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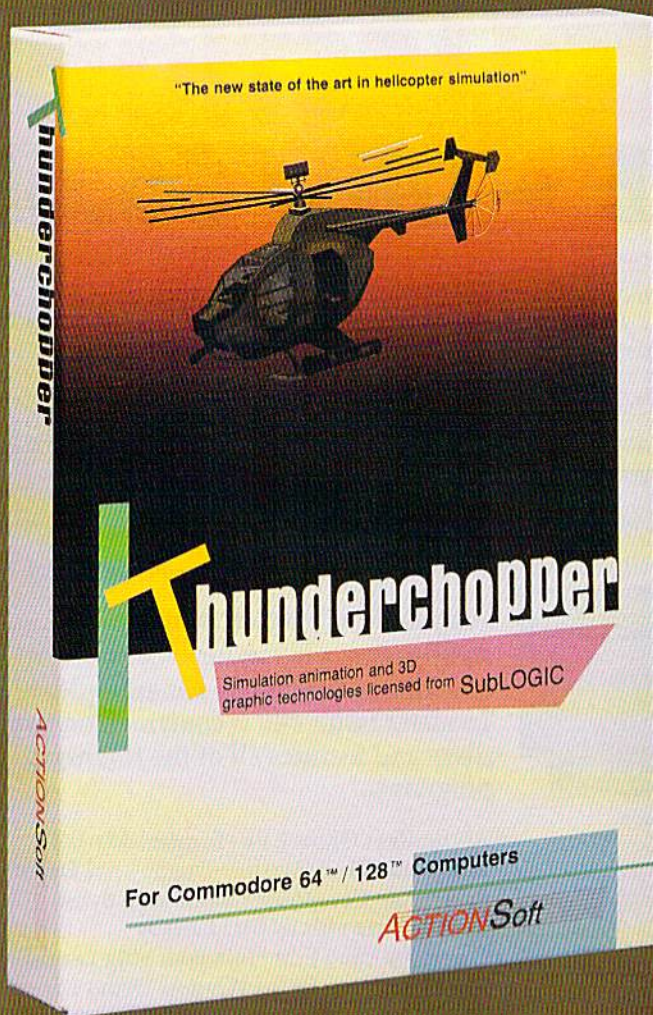
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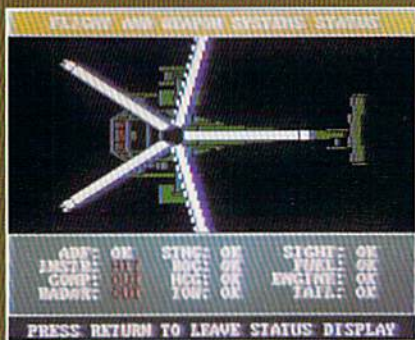
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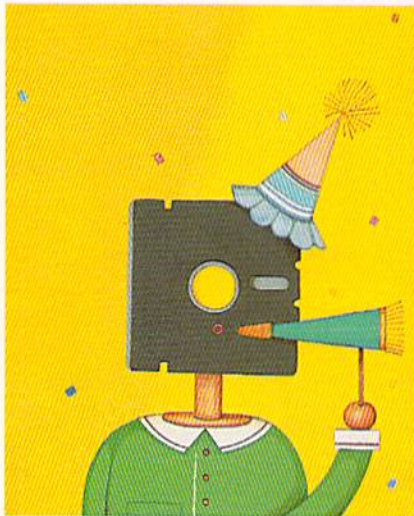
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COVER ILLUSTRATION BY STEVEN RYDBERG

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Answers to your questions and other advice on using modems, terminal programs, bulletin boards and online networks.

* **RUN'S CHECKSUM PROGRAM** by Bob Kodadek 80

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* THIS ARTICLE CONTAINS A PROGRAM LISTING. THE PROGRAM IS ALSO AVAILABLE ON THE JANUARY-FEBRUARY 1988 RERUN DISK. TO ORDER, USE THE CARD BETWEEN PAGES 80 AND 81.

† SEE RUNNING RUMINATIONS, ON PAGE 8, FOR AN EXPLANATION OF THE LISTING FORMAT USED IN THESE ARTICLES.

PUBLISHER
STEPHEN TWOMBLY

EDITOR IN CHIEF
DENNIS BRISSON

MANAGING EDITOR/PRODUCTION
SWAIN PRATT

REVIEW EDITOR
BETH JALA

COPY EDITOR
PEG LEPAGE

NEW PRODUCTS EDITOR
HAROLD R. BJORNSEN

TECHNICAL MANAGER
LOU WALLACE

TECHNICAL EDITOR
TIMOTHY WALSH

ASSOCIATE EDITORS
ROBERT KODADEK; ROBERT ROCKEFELLER

ART DIRECTOR
ROSSLYN A. FRICK

ASSISTANT ART DIRECTOR
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DESIGNERS
ANNE DILLON
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PRODUCTION ASSISTANT
RUTH BENEDICT

ASSOCIATE PUBLISHER/SALES MANAGER
STEPHEN ROBBINS

SALES REPRESENTATIVES
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NANCY POTTER-THOMPSON

CLASS AD SALES—EAST COAST
HEATHER PAQUETTE
603-924-9471

ADVERTISING COORDINATOR
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SALES MANAGER
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CLASS AD SALES
DANNA CARNEY

3350 W. BAYSHORE ROAD, SUITE 201
PALO ALTO, CA 94303
415-328-3470

MARKETING MANAGER
WENDIE HAINES

MARKETING ASSISTANT
LAURA LIVINGSTON

BUSINESS MANAGER
BARBARA HARRIS

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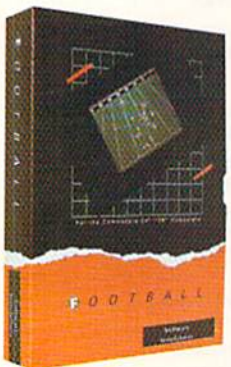


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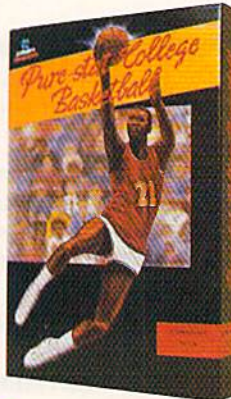
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RUNNING RUMINATIONS

A look back and a look ahead, as RUN enters its fifth year.

SALUTE THE PAST, RING IN THE NEW

As we begin a new year, it's a good opportunity to rededicate ourselves to our editorial mission of providing our readers with the most useful coverage of the Commodore marketplace.

To that effect, we have implemented in this issue some changes in staffing and assignments.

Jim Strasma, who has authored *RUN's* popular Commodore Clinic column since its inception in January 1984, has stepped down from that position. Job responsibilities as PC Lab Manager at Western Illinois University have necessitated this move for Jim, who, as most of you know, was an early pioneer in the Commodore/PET market.

We've enjoyed working with Jim over the last four years and have learned a lot from him. His encyclopedic knowledge of Commodore companies and products was instrumental in establishing Commodore Clinic as one of the most-read columns in the magazine. In his four years with *RUN*, we conservatively estimate that he has answered over 1000 questions through his column—and many more over the phone and through his correspondence with readers.

While we're sad to see him go, we're enthused by the prospect of our own Lou Wallace taking over the column. So readers each month can continue to expect the same insightful and informational answers to their questions and comments.

Beginning with this issue, *RUN's* Magic column is also experiencing a changing of the guard. *RUN's* technical editor, Tim Walsh, will be taking over the column for Jim Borden, who will continue to lend his programming expertise to the magazine.

We view these as positive changes that will strengthen the magazine.

Also at this time, we announce a format change in our educational coverage. Beginning with this issue, *RUN* will discontinue publishing the monthly Resource Center column. We will be incorporating our educational coverage

in the magazine proper.

Through her column, Associate Editor Margaret Morabito has provided Commodore 64 and 128 owners one-of-a-kind coverage of the Commodore education market, and has subsequently built up quite a following as champion of educational applications for Commodores. She is now writing a book that explores this topic.

We extend our appreciation to Jim, Margie and Jim for their roles as columnists in the magazine and wish them well in their future endeavors. We assure our readers that they can expect the same quality coverage they have become accustomed to as we enter 1988, our fifth year of publication.

ATTENTION, READERS

This issue features two "blockbuster" programs—*RUN's* Memo Book and *RUN* Term 128—that are exceedingly powerful machine language programs with (especially in the case of *RUN* Term 128) quite long listings.

Because of the length of the machine code, we had to consider several ways of generating listings that could be typed in by our readers.

We considered three main techniques. The first was to use the tried-and-true method of converting the binary files to Basic Data statements consisting of numbers in decimal format (0-255) separated by commas, like this:

```
100 DATA 12,76,34,231,19,45,255,0,64,19
```

One of the benefits of a Basic Data statement format is that you can use *RUN's* Checksum program to make sure you enter the lines correctly. But, in the case of *RUN* Term 128, this technique would have resulted in a type-in listing of nearly 14 pages!

A second format would involve a special ML entry program that converts the binary files to a hexadecimal format of 11 pairs of digits. Line numbers and commas are not used, but a space occurs between each pair of digits. It looks like this:

```
0000 A1 34 FF 23 C5 9A DF 5F B4 98 C0
```

Compared to the decimal method described first, this is a more condensed method of presenting the data, but it still would occupy about 10 pages for the *RUN* Term 128 listing. And, unfortunately, it would also require your typing in a special ML entry program, in itself over two magazine pages long. That means you'd need *RUN's* Checksum program to type in the ML entry program, which you'd then use to enter the hex data shown above. All in all, you'd have to enter well over a dozen pages for *RUN* Term 128 using this technique.

The third method is also a hex entry technique, but it's a combination of the two described above. It uses Basic Data statements like the first, but has hex data like the second. The data is presented with more information on a line, and looks like this:

```
100 DATA A23456DE45 F02376C5AA E3F7
```

As you can see, this looks somewhat more cryptic, but has the advantage of being the most condensed form (in the case of *RUN* Term 128, it's a little over seven pages). It can also be used with *RUN's* Checksum program.

After a great deal of discussion, testing and measuring, we opted to use this last method for these long, machine language programs. There are two advantages for you, the reader. One, you type in fewer lines; two, it frees up pages for other programs and articles, so we can bring you more per issue.

In discussing the various merits of the different techniques, we questioned whether readers want these very powerful, commercial-quality programs (*RUN* Term 128, *RUN* Script, and so on) that require a lot of typing, or would prefer several smaller programs instead? Obviously, the programs that offer the most contain the longest listings.

We'll be bringing you some super 64/128 programs in the coming year. Let us know the kinds of programs you prefer and how you want us to format the listings. Send your comments to: *RUN* Editors, 80 Elm St., Peterborough, NH 03458.

—*RUN* Editors

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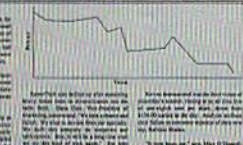
Firebird software for Commodore 64 systems, including the popular Golden Path, Pawn, Colossus Chess IV, Cholo, Talking Teacher, Concise Music System and Advanced Music System, is available from \$24.95 to \$59.95.

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SNOOPS & SCOOPS

STOCKS PLUMMET IN RECORD TRADING

As the market opened in record volume, the Dow Jones Industrial Average fell 100 points in record trading. The S&P 500 fell 35 points. The Nasdaq fell 15 points. The market closed with a record high volume of trading.




Weather
Local weather: Look for clouds throughout the morning, heating off near midday. Temperatures should soar to the mid 200's by late afternoon with heavy electrical activity and thunderstorms appearing around 4P. No rain, so don't get all that soggy. Expect an air raid around 6P.

Television Highlights
Monday: (4) 6:30 I LOVE LUCY
Tuesday: (2) 7:30 LAWRENCE WELK IN BULGARIA
Wednesday: (3) 9:30 BRUCE LEE IN REVENGE OF THE MEATBALL

VANISHING TIMES

A Berkeley Softworks Publication Vol. XLXIV 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?"

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

inches. 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

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
Tuesday: (2) 7:30 LAWRENCE WELK IN BULGARIA
Wednesday: (3) 9:30 BRUCE LEE IN REVENGE OF THE MEATBALL
Thursday: (4) 8:30 GILLIGAN'S ISLAND

Weather
Local weather: Look for clouds throughout the morning, heating off near midday. Temperatures should soar to the mid 200's by late afternoon with heavy electrical activity and thunderstorms appearing around 4P. No rain, so don't get all that soggy. Expect an air raid around 6P.

ED'S WEEKLY

December 3

More people reading stuff like this!

A just released by Berkeley Softworks... More people reading stuff like this!

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.

IT MADE GE NEWS.

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

Freedom of the press.

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

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

All you do is draw a bunch of columns for your master

layout. They could be two, four or sixteen across the page. They could be short and squat, or long and skinny. It's your call. After that, you just

"pour" your geoWrite document, text, graphics and all—into column after column. Page after page.

Everything fills up automatically until it fits firmly into your

finely fashioned format.

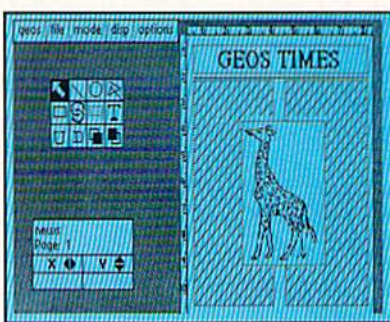
Extras! Extras! Read all about 'em!

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

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

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

Finally, those of you intent on making banner headlines should know that geoPublish doesn't wimp out



when it comes to headlines. It screams them out, with genuine, newspaper-sized, 96 point megafonts.

Now, if you think that sounds terrific on paper,

just wait until you see it printed out on a Laser-Writer.™

We've saved the best news for last.

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

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

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

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

geoPublish \$69.95

(California residents add 7% sales tax.)

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

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Softworks**

The brightest minds are working at Berkeley.

GEOPUBLISH



SCIENTISTS A STOP THE AGE

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

Wrong.

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

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

of a mouse or joystick.

Time Warps Discovered

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

End of lesson.

Now, once you know that, you know how every other GEOS application works, too. Like geoWrite, which lets you punch up paragraphs with five different fonts. Or geoPaint, which dresses up diagrams with an arsenal of artistic appliances. Both are built

right into the GEOS disk. And when you put them together with geoWrite Workshop's LaserWriter compatibility, every new GEOS document comes out looking like an old master.

GEOS™
GRAPHIC ENVIRONMENT OPERATING SYSTEM

THE NEW OPERATING SYSTEM STANDARD FOR THE COMMODORE 64, 64c AND 128 COMPUTERS.

diskWrite manager and the manager geoWrite powerful graphics editor geoWrite user to use. geoPaint (user) word processor

diskEditor for the leader Disk Structures, disk tool, window, command, photo library, text editor, Quantum link, microcomputers in software

GEOPUBLISH

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

GEOCALC

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

GEOWRITE WORKSHOP

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

GEOFILE

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

GEOPROGRAMMER

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

GEOSPELL™

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

AT BERKELEY ING PROCESS!

Avoid Old Age Forever!

But how does all this affect your Commodore's future? Well, it means you don't ever have to worry about it becoming obsolete, because there are all kinds

of GEOS applications for almost every purpose.

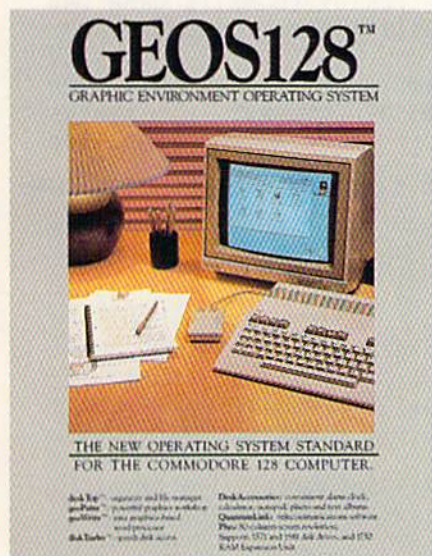
You can finally get organized with geoFile, the database that searches, finds and lists almost anything that you want to search, find and list. You can manipulate mathematics or figure out financial formulas with geoCalc. If writing's your style, geoWrite Workshop can help you hammer out any kind of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

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

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



The brightest minds are working at Berkeley.



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



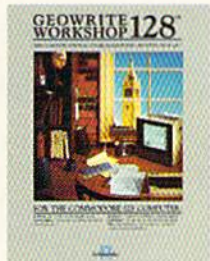
DECKPACK
NEW Six GEOS-compatible applications: Graphics Grabber for importing art from Print Shop™, Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer. Now includes geoDex, the GEOS-compatible directory that allows you to create lists by name, address, phone number, and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



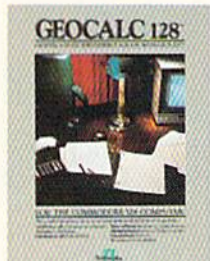
FONTPACK
A collection of even more fonts for use with GEOS applications, in various shapes and sizes for more expressive and creative documents. Includes font editor. In either 40 or 80 column mode.



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



GEOWRITE WORKSHOP 128
NEW All the GEOS-compatible tools a writer needs, including geoWrite 2.1 with headers, footers, margins to 8" across and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability. Features full 80 column screen.



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NEW The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections. 128 version features full 80 column screen. Due soon!

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MAGIC

Drive a hot race car down a zig-zag track; rename disks to clear the screen when the directory is listed; add over 2K of additional RAM to Basic 7.0.

Compiled by TIM WALSH

\$45A FRERE JACQUES

Wouldn't you love to attend an evening *soiree* in Paris? Or maybe catch a *bain de soleil* on the French Riviera? Close your eyes and play my program a few times on your C-128 for an uplifting French experience. *Merci!*

```
Ø REM FRERE JACQUES - JIM WALLACE :REM*231
1Ø TEMPO 11 :REM*1Ø7
2Ø PLAY"V1Ø5T5" :REM*61
3Ø A$="QCDECCDECFHGQEFHG :REM*28
4Ø B$="IGAGFQECIGAGFQEC" :REM*73
5Ø C$="QCØ4GØ5HCQØ4GØ5HC" :REM*89
6Ø PLAY A$+B$+C$ :REM*147
```

—JIM WALLACE, TOMS RIVER, NJ

\$45C C-64 SLIDING MESSAGE

If you'd like to jazz up your programs a little, use my short routine, called Sliding Message. It will spice up any program introduction, error message or other display.

