :REM*89
1ØØ DATA 24,Ø,16,4Ø,68,66,68,4Ø
   ,16,Ø,24,36,66,12Ø,66,36,24
   ,Ø,24,36,66,12Ø       :REM*141
11Ø DATA 64,32,16,Ø,24,36,64,68
   ,66,36,26,Ø,36,36,66,126,66
   ,36,36,Ø,16,16        :REM*2Ø6
12Ø DATA 4Ø,124,4Ø,16,16,Ø,12,4
   ,2,2,1ØØ,72,48,Ø,18,36,72,1
   12,72,36,18,Ø,8       :REM*153
13Ø DATA 8,16,32,64,64,62,Ø,36,
   36,9Ø,66,66,36,36,Ø,36,52,8
   2,9Ø,74,44,36,Ø       :REM*33
14Ø DATA 24,36,66,66,66,36,24,Ø
   ,24,36,66,124,64,32,16,Ø,24
   ,36,66,66,74,36       :REM*12Ø
15Ø DATA 26,Ø,24,36,66,124,72,3
   6,18,Ø,8,2Ø,34,16,72,36,24,
   Ø,6Ø,9Ø,24,6Ø,6Ø      :REM*139
16Ø DATA 24,24,Ø,36,36,66,66,66
   ,36,26,Ø,36,36,66,66,66,36,
   24,Ø,36,36,66,66      :REM*67
17Ø DATA 9Ø,36,36,Ø,66,36,24,24
   ,24,36,66,Ø,36,36,66,36,24,
   24,24,Ø,62,66,4       :REM*143
18Ø DATA 8,16,34,124,Ø   :REM*23Ø
```

Listing 9. Dot Set program.

```
1Ø REM DOT SET - KENNY LAWSON
                         :REM*84
2Ø OPEN8,8,8,"DOTFONT,P,W":PRIN
   T#8,CHR$(Ø);CHR$(8);:REM*1Ø9
3Ø FORX=2Ø48TO2Ø55:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*99
4Ø FORX=1TO2Ø8:READA:PRINT#8,CH
   R$(A);:NEXT:RESTORE   :REM*4
5Ø FORX=2264TO3Ø71:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*1Ø2
6Ø FORX=3Ø72TO3Ø79:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*1Ø
7Ø FORX=1TO2Ø8:READA:PRINT#8,CH
   R$(255-A);:NEXT:RESTORE
                         :REM*58
8Ø CLOSE8:OPEN15,8,15,"IØ":CLOS
   E15:END               :REM*139
9Ø DATA 24,36,66,6Ø,66,36,66,Ø,
   84,34,66,6Ø,66,34,84,Ø,4Ø,66
   ,32,64,32,66,4Ø       :REM*92
1ØØ DATA Ø,84,34,64,34,64,34,84
   ,Ø,84,32,64,4Ø,64,43,84,Ø,8
   4,32,64,4Ø,64,32      :REM*9Ø
11Ø DATA 64,Ø,84,34,64,32,76,34
   ,84,Ø,66,36,66,6Ø,66,36,66,
   Ø,16,8,16,8,16,8      :REM*1Ø2
12Ø DATA 16,Ø,8,4,8,4,8,68,4Ø,Ø
   ,66,36,72,48,72,36,66,Ø,64,
   32,64,32,64,42        :REM*159
13Ø DATA 84,Ø,66,36,9Ø,36,66,36
   ,66,Ø,66,36,82,36,74,36,66,
   Ø,2Ø,42,68,34,68      :REM*82
14Ø DATA 42,2Ø,Ø,84,42,66,6Ø,64
   ,32,64,Ø,84,42,68,34,76,42,
   22,Ø,84,42,66,6Ø      :REM*113
15Ø DATA 72,36,66,Ø,2Ø,42,64,6Ø
   ,2,84,4Ø,Ø,84,42,16,8,16,8,
   16,Ø,66,36,66,36      :REM*118
16Ø DATA 66,36,26,Ø,66,36,66,36
   ,66,36,24,Ø,66,36,66,36,9Ø,
   36,66,Ø,66,36,24      :REM*56
17Ø DATA Ø,24,36,66,Ø,66,1Ø2,36
   ,24,8,16,8,Ø,84,42,4,24,32,
   84,42,Ø               :REM*15Ø
```

Listing 10. Stencil Set program.