Place your message in line 10 of the program, and use line 30 to change the filler character. Adjust the delay (default = 50) and see what happens. To slide the message once, delete line 70.

```
Ø REM SLIDING MESSAGE - JOHN GOTTS :REM*149
1Ø A$="ANY MESSAGE UP TO 39 CHARACTERS!" :REM*179
2Ø A=LEN(A$):DIMB$(39):PRINT"(SHFT CLR)" :REM*4
3Ø FORT=1TO39-A:A$=" "+A$:NEXT:A=39:REM*49
4Ø FORT=1TOA:B$(T)=MID$(A$,T,1):NEXT :REM*41
5Ø FORT=ATO1STEP-1:PRINT"{HOME}{5 CRSR DNS } {SHFT INST}"B$(T):FORX=1TO5Ø:NEXT:NEXT :REM*37
6Ø FORT=1TOA:PRINT"{HOME}{5 CRSR DNS} ";CHR$(2Ø):FORX=1TO5Ø:NEXT:NEXT :REM*65
7Ø GOTO5Ø :REM*2ØØ
```

—JOHN E. GOTTS, STERLING HEIGHTS, MI▶

TRICK OF THE MONTH

\$45B C-64 ROAD RACER

If you liked River Run (September 1987), then you'll love C-64 Road Racer. Your car is a sprite (could it be an Austin Healy sprite?) that you pilot down a winding race course, using the H (to turn left) and J (to turn right) keys. Every marker you pass adds one point to your score.

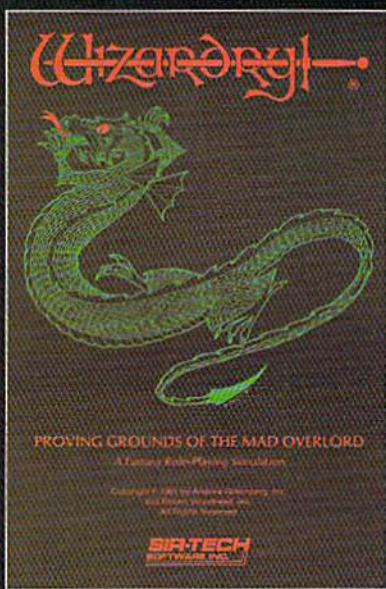
So challenge your reflexes with some intense driving. If your racing skills already approach those of Formula-One caliber, decrease the course width (variable W).

```
Ø REM C-64 ROAD RACER - J. R. CHARNETSKI :REM*7
1Ø DATA 24Ø,Ø,15,243,255,2Ø7,243,255,2Ø7,255,6Ø,255,243,9Ø,2Ø7,243,1Ø2,2Ø7,243 :REM*65
2Ø DATA 126,2Ø7,3,126,192,3,6Ø,192,3,255,192,3,255,192,3,Ø,192,3,Ø,192,3,Ø,192 :REM*192
3Ø DATA243,Ø,2Ø7,243,129,2Ø7,243,195,2Ø7,255,231,255,241,255,143,24Ø,255,15,24Ø :REM*25Ø
4Ø V=53248:FORU=832TO894:READN:POKEU,N:NEXT :REM*174
5Ø POKEV+32,Ø:POKEV+33,Ø:DATA 126,15,Ø :REM*245
6Ø W=1Ø:R=54296:I=7:J=12:L=1986:M=8:MK=81:
```

```
B=198:S=1-J:X=14Ø:POKE2Ø4Ø,13:POKEV,X :REM*117
7Ø POKE646,INT(RND(1)*J+2):PRINT"(SHFT CLR)ROAD RACER (-H J-) PRESS ANY KEY":POKEB,Ø :REM*135
8Ø WAITB,1:POKEV+1,139:POKEV+39,1:POKEV+21,1:P=PEEK(V+31):FORD=1TO23:PRINT:NEXT :REM*2Ø7
9Ø POKER,J:S=S+1:IFZ=ØTHENI=I+1 :REM*54
1ØØ N=PEEK(197):IFN=29 THEN IFX>6Ø THEN X=X-M :REM*248
11Ø IF N=34 THEN IFX+M<256 THENX=X+M :REM*213
12Ø IFI=INT(RND(.)*J+M)ORI>2ØTHEN Z=1-Z :REM*197
13Ø POKEV,X:IFZTHENI=I-1:IF I<3THENZ=. :REM*85
14Ø POKER,Ø:POKEL+I,MK:POKEL+I+W+1,MK:PRINT :REM*126
15Ø ON-(PEEK(V+31)=.)GOTO9Ø:POKEV+21,Ø :REM*166
16Ø PRINT"{SHFT CLR}SCORE="S:PRINT"{CRSR DN}TRY AGAIN Y/N?":POKEB,Ø:WAITB,1:GETA$:IFAS$="Y"THEN6Ø :REM*21Ø
```

—JOSEPH CHARNETSKI, DALLAS, PA

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PLAY IT TO THE HILT!

* Many other Wizardry scenarios coming for Commodore players.

MAGIC

\$45D KEYPRESS DETECTOR

Mention the number 653 to most C-64 programmers, and they immediately think, "wait," because a program's execution can be stopped by entering the WAIT 653,1 command.

I wrote a short program that reacts to the control, Commodore and shift keys—the keys that affect location 653. By using the logic in my Magic program, you can write routines that halt program execution until two or more keys are pressed simultaneously.

```
Ø REM KEYPRESS DETECTOR - T. WALSH:REM*192
1Ø PRINT"{SHFT CLR}":R=PEEK(653) :REM*115
2Ø A$="{CTRL 2}SHIFT":B$="{CTRL 8}COMMODORE":C$="{CTRL 1}CONTROL":D$="{CTRL 4}"/":E$="." :REM*244
3Ø F$="{HOME}{COMD 7}YOU'RE PRESSING " :REM*69
4Ø IF R=Ø THEN 13Ø :REM*112
5Ø IF R=1 THEN 12Ø :REM*137
6Ø IF R=2 THEN A$=B$ :REM*75
7Ø IF R=3 THEN A$=A$+D$+B$ :REM*54
8Ø IF R=4 THEN A$=C$ :REM*11Ø
9Ø IF R=5 THEN A$=A$+D$+C$ :REM*1Ø7
1ØØ IF R=6 THEN A$=B$+D$+C$ :REM*116
11Ø IF R=7 THEN A$=A$+D$+B$+D$+C$ :REM*185
12Ø PRINT F$+A$+E$:GOTO 1Ø :REM*216
13Ø RUN :REM*13
```

—TIM WALSH, RUN STAFF

\$45E CLEAR SCREEN DIRECTORY

After renaming a disk using the trick below, the screen automatically clears whenever you list the disk directory to the screen. In its present form, the program requires that the disk be formatted beforehand, but the technique I use is outlined in line 50, and it can be applied to format a disk, as well.

```
Ø REM CLEAR SCREEN DIRECTORY - CHARLES JONES :REM*215
1Ø INPUT"{SHFT CLR}NAME OF DISK:";DN$ :REM*169
2Ø PRINT"PLACE A FORMATTED WORK DISK IN DRIVE" :REM*45
3Ø PRINT"AND PRESS RETURN..." :REM*1Ø7
4Ø GET A$:IF A$="" THEN 4Ø :REM*224
5Ø OPEN15,8,15,"N:"+CHR$(13)+"{SHFT CLR}"+DN$ :REM*199
6Ø CLOSE15 :REM*22Ø
7Ø PRINT"{SHFT CLR} CLEAR SCREEN DIRECTORY INSTALLED!" :REM*231
```

—CHARLES JONES, CARRIERE, MS

\$45F LABAR'S LAMENT

Commodore 128 users still contemplating Thomas Smith's C-128 Engineering Disaster (trick \$404, August 1987) might lapse into an altered state of consciousness over my elementary engineering enigma. So, why while winter away waiting? Don't linger any longer—lapse into LaBar's Latest Lament.

```
Ø REM LABAR'S LAMENT - SI LABAR :REM*61
1Ø GRAPHIC1,1:DRAW 1,24Ø, 75 TO 24Ø, 15Ø TO 8Ø, 15Ø TO 8Ø, 75 TO 275, 75 TO 275,
```

```
17Ø TO 15, 17Ø TO 15, 2Ø TO 28Ø, 2Ø TO 31Ø, 45 TO 31Ø, 19Ø TO 4Ø, 19Ø TO 15,17Ø :REM*251
2Ø DRAW 1, 31Ø, 45 TO 5Ø, 45 TO 5Ø, 15Ø TO 8Ø, 15Ø:DRAW 1, 275, 17Ø TO 245,15Ø:DRAW 1, 8Ø, 75 TO 5Ø,45:COLOR1,16:PAINT 1, 16Ø,1ØØ:PAINT 1,1Ø,1Ø:SLEEP5 :REM*187
3Ø GRAPHICØ:PRINT"{SHFT CLR}PRESS A KEY TO TOGGLE BETWEEN SCREENS" :REM*4
4Ø GETKEYA$:GRAPHIC1 :REM*176
5Ø GETKEYA$: GOTO 3Ø :REM*94
```

—SI LABAR, BETHLEHEM, PA

\$460 EXTRA! EXTRA! 2300 BYTES EXTRA!

Attention C-128 programmers! When you're writing Basic programs and don't need the 40-column graphics of your C-128, type in this line to get an extra 2300 bytes of Basic RAM:

```
POKE 45,1:POKE 46,19:POKE 4864,0:NEW
```

—HOWARD LEW, SAN FRANCISCO, CA

\$461 DOS 5.1 WEDGE QUICKSAVE

Nearly all C-64 users like to keep a copy of Commodore's DOS wedge on their work disks. After all, it simplifies long, complicated disk commands into one- or two-character commands. Unfortunately, since the DOS wedge is pure machine language, it isn't easily copied to disk without special techniques. Until now.

My utility, called DOS 5.1 Quicksave, quickly copies the wedge to any disk. First, load the wedge as usual, then type in DOS 5.1 Quicksave. Now insert the formatted disk you want to place the wedge on into your drive and run the program. Presto! DOS 5.1 is on the disk!

```
Ø REM COPY DOS WEDGE - THOMAS B. SMITH :REM*1Ø8
1Ø OPEN8,8,8,"DOS 5.1":POKE251,Ø:POKE252,2Ø4:POKE78Ø,251:POKE781,9Ø:POKE782,2Ø7 :REM*113
2Ø SYS 65496 :REM*234
```

—THOMAS B. SMITH, GALLIPOLIS, OH

\$462 C-128 EXPLOSIVE ENDING

Dramatic sound effects can enhance almost any game. My routine makes all three voices on the C-128 rise in pitch until only one is left, followed by a powerful explosion that rocks the 40-column screen. Don't fret—everything returns to normal after the explosion.

```
Ø REM C-128 EXPLOSIVE END - JOHN KUHNE :REM*59
1Ø SOUND 1,45ØØØ,2ØØØØ,Ø,1,3,Ø :REM*1Ø2
2Ø SOUND 2,45ØØØ,15ØØØ,Ø,1,1Ø,Ø :REM*83
3Ø SOUND 3,45ØØØ,1ØØØØ,Ø,1,15,Ø :REM*154
4Ø SOUND 1,195Ø,1ØØ,1,1,25,3 :REM*1Ø4
5Ø SOUND 2,295Ø,1ØØ,1,1,15,3 :REM*23
6Ø SOUND 3,95Ø,1ØØ,1,1,1Ø,3 :REM*12
7Ø FORK=1 TO 4:FORJ=1TO42:POKE5327Ø,J:NEXT J:NEXTK :REM*65
```

—JOHN KUHNE, NEWMARKET, ONTARIO, CANADA

Continued on p. 113.

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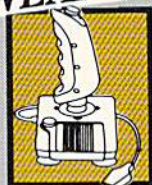


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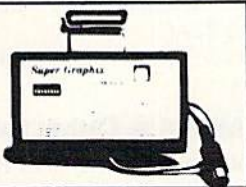


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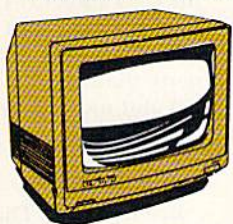
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NEWS AND NEW PRODUCTS

Meet Max Toy, Commodore's new president and CEO; make bright-yellow, rear-window car signs with your C-64; fly your plane to the rim of Niagara Falls.

Compiled by HAROLD R. BJORNSEN

GUNSHIP MEDAL OF HONOR

HUNT VALLEY, MD—Larry Woodworth, a 27-year-old electronics technician from Syracuse, New York, is the first winner of the Congressional Medal of Honor in MicroProse Software's Gunship helicopter simulation and an honorary member of the Gunship Design Team.

"I feel like a little kid at Christmas," he said. "I didn't expect this kind of recognition when I won the medal. In fact, I didn't realize until recently that I was the first to do it." Woodworth works on military fire-control computers for General Electric Corp.

The Congressional Medal of Honor is the highest achievement in the Gunship simulation of an Apache AH-64A attack helicopter. Players are awarded military decorations and receive promotions in rank based on their performance on missions in South Vietnam, Central America and Western Europe.

RUN READER ON BOARD

WOODHAVEN, NY—Zebra Systems (78-06 Jamaica Ave., Woodhaven, NY 11421) has released its Car Sign Designer for the C-64. The program lets you create diamond-shaped car signs on



Introduce yourself to other drivers with Zebra Systems' Car Sign Designer.

your computer screen before printing out the result on bright-yellow paper, which you then insert into one of two reusable clear plastic sign holders with suction cups included in the package. Available for \$29.95.

Check Reader Service number 405.

PROGRAMMER'S CHALLENGE

BLUE RIDGE SUMMIT, PA—Tab Books (PO Box 40, Blue Ridge Summit, PA 17214) has released *The Commodore Programmer's Challenge: 50 Challenging Problems to Test Your Programming Skills—with Solutions in Basic, Pascal and C*. Fun is the main objective of the book, but the problems also help computerists polish their programming skills or learn to program in a new language.

The 50 problems are divided equally into ten sets of five problems each. The sets represent different tests, and the five problems in each test are graded according to level of difficulty: the first two are for beginners, the next two for more experienced programmers and the last is very difficult. The 240-page book has 163 illustrations and is available in paperback for the C-64 for \$14.60.

Check Reader Service number 401.

LESS TAXING

RANDALLSTOWN, MD—Master Software (6 Hillery Court, Randallstown, MD 21133) has released the 1987 version of its Tax Master, an aid in the preparation of U.S. Federal Income Taxes. The C-64 program covers all the new tax laws and guides you through the preparation of Forms 1040 and 4562 and Schedules A-F. It performs all calculations, figures your tax automatically, and even transfers results from one form to another. The tax tables are included. Available for \$30.

Check Reader Service number 403.

THE GAME IN SPAIN

CAMBRIDGE—Ticket to Spain, the new title in the software travelogue se-

ries from Blue Lion Software (90 Sherman St., Cambridge, MA 02140), is available for the C-64. In this program, you travel through Spain in search of a family heirloom. With a limited budget and a series of tasks to fulfill, you set out on a quest that takes you to various cities and towns, such as Seville, Madrid, Toledo, Granada and Barcelona. You'll explore historical landmarks, converse with the locals, attend a bullfight, shop or dine in authentic locales. All the while, you'll learn about Spanish culture and language, history, geography and contemporary life. A phrasebook is included in the package to help you with the most difficult situations. \$29.95.

Check Reader Service number 404.

OUTSTANDING SALES

WASHINGTON, DC—The Software Publishers Association has given awards for outstanding sales in 1987 to the following software packages available for the C-64 and/or C-128. To qualify, a software package must have sold more than 250,000 copies for a platinum label, more than 100,000 copies for a gold label and more than 50,000 copies for a silver label.

PLATINUM—

Broderbund's The Print Shop Graphics Library: Disk 1 and Bank Street Writer.

Davidson & Associates' Math Blaster! Hi-Tech Expressions' Jingle Disk.

Infocom's The Hitchhiker's Guide to the Galaxy and Zork I.

MicroProse's Silent Service and F-15 Strike Eagle.

GOLD—

Accolade's HardBall!

Activision's Hacker.

Broderbund's Where in the World Is Carmen Sandiego? and The Print Shop Graphics Library: Disk 3.

Cosmi's Super Huey.

Data East USA's Karate Champ, Commando and Tag Team Wrestling.

Electronic Arts' The Bard's Tale and Racing Destruction Set.

Hi-Tech Expressions' CardWare and HeartWare.

Infocom's Leather Goddesses of Phobos.

Micro League Sports Association's Micro League Baseball.

MicroProse's Gunship.

Software Toolworks' Chessmaster 2000.

SILVER—

Accolade's Ace of Aces, Fight Night, Mean 18 and Dam Busters.

Activision's Hacker II: The Doomsday Papers, Championship Baseball, GFL Championship Football, and GBA Championship Basketball: Two-On-Two.

Cosmi's Super Huey II.

Data East USA's Kung Fu Master and Commando.

Davidson & Associates' Spell It!

Firebird's Elite.

Hi-Tech Expressions' PartyWare.

Infocom's Wishbringer.

WHISTLE MUSIC

EUGENE, OR—Voice Master Jr., a micro-size speech digitizer and voice-recognition system for the C-64, lets you record and play back up to 64 words or phrases, in any accent and any language. With the system, your computer can understand up to 32 voice commands, and additional voice commands can be loaded from disk. Another feature, the Voice Harp, lets you create and compose music by whistling into the microphone. Notes corresponding to your whistle-pitch scroll across the screen as you whistle. Available for \$39.95 from Covox, 675-D Conger St., Eugene, OR 97402.

Check Reader Service number 402.

TOY TAKES THE HELM

WEST CHESTER, PA—Irving Gould, chairman and CEO of Commodore International Limited, has announced that Max Toy will join the company as president and chief operating officer of Commodore Business Machines, the company's U.S. subsidiary.

A computer-industry veteran, Mr. Toy has held management positions at IIT, Compaq and IBM. Says Gould, "Max has over 12 years of personal computer industry experience and has established solid distribution networks and VAR programs. This expertise will complement the progress already made in U.S. operations...and in sales and marketing."

DON'T GET TOO CLOSE

CHAMPAIGN, IL—Scenery Disk 11, a C-64 program for the Flight Simulator II and Jet programs from SubLogic (713 Edgebrook Drive, Champaign, IL 61820), covers the central Great Lakes area of the United States. The disk features detailed views of Detroit, with features such as the Ambassador Bridge, Renaissance Center and Tiger Stadium; Pittsburgh, showing skyscrapers and bridges spanning three rivers; and Niagara Falls, where you can actually fly below the rim of the Niagara River canyon right up to the falls. To eliminate the monotony of flying between cities, a new default ground pattern simulating fields and other areas of varying color has been added. It's available for \$24.95.

Check Reader Service number 406.

JIMBO BABY IS BACK

NORTHBROOK, IL—And so is the Mad Leader, in Infiltrator II, the helicopter simulator/graphics adventure sequel from Mindscape (3444 Dundee Rd., Northbrook, IL 60062). As Captain Johnny "Jimbo Baby" McGibbits, you must sharpen your flying skills and file your flight plan, for headquarters has assigned you to the mission—to stop the evil Mad Leader from dominating the world. It's available for the C-64 for \$34.95.

Check Reader Service number 400.

HANG 'EM HIGH

WESTWOOD, MA—Feed-A-Form holds up to four continuous-feed forms simultaneously for convenient feeding to your printer. The forms feed right from



Feed-A-Form stands ready to feed up to four forms to your form-feeder.

their cartons stored under the printer table. The end of each stock of forms is held in place between two acrylic bars until you feed the desired form into the printer. The aluminum, steel and acrylic feeder measures 18 by 18 by 21 inches and weighs eight pounds. It's available for \$89.95 from Feed-A-Form, 29 Dover Terrace, Westwood, MA 02090.

Check Reader Service number 408.

Ho, Ho, Ho!

NEW YORK, NY—"Twas the Night Before Christmas, an animated musical holiday disk for the C-64, has been released by Simon and Schuster Software (One Gulf + Western Plaza, New York, NY 10023). The program narrates the classic poem with animation and musical accompaniment.

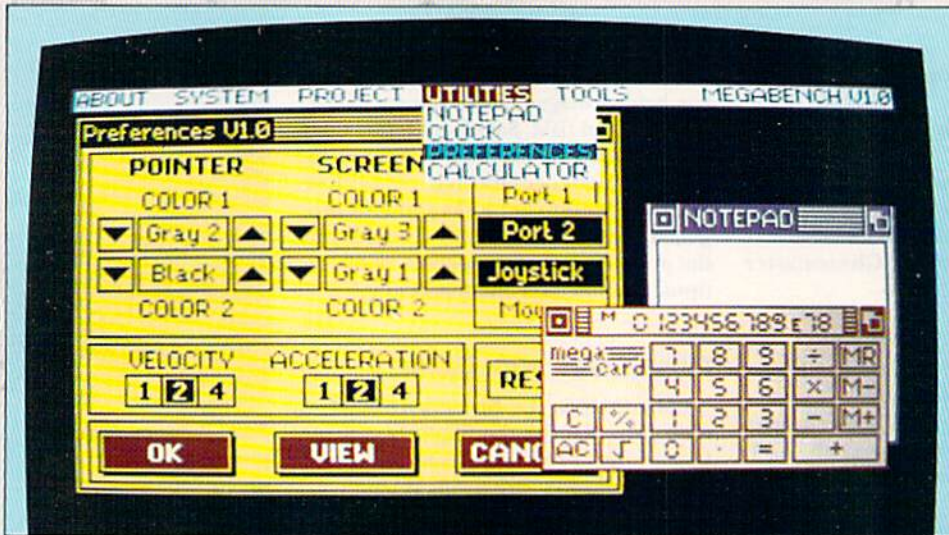
But Santa has also included other nifty features.

With it, you can send animated and personalized Christmas disks to friends and relatives, type and print letters to Santa (the letter is automatically addressed to the North Pole when printed out), print Christmas cards and play the Christmas game (a computerized jigsaw puzzle). It's available for \$8.95 and requires an MPS-801 or -1000 printer or compatible.

Check Reader Service number 409. ■

KEEP IT SIMPLE!

NEW FROM HOLLAND



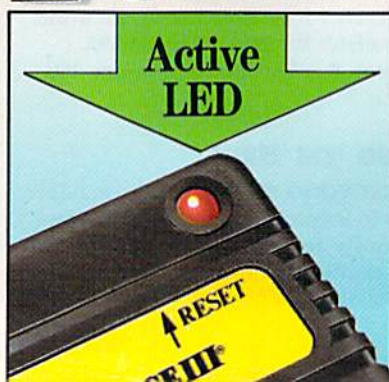
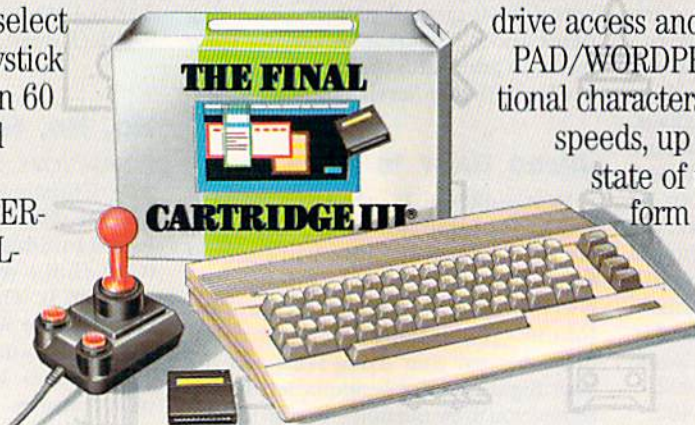
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WINDOWS



THE FINAL CARTRIDGE III®

The high-resolution bit mapped windows are selected from a menu bar. An unlimited number of windows can be open on the screen at the same time. The windows can be freely moved on the screen. The following windows are already implemented in ROM:

PREFERENCE WINDOW

Selects: mouse port, joystick port, mouse speed, joystick speed, screen colors, pointer colors, keyboard click, keyboard repeat.

CALCULATOR

Complete simulation of a LCD-calculator. Input either with mouse, joystick or keyboard. The numeric key-pad of the C128 can be used in C64-mode.

NOTE PAD

Easy to use wordprocessor with proportional characters enables you to store and print small notes, letters, etc.

DIRECTORY WINDOWS

Enables you to open directories from different



disks and drives, sort and print directories.

DISK WINDOWS

Load, Run, Rename, Validate, Scratch, Initialize, Fast format disks.

TAPE WINDOW

Activates fast and normal modes.

PRINTER WINDOWS

Select different printers, such as Commodore serial, Centronics, RS 232, Color printers.

REQUESTER WINDOWS

DISK BASED USER WINDOWS

Design your own windows.

CLOCK

Real Time Clock, with Alarm.

PULL DOWN MENU



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Almost all commands and functions that are not activated by windows can be selected from a menu bar, which appears on top of the screen after pressing the fire button, either in Basic or from the freezer. The following Basic Toolkit and keyboard extra's are included:

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- Find • Replace • 24K extra Ram for Basic • Append • DAppend • DSave • DOS • Monitor
- Drive monitor • Sprite editing
- Centronics interface • Fast format • Low Res screendumps
- Plist • Scrolling up and

- down • Stops and continues listings • Preprogrammed functionkeys • Packer/Cruncher
- Hex to decimal conversion • Pokes, syscalls and variables may all have Hexadecimal values • Trace, Dump, Order, Mem.

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FREZZER MENU



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Innovative hardware, combined with smart software, allow you to freeze and continue every well-known C64-program. Freezer options include:

CENTRONICS/SERIAL/RS 232 SCREENDUMPS

- Full A4 printing • Variable printsize • Color printing • Sprite printing • Reverse printing • Color changes.

GAMEKILLER

- Kills sprite to sprite • and/or sprite to background collision
- Can be started at any point in your game.

AUTO FIRE

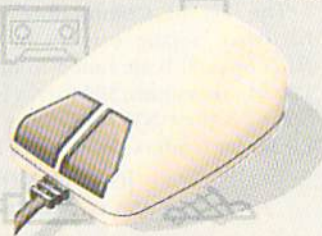
- Transforms a normal joystick to an advanced auto fire engine.

JOYSTICK PORT CHANGER

- Never blow up your computer again by changing joystick ports while the C64 is running.

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Comfortable ML monitor. Does not reside in memory.

Functions include:

- Scrolling up and down • 64K ROM/RAM access • Sprite editor
- Character editor • Drive monitor
- Fast loading and saving • Printer driver.

MAIL RUN

This month's letters feature reports on software, an rf shielding technique and screen magnifiers.

THE BIG PICTURE

I may have help for Catherine Firmin, who wrote in last November's Mail RUN about her difficulties in using a computer and her hope to find a screen magnifier. Independent Living Aids, Inc., of 27 East Mall, Plainview, NY 11803; 516-752-8080, offers a product called the Beamscope, a large rectangular lens made of acrylic and mounted on legs that, placed in front of a TV screen, magnifies it more than 50 percent. The blurb in the catalog says the Beamscope "provides exceptional color, brightness and clarity." There's a version for 10- to 15-inch screens (\$57.95) and one for 17- to 23-inch screens (\$67.95).

—JAMES M. MOSHER
TOPEKA, KS

Thanks for the tip! Such magnifiers were fairly common in the early days of television, when screens were very small.

Another reader, Amzi Warren of Proctor, Vermont, sent information on a very similar product called the Super Screen. Listed in Dr. Leonard's Health Care Catalog, the Super Screen accommodates 16- to 21-inch TVs and costs \$29.95. Contact Dr. Leonard's at 74-20th St., Brooklyn, NY 11232 or call 718-768-0010.

Deborah A. Randall of Auburn, Maine, wrote to report that a support organization for handicapped persons called the Job Accommodation Network in Morgantown, West Virginia, had information about another screen magnifier. We spoke with Karl Marion of JAN who said the name of the magnifier is Compulenz, and it's available from International Marketing Services in Florida. Their phone number is 813-842-3231.

—EDITORS

SHIELDED SHELVES

After many months of trying to get Pocket Writer 2 from Digital Solutions to work on my C-128, I've finally succeeded. I believe my problem was their protection scheme, which makes any type of interference whatsoever inhibit the program. In their latest correspondence, after they copied Pocket Writer

for me for the third time, they suggested that I move my equipment around until I found a location where the program would work.

Well, I have my hardware all arranged on shelves, so I didn't want to rearrange it to accommodate one program. However, their advice suggested another solution to me: installing rf shields on the shelves to isolate the units. I used aluminum flashing, which is readily accessible and easy to work with, and, attached to the underside of each shelf, it solved the problem.

If necessary, you could achieve even better protection by connecting the shields to each other with wire or strips of the flashing, then using a wire to attach the shield network to the ground receptacle in an ac outlet.

—PAUL P. YANTCHOOK
CHANTILLY, VA

The ground receptacle is the round third hole in more recent electrical outlets. Make sure you don't connect the shield to one of the rectangular receptacles—they're hot! You could also ground the shield to one of the outlet's faceplate screws. In fact, with an older two-hole outlet, you'd have to use a screw.

—EDITORS

ROCKLAND COUNTY REPAIRS

The list of Commodore-authorized hardware repair centers in the 1988 RUN Special Issue failed to include Kasara Microsystems, 33 Murray Hill Drive, Spring Valley, NY 10977; 914-356-3131. Please let readers know we're here.

—JOEL H. KORNREICH
KASARA MICROSYSTEMS

Done—and we're sorry about the omission.

—EDITORS

CP/M BOOKKEEPER

An "Editors" note in last October's Mail RUN invited comments from readers about CP/M programs they use. Here's my contribution.

I use a CP/M program called Checks

and Balances from CDE Software to monitor my family's expenses and bank accounts, and I'm very pleased with it. It supports two disk drives and 80 columns. Data can be entered in any order; then the Sort command places it in correct sequence for fast retrieval and review.

The Total command calls screens that display account totals by year, quarter or month; cash flow; bills; profit and loss; and transaction types. It also displays missing and duplicate checks. The documentation is clear and supplemented by a sample data disk that I haven't even had to use yet. Checks and Balances is just what I needed in a domestic bookkeeping program.

—BRAHAM LATCH
MONTROSE, CA

We reviewed CDE's Checks and Balances in our February 1987 Software Gallery. The reviewer, Alex Lane, gave the program excellent marks also. For more information, contact CDE at 948 Tularosa Drive, Los Angeles, CA 90026; 213-661-2031.

—EDITORS

ADDED INPUT

I've been using Dome Accounting by Computer for the past six months and find the program easy to work with. However, it has a significant drawback that Walt Latocha didn't mention in his Software Gallery review last October. Nowhere in Great American Software's ads do they mention that the disk can be used for only one year or by one company. After you respond to the prompts on the set-up screen, the program writes the data to disk, then erases the set-up routine. Thus, you can't set up the program for another year or another company without buying another disk. Had I known about this copy-protection scheme, I would never have bought the program.

—LESLIE A. POLLAK
CHOMEDEY, LAVAL
QUEBEC, CANADA ■



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SOFTWARE GALLERY

Start off the new year with reviews of graphics programs, a disk drive utility and warriors of land and sea!

Compiled by BETH S. JALA

GUILD OF THIEVES A+

*A Chart-Topper Sequel
To The Pawn*

I've lately become skeptical of adventure games because I've seen so many come and go. With my own collection of fantasy/adventure games approaching 100 in number, it's difficult for me to get excited when a new program appears. When I received Firebird's Guild of Thieves, I saw no reason to become optimistic—that is, until I opened the box.

It's not Guild of Thieves' superb and often hilarious documentation that engaged me so, and I've seen better plots on the backs of cereal boxes. The joy of playing Guild of Thieves comes from the excitement of interacting with a program that has been so lovingly and expertly crafted that every aspect of it simply shines.

Welcome to the land of Kerovnia, where you've applied for entrance into the Guild of Thieves, better known as the Worshipful and Partially Honourable Guild of Professional Nocturnal Surreptitious Entry and Removal Operatives. Before you can be admitted into the Guild, you must successfully complete a test that entails plundering a castle and the surrounding countryside, pillaging practically everything that doesn't walk or isn't nailed down. No easy test, to be sure.

Before you begin, you must first read "What Burglar," an old gazette that is supplied with the game. Aimed at the professional thief, the gazette is reminiscent of a seedy club newsletter. In it, you'll find the playing instructions, several humorous news stories, an interview with the Guild's founder, Rhino Q.Q. Thrushwhaker III, classified ads and a useful hints section.

Several interesting props are also included: a Guild contract (suitable for framing), playing die and a plastic credit card.

You move about and communicate with the story by using English words and phrases. The game's powerful par-

ser can understand varied and complex compound sentences, and gives you the ability to converse and interact with a lot of the characters within the story. Additionally, the parser understands many standard abbreviations, such as "L" for look, "I" for inventory, and so on. I was intrigued by how infrequently the program questioned my commands, as if every move was anticipated.

Graphically, Guild of Thieves offers dozens of exciting high-resolution depictions that help guide you along your surreptitious path. You can select an option that displays a full graphic screen the first time a new area is entered, and a small cameo picture on subsequent visits. This cameo is a capulized version of the full view, displayed out of the way of the main text. Graphics can be scrolled up or down to suit your tastes. With the graphics enabled, you'll be prompted to swap disks quite a bit. Using the function keys, however, you can disable the graphics, thereby reducing disk access and swapping. Perhaps, in future releases, the authors will take into consideration those of us with two disk drives.

To complete the game, you must collect all of the treasures available, while solving the puzzles associated with them. You can resort to the "hint" command for a particularly tough problem,

but you might regret your lack of patience for not thinking of the solution yourself.

Guild of Thieves takes a lighthearted and fascinating approach to a tired genre. It's an intriguing, thoughtfully crafted game that doesn't take itself too seriously. If I had to throw away all but one of my own adventure games, Guild of Thieves would be a top contender for the one I would keep. (*Firebird*, PO Box 49, Ramsey, NJ 07446. C-64/\$39.95.)

—JOHN RYAN
BILOXI, MS

MANIAC MANSION A+

*You'll Experience Laughter
Fear, Victory, Bewilderment
—And Fun!*

It takes a great deal of effort to produce a highly successful piece of entertainment software in today's competitive market. A product must be professionally crafted, innovative, replayable, and seed you with the desire to return to it time and again. These are facets that not all software houses can measure up to, unless of course, you happen to be Lucasfilm, whose release, Maniac Mansion, possesses all of ▶

REPORT CARD

A Superb!

An exceptional program that outshines all others.

B Good.

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

C Average.

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

D Poor.

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

E Failure.

Many problems; should be deep-sixed!

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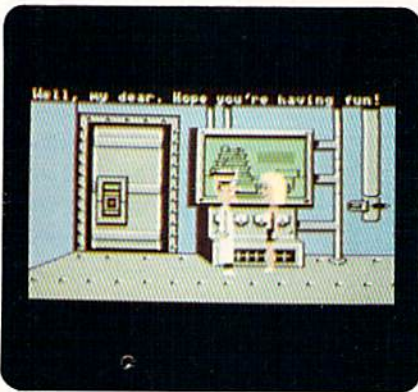
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Circle 131 on Reader Service card.

these qualities, and more!

Maniac Mansion could be labeled as a graphic adventure game, although that particular term would do it a great injustice. The program is better thought of as an event, where emotions like triumph, delight, fear and frustration are brought out in full force.

This is a 3-D adventure as you have never experienced before. You are Dave Miller, popular student and local all-American boy-next-door. Your girlfriend, Sandy, has been kidnapped by the dastardly Dr. Fred, a psychopathic scientist who lives in an old mansion on the hill. Dire events are in store for Sandy unless you can save her. To do this, you choose two other teenagers from a pool of seven local boys and girls. You'll find that each teenager possesses special talents that can help or hinder you when you're trying to solve some of the puzzles within the house.