```
1Ø REM STENCIL SET - KENNY LAWS
   ON                    :REM*2Ø7
2Ø OPEN8,8,8,"STENCILFONT,P,W":
   PRINT#8,CHR$(Ø);CHR$(8);
                         :REM*3Ø
3Ø FORX=1TO216:READA:PRINT#8,CH
   R$(A);:NEXT           :REM*174
4Ø FORX=2264TO2431:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*156
5Ø FORX=1TO8Ø:READA:PRINT#8,CHR
   $(A);:NEXT:RESTORE    :REM*219
6Ø FORX=2512TO3Ø71:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*152
7Ø FORX=1TO216:READA:PRINT#8,CH
   R$(255-A);:NEXT       :REM*56
8Ø FORX=3288TO3455:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*25Ø
9Ø FORX=1TO8Ø:READA:PRINT#8,CHR
   $(255-A);:NEXT        :REM*146
1ØØ CLOSE8:OPEN15,8,15,"IØ":CLO
   SE15:END              :REM*159
11Ø DATA 62,34,43,11Ø,32,34,126
   ,Ø,126,36,36,126,36,36,1Ø2,
   Ø,12Ø,36,36,12Ø       :REM*143
12Ø DATA 36,36,12Ø,Ø,24,38,32,9
   6,32,38,24,Ø,12Ø,36,36,1Ø2,
   36,36,12Ø,Ø,126       :REM*2Ø8
13Ø DATA 32,32,126,32,32,126,Ø,
   126,32,32,12Ø,32,32,112,Ø,1
   24,34,32,96,46        :REM*252
14Ø DATA 36,122,Ø,1Ø2,36,36,126
   ,36,36,1Ø2,Ø,126,24,24,6Ø,2
   4,24,126,Ø,3Ø,12      :REM*16
15Ø DATA 12,14,1Ø8,6Ø,62,Ø,1Ø2,
   44,56,112,56,44,1Ø2,Ø,12Ø,4
   8,48,12Ø,48,126       :REM*6Ø
16Ø DATA 126,Ø,1Ø2,6Ø,36,1Ø2,36
   ,36,1Ø2,Ø,1Ø2,52,6Ø,11Ø,36,
   36,1Ø2,Ø,126,36       :REM*72
```

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```
17Ø DATA 36,1Ø2,36,36,126,Ø,124
    ,34,34,124,32,32,112,Ø,126,
    36,36,1Ø2,52,44      :REM*56
18Ø DATA 126,Ø,124,34,34,124,56
    ,44,1Ø2,Ø,126,32,32,126,4,4
    ,126,Ø,126,24,24     :REM*21Ø
19Ø DATA 6Ø,24,24,6Ø,Ø,1Ø2,36,3
    6,1Ø2,36,36,126,Ø,1Ø2,36,36
    ,1Ø2,36,24,6Ø,Ø      :REM*24Ø
2ØØ DATA 1Ø2,36,36,1Ø2,36,6Ø,1Ø
    2,Ø,66,36,24,6Ø,24,36,66,Ø,
    1Ø2,36,24,6Ø,24      :REM*2ØØ
21Ø DATA 24,24,Ø,126,4,14,24,11
    2,32,126,Ø,24,36,36,1Ø2,36,
    36,24,Ø,56,88,24     :REM*179
22Ø DATA 6Ø,24,24,126,Ø,28,98,4
    ,24,32,64,126,Ø,28,98,2,6Ø,
    2,98,28,Ø,36,36      :REM*15Ø
23Ø DATA 36,126,4,4,4,Ø,6Ø,98,3
    2,56,6,1ØØ,56,Ø,6,8,16,96,4
    4,5Ø,28,Ø,62,98      :REM*22Ø
24Ø DATA 4,8,28,8,8,Ø,24,36,1Ø2
    ,24,36,1Ø2,24,Ø,28,36,98,34
    ,3Ø,4,8,Ø            :REM*1Ø2
```