Maniac Mansion's Doctor Fred insists on threatening Sandy.

Expect to interact with the house's demented inhabitants—Nurse Edna, an old gal with an oversized libido; Weird Ed, a teenage commando with a thing for hamsters; then there's dead cousin Ted; and let's not forget the dreaded tentacle and... oh well, you'll get the point when you play this magical and captivating adventure.

This game is different from all the others of its genre in one important respect—there's no typing involved! Action is controlled entirely by joystick. The screen is divided into three main sections: the command line, the information line and the main graphics screen—your window to the world of Maniac Mansion. Each player is controlled by moving the joystick arrow to a location and clicking the joystick button. Objects displayed on the screen can be picked up, used, pushed, pulled, and so forth, by a simple point-and-click method.

Each player is controlled independently, and, in fact, you'll often have each one doing different things in many of Maniac Mansion's 55 locations. This is definitely a cooperative venture—you cannot solve it with just one player.

What makes Maniac Mansion really shine is the brilliant use of simulated 3-D graphics and the depth of play involved. It's not a simple show-and-tell graphics adventure. As you move from room to room and interact with Maniac Mansion, you'll soon feel as though you're playing a part in some teenager-versus-the-madman movie script. If you're not stealthy, you'll run into the house's eccentric inhabitants, all of whom move about and take care of their own business, regardless of what you're doing! Because of this, you'll find yourself in the dungeon quite a few times before you finish.

However, Maniac Mansion is not one of those cut-and-dried adventures. You won't end up dead or out of play if you make a simple mistake, and there are several ways to finish the game.

Every so often, the action stops while "cut scenes" are introduced. These are like movie clips, where you can observe Dr. Fred, Edna, and Weird Ed in actions that might offer clues to aid you in your rescue effort. These scenes also help you keep track of what the house's inhabitants are up to. For example, by calling Nurse Edna on the telephone in the library, you can watch her answer it in her own room during the cut scene.

Everything about Maniac Mansion is big budget. From the superb sound track to the opening credits, it breaks down the traditional computer-player interface and places you in another world. And, in this movie, the script can be written several ways, depending on how you want to solve the adventure.

I found Maniac Mansion to be one of the best entertainment packages available, and I think you will, too. (Lucasfilm; distributed by Activision, 2350 Bayshore Parkway, Mountain View, CA 94043. C-64/\$34.95.)

—JOHN RYAN
BILOXI, MS

BOP'N RUMBLE **B+**

*It's Rough 'n'
Tumble Action
On the Streets!*

Like Rocky Balboa, another fictional ring warrior is returning in a sequel. Gorgeous Greg, the hero of Mindscape's

Bop'n Wrestle, faces more challenges in Bop'n Rumble. But, while the Rocky follow-ups have generally been panned as copies of the original, Greg's second adventure breaks fresh ground.

The wrestler has kept his gold spandex trunks and still uses his spectacular wrestling moves. However, the option



Don't let those creeps take over the city in Bop'n Rumble.

of competition between two human players has not been reproduced. A more positive change from the original format is the grappler's departure from the arena into a city that's overrun by bizarre thugs.

The brief instructions deliberately give little detail about the game's ten levels. In each of these stages, one or two players score points by using a joystick or the keyboard to successfully guide Greg through a dangerous neighborhood. Throughout the contest, the wrestler can duck, jump up, walk and leap to the left and right. He also has four attack moves, which are different on each level. For example, the computer input that produces a head butt during stage one generates a knee to the chest during the third round of play.

The characters that Greg meets also vary from level to level. A motley bunch they are, from bulldogs and gorillas to flashers and stick-wielding punks. With few exceptions, they attack on sight, either singly or in pairs. If their blows strike home, Greg weakens and eventually dies. When he has lost five lives, the game ends.

Bop'n Rumble's graphics are crisp and colorful. Its sound effects not only include the mandatory splats and thuds, but also a jazzy theme that plays during lulls in combat.

Fortunately, the game is more than just bells and whistles used to decorate a simple test of reflexes. To succeed, a player must constantly develop new tactics, because the effectiveness of each

TAKE YOUR REVENGE!



The Last Ninja™

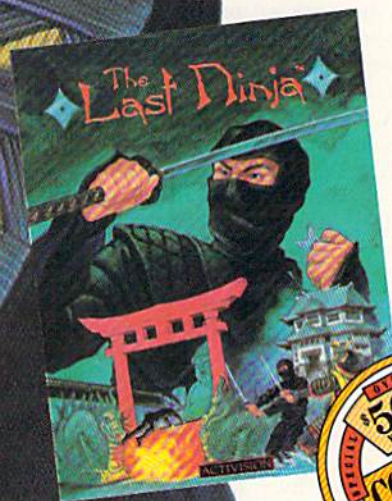
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SOFTWARE GALLERY

possible move varies with different circumstances. For instance, some of Greg's blows are most powerful when delivered from a distance, while others are best for combat at close quarters. Having to puzzle out the appropriate action for each situation adds spice to the contest.

However, the software is not perfect. For one thing, its continuous violence will repel some players. Also, the program doesn't save updated versions of its high score screen to disk for viewing during future games.

But players who relish heroic arcade battles should still enjoy Bop'n Rumble. It offers a heady mixture of tactical choices and nonstop action. (*Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/\$29.95.*)

WALT LATOCHA
OAK PARK, IL

PIRATES! B+

Yo, Ho, Ho and

A Bottle of Rum, Matey!

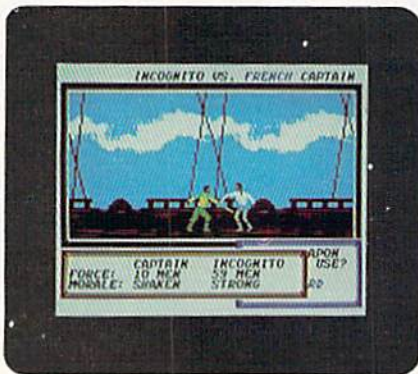
Sid Meier is probably best known as the creator of F-15 Strike Eagle, MicroProse's jet combat simulator that puts you in the cockpit of one of the most powerful and technologically advanced fighter planes in the world. Meier has turned his attention away from the high-tech world of jet fighters and toward the Spanish Galleons, treasure fleets and swashbucklers who sailed the Caribbean during the 17th century. *Pirates!*, an unusual blend of action and adventure, lets you sail back into this romantic period as an English or French buccaneer, a Dutch adventurer or a Spanish renegade.

The nationality you select as you begin your new career helps to determine the starting point of your adventure, the types of ships you'll sail, the size of your crew and, to some extent, the kind of reception you'll receive when you enter a new port or encounter other ships at sea.

You can also choose any one of six historical periods, from 1560 (The Silver Empire) to 1680 (Pirates Sunset). Each time period presents unique challenges and opportunities for fortune and adventure. For advanced players, *Pirates!* even gives you the option of commanding a famous expedition. For example, you can recreate the 1573 Silver Train Ambush as Francis Drake or play the part of John Hawkins in the 1569 Battle of San Juan de Ulua.

Pirates! is played entirely with a joystick; in fact, even menu selections are made by moving a flashing cutlass-shaped cursor over your option and pressing the fire-button. While traveling across the Caribbean, the joystick is used to steer your ship, but your swiftness depends on the speed and direction of the wind. When your lookout spots a sail on the horizon, you can either continue your voyage or investigate, in which case you'll be told the type of ship identified and the flag it's flying.

During battle, you can defeat the other ship by inflicting so much damage with your cannon that the enemy surrenders, or by pulling up alongside, boarding it, and dueling it out with swords. Here, various combinations of attacks, parries and slashes can be combined as you wield your choice of long-



Shiver me timbers and blow the man down in *Pirates!*

sword, cutlass or rapier.

Pirates! is not simply a simulation of naval battles and sword fights. Much of the game's character comes from your experiences on dry land. When you enter a town, you can visit the local tavern and interact with its patrons, pay a call on the governor, who may grant you special privileges in exchange for your services as a mercenary, or check on your personal status and the general status of your crew. You also have the additional options of dividing up your plunder and retiring, trading goods and ships with local merchants or saving the current game to disk.

Pirates! comes with a map of the Caribbean that shows the locations of the more than 50 towns you can visit. The clearly organized, 88-page manual gives you game instructions, with a wealth of historical information on colonial life during the 17th century and the ships of the period.

Although *Pirates!* may never achieve the block-buster status of MicroProse's

F-15 Strike Eagle or Silent Service, it's clear that just as much research and hard work went into its development. The result is a well-designed game that is certain to please anyone fascinated with pirates and their time in history. (*MicroProse, 120 Lakefront Drive, Hunt Valley, MD 21030. C-64/\$39.95.*)

—BOB GUERRA
SOUTH BOSTON, MA

THE GRAPHICS TRANSFORMER A+

A Program That

Performs More Switcheroos

Than a Magician!

Slowly but surely, software programmers are realizing that there are a lot of Commodore computerists who'd like to be able to exchange high-resolution pictures among various drawing and printing programs. I've seen some very nice packages that help accomplish this transfer, but usually only for a handful of programs. With CDA's Graphics Transformer, you can convert files from over 20 different products, including GEOS, Print Shop, Koala and Doodle!

The very best part of The Graphics Transformer is that the process is flexible enough to convert files from any of the programs supported to any of the other file types.

The instruction booklet is short and to the point, which is all that's needed, because on-screen prompting is very clear. The simple operation of the program shields the very complex tasks of conversion from the user.

The program uses a fast disk I/O routine that borders on the incredible. I tested the package on a C-128 (in 64 mode) with two 1571 disk drives. I've never seen anything work faster on my system.

CDA has included a full disk utility option just in case you need it. The Graphics Transformer is so complete that it even reads in the disk directory for you.

The conversion process begins by highlighting the files you want to convert. A header at the top of the screen displays all kinds of useful information, such as disk name and ID, blocks free and used, number of files on disk, number of files selected for conversion, disk drive status and the source and destination drive numbers. The Graphics Transformer fully supports dual disk drive operation.

During conversion, you're given a va- ▶

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riety of choices to enhance or change the picture. You can strip the image of color; flip the picture horizontally, vertically or both; change bit colors; or scroll the picture, one pixel at a time, in any direction. If at any time you do something that results in an unacceptable image, there's a restore option.

When I tried converting some of my own pictures, I was reminded of something you should keep in mind. As you begin converting pictures, you might not get the result you expect. At first, you may think it's a program problem. In reality, you might have done something in the original picture that's coming back to haunt you. For example, I had a high-resolution picture of my company logo. In using Koala Painter, I had "painted" some pixels the same color as the background. It looked fine, but from a storage standpoint, the individual pixels I changed were stored as part of the high-resolution image, whereas the background color was stored only once. In conversion, the result can be somewhat different.

The CDA package also automatically takes care of formatting the name of the converted file to work with the package you've specified.

The Graphics Transformer has a few more tricks up its sleeve. Images can be converted to a "stand-alone" file. The instructions refer to it as "a compressed, autobooting, fast-loading" file of your picture. If you're interested in game programming and wish to create your pictures using the drawing program of your choice, you can then use the Multi File option to create three individual files—bit map, screen and color (for multicolor only) memory.

If you're in a position where you often want to transfer pictures from one program to another, The Graphics Transformer is a virtual must for your collection of software utilities. It is extremely well done. (CDA, Inc., PO Box 1052, Yreka, CA 96097. C-64/\$34.95.)

—JIM GRUBBS
SPRINGFIELD, IL

DEFENDER OF THE CROWN A

It's Almost Like

Playing Camelot

On Your Commodore

Fortunately for C-64 owners, many of the same breathtaking aspects that are seen and heard when Defender of the Crown runs on the Amiga can be per-

ceived with Mindscape's recent conversion of the program to C-64 format. But Defender is more than just another pretty face. Set in 13th century England and termed an "interactive movie," it's actually a strategy contest that combines elements of role-playing games with action sequences.

At the beginning of Defender, you choose your character from one of four Saxon lords—Wilfred of Ivanhoe, Wolf-ric the Wild, Geoffrey Longsword or Cedric of Rotherwood. Each lord is rated for his skill in leadership, jousting and swordplay, and much of the game's strategy comes from knowing the strengths and weaknesses of the other lords, and using this information to your advantage on the battlefield. To survive, you must be able to hold your own, not only against two of the other Saxon lords, but also against three Normans.



In Defender of the Crown, the countryside looks peaceful, until your lord and his sword appear.

You and each of the five computer-controlled lords are given a castle in one of 18 territories. Neutral territories can be seized simply by moving troops into them, but capturing a territory under another lord's control requires fighting it out on the battlefield. Here you can stand and fight, attack ferociously, bombard the enemy with your catapults, outflank the enemy or retreat.

No matter which strategies you select from the on-screen menu, the winner of the battle is often the lord with the largest army. Every territory you control contributes vassals to help you fight your battles and gold you can use to buy soldiers, knights, catapults and castles.

One way to gain additional gold is by raiding an enemy's castle. In perhaps the game's best animated sequence, you use your sword to fight your way past the guard in the enemy's torch-lit courtyard, enter the castle and continue to duel with the captain of the garrison until you force him to the top of the

stairs where you can finish him off. When you do, you'll be able to enter an inner chamber that contains the store of gold.

The joust, another one of the game's action sequences, occurs whenever you or one of the other lords calls a tournament. Amid much fanfare and pageantry, you mount a steed and charge toward your enemy with your trusty joystick-controlled lance. Although I've never been successful at the joust, the idea is to unseat your enemy by striking him in the center of his shield. Here again, winning has a lot to do with the preset jousting ratings possessed by both you and your opponent.

Defender of the Crown was one of the first adventure/strategy games to be released for the Amiga, and the game's stunning images of torch-lit castles and beautiful damsels, along with a great musical soundtrack, helped to convince many people of the machine's graphic and sound potential. With the conversion of Defender to C-64 format, its designers have done an excellent job of reproducing these now-familiar images without sacrificing much of the original detail. More important, the game still features the same combination of action, adventure and strategic depth that keeps things interesting once you get your breath back. (Cinemaware; distributed by Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062. C-64/\$34.95.)

—BOB GUERRA
SOUTH BOSTON, MA

PRESIDENT ELECT B-

And If I'm Elected,

I Promise To . . .

No matter what I do, the candidates I like lose. This suggests that either my judgment or the country is in trouble. But I have to admit that SSI's 1988 Edition of President Elect is fun, engaging and, yes, educational.

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establish his or her degree of liberalism or conservatism. From there, you can rate attributes like magnetism and speaking ability.

At the start of the game, the computer establishes the political climate of a specified year. For a 1988 simulation, the manual suggests economic and political input that you can alter.

If you, and not the computer, are managing the election, you must allocate your resources among national, regional and key-state campaigning. If the candidates agree to debate, you control their responses to computer-generated questions. At the end, you can choose to view the election returns minute by minute or instantaneously.

The game is easy to learn—a relatively well-organized manual helps explain screens and prompts that might seem incomprehensible at first. The documentation presents notes on strategy and useful political and historical information.

An intelligent playing of the simulation, however, requires some political and current events knowledge—for example, the current rate of GNP growth or the meaning of the NAACP agenda. After all, the more accurate the information, the more value the game has as a predictor.

And how accurate, in fact, can this simulation be? It doesn't take into account all important variables. For instance, the only attribute of a vice-presidential candidate that's noted is geographic region—sex, race and religion are ignored.

The design of the game also limits your control of the variables. There are times when world events might inspire you to change your mind about an option such as a trip abroad, yet there is no way to alter a previous choice without rebooting.

The play itself is both engaging and frustrating. Various screens include weekly polls, data on campaign stops, debate questions, colorful maps reflecting weekly standings, and election night projections. There's a lot of wait time, however, especially in the week-by-week campaigns managed by the computer. Some patriotic music, waving flags, historical facts scrolled across the screen, or even dancing elephants and donkeys would add interest.

Nonetheless, this game has unquestionable educational value for high school and college students, as well as for adults. The simulation, in conjunction with the documentation, presents the nuts and bolts of campaigning, and historical as well as political informa-



tion. It fosters decision making and critical thinking skills.

The initial version of the game, issued in 1981, correctly predicted Reagan's 1984 landslide. President Elect, 1988 Edition, predicts a closer race. To find out which party is most likely to win, play the game. Maybe someone can discover a strategy to let the good guys win! (*Strategic Simulations, Inc., 1046 N. Rengstorff Ave., Mountain View, CA 94943. C-64/\$24.95. Owners of the original version can receive this edition by sending in the old disk with \$10 plus \$2 shipping and handling.*)

—SHARON WEINER
CHICAGO, IL

1541/1571 DRIVE ALIGNMENT B

Straighten Out and Get Those Disk Drives On the Right Track

What goes "rattle, klank, thud," is a few inches high and is found next to many Commodore computers? The answer, of course, is Commodore's 1541 disk drive. Its younger cousin, the 1571, can also be located there.

Why is the 1541 so cantankerous? According to Free Spirit Software, when a particular track on the disk isn't where the microprocessor in the drive thinks it ought to be, it repositions (read that: smacks the heck out of) the head by hitting it against the stop assembly, thereby putting it out of alignment.

Some software companies, in their quest for the perfect software protection system, deliberately introduce errors onto their disks. These errors also encourage the disk drive to perform such repositioning.

Owners of the 1571 are slightly more fortunate. A photo-electric cell helps to handle such situations a bit differently. Still, some disk errors will make the 1571 render a gut-wrenching clatter. I

know; I had one that did just that.

The 1541/1571 Drive Alignment program might be just what you need if you have a similar problem. It did the trick for me.

From an operational standpoint, the program couldn't be easier to use. On-screen instructions walk you through the testing procedure, which lets you check head alignment for any track on the disk, including half-steps. A speed check can also be performed. This program not only tells you what it finds, it gives you a quality rating, in plain English.

Armed with information on the condition of your drive, you can then elect to align the drive. (Caution: This isn't for the faint of heart.) The second side of the program disk contains a precision track alignment signal. The program can align the 1541, 1541C and 1571 drives, and also the drive in an SX-64. The degree of difficulty in making the needed adjustments varies from model to model. It's relatively simple on the 1541 series. The 1571 can be a bit more challenging, depending on which production model you have, and the SX-64 can prove very difficult.