Listing 11. Thin Set program.

```
1Ø REM THIN SET - KENNY LAWSON
                         :REM*123
2Ø OPEN8,8,8,"THINFONT,P,W":PRI
   NT#8,CHR$(Ø);CHR$(8);
                         :REM*11Ø
3Ø FORX=1TO512:READA:PRINT#8,CH
   R$(A);:NEXT:RESTORE   :REM*37
4Ø FORX=256ØTO3Ø71:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*156
5Ø FORX=1TO512:READA:PRINT#8,CH
   R$(255-A);:NEXT       :REM*86
6Ø CLOSE8:OPEN15,8,15,"I0":CLOS
   E15:END               :REM*247
7Ø DATA 6Ø,66,82,76,64,66,6Ø,Ø,
   6Ø,66,66,126,66,66,66,Ø,124,
   66,66,124,66,66       :REM*2Ø4
8Ø DATA 124,Ø,6Ø,66,64,64,64,66
   ,6Ø,Ø,12Ø,68,66,66,66,68,12Ø
   ,Ø,126,64,64,12Ø      :REM*3Ø
9Ø DATA 64,64,126,Ø,126,64,64,1
   2Ø,64,64,64,Ø,124,66,64,64,7
   8,66,126,Ø,66,66      :REM*188
1ØØ DATA 66,126,66,66,66,Ø,126,
    24,24,24,24,24,126,Ø,2,2,2,
    2,66,66,62,Ø,7Ø      :REM*119
11Ø DATA 72,8Ø,96,8Ø,72,7Ø,Ø,64
    ,64,64,64,64,66,126,Ø,36,9Ø
    ,9Ø,66,66,66,66      :REM*156
12Ø DATA Ø,66,98,82,74,7Ø,66,66
    ,Ø,6Ø,66,66,66,66,66,6Ø,Ø,1
    24,66,66,124,64      :REM*4Ø
13Ø DATA 64,64,Ø,6Ø,66,66,66,74
    ,68,58,Ø,124,66,66,124,72,6
    8,66,Ø,62,64,64      :REM*23Ø
14Ø DATA 6Ø,2,2,124,Ø,126,24,24
    ,24,24,24,24,Ø,66,66,66,66,
    66,36,6Ø,Ø,66,66     :REM*43
15Ø DATA 66,66,66,36,24,Ø,66,66
    ,66,66,9Ø,9Ø,36,Ø,66,36,24,
    24,24,36,66,Ø,66     :REM*21Ø
16Ø DATA 36,24,24,24,24,24,Ø,12
    6,2,4,8,16,32,126,Ø,28,16,1
    6,16,16,16,28,Ø      :REM*1Ø8
17Ø DATA 12,18,32,112,32,32,126
    ,Ø,56,8,8,8,8,8,56,Ø,8,28,4
    2,8,8,8,8,Ø,Ø,16     :REM*123
18Ø DATA 32,126,32,16,Ø,Ø,Ø,Ø,Ø
    ,Ø,Ø,Ø,Ø,Ø,Ø,16,16,16,16,16,Ø
    ,16,Ø,36,36,Ø,Ø      :REM*137
19Ø DATA Ø,Ø,Ø,Ø,Ø,36,126,36,36,3
    6,126,36,Ø,8,62,72,6Ø,1Ø,12
    4,8,Ø,Ø,98,4,8       :REM*141
2ØØ DATA 16,32,7Ø,Ø,48,72,48,8Ø
    ,74,76,5Ø,Ø,24,8,16,Ø,Ø,Ø,Ø
    ,Ø,12,16,32,32       :REM*16Ø
21Ø DATA 32,16,12,Ø,48,8,4,4,4,
    8,48,Ø,Ø,4Ø,16,124,16,4Ø,Ø,
    Ø,Ø,8,8,62,8,8,Ø     :REM*21
22Ø DATA Ø,Ø,Ø,Ø,Ø,Ø,Ø,24,8,16,Ø,
    Ø,Ø,6Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,Ø,
    24,Ø,Ø,2,4,8,16      :REM*38
23Ø DATA 32,64,Ø,6Ø,7Ø,74,74,82
    ,98,6Ø,Ø,8,24,8,8,8,8,28,Ø,
    56,68,2,4,56,64      :REM*6
24Ø DATA 124,Ø,6Ø,66,2,28,2,66,
    6Ø,Ø,66,66,66,126,2,2,2,Ø,1
    26,64,64,124,2       :REM*17
25Ø DATA 66,6Ø,Ø,6Ø,66,64,124,6
    6,66,6Ø,Ø,62,66,2,4,4,8,8,Ø
    ,6Ø,66,66,6Ø,66      :REM*114
26Ø DATA 66,6Ø,Ø,6Ø,66,66,62,2,
    2,6Ø,Ø,Ø,Ø,24,Ø,24,Ø,Ø,Ø,Ø,
    Ø,24,Ø,24,8,16,Ø     :REM*189
27Ø DATA 4,8,16,32,16,8,4,Ø,Ø,Ø
    ,6Ø,Ø,6Ø,Ø,Ø,Ø,32,16,8,4,8,
    16,32,Ø,6Ø,66,4      :REM*234
28Ø DATA 8,8,Ø,8,Ø       :REM*192
```