I got my 1571 back into alignment, but it's not a task I suggest for a beginner. That's not the fault of the software, but rather a function of the hardware. If you're too timid to do the alignment yourself, the program can still be used as a diagnostic aid to periodically check the health of your drive. When it starts getting bad, you might want to take it into your Commodore service center for adjustment.

A brief, eight-page manual adequately describes the procedure and the operation of the program. The drawings appear to have been made using some sort of simple computer-assisted drawing program, and they could be much clearer than they are.

Be sure and read the instructions regarding the 1571. It will always fail the head stop test because of the electronics that won't let the 1571 head move to track zero. Also note that off-speed conditions can be easily corrected on the 1541 series, but the 1571 offers no such adjustment.

If you are moderately talented with tools, Free Spirit's 1541/1571 Drive Alignment and a steady hand are all you'll probably need to put your disk drive back in tip-top shape. (*Free Spirit Software, Inc., 538 S. Edgewood, LaGrange, IL 60525. C-64, C-128/\$34.95.*)

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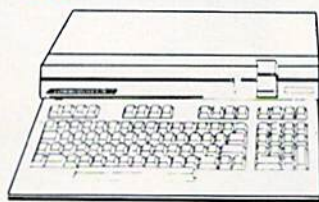
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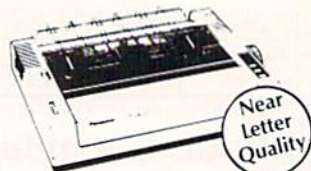
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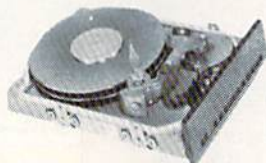
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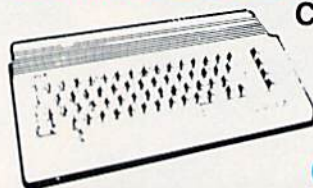
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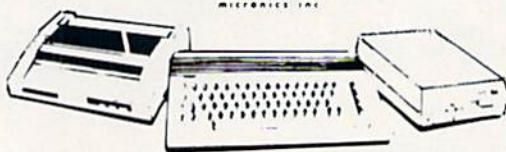
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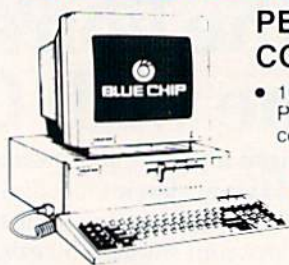
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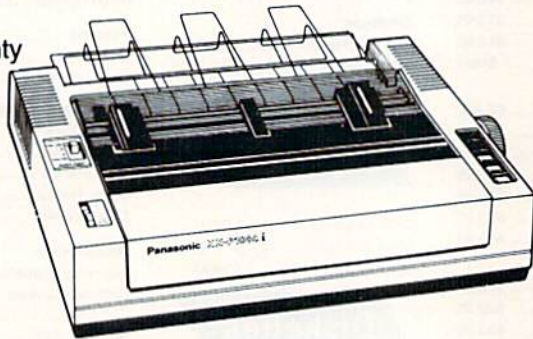
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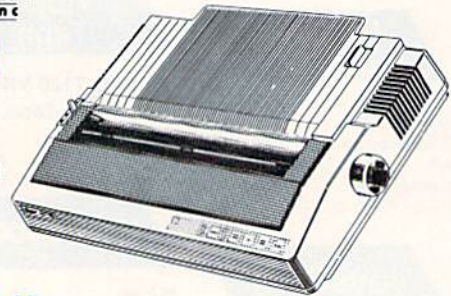
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M1409	\$299
M1509	\$365
M1709	\$475
Twinwriter 6 Dot & Daisy	\$899
M1724L	\$625
HR20	\$339
HR40	\$569
HR60	\$709.95

CITIZEN

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180 D	\$175.95
MSP-10	\$259.95
MSP-40	\$289.95
MSP-15	\$324.95
MSP-50	\$359.95
MSP-45	\$425.95
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Thomson:

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4160 CGA	\$259.95
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4375 UltraScan	\$459.95

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NEC:

Multisync	\$549
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Mark "Mac" Bowser, Sales Manager

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Here's How





R. Keenan

A Happy New You!

Make your 1988 resolutions easier

to keep with the wide range

of self-help software available

for Commodore computers.

HOW COULD I use my C-64 to better manage my life?" I mused aloud. My wife had an immediate answer: "Sell it and buy a home-exercise unit, spend Saturdays working in the yard instead of visiting with computer buddies and use those floppy disks for coasters, so the drink glasses don't leave water rings."

Ohhhh, me! Sitting in front of the computer has gotten me into this mess. Can it also get me out? Well, bless its little microchip, it can. There's light at the end of the cathode-ray tube.

Type faster. Drive better. Cook gourmet foods that will expand your waistline, then contract it through exercises. Prepare for the SATs. Draw up a will. No matter what your goal, there's probably C-64 software to help you reach it. Computer programs can not only help you learn, but can also provide the incentive to keep your self-improvement resolutions.

TO YOUR HEALTH

Let's face it: Typing in *RUN* magazine programs isn't really making your cardio-vascular system healthier, is it? But your Commodore can improve your heart and circulation in other ways. According to Bob Bowden, a developer of personal health programs, teaching about health and monitoring exercise are tasks that the computer is good at.

Said Bowden, "A computer can be a big incentive to start an exercise program and a help in keeping track of it. The computer can also help keep you motivated through the first 28 days of an exercise regime—the period when you're most likely to lose interest."

Bowden's Exercise Tracker is a program with few bells and whistles, but lots of useful information. It can figure the range of heartbeat rate that'll give you the most benefit from an exercise ▶

By LONNIE BROWN

The program also lets you

record your mood at

mealtime, since moods

affect eating patterns.

session. For outdoor activities, it can calculate heat and chill indexes, taking into account humidity and wind speed, both of which influence the way the temperature affects your body. Based on your weight and the duration of your exercise sessions, the program will also calculate calories burned and keep a monthly total; and, if you bike, walk or jog, it will log the distance you cover and represent it on a map as if you were crossing the U.S.

Bowden's other programs include Vitamin Advisor, which outlines what vitamin supplements you may need, and Planning Tanning, which helps you achieve a beautiful tan with brief exposure to the sun, instead of the usual blister-and-peel method.

He's also written a program for teenage boys called For Ectomorphs Only. Ectomorphs are those lucky people who can eat everything in the refrigerator without becoming the size of one. "Some young boys turn to steroids to build their bodies," Bowden said. "This program provides a natural way to gain weight and strength."

WATCH YOUR STEP!

Computers can really keep you on your toes—in fact, you can put a computer on your toes! Puma's RS-Computer Shoe features a built-in computer that calculates how many steps you've run, your elapsed time and how many calories you've burned. At the end of a run, you can place the shoe's memory on hold until you have a chance to dump it to a C-64. Saving the information to disk lets you monitor your daily, monthly and yearly progress in graphic form. You can also tell your sole-mate how far you want to run; then, when you've covered the specified distance, it beeps to alert you.

COUNTING CALORIES

The Original Boston Computer Diet, from Mindscape, is a well-balanced and respected diet/

exercise program. Its nontechnical manual provides a clear understanding of what calories are and why your body turns some of them into fat, and the program comes with a database for keeping track of the calories in your diet. The program also lets you record your mood at mealtime, since moods affect eating patterns. The diet includes foods from six basic groups and encourages food swapping to prevent diet boredom.

When it comes to diet and health, keep in mind, too, that spreadsheets like *RUN's* own *RUN Calc* provide an easy way to keep track of exercise, monitor calorie intake and perform the calculations associated with weight control.

FINE TUNING

Disk-based instruction for stringed instruments can't replace teachers, books and records, but it can provide a change of pace and increased incentive.

DJ Software's Easy Guitar, for beginners, offers a computerized pitchpipe, an exercise to help you develop a sense of pitch, 50 chord diagrams, an adjustable metronome and a built-in rhythm section. An included quiz helps you assess your progress, as does a video game that tests chord knowledge.

According to its packaging, Guitar Wizard, from Baudville, is designed to help intermediate and advanced players "fine-tune their play." The Chord Wizard section displays and prints out the different locations of chords on the guitar's neck, while Scale Wizard does the same for scales. Fretboard Wizard displays or prints the chord and scale pattern at the same time, and Improvisation Wizard helps you create improvised solos by suggesting notes to play with various chords. The program also includes sections on music theory and technique.

THE CHIPS ARE DOWN

With casinos using computerized poker machines, Applications Plus has come out with a program called Vegas Video Poker, which is designed to improve your chances of drawing good hands at computer poker. In computer poker, the goal is to get a hand with a pair of jacks or better, so you can win back even money on your bet. The graphics are plain, but the emphasis is not on arcade-type action, but on learning how to play the odds to your advantage.

The machine lets you discard and draw up to five cards to improve your hand. Using computers, Vegas Video programmers analyzed the outcome of various discard options as many as 25,000 times, then converted the results into payback ratios to see which options would return the most money to the player. For instance, given a mismatched hand with a jack as the high card, should you discard the whole hand? The Vegas

Video experts say no—hang on to the jack. Tossing out all five cards produces a payback ratio of 33 cents on each dollar bet; starting with a jack increases the probability of drawing a pair and results in a payback ratio of nearly 50 cents on the dollar.

IF YOU'RE A CHESS NUT...

While poker mixes skill and luck, winning at chess depends on skill alone. You can increase your skill with Enlightenment's Paul Whitehead Teaches Chess, one of the best chess instruction programs available. More than 60 hours of instruction are included on the program's three disks, and at any point you can exit the instruction boards to test yourself on the Coffeehouse Chess Monster, a computer chess game with nine skill levels. Enlightenment also distributes Jeremy Silman's Guide to Chess Openings.

DRIVING THE POINT HOME

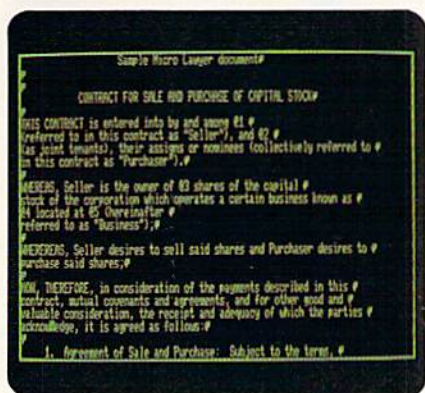
As the program points out, Keys to Responsible Driving, developed by CBS Software and distributed by Mindscape, is no substitute for a driver education course. However, the nine self-paced sections will augment a real-life course. The sections cover handling a vehicle, traffic signs, regulations, how stress and drugs affect responses, and so on. Pretests determine how much you already know about a subject; posttests determine how much you've learned.

The two-disk program also produces pictures of driving situations you might encounter and displays stopping distances and reaction times in the form of bar graphs. For instructors, it keeps a list of students and their progress.

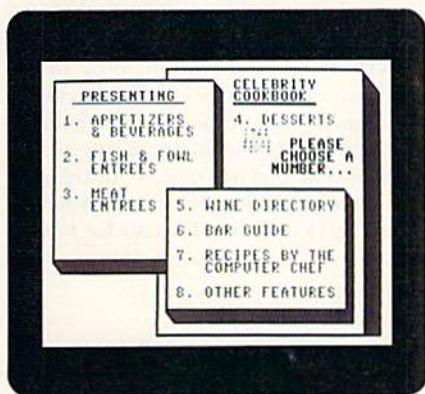
CHEERS!

Concept Development Associates has computerized the mainstay of the bartender's bookcase in Mr. Boston's Official Micro Bartender's Guide. The printed guide has been published in 62 editions over a 50-year span, and more than nine million copies have been sold. The electronic version comes with more than 1000 drink recipes, a complete wine-selection list, descriptions of beers of the world and provision for adding recipes or changing them to suit your taste.

If you're expecting a crowd of 500 for cocktails, no problem. Mr. Boston will quickly determine the proper proportions for one to 999 servings of any drink. It can also search for drinks by various parameters, including name and main ingredient; lets you note which drinks your friends like and recall the list later; and prints out recipes and a shopping list covering liquor, mixers and glassware. An abridged version of the program is also available. ▶



The sort of document Micro Lawyer can produce.



Celebrity Cookbook's menu leads you to a host of delicious recipes.



Mr. Boston's Guide tells you all you need to know about potent beverages.



Searching for the Perfect College?

... maybe your typing's

terrible. Well, several

C-64 programs stand

waiting to help.

CDA's Micro Wine Companion, now in its third edition, ties wine choices to food recipes from the company's cookbook disks (see below). It catalogs wines by 19 criteria, including price, approximate purchase date, type, country and flavor; provides wine-tasting reviews; and prints pocket reviews in 11 different formats for handy reference.

CHOW!

Concept Development also publishes a complete set of cookbooks on disk. The America Cooks series includes separate program packs covering such cuisines as Chinese, Italian, American, Mexican and French. Each package contains recipes from 20 to 24 top chefs representing each nationality, plus wine suggestions to complement the recipes.

CDA's Great Chefs program is a three-volume collection of more than 300 recipes from Public Broadcasting's television series by the same name. The program can alter recipes so that you can accommodate any number of guests, and it prints out lists of ingredients and instructions. You will find this a handy feature, since computers are seldom located in the food-preparation area.

These cookbook programs are versatile in searching through recipes by various parameters, such as name, main ingredient, whether the dish is served hot or cold and whether it's a main dish, side dish or dessert.

If you'd rather cook like a celebrity instead of a great chef, you'll be interested in The Celebrity Cookbook, from The Dream Machine. This program isn't as chock full of recipes as the others, but it still includes many offerings. It also provides a recipe filer and a quiz for determining if your weight problem is psychological, plus sections on nutrition, shopping manners and what food preferences reveal about personality. A bartender's guide provides instruction on making a dozen popular drinks, while a related pro-

gram determines how much booze to buy for a big party.

COMPUTER TUTORS

Doing homework isn't fun, but Spinnaker Software's Homework Helper programs can make it easier. Homework Helper—Writing, for instance, breaks writing down into three stages: prewriting, writing and rewriting. It then applies these divisions to two types of assignments: book reports and essays. Book reports are further broken down into fiction, biography and informational, and essays into descriptive, narrative, persuasive and expository.

You specify the type of document you want to create; then the program automatically leads you through its preparation. For a book report, it begins by asking you the theme of the book, and even suggests universal themes to help. It also asks about the setting, characters and other particulars. Finally, you call up the built-in word processor to flesh out your answers into a completed report.

For persuasive essays, the program wants supporting arguments, as well as arguments that might be used by the opposition. It's a tedious process—but that's what writing is all about.

Spinnaker's Math Word Problems presents word problems, then shows you how to determine what's being asked and how to come up with an equation to solve the problem.

JUST YOUR TYPE

Of course, you might want to write letters to your friends about how you've slimmed down, hit the video-poker jackpot and learned to cook gourmet dishes, but maybe your typing's terrible. Well, several C-64 programs stand waiting to help.

Typing Tutor IV, from Simon & Schuster Software, is an upgrade of Typing Tutor III, a program that's sold 300,000 copies in three years. The new version asks how you type now (hunt-and-peck? two-finger? touch?) and how many hours a week you have for practicing, then tailors your lessons accordingly. It also distinguishes between upper- and lowercase letters and, recognizing that many people now use word processors instead of typewriters, lets you backspace to delete errors, even at a sacrifice of speed. Typing Tutor IV's Instructor mode can hold records for eight students, review their progress, add new tests, delete records and give multiple-level speed tests, and its Letter Invaders game spices up practice with arcade-type action.

MasterType, developed by The Scarborough System and distributed by Mindscape, displays fingers resting at the home position on the keyboard, then wiggling to show how to move to the upper and lower rows of the keyboard and back. ▶

Table 1. Distributors and prices.

Applications Plus

15720 Harmony Way
Apple Valley, MN 55124
612-432-5560
Vegas Video Poker—\$29.95

Baudville

1001 Medical Park Drive SE
Grand Rapids, MI 49506
616-957-3036
Guitar Wizard—\$24.95

Robert Bowden

4907 22nd Ave. W
Bradenton, FL 34209
813-792-4876
Exercise Tracker—\$15
For Ectomorphs Only—\$10
Planning Tanning—\$10
Vitamin Advisor—\$10

Concept Development Associates

45 Cordova St.
St. Augustine, FL 32084
904-825-0220
America Cooks series—\$14.95 each
Great Chefs—\$65
Micro Wine Companion—\$49.95
Mr. Boston's Official Micro Bartender's Guide—full
version, \$29.95; abridged version, \$14.95

DJ Software

10636 Main St., Suite 414
Bellevue, WA 98004
206-883-9257
Easy Guitar—\$30

The Dream Machine

Merrill Ward & Associates
255 N. El Cielo Rd., Suite 222
Palm Springs, CA 92262
619-320-5828
The Celebrity Cookbook—\$29.99

Electronic Arts

1820 Gateway Drive
San Mateo, CA 94404
415-571-7171
Mavis Beacon Teaches Typing—\$39.95

Enlightenment, Inc.

1240 Sanchez St.
San Francisco, CA 94114
415-641-9131
*Jeremy Silman's Guide to Chess
Openings*—\$59.95
Paul Whitehead Teaches Chess—\$59.95

Nolo Press

950 Parker St.
Berkeley, CA 94710
415-549-1976
WillWriter—\$39.95

Mindscape

3444 Dundee Rd.
Northbrook, IL 60062
312-480-7667
Keys to Responsible Driving—\$89.95
MasterType—\$39.95
The Original Boston Computer Diet—\$49.95
The Perfect Score (including *The Perfect
College*)—\$69.95; *The Perfect College
alone*—\$19.95

Progressive Peripherals & Software

464 Kalamath St.
Denver, CO 80204
303-825-4144
MicroLawyer—\$59.95

PUMA U.S.A.