Listing 12. Under Set program.

```
1Ø REM UNDERLINE SET - KENNY LA
   WSON                  :REM*1Ø4
2Ø OPEN8,8,8,"UNDERFONT,P,W":PR
   INT#8,CHR$(Ø);CHR$(8);
                         :REM*251
3Ø FORX=1TO512:READA:PRINT#8,CH
   R$(A);:NEXT:RESTORE   :REM*37
4Ø FORX=256ØTO3Ø71:PRINT#8,CHR$
   (PEEK(X));:NEXT       :REM*156
5Ø FORX=1TO512:READA:PRINT#8,CH
   R$(255-A);:NEXT       :REM*86
6Ø CLOSE8:OPEN15,8,15,"I0":CLOS
   E15:END               :REM*247
7Ø DATA 124,68,92,64,124,Ø,255,
   Ø,24,36,1Ø2,126,1Ø2,Ø,255,Ø,
   124,98,124,98         :REM*167
8Ø DATA 124,Ø,255,Ø,6Ø,66,64,66
   ,6Ø,Ø,255,Ø,12Ø,1ØØ,98,1ØØ,1
   2Ø,Ø,255,Ø,126        :REM*163
9Ø DATA 96,12Ø,96,126,Ø,255,Ø,1
   26,96,12Ø,96,96,Ø,255,Ø,126,
   96,11Ø,1ØØ,126,Ø      :REM*6Ø
1ØØ DATA 255,Ø,118,118,126,118,
    118,Ø,255,Ø,126,24,24,24,12
    6,Ø,255,Ø,6,6,7Ø     :REM*194
11Ø DATA 7Ø,6Ø,Ø,255,Ø,98,1ØØ,1
    2Ø,1ØØ,98,Ø,255,Ø,96,96,96,
    96,126,Ø,255,Ø       :REM*214
12Ø DATA 36,9Ø,66,66,66,Ø,255,Ø
    ,98,114,1Ø6,1Ø2,98,Ø,255,Ø,
    6Ø,66,66,66,6Ø,Ø     :REM*146
13Ø DATA 255,Ø,124,1Ø2,124,96,9
    6,Ø,255,Ø,6Ø,66,74,68,58,Ø,
    255,Ø,124,1Ø2        :REM*94
14Ø DATA 124,1Ø4,1Ø2,Ø,255,Ø,62
    ,96,6Ø,2,124,Ø,255,Ø,126,12
    6,24,24,24,Ø,255     :REM*138
15Ø DATA Ø,1Ø2,1Ø2,1Ø2,1Ø2,6Ø,Ø
    ,255,Ø,1Ø2,1Ø2,1Ø2,6Ø,24,Ø,
    255,Ø,66,66,66       :REM*211
16Ø DATA 9Ø,36,Ø,255,Ø,66,36,24
    ,36,66,Ø,255,Ø,66,36,24,24,
    24,Ø,255,Ø,126       :REM*25
17Ø DATA 12,24,48,126,Ø,255,Ø,5
    6,32,32,32,56,Ø,255,Ø,24,36
    ,112,32,124,Ø        :REM*41
18Ø DATA 255,Ø,56,8,8,8,56,Ø,25
    5,Ø,8,28,42,8,8,Ø,255,Ø,16,
    32,126,32,16,Ø       :REM*194
19Ø DATA 255,Ø,Ø,Ø,Ø,Ø,Ø,Ø,255,
    Ø,24,24,24,Ø,24,Ø,255,Ø,36,
    36,Ø,Ø,Ø,Ø,255,Ø     :REM*143
2ØØ DATA 36,126,36,126,36,Ø,255
    ,Ø,124,8Ø,124,2Ø,124,16,255
    ,Ø,76,24,48,96       :REM*195
21Ø DATA 68,Ø,255,Ø,28,4Ø,28,4Ø
    ,28,8,255,Ø,24,8,16,Ø,Ø,Ø,2
    55,Ø,8,16,16,16      :REM*2Ø1
22Ø DATA 8,Ø,255,Ø,16,8,8,8,16,
    Ø,255,Ø,16,84,56,16,4Ø,Ø,25
    5,Ø,24,24,126,24     :REM*154
23Ø DATA 24,Ø,255,Ø,Ø,Ø,24,8,16
    ,Ø,255,Ø,Ø,Ø,126,Ø,Ø,Ø,255,
    Ø,Ø,Ø,Ø,Ø,48,Ø       :REM*1ØØ
24Ø DATA 255,Ø,6,12,24,48,96,Ø,
    255,Ø,24,36,36,36,24,Ø,255,
    Ø,16,48,16,16,56     :REM*238
25Ø DATA Ø,255,Ø,24,36,12,16,6Ø
    ,Ø,255,Ø,24,36,8,36,24,Ø,25
    5,Ø,36,36,62,4,4     :REM*179
26Ø DATA Ø,255,Ø,6Ø,32,56,4,56,
    Ø,255,Ø,28,32,56,36,24,Ø,25
    5,Ø,6Ø,4,8,16,16     :REM*2
27Ø DATA Ø,255,Ø,24,36,24,36,24
    ,Ø,255,Ø,24,36,28,4,8,Ø,255
    ,Ø,Ø,24,Ø,24,Ø,Ø     :REM*239
28Ø DATA 255,Ø,Ø,24,Ø,24,8,Ø,25
    5,Ø,12,16,32,16,12,Ø,255,Ø,
    Ø,6Ø,Ø,6Ø,Ø,Ø        :REM*1Ø6
29Ø DATA 255,Ø,48,8,4,8,48,Ø,25
    5,Ø,24,36,8,Ø,8,Ø,255,Ø
                         :REM*252
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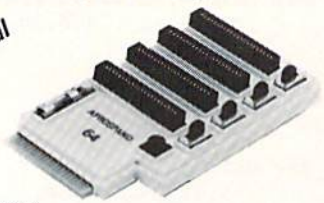

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MAGIC

From p. 12.

$48D New 64 Defaults

Some C-64 commercial programs have built-in default screen colors that appear after pressing run-stop/restore (a soft reset). This means that the colors won't be the usual blue screen and border; instead, the colors will be those the programmer decided to use.

You can create the same type of color control by using my program, New 64 Defaults, which lets you decide which screen colors will appear after performing a soft reset. After running my program, you'll be prompted to enter the screen, border and character colors. After you've set them, they become permanent until the computer is turned off or the reset button (C-128) is pressed. Pressing run-stop/restore clears the screen and leaves the colors unchanged.