492 Old Connecticut Path
Framingham, MA 01701
617-875-0660
RS-Computer Shoe—\$199.95 per pair

RUN Magazine

80 Elm St.
Peterborough, NH 03458
800-258-5473
RUN Calc (in ReRUN Productivity Pak III)—\$19.97

Simon & Schuster Software

Gulf & Western Building
One Gulf + Western Plaza
New York, NY 10023
212-373-8882
Typing Tutor IV—\$39.95

Spinnaker Software

One Kendall Square
Cambridge, MA 02139
617-494-1200
Homework Helper—Writing—\$32.95
Math Word Problems—\$32.95
*Hayden Score Improvement System
for the SAT*—\$39.95

Timeworks

444 Lake Cook Rd.
Deerfield, IL 60015
312-948-9200
Evelyn Wood Dynamic Reader—\$29.95

Your C-64 may not be a

lawyer, but there are

programs for it that offer

competent legal assistance.

There are 18 lessons, each concentrating on a different section of the keyboard.

New on the scene is Mavis Beacon Teaches Typing, manufactured by Software Toolworks and distributed by Electronic Arts. If you're an adult, you'll practice on passages from Mavis's library of 1000 historical writings, while youngsters get to type jokes, riddles and rhymes. Mavis "speaks" in conversational tones while analyzing your typing mistakes. The program also displays a keyboard with fingers that type along with you to show correct fingering, and it lets you set a metronome to encourage even typing. To break the monotony, an Indy Racer game is included on the Mavis Beacon disk.

SAT: SOFTWARE ANTICIPATES TESTING

The letters SAT, for Scholastic Aptitude Test, often strike fear into the hearts of high school students. But now, as software anticipates testing, they signify help as well.

Among the programs students can turn to in preparing for this test is the Hayden Score Improvement System for the SAT, from Spinnaker. This extensive program fills seven disks and is divided into three sections: math, verbal and practice tests. The math section provides review in algebra, geometry, quantitative comparisons and word problems, while the verbal section covers vocabulary and reading comprehension. The practice tests include a diagnostic pretest for revealing the skills you need to work on, as well as two complete tests that are similar to the real thing, so you'll know what to expect on exam day.

Mindscape's Perfect Score preparation program for the SAT occupies six double-sided disks. The 149-page manual, which comes in a three-ring binder, provides detailed test-question examples. The package includes a separate program, the Perfect College database, which lists 1600 colleges and universities and lets you search

for institutions according to criteria such as location, academic emphasis and cost.

DON'T MOVE YOUR LIPS!

If you need to improve your reading comprehension and speed, Timeworks' time-tested Evelyn Wood Dynamic Reader promises help. It flashes sentences and phrases on the screen and tells you how long you have to read them. There's no cheating and no looking back. Your progress is recorded on disk for review later in an easy-to-comprehend bar chart.

YOUR COMPUTER AS COUNSEL

When a person begins a sentence with, "Now, I'm not a lawyer, but . . .," watch out! However, if it's a Commodore speaking, you might well listen. Your C-64 may not be a lawyer, but there are programs for it that offer competent legal assistance.

For instance, WillWriter from the Nolo Press is designed to produce a valid will. The book accompanying the program says many people resist making or updating their will "to avoid high lawyer fees." However, if you need only a simple will, you may be able to prepare it for only the price of this program. Several estate attorneys who have looked at WillWriter said it is suitable for people who have uncomplicated estates and no business ventures.

WillWriter's book helps you determine if a simple will can meet your needs. If so, you go on to the program, which produces a thorough document, including gifts to children and others.

Progressive Peripherals' MicroLawyer produces blanks of more than 100 commonly used legal forms, to be used, as the program states, "in conjunction with advice from your lawyer."

Why bother with the program if you need a lawyer anyway? Because, in the process of filling out the forms, you'll gather needed information and focus your direction, thereby reducing the number of hours for which you'll have to pay your attorney.

THERE'S MORE

From cookstove to courthouse, C-64 software can help you do things faster and more proficiently. This article is only a sampling of available programs, so look around and read *RUN's* software reviews and advertisements. Without appropriate software, your Commodore doesn't live up to its full potential, and maybe you aren't living up to yours, either. ■

Lonnie Brown is an editorial writer and computer columnist for a New York Times-owned newspaper in central Florida.

Get Results

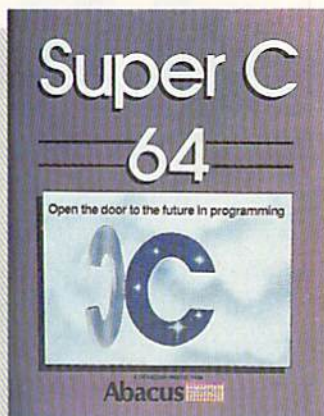
with proven software and books from Abacus.



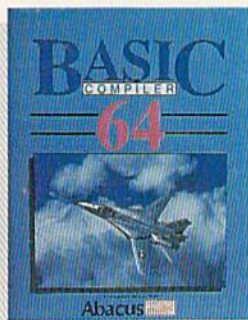
Super Pascal—Get the fastest and complete Pascal for your computer. **Super Pascal** is a full implementation of standard Pascal. Extensive editor features search, replace, etc. Even add machine language routines with the built-in assembler. Fast graphics library. C-64 version has high-speed DOS for faster access. More than just a compiler—**Super Pascal** is a complete system that gives you programming results.
C-64 \$59.95 C-128 \$59.95



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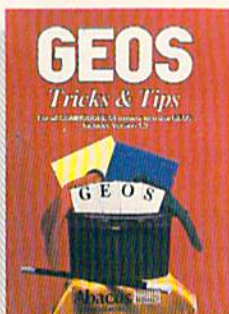


Super C—You can now develop software or just learn C on your computer. Easy-to-use and takes full advantage of this versatile language. Produces 6502 machine code and is many times faster than BASIC. Includes full-screen editor (search, replace and block operations), compiler, linker and handbook. Libraries for graphics and advanced math are included. Whether you want to learn C, or program in a serious C environment for your Commodore, **Super C** is the one to buy.
C-64 \$59.95 C-128 \$59.95



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GEOS is a trademark of Berkeley Softworks.

RUN TERM 128



By TOM BROWN

.....

RUN TERM 128 IS A POWERFUL TELECOMMUNICATIONS PROGRAM OFFERING FEATURES THAT RIVAL THOSE OF COMMERCIAL PROGRAMS. IT SUPPORTS BOTH 40- AND 80-COLUMN MODE; 300 AND 1200 BAUD; BOTH THE PUNTER AND XMODEM FILE-TRANSFER PROTOCOLS; A NINE-NUMBER PHONE BOOK; AN AUTODIALER THAT WORKS WITH THE COMMODORE 1650, 1660 AND 1670, AND WITH THE HAYES MODEMS; A 60K TEXT BUFFER; AND MORE!

RUN TERM 128 IS COMPOSED OF FIVE DISK FILES. USING *RUN'S* NEW CHECKSUM PROGRAM ON PAGE 80 OF THIS ISSUE, TYPE IN EACH FILE CAREFULLY AND SAVE IT TO A FRESHLY FORMATTED BLANK DISK. THE LISTINGS APPEAR IN A SPECIAL FORM, CONSISTING OF HEXADECIMAL DATA AND A SMALL BASIC HEADER THAT READS IN THE HEX DATA, CONVERTS IT TO INDIVIDUAL BYTES, AND THEN ACTUALLY CREATES A BINARY FILE ON YOUR DISK.

ONCE YOU'VE SAVED ALL FIVE FILES TO DISK, RUN THE FOUR HEX LISTINGS TO CREATE THE ACTUAL PROGRAM FILES. THEN LOAD AND RUN THE BASIC PROGRAM CALLED `BOOT.RUNTERM128`. WHEN THE PROGRAM HAS BEEN ACTIVATED, THE SCREEN FLICKERS MOMENTARILY AND PROMPTS FOR THE TIME APPEAR. PRESSING THE RETURN KEY AT THE FIRST PROMPT (AM/PM) ZEROES THE CLOCK AND EXITS TO TERMINAL MODE. ►

.....

RUN it right: **C-128; modem**





At this point, the Status line (see below) appears at the top of the screen, accompanied by a brief help menu listing the main program commands. You can also bring up this menu by pressing the help key from Terminal mode.

Whenever the Status line (marked by the clock on the right side) appears on the screen, you're in Terminal mode, and the main ALT commands (see below) are active. When you select a program option, the Status line disappears and these commands are no longer available. Normally, this is because you're being asked for a menu selection, filename or other input.

When you return to Terminal mode, the screen is usually the same as you left it, except in Conference mode and during file transfers. Some ALT commands don't change the screen at any time during execution.

THE STATUS LINE

The top line of the screen is called the Status line and displays information on the program's internal settings. On the right end of the line is the clock. If your modem can detect a carrier, you'll see a lowercase *c* to the left of the time whenever a carrier is present. On the left end of the line is the baud rate—either 300 or 1200. To the right of the baud rate is a set of single-letter flags: *b e w j t d s*. Their meanings are as follows:

b—the text buffer is open to receive characters from the modem for later retrieval.

e—the Echo function is on. Sometimes called half-duplex, Echo displays what you've typed, if the service you're on doesn't echo characters back to your computer.

w—the Buffer Wrap function is on. When the text buffer fills up, buffer wrap makes it wrap around to continue to accept data. Otherwise, the buffer closes when it's full.

j—linefeeds from the modem will be printed to the screen. When this option isn't on, linefeeds are ignored. This feature works by changing the Input Translation table.

t—ASCII translation during Xmodem file transfers is activated.

d—DLE screening (used for PC Pursuit) during Xmodem file transfers is on.

s—padding will be stripped from the end of files downloaded using any Xmodem option. If an *s* isn't present, such padding is retained.

When any of the above letters don't appear in the Status line, those options are not in use.

THE TRANSLATION TABLE

All the keys behave in their default state, as they do in the VT100 program on the 1670 demo disk, and RUN Term 128 uses the same translation tables as VT100. However, RUN Term 128 isn't specifically designed for VT100 emulation,

so some substitute keypresses are needed. I've used the ones that follow, with the Commodore substitute listed first.

Shifted + equals {
Shifted - (minus) equals }
Commodore/- equals |
Shifted ↑ equals ~
↑ equals ^
£ equals \
Shifted @ equals

Note that escape sequences aren't supported by RUN Term 128, so the program may not operate properly on remote full-screen editors.

THE ALT COMMANDS

To view most of RUN Term 128's available commands, press the help key. Execute these commands by holding down the ALT key at the top of the keyboard as you press the desired command key. The following are the ALT key commands available in RUN Term 128:

A—Accesses Autodial mode. First you must specify your modem type, then the number of seconds you want to elapse between dial attempts. Finally, you can enter a number directly or use the Phonebook.

The Phonebook commands are a straightforward Load, Save and Edit. If you choose to Edit with nothing in memory, a new blank book is created for you.

You can enter nine numbers in a Phonebook. Each entry includes the name of the BBS, its phone number and three strings, which can be used to send a log-on sequence. If you're using the 1670/Hayes option, the first character of every phone number must be a letter *p* or *t* (note the lowercase) to indicate pulse or tone dialing. With the 1650 or 1660 dialing option, an asterisk in the phone number delays dialing for one second.

B—Toggles the Text Buffer open and closed. To find out where you are in the buffer, press the help key. Below the list of commands you'll see the present position of the buffer write pointer, with the maximum possible value of the pointer in parentheses.

C—Selects Conference mode, which makes a number of simultaneous connections possible. At the top of the screen, you'll see a row of 80 reverse-video spaces, where your characters appear as you type. There's no cursor in this mode. Press control/X to erase the whole line, or use the delete key to erase individual characters as usual. Your line of text won't be sent until you press the return key. Characters received from the modem are printed at the bottom of the screen. It's recommended that you instruct the on-line service *not* to echo your characters back while you're using this option.



The *only* way to exit Conference mode is with the stop key, because none of the ALT command keys are available. However, settings such as Buffer Open/Close, Echo and Baud Rate that are selected in regular Terminal mode are active in Conference mode. In other words, open the buffer *before* entering Conference mode!

D—Downloads (receives) a file from another computer. This option works only with drive 8. You have a choice of Punter protocol or one of three Xmodem protocols: Checksum, CRC or WXmodem.

Don't worry if you don't know which Xmodem protocol to use. Checksum is the standard, and the program automatically switches from WXmodem to CRC and from CRC to Checksum, if it doesn't connect properly using the protocol you selected.

WXmodem, which stands for Windowed Xmodem, is relatively new to Commodore users. Available only on PeopleLink (PLink), it transfers four Xmodem blocks at a time, so it's faster than Checksum or CRC.

To abort Punter transfers, hold down the Commodore key. To abort Xmodem transfers, hold down the stop key.

Punter indicates a block has transferred correctly by printing a hyphen to the screen or incorrectly by printing a colon. Xmodem clearly lists the number of blocks and the number of errors in the transfer as ASCII digits.

During any Xmodem transfer (up- or download), the file is visible on the 40-column screen as it moves. If you're in 80-column and want to view a file as it passes through, you can switch to 40 columns by using the composite/RGB switch on your monitor.

Since Xmodem files must be transmitted in blocks of 128 bytes, you may have to add bytes to the last block to give it the full 128. This is called file padding and is done using either control/Zs or CHR\$(0)s (zero bytes).

The Xmodem standard requires the transmitting program to make sure the byte used for padding is *different* from the last byte of the file. A few Xmodem programs (including RUN's RUNning Board BBS) fail to do this, so downloads from them using the Pad Stripping option may be garbled. To remedy this, turn off the Pad Stripping option by using the appropriate option from the Default submenu (see * below).

E—Toggles the Echo mode—sometimes referred to as *half-duplex*—on and off. When Echo mode is off, you're in *full-duplex*. If you can't see what you're typing when you're online, turn on Echo mode.

F—Sequential file reader. Use this command to send a file to the screen, printer or modem. See Boot.RUNTerm128 (Listing 1) for the printer device and secondary address number Pokes,

which default to device 4 and secondary address 7. A file is translated to ASCII when sent to the modem.

H—A modem, like a phone, can be “off the hook” or “on the hook.” This option works only with the 1650 and 1660 modems, and it's a toggle, because the pick-up command for the 1650 is the hang-up command for the 1660.

To hang up the 1670 and other Hayes-compatible modems, press the plus-sign key three times in rapid succession from Terminal mode, with a pause both before and after the trio of keypresses. The pause tells the modem you're sending a command, not just sending a line of plus signs to the remote terminal or BBS.

To pick up a 1670/Hayes modem, type in an uppercase ATD to access Originate mode (like



Main menu for RUN Term 128, showing the options.

dialing without a phone number) or an all-caps ATA to force your modem into Autodial mode.

J—Toggles linefeed printing. This option actually changes the Input Translation table. Some services always send CHR\$(10) (a linefeed) with each return, leaving you with double-spaced text. It's usually best to turn linefeeds off, unless you need them.

K—RUN Term 128 redefines only the help key and the shifted run-stop key, but, using Basic 7.0 commands in Direct mode, you can define a set of function keys for your own special use while online. This option lets you load and save these keys easily.

L—Loads a sequential file into the text buffer, starting at the buffer write-pointer position. When the load is finished, the write-pointer is updated, allowing you to append several other sequential files. To force the load into the start of the buffer, first zero the buffer (see Z below).

When you return to the Terminal mode, remember that the screen is preserved during operations such as loading the buffer. If you had the main menu on the screen before the buffer load, you'll find the buffer write-pointer unchanged when you return to Terminal mode.



Press the help key again if you want to see the updated buffer write-pointer.

S—Saves your choice of the entire buffer area (60K) or the area from the start of the buffer to the buffer write-pointer. The first of these options is handy for use with the Buffer Wrap feature and the second for saving short pieces of data. The save is directed to your choice of three devices: to disk, as a standard sequential file; to the printer (see F above); or to the modem (with ASCII translation).

T—Sets the on-screen clock. By pressing return at the AM/PM prompt, you can instantly zero the clock.

U—Uploads (sends) a file via Punter or one of two Xmodem protocols: Checksum or CRC. Due to hardware limitations in the C-128, WXmodem (see D above) isn't available for uploading files.

V—View the text buffer. Text is formatted on the screen, with a left arrow taking the place of a return. The following key commands are active in this option:

Cursor down: Scrolls the buffer forward (advances through the text).

Cursor up: Scrolls the buffer backward (toward the beginning of the text).

Plus sign: Scrolls forward 256 characters.

Minus sign: Scrolls backward 256 characters.

Home: Moves to the start of the buffer. Any other keypress exits to Terminal mode.

W—Toggles the Buffer Wrap function. Sometimes it's inconvenient to have a buffer close in the middle of a transmission. This option forces the buffer write-pointer back to the start of the buffer to continue writing, without the buffer closing. Note that the Buffer Wrap option works only when you're saving the entire 60K buffer (see S above). If this option is turned off, the buffer closes when it's full.

Z—Zeroes the buffer and fills the entire buffer with CHR\$(13)s (returns). When you press Z, the Terminal mode screen doesn't change, but the cursor vanishes, then reappears shortly.

@—Sends a disk command. When you're prompted for a command string, input is a dollar sign to Read the Directory. Pattern matching is possible here, as in the C-128's machine language monitor.

To read the disk drive's error channel, just press return without entering a command string.

Disk commands should be sent the same way as with the DOS Wedge, except you can omit the @ as the first character.

*****—Changes several system defaults. Select the proper menu options here to change the foreground and background colors; Punter protocol block size; and parity, stop bit, word length and delete key values.

Don't change the above parameters unless you know what you're doing! Also, changing the de-

lete key value alters the Input and Output Translation tables. RUN Term 128's delete key value is CHR\$(20), while some computers you call may use CHR\$(127) or CHR\$(8).

You can also opt for three Xmodem features here. One is ASCII translation, which makes text files more readable if they were written on another computer using true ASCII.

The second is DLE screening. Long-distance services, such as PC Pursuit, use the same Xmodem commands for their own operation as you use for file transfers. If the other computer has DLE screening available, then turn this option on.

The third Xmodem option is to strip file padding at the end of Xmodem downloads. The default is on (indicated by a letter s on the Status line). Turn this option off, and any bytes added to the end of the file during the transfer to your computer are left intact. Some programs won't work unless the extra padding is removed.

1—Toggles between 300 and 1200 baud. Don't select 1200 baud unless you have a 1200-baud modem! Also, don't change baud rates while online. Modems that support 1200 baud, such as the 1670, set their own baud rate when you type in the ATD command to dial, and they can't change that setting until you hang up.

1, 2, 3—Holding down the ALT key with number key 1, 2 or 3 sends one of the three Phonebook strings to the modem, with translation to ASCII. Note that you must have dialed with the Phonebook option and that the selected Phonebook must still be in memory, so don't load another while you're still online. These three keys are deliberately sent slowly, due to problems I've experienced at 1200 baud with some online computer services.

Escape—Pressing the escape key while holding down the ALT key returns you to Basic. Don't press run-stop/restore! To reactivate RUN Term 128, type in the following in Direct mode and press return:

```
BANK0:SYS22000
```

ACKNOWLEDGMENTS

My thanks go to Kermit Woodall of PeopleLink (PLink) for not only turning my CRC Checksum routine into CRC Xmodem, but for going one step further and creating WXmodem, a protocol that was "physically impossible" for computers without a UART (Universal Asynchronous Receiver/Transmitter) chip! He has placed his work in the public domain, and for that we should all thank him. ☐

Tom Brown has been writing programs for Commodore computers since 1983. His Prototerm for the C-64 has been a public domain staple for BBSs.

Continued on p. 88.

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Sprinter Printer

*Hitch Okidata's 180 to your Commodore
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By TIM WALSH

After reading several Okidata 180 press releases that passed through the office, I couldn't wait to get one of these printers. After all, it isn't every day that a manufacturer announces a 180-character-per-second printer that's Commodore compatible right out of the carton.

A speed of 180 cps is usually associated with expensive 24-pin, high-end printers, not low-cost machines aimed at the home market. Faster speed does not necessarily result in a better printer, though. Even the most conscientious manufacturers might sacrifice some reliability and software compatibility in the name of faster speed. Ideally, if the printer offers fast printing, it should complement the increase in speed with heavy-duty construction, software friendliness, and, above all, a price tag that doesn't outweigh that of your entire computer system. I'll let you be the judge as to whether or not the Okidata 180 meets or exceeds those desirable attributes.

DELIVERY DAY

When the 180 arrived, I was pleased to find a printer that had the same high quality of appearance found in other Okidata printers, such as the 182 and the Commodore-compatible 120. One look, and Okidata 180 buyers will know that their money wasn't wasted on flimsy, low-budget hardware.

As the press releases promised, two cables were packaged with the unit, one designed for use with the printer's Commodore-compatible serial port and the other for interfacing the printer's parallel port with parallel computer systems. Remove the styrofoam packing materials, plug the serial cable into your disk drive, pop the nylon ribbon cartridge (replacement cost: \$8.95) in place, and you're ready to print.

With dimensions of 14.2 x 10.8 x



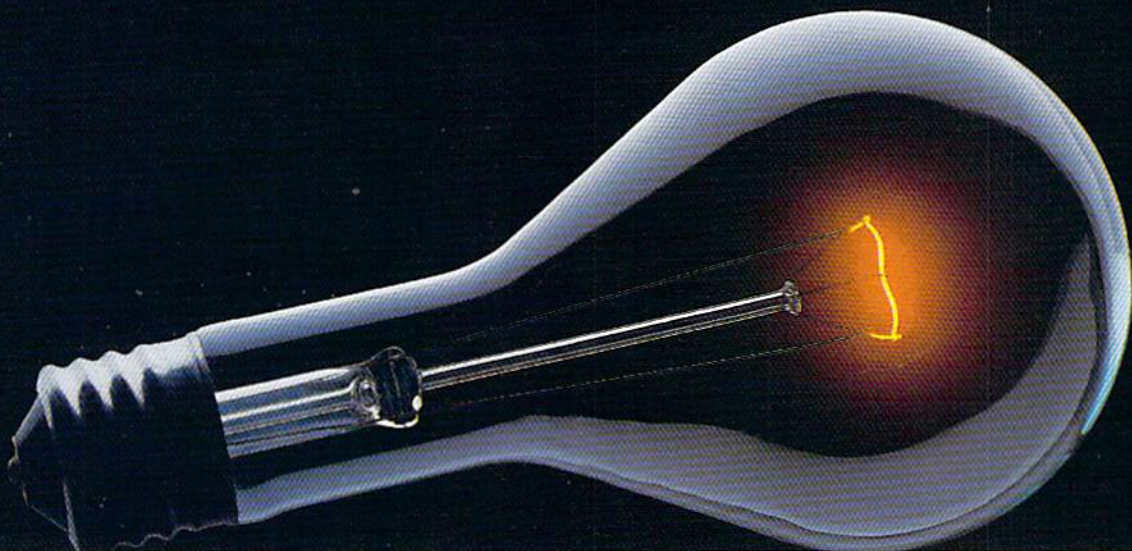
The Okidata 180, shown with accompanying serial and parallel cables.

3.2 inches, the 180's size is roughly in the same ballpark as many other printers of its class. Four control buttons and a total of nine small LED-type lights are located on the front panel. The leftmost feed button lets you perform a printer self-test. It also controls line-feeds and, if held down for a second or two, form-feeds. Next to that button is the select button, which lets you perform hex dumps and toggle the printer on- and off-line.

Moving to the other side of the control panel, the rightmost button lets you

choose from three print modes: Near Letter Quality, Utility (draft) and HSD (High-Speed Draft). Finally, the button to the left of the print-mode button permits the selection of 10-, 12- or 17.1-character-per-inch print pitch.

Other print controls include a bank of dual in-line package (DIP) switches hidden under a cover in the rear of the unit. Once you find a screwdriver to remove the cover, you'll be able to use the DIP switches to select Commodore or Epson printer emulation, set both form lengths and automatic linefeeds, ▶



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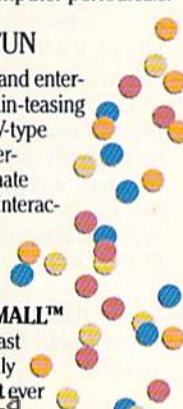
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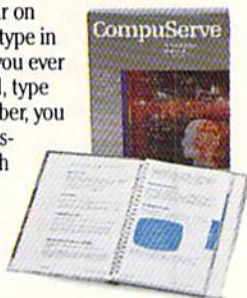
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SPRINTER PRINTER

choose international character sets, adjust graphics density and assign the unit a printer device number of 4 or 5.

One feature I found useful was a folding paper separator located on top of the unit. It locks into an upright position for single sheets and folds flat for continuous forms. Rather than try to incorporate a fancy, complicated design, Okidata opted for simplicity, and the result is an effective, easily manipulated paper separator. Incidentally, the 180 also has an opening underneath for an alternative method of printing continuous forms.

Like other Okidata printers, tractor-feed sprockets are built into both ends of the platen roller, which means that they cannot be adjusted. This raises the question of how you print continuous mailing labels with this printer. You won't find any clues in the manual, but having gained experience with a few Okidata printers of similar design, I've developed a sure-fire solution. Lower the paper separator, then align the holes on the left side of the labels with the left sprocket teeth and set the paper lever to friction feed. Aligning your addresses horizontally is simply a matter of using your label program to set the left margin; or you can choose to set the printer's left margin to a default value that works best with your labels.

DOCUMENTATION

An 88-page, clearly written reference guide takes you on an informative printer tour and provides about as much information as most users probably need in order to use the 180 with their computer systems. Okidata devotes eleven pages of the manual to instructions on using the printer with commercial software. Half of those pages are devoted to three Commodore word processors: PaperClip, Easy Script and WordPro.

For the most part, the instructions explain how to access some of the Okidata 180's various print options from those software packages. For instance, you'll find the control-code format for underlining with PaperClip, getting subscripts within Easy Script and assigning decimal codes in WordPro. None of the instructions go into great detail, but they're substantial enough to get you started.

COMPATIBILITY CAMPAIGN

Exhaustive testing revealed that the printer works with a variety of Commodore-specific graphics packages. I subjected it to the equivalent of the acid test. Connected to my C-128D, it



was barraged for weeks with endless work—screen dumps of graphics, commercial printing packages, manuscripts, program listings—you name it, I tried it.

I found the print quality in Near Letter Quality mode as good as or better than most printers in the 180's price range, but not quite as crisp as the Commodore-compatible Star NL-10, the printer whose NLQ mode serves as a bench mark by which all other low-cost printers should be measured. Overall, though, the NLQ mode is probably impressive enough to attract many buyers. NLQ is available in both 10- and 12-pitch print modes.

Draft and High-Speed Draft modes are both clear and are easier to read than Draft modes on most other printers. Not only is the quality and readability exceptionally good, but it is very easy to change modes. Simply press a button to select the off-line mode of the printer, then toggle through NLQ, Draft and High-Speed Draft. Of course, if you opt for software control, the manual does list the printer-control codes used to access those options.

As mentioned previously, the 180 supplies an Epson mode that opens up a great deal of flexibility, especially for those who need the features the Epson mode offers. For starters, it gives you 9-pin graphics and a choice of eight graphic densities, ranging from a single density of 60 dots per inch, up to a high of 240 dots per inch in quadruple-density graphics.

Like all Epson-compatible printers, accessing these graphics in your own programs requires some effort on the part of the user, and the manual gives the same advice I do—purchase a software program that lets you enter the codes needed to access those graphics. Getting such software is no problem, since nearly every commercial software package for the C-64 and C-128 provides Epson printer drivers.

The 41 Commodore and 58 Epson

control codes that the manual clearly lists in both decimal and hexadecimal configurations make programming the 180 through software fairly easy. Every print option, from selecting print pitch to setting tabs, is given, but no mention is made of which features can be mixed together. For instance, NLQ isn't available in 17.1 cpi mode, so entering that combination of control codes is ineffective.

With the printer in Commodore mode, you have a choice of 10, 12 or 17.1 cpi printing. In Epson mode, a fourth print pitch of 20 cpi is offered, which allows printing up to 160 characters per line. Other print options available include sub- and superscripts, enhanced, emphasized, double-width and underline printing, in both Commodore and Epson modes. Like most Epson emulation modes, it also offers an italicized character set.

When using the 180 with graphics printing packages, I expected it to work well, and it did. In Commodore mode, with software using printer drivers such as 1525, MPS-1000, MPS-1200, and so on, the printer works very well. Print Shop, Newsroom and Printmaster graphics all print without a hitch and look great on the 180.

In an effort to discover the printer's performance using the parallel connector, I performed testing on an Amiga 500 and was alarmed to discover the printer didn't work in Parallel mode. Further investigation revealed that the 180 was innocent of any wrongdoing—the printer port on the Amiga was defective.

CONCLUSION

Overall, the 180 is a fine printer. New owners certainly won't be disappointed with it. It looks good, operates quietly and quickly and offers a compatibility option that doesn't limit your use to the C-64 and C-128. I'd have a hard time deciding between purchasing the 180 and quite a few other top-notch competing printers, such as the Commodore MPS-1200 and 1250, the Star Micronics NL-10 and NX-10 and a half-dozen or so parallel printers.

The mere fact that the advent of the 180 makes the purchasing decision so difficult says a lot for the printer. If it had any significant shortcomings, the decision would be easy. (Okidata, 532 Fellowship Rd., Mt. Laurel, NJ 08054. \$329.) ■

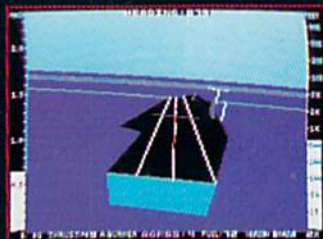
Tim Walsh, RUN's technical editor, is our indefatigable resident hardware tester and reviewer.



1987 - Expanding Scenery disk coverage; East Coast, Japan, & Europe



1986 - Flight Simulator II for the 68000 computers



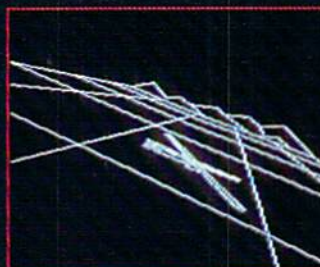
1985 - High-performance Jet flight simulator for the IBM, Commodore 64, and Apple II computers



1982/1983 - Microsoft Flight Simulator & Flight Simulator II



1979 - 3D graphics applied to the original FS1 Flight Simulator for the new Apple II and TRS-80 computers



1977 - SubLOGIC's 3D graphics package in BASIC and M6800 Assembly Language

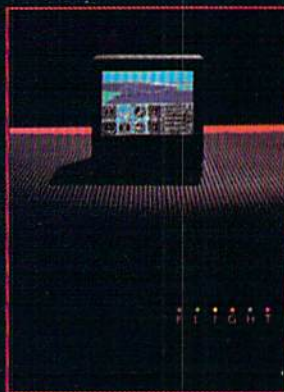
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We invite you to help us celebrate our first decade of success, and share in our anticipation of the next ten years to come. SubLOGIC tenth-anniversary promotional shirts and posters are available at your dealer or directly from SubLOGIC. See your dealer, or write or call us for more information.

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RUN's Memo Book

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the press of a key.

By BARBARA MINTZ

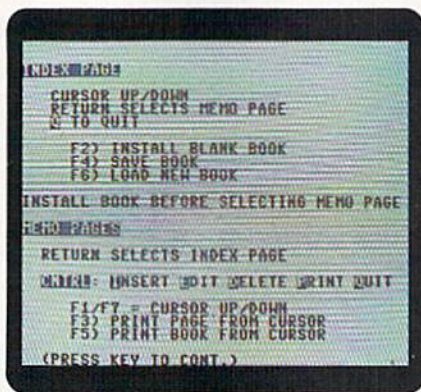
If you'd like to set up a simple, versatile file system with a minimum of effort and a maximum of flexibility, then it's time to add *RUN's* Memo Book to your collection of C-64 application programs. Memo Book is an electronic "Rolodex" you can organize and format any way you want, then flip through the pages at will. And "flip" it is, for the machine language program is fast, and your data is held in memory, so no time is lost in disk access.

GETTING STARTED

Type in Listing 1 using *RUN's* Checksum, and save it to disk. Once it has been saved, run it and Memo Book installs itself at the top of Basic memory, starting at address \$9400. Then it resets the top-of-Basic pointers to that address, so Basic programs won't interfere with Memo Book's operation. About 141 blocks are left free for a second program. Memo Book also inserts the address of its own machine code in Basic's error vector at \$300, to intercept the routine that prints Basic's error messages. This makes Memo Book's index page, instead of the usual Syntax Error message, appear each time you press * and return.

When initialization is complete, a subroutine clears the Basic program area, resets all the pointers and displays Memo Book's index page. You can go on to set up your Memo Book at this point, or, if it's already set up, you can leave the program by pressing Q and return, and load another program. Unless the program you load is unusually long or changes the Basic pointers (which many commercial programs do), you can continue to read and write memos until you turn off your computer.

If a crash forces a reset, you can probably reinitialize Memo Book with SYS 40486. Even if you can't, your entries should be safe, because they're stored out of the way under Basic's ROM.



Menu of commands from the Memo Book program.

Nevertheless, when you've made a lot of entries, better safe than sorry—back up your data by saving it to disk.

When you use the program for the first time, you'll have to set up your memo book. To start this process, press F2. Then, at the question "Save This Book?", respond with N, since you don't yet have a book to save. Finally, press return, and the first empty page of your memo book will appear.

If you've already set up a book with data and saved it to disk, this is the time to load it into memory. Press F6 and, at the prompt, type the filename of the book and press return. When the index page appears, use the cursor keys to scroll to the page you want, then press return to display the page on the screen. You can also "flip" through the pages of your book by scrolling. Use the cursor keys to scroll rapidly, or F1 and F7 to scroll slowly. If the number of entries makes scrolling through the pages unwieldy, press return to go back to the index and pop to another page.

Memo Book has relatively few commands to remember, and I've kept those



few as intuitive as possible. If you do need to refresh your memory, enter ? to see the Help screen. Also, if you ever issue the wrong command, you can abort it with a return. Commands that affect the entire book must be entered from the index page.

INPUTTING ENTRIES

The command for adding entries to your memo book is control/I (for insert). It works whenever the cursor points to an empty line, whether you're starting a new book or adding entries to one that's already established.

After you press control/I, the screen clears, and a red prompt message instructs you to input an entry. The entry can be up to six lines long and 38 columns wide, and you can format it any way you like, with whatever punctuation you find convenient. If one six-line entry isn't enough, continue right below with another. If you have trouble staying within the 38-column limit, the segmented guideline I've provided should help.

Press return at the end of each line, and signal completion of your entry by pressing return on an empty line. You'll find yourself back in the memo book, ▶

RUN it right: C-64

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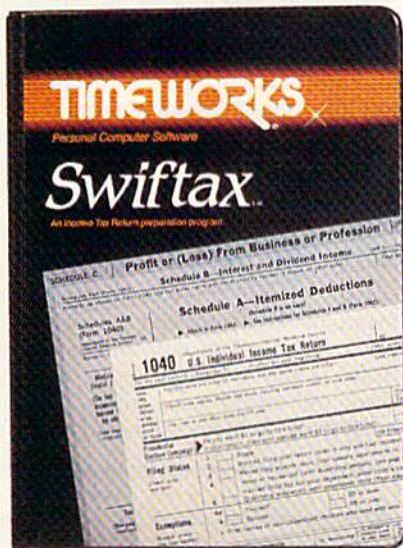
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MEMO BOOK

looking at the new entry. When you're adding a lot of new entries, it's wise to save your data frequently.

EDITING ENTRIES

To edit an entry, press control/E. Once again the screen will clear, but this time the entry you want to edit will appear, with a flashing cursor at its first character. Edit one line of the entry at a time, using all the normal keys to insert, delete and overwrite characters. When you finish a line, press return. In fact, you must press return for each line you want to retain, whether you change it or not. Conversely, if you want to eliminate a line, move the cursor to the next line without pressing return.

To insert a new line in an entry, move the cursor to an empty line, type in your data and press return. Then move the cursor back to edit the next line.