```
Ø REM DEFAULT C-64 COLORS OF CHOICE - PETE
  R LOTTRUP                          :REM*88
1Ø FORI= 828 TO 868:READD:POKEI,D:CK=CK+D:
   NEXT                              :REM*173
2Ø IFCK<>4161 THEN PRINT"ERROR IN DATA..":
   END                               :REM*185
3Ø DATA 173,2,3,141,1Ø1,3,173,3,3,141,1Ø2,
   3,169,83,141,2,3,169,3             :REM*6
4Ø DATA 141,3,3,96,165,25Ø,141,32,2Ø8,165,
   251,141,33,2Ø8,165,252,141         :REM*84
5Ø DATA 134,2,1Ø8,1Ø1,3               :REM*44
8Ø PRINTCHR$(147)"ENTER BORDER COLOR (Ø-15
   )":INPUTA                         :REM*213
9Ø PRINT"ENTER BACKGROUND COLOR (Ø-15)":IN
   PUTB                              :REM*41
1ØØ PRINT"ENTER CHARACTER COLOR (Ø-15)":IN
    PUTC                             :REM*14Ø
11Ø T=25Ø:POKE T,A:POKET+1,B:POKET+2,C:SYS
    828                              :REM*28
```

—Peter M. L. Lottrup, Buenos Aires, Argentina

$48E Five-Character Disk IDs

Commodore disk drives limit you to a two-character identification number when you format a disk, which is fine unless you want to catalog several hundred or several thousand disks all using unique ID characters. Wouldn't it be nice to have IDs of three, four, or even five characters on your disks?

Well, my program, Five-Character ID, does just that—lets you create disks with five-character IDs. It runs in both 64 and 128 modes and is intended to be used on previously formatted disks. A note of caution, though: Be sure you have a back-up copy of the disk whose ID you are modifying. Because you're altering the ID, there is a slight chance that a disk error could occur, especially on older disks.

```
Ø REM 5-CHARACTER ID MAKER - JACOB M. SMIT
  H                                  :REM*2ØØ
1Ø PRINT"CURRENT DISK ID =";         :REM*194
2Ø OPEN15,8,15:OPEN5,8,5,"#":PRINT#15,"U1"
   ;5;Ø;18;Ø                         :REM*246
3Ø FORT=16Ø TO 166:PRINT#15,"B-P";5;T:GET#
   5,A$:PRINTA$;:NEXT:PRINT          :REM*158
4Ø PRINT"ENTER ID UP TO 5 CHARACTERS"
                                     :REM*154
5Ø INPUT ID$:ID$="{2 SPACEs}"+ID$ :REM*2ØØ
6Ø IFLEN(ID$)<7THENID$=ID$+" ":GOTO6Ø
```


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```
                                        :REM*190
70 ID$=LEFT$(ID$,7)                     :REM*147
80 FORT=160 TO 166:PRINT#15,"B-P";5;T:PRIN
   T#5,MID$(ID$,T-159,1);:NEXT          :REM*45
90 PRINT#15,"U2";5;0;18;0               :REM*92
100 CLOSE5:PRINT#15,"I":CLOSE15:PRINT"ALL
    DONE!"                              :REM*69
```

—JACOB M. SMITH, SILVER CREEK, NY

$48F A BETTER C-64 CTRL-G

Upon seeing Magic Trick $467 (January 1988), I felt obligated to uphold my civic duty to fellow computerists everywhere and improve upon it. Behold: CTRL-G 64 Improved. Now it's in the form of an interrupt-driven routine residing at memory location 49152; all you have to do is type it in, save it and then run it. Then, whenever you feel a need to "ring your bell," turn up the volume on your monitor and press CTRL-G.

```
0 REM A BETTER C-64 CTRL-G - ROBERT PAGANO
                                        :REM*165
10 FORT= 49152 TO 49211:READ A: POKE T,A:N
   EXT:SYS49152                         :REM*118
20 DATA 120,169,13,141,20,3,169,192,141,21
   ,3,88,96,174,203,0,172,141,2         :REM*88
30 DATA 224,26,208,34,192,4,208,30,169,21,
   141,24,212,169,9,141,5,212           :REM*36
40 DATA 169,0,141,6,212,169,48,141,1,212,1
   69,32,141,4,212,169,33,141           :REM*35
50 DATA 4,212,76,49,234                 :REM*42
```

—ROBERT PAGANO, TEANECK, NJ

$490 64 MULTI-SYS

Commodore 64 users have done without a multi-SYS utility for far too long. With it, you can reactivate several interrupt-driven (better known as "wedge") programs residing in memory by entering just one SYS command.

Let's say you've placed an interrupt-driven utility at location 828, a second wedge utility, such as *RUN*'s 64 DOS Shell (November 1987), at location 34500, a third wedge at location 49152 and a DOS wedge at a higher location (52000+). Now, should you perform a soft or hard reset, all of these utilities would be deactivated and you'd have to enter four SYS numbers to reactivate them.

However, had you run my 64 Multi-SYS program after initially activating all the above utilities, and input each utility's starting address at the prompts, you could enter SYS 730 and they would all be reactivated. In fact, 64 Multi-SYS can reactivate up to ten interrupt-driven wedge programs.

Of course, while 64 Multi-SYS is a great little utility, it requires compatibility testing on the part of the user. You must be certain beforehand that the wedge programs you intend to use with it are compatible with each other and do not use locations 730 to 763. Once you've determined their compatibility, you'll find yourself wanting to use 64 Multi-SYS whenever you're programming with more than one wedge utility.

```
0 REM 64 MULTI-SYS - ERIC B. THOMASA
                                        :REM*32
10 FORX=730 TO 762 STEP3                :REM*27
20 READ A,B,C:POKE X,A:POKE X+1,B:POKE X+2
```

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```
   ,C:RESTORE:NEXT:POKEX,96          :REM*129
3Ø DATA 32,251,2                     :REM*246
4Ø ADD= 731:FORN=1 TO 1Ø             :REM*99
5Ø PRINT"ENTER SYS ADDRESS OF UTILITY:"N;
                                     :REM*242
6Ø INPUTA$:A$=RIGHT$(A$,5)           :REM*75
7Ø A=VAL(A$):IF A<1Ø THENN=1Ø:GOTO1ØØ
                                     :REM*244
8Ø HI=INT(A/256):LO=A-(HI*256):POKEADD,LO:
   ADD=ADD+1:POKEADD,HI:ADD=ADD+2    :REM*234
9Ø A$=""                             :REM*47
1ØØ NEXT                             :REM*23Ø
11Ø PRINT"SYS 73Ø RESETS ALL UTILITIES."
                                     :REM*4
```

—ERIC B. THOMASA, WALKER, MI ■

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

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MEGA-MAGIC

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CURSOR COMMOTION 128

I really enjoyed the QuickDoc program for the C-64 (Mega-Magic, September 1987), which lets you save and play back any series of key presses, including Commodore graphics and colors. After playing with it for a while, I decided to write a version for the C-128's 40- and 80-Column modes.

After you type in QuickDoc 128, save a copy to disk before running it. When you run it, it checks to see if you're creating a QuickDoc file or reading one back. As with the 64 version, you can press any key but F7 in creating a document. Use the F7 key only to signal that the document is done.

Because the program uses F7, you must enter POKE 828,183 before typing it in. This redefines the function keys to the C-64 values. To reinstate the default C-128 values, use POKE 828,173.

I suggest that you include the screen width in your document filenames to avoid problems such as "playing back" a full 80-column display on a 40-column screen, where only half of it will fit. R

—JIM BORDEN, CARLISLE, PA

Listing 1. QuickDoc 128 program.

```
1Ø GRAPHIC CLR:BANK15:POKE5328Ø,12:A$="{CR
   SR LF} {CRSR LF}":C$="*":PRINT"{SHFT CL
   R}{CTRL N}{CTRL 4}"C$;            :REM*168
2Ø S1=PEEK(4624):S2=PEEK(4625):I=S1+S2*256
   :S=PEEK(I-2)+PEEK(I-1)*256        :REM*57
3Ø POKE53281,11:COLOR6,13:BANKØ:IFS=ØTHENP
   OKE828,183:GOTO6Ø                 :REM*68
4Ø FORI=STO2{UP ARROW}16:B$=CHR$(PEEK(I)):
   IFB$="{FUNCT 7}"THENPRINTA$;"{CTRL 1}";
   :END                              :REM*189
5Ø PRINTA$B$C$;:FORJ=1TO2Ø:NEXTJ,I:REM*134
6Ø DO:GETKEY B$:PRINT A$B$C$;:POKE I,ASC(B
   $):I=I+1:LOOP WHILE B$<>"{FUNCT 7}"
                                     :REM*195
7Ø POKE828,173:POKEI,S1:POKEI+1,S2:I=I+2:H
   I=INT(I/256):POKE4624,I-HI*256 :REM*2Ø8
8Ø POKE4625,HI:RUN:{2 SPACEs}QUICKDOC 128
   - JIM BORDEN                      :REM*29 ■
```

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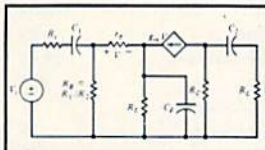

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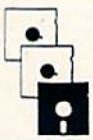

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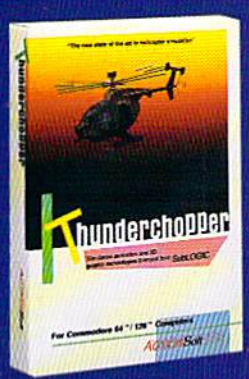

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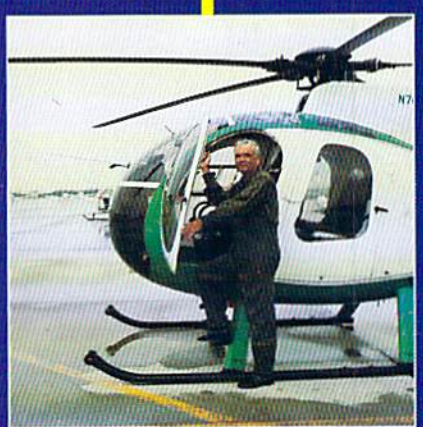

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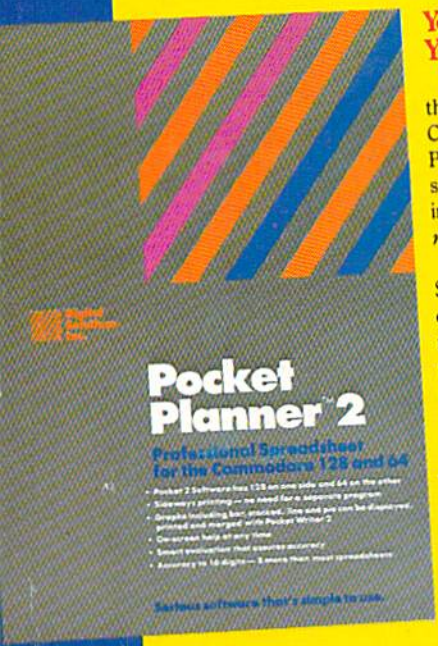

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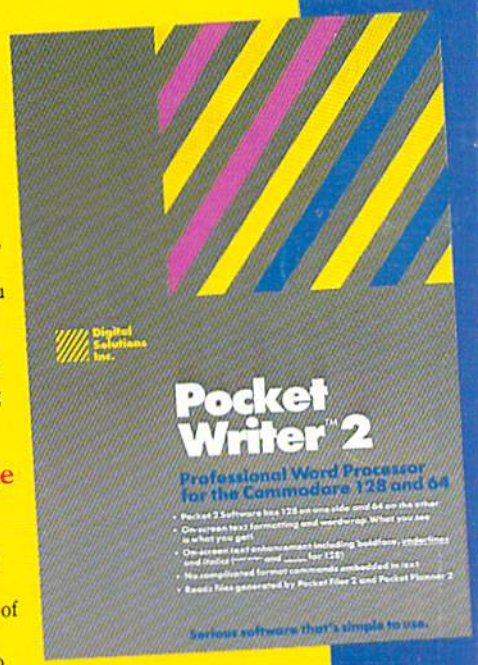

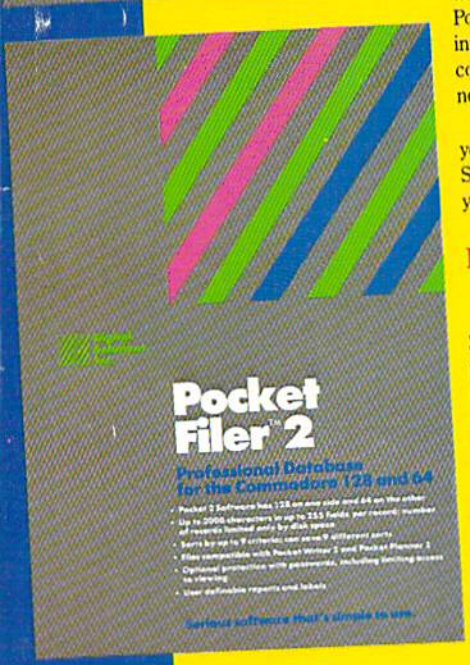

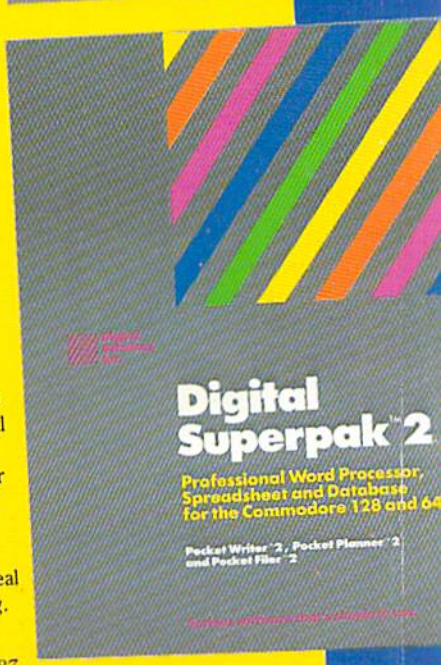

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