When you've finished editing your entry, press return on an empty line to put it back in the memo book.

DELETING ENTRIES

Control/D, as you might expect, deletes an entry. To prevent accidents, you must confirm by pressing Y that the entry, now highlighted in red, really should be deleted.

SAVING A BOOK

Press F4 to save a book. When the program asks if you want to update a

file, a yes response will scratch the old file, and the book you're currently using will be saved in its place. As I've mentioned, F2 starts a completely new book. Here, also, you have the option of saving the current book first.

A full book occupies about 35 blocks in memory locations \$A000-\$C000. However, only the portion that actually contains data is saved and reloaded, so no time and disk space is wasted on empty bytes.

PRINTING

To print out one entry, press control/P, then, at the prompts, choose to print the entire entry, omit the last line or omit the last two lines. If you keep phone numbers and comments on those lines, you'll want to eliminate them when you print addresses on envelopes or labels.

If you want to print a full page of entries, press F3. Again, you can choose to eliminate lines, and the page will be printed beginning at the cursor position. F5 prints the entire book, with the same options.

RETURNING TO BASIC

When you're done consulting your memo book, if you're on a memo page, press control/Q to quit and return to Basic. If you're on the index page, Q alone will do the same thing. You can jump back to Memo Book from Basic

at any time by pressing * and return in Direct mode.

MULTIPLE APPLICATIONS

Because it's so unstructured, Memo Book can be used for a variety of purposes simultaneously. It's easy, for example, to add appointments and a list of "things to do" to the top of the first page, under A. If you don't scroll the index, the book will automatically open there, for a quick check of your schedule.

It's equally easy to set up and use several books for different purposes, because Memo Book lets you save one book and load another by just returning to the index and inputting F6. Because the load will obliterate the data you've been working on, the program will ask if you want to save the present book before loading the next one. Responding Y gives you a save routine similar to the one I described earlier.

When that book has been taken care of, you'll be prompted for the name of the book you want to load, and the load will take place. It's a good idea to keep a list of your memo books somewhere in each book, so you don't have to consult the disk directory for the correct names. ☐

Barbara Mintz is a director of the Boston Computer Society's Commodore user's group and director of software development for Brown Boxes, Inc.

Listing 1. Memo Book program. (Note: Checksums are for RUN's new checksum program.)

```

0 REM BASIC HEX LOADER FOR RUN          0) +RIGHT$(A$, LEN(A$) - 42)          105 DATA 20D2FFA01820F0FFA93E 1
MEMO BOOK                               :REM*140                               0D2FFA5FC6FC20D2FF E8E013D
5 OPEN 8,8,8,"RUN MEMO BOOK,P,W        70 FOR I=1 TO LEN(B$)/2:REM*221       0D818A20BA01C :REM*187
"                                         :REM*64                               106 DATA 20F0FFA935A095201EAB A
:                                         :REM*64                               2018E3A03A206A00B4C D39420E
10 READ A$:IF A$="-1" THEN CLOS        T$(C$,1):L$=RIGHT$(C$,1)           4FFF0FBC989F0 :REM*222
E8:END                                   :REM*140                               107 DATA 6EC98AF06DC98BF06CC9 1
15 IF LEN(A$)<62 THEN 55                80 H=VAL(H$):IF H$>"9" THEN H=A     1F016C991F035C93FF0 63C90DD
:                                         :REM*254                               0034CFA94C951 :REM*177
20 B$=MID$(A$,1,20)+MID$(A$,22,        85 L=VAL(L$):IF L$>"9" THEN L=A     SC(L$)-55 :REM*84
20)+MID$(A$,43,20) :REM*242           90 BY=H*16+L:PRINT#8,CHR$(BY);      :REM*148
25 FOR I=1 TO 30 :REM*181              95 NEXT:GOTO 10 :REM*160             109 DATA 95D0B9A206A0184CD394 C
30 C$=MID$(B$, (I*2)-1,2):H$=LEF      100 REM RUN MEMO BOOK FOR THE C     E3A03206395AE3A03F0 12E00DD
T$(C$,1):L$=RIGHT$(C$,1)             64 :REM*150                             0E2A212A00B18 :REM*144
:                                         :REM*209                               110 DATA 20F0FF206E954C7294A2 1
35 H=VAL(H$):IF H$>"9" THEN H=A       101 DATA 01080C0832009E323036 3   A8E3A03A212A0184CD3 944CC89
SC(H$)-55 :REM*85                       83A0012083C00800000 00A9948     D4CDF9C4C629D :REM*22
40 L=VAL(L$):IF L$>"9" THEN L=A       5FCA90085FBA8 :REM*172
SC(L$)-55 :REM*136
45 BY=H*16+L:PRINT#8,CHR$(BY);        102 DATA A93985FDA90885FEB1FD 9   111 DATA A9008D35034C5A9E2094 9
:                                         :REM*67                               5ADFFBFCDFEBFD0034C 1396200
50 NEXT:GOTO 10 :REM*115                0EF4C269EA906 :REM*182
55 IF LEN(A$)<21 THEN B$=A$:GOT        103 DATA 8D8602A9018D21D0A941 8   B95A977A09520 :REM*209
O 70 :REM*184
60 IF LEN(A$)<42 THEN B$=LEFT$(        5FBA94E85FCA2008E39 03A915A     112 DATA 1EAB4C4F97930D0D2020 2
A$,20)+RIGHT$(A$, (LEN(A$)-21         095201EABA218 :REM*148
):GOTO 70 :REM*137
65 B$=LEFT$(A$,20)+MID$(A$,22,2

```


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 SECTORS TROJAN GROUP STOP
 EQUIP MAX WEAPONS LOAD STOP
 SEEK AND DESTROY ALL UNIDENTIFIED
 MILITARY CRAFT STOP
 THIS IS NOT REPEAT NOT A DRILL STOP
 OPERATION CODE STATUS IS RED STOP
 BEST LUCK STOP

Acceleration presses you deep into your cushioned seat. The ship's hull resonates to the throb of your fusion engines, creating a deep rumble almost below the range of hearing. Speed climbs swiftly. The rocks of the Asteroid Belt hurtle past your viewpoints.

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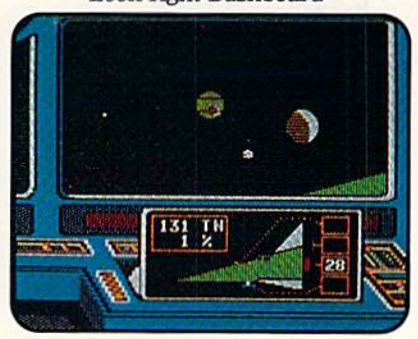
Look-left Dashboard



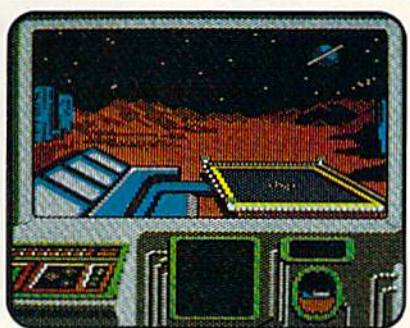
Forward Dashboard



Look-right Dashboard



Quadrant Map Display



Control Tower View

Sample screens taken from the Apple II.



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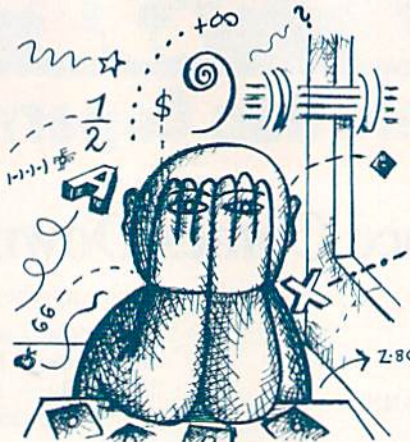
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MEMO BOOK



114 DATA 2042524F574E20424F58 4
5532C494E4320313938 3729004
8A4D3B1D1297F :REM*120

115 DATA 91D16860A4D3B1D10980 9
1D160930D0D1C20204E 4F20424
F4F4B20494E20 :REM*127

116 DATA 4D454D4F52590D0D0D0D 1
F00A50129FE850160A5 0109FF8
50160AD3A030A :REM*149

117 DATA AA6018AD3A036940D015 E
E3A03A205D0090D0D20 0020129
3A206BDB795F0 :REM*114

118 DATA E320D2FFCA10F520A295 B
D01A085FBE8BD01A085 FCE6FBD
002E6FCA9008D :REM*203

119 DATA 340360C8C8A92020D2FF B
1FBC820D2FFC90DD0F6 A92020D
2FFB1FBC907B0 :REM*66

120 DATA ED8D3B03C8B1FB8D3E03 A
90D20D2FF6020949520 BE95A00
0B1FBF021C9FF :REM*254

121 DATA F01DA90D20D2FF20E595 C
8B1FB300D1865D6C918 B00620B
5964C169620C4 :REM*156

122 DATA 98A93E20D2FFA99D20D F
F206E95209B9520E4FF F0FBAE8
E02E004D028C9 :REM*11

123 DATA 09F067C9004D0034CD999 C
910D0034C919BC905D0 034CEB9
AC911D0D7209B :REM*238

124 DATA 95A99320D2FF4C74A4C9 1
1F027C991F026C90DF0 25C985F
01EC988F017C9 :REM*186

125 DATA 86F010C987F0CC93FD0 A
CA9018D35034C5A9E4C 939B4C7
8984CE2984C00 :REM*152

126 DATA 94AD3E031865FB85FBA9 0
065FC85FC6020B49AA9 00A0982
01EABAD3C038D :REM*2

127 DATA 8602A5FB8D3F03A5FC8D 4
003A0008C3E038C3B03 84FDA9C
085FE20060A5A2 :REM*195

128 DATA 00AC3E03BD0002F00D91 F
DC8EE3E03E8E026F006 D0EEE00
1F014A90D91FD :REM*13

129 DATA EE3E03EE3B03AE3B03E0 0
690D1EE3E03AD3B03D0 034C109
6EE3E03209495 :REM*251

130 DATA AD3E038D36031869028D 3
E03186D01A0AD02A069 00C9C09
019209B95A952 :REM*168

131 DATA A098201EABA961A09820 1
EAB20E4FFF0FB4C0094 A000B1F
B8D3703AD01A0 :REM*48

132 DATA 85FBAD02A085FC18A5FB 6
D3E0385FD8D01A0A5FC 690085F
E8D02A0AD3703 :REM*153

133 DATA D008E6FBD02BE6FCD027 A
000B1FB91FDA5FBCD3F 03D007A
5FCCD4003F013 :REM*208

134 DATA A5FBD002C6FCC6FBA5FD D
002C6FEC6FD4C9097A9 BF85FEA
9FE85FDA00020 :REM*176

135 DATA F497C8B1FD91FBCC3603 D
0F620F49720A295E8E8 E035B01
2BD01A0186D3E :REM*51

136 DATA 039D01A090EEE8FE01A0 B
0E9A99320D2FF4C1696 AD3B039
1FBC8AD3E0391 :REM*29

137 DATA FB60930D54595045204C 4
94E452F52455455524E 2D2D454
E4420424C414E :REM*130

138 DATA 4B204C494E452F524554 5
5524E0DB2B2B2B2B2 B2B2283
6204C494E4520 :REM*4

139 DATA 3C333820535043533E20 4
D415829B2B2B2B2B2 B2B20D0
02020424F4F4B :REM*56

140 DATA 2046554C4C210D0D020 2
0285052455353204B45 5920544
F20434F4E542E :REM*65

141 DATA 2900AD3403F019CE3403 A
92020D2FFAE3B03A90D 20D2FFC
A10FA20B5964C :REM*127

142 DATA 3D96A92020D2FFA90D20 D
2FF209495A000B1FBF0 0AC9FFD
01120B9954C3D :REM*181

143 DATA 96A2018E3A0320B3954C 3
D9620E5954C3A96AE3B 03A9912
0D2FFCA10FAA9 :REM*20

144 DATA 018D340360A5FBD002C6 F
CC6FBA000B1FB602094 95A5FB8
D3F03A5FC8D40 :REM*222

145 DATA 03A92020D2FFA99D20D2 F
FAD3403F018CE3403A6 D6D0092
06CE920BD994C :REM*133

146 DATA 3D96A99120D2FF4C3D96 2
0D598C9FFD050A203E4 D6901CF
01ACA8E3B0320 :REM*194

147 DATA 9B99A91120D2FF4C4499 A
203A99120D2FFCAD0F8 60A2022
0369920B39520 :REM*30

148 DATA 349920D598CE3A03F003 4
C3D96A21A8E3A03AD02 A085FCA
D01A085FB8E6FB :REM*31

149 DATA D0EAE6FC4C3D968D3E03 A
9018D340320D5988D3B 0338AD3
F03ED3E0385FB :REM*230

150 DATA AD4003E90085FCAD3B03 C
5D690062209B9920E595 4CC198A
E3B03E88A38E5 :REM*205

151 DATA D68D3F03A2008E4003A2 0
086D6206CE9EE4003AD 4003CD3
F0390EEA5D909 :REM*77

152 DATA 0885D918A200A00020F0 F
F604E2F5923F455445 4C45442
020AD3403D003 :REM*141

153 DATA 4C4D96209495A5D68D36 0
320B49AA00020E595A0 0CB9CC9

920D2FF8810F7 :REM*96

154 DATA AD3C038D860220E4FFF0 F
BC959F014A6D620FFE9 AE3603A
0001820F0FF20 :REM*214

155 DATA E5954CC198AE360320FF E
9E8E019D0F8AE3603CA 1005A90
120A399A00018 :REM*23

156 DATA 20F0FF20469AA0008C34 0
34C1696A5FB85FD8D3F 03A5FC8
D400385FE20B5 :REM*251

157 DATA 96A000B1FB91FDC900F0 0
9C8D0F5E6FCE6FED0EF 38AD01A
0ED3E038D01A0 :REM*55

158 DATA B003CE02A0AD01A085FD A
D02A085FEA900A8C891 FDCC3E0
3D0F820A295E8 :REM*187

159 DATA E8E035B01238BD01A0ED 3
E039D01A0B0EEE8DE01 A0D0E9A
D3F0385FBAD40 :REM*208

160 DATA 0385FC60AD86028D3C03 A
9028D860260930D0D20 4849542
052455455524E :REM*123

161 DATA 20464F52204541434800 4
34F5252454354204C49 4E450D0
D4544495400AD :REM*40

162 DATA 3403D0034C4D9620B49A A
9C0A09A201EABA906A0 98201EA
BAD3C038D8602 :REM*80

163 DATA 209495AD3E0338E9048D 3
603A0002B1FB20D2FFC8 CE3603D
0F5AE3B032036 :REM*42

164 DATA 9920469A209B954CD496 0
D30295052494E542043 4D504C5
420454E545259 :REM*138

165 DATA 3F0D31294F4D4954204C 4
15354204C494E453F0D 32294F4
D4954204C4153 :REM*66

166 DATA 542032204C494E45533F 2
0202028302F312F322F 3329203
F0D3329524554 :REM*165

167 DATA 55524E20544F20494E44 4
5583F0D00A9008D3803 AE3B03A
91120D2FFCA0 :REM*173

168 DATA FA20B49AA6D68E3603A0 0
08C3703206CE9AE3603 EE3703A
D3703C906D0F0 :REM*67

169 DATA B5D9095095D9A932A09B 2
01EABAD3C038D860220 E4FFF0F
B4930C904B0F5 :REM*84

170 DATA 8D3703C903D0034C0094 A
90020BDFFA904AAA000 20BAFF2
0CFFFA2042C90 :REM*201

171 DATA FF209495A000B1FBF04C C
9FFF0398D3B0338ED37 038D360
3A200C8B1FB8D :REM*41

172 DATA 3E03AD3603F0183016C8 B
1FB20D2FFC90DD0F6E8 EC3603D
0F020D2FF20D2 :REM*83

173 DATA FFAD3803F01420B596D0 B
DAE3803E086F08E6FB D0B2E6F
CD0AE20CCFFA9 :REM*45

174 DATA 0420C3FF4C1096930D53 4
1564520544849532042 4F4F4B3
F20000D0D04E45 :REM*237

175 DATA 5720424F4F4B204E414D 4
53F0D0D00930D1C4C4F 4144204
E455720424F4F :REM*121

176 DATA 4B3F1F00930D1C535441 5
254204E455720424F4F 4B3F1F0

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 the bull!



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 Go for rock'n' rallsies,
 hand plants, rallsies,
 even methods!



Skate & Destroy.
 Karate chop
 biddast alley in the
 neighborhood. One of
 two downhill events.



Wreck Myself.
 Two skaters fly up
 the arena in the
 square to the death. The
 buns to only one
 just is only one
 to 8 and 8 skate events.

MEMO BOOK

177	DATA 029D4103D0F68AA241A0 0320BDDF6053303A1C0D 0D53435241544348204F	:REM*214	187	DATA 94A9018D37034C799D20 9495A9A085FCA90085FB A001A95091FBA9A0A237	:REM*43	196	DATA 4B0D2020202020463429 205341564520424F4F4B 0D202020202046362920	:REM*151
178	DATA 4C442046494C453F201F 000D4E414D453F0D00A2 008E37034C799DA9C0A0	:REM*146	188	DATA C891FBC8488A91FB68E8 C8C03790F288A9FF91FB C8C051D0F9A90091FBC8	:REM*251	197	DATA 4C4F4144204E45572042 4F4F4B0D0D494E535441 4C4C20424F4F4B204245	:REM*38
179	DATA 9C201EAB20E4FFF0FB20 D2FF48A9D7A09C201EAB 2060A568C94EF023C959	:REM*216	189	DATA D0FBE6FCA6FCE0C0D0F3 209B954C0094A9FF8537 A9938538AD00038D589E	:REM*74	198	DATA 464F52452053454C4543 54494E47204D4544D4F20 504147450D0D0124D45	:REM*243
180	DATA F0034CE79CA2FFE8BDBD 9C9D4103E002D0F520A8 9CA06FA901A20820BAFF	:REM*252	190	DATA AD01038D599EA94A8D00 03A99E8D01032044A64C 0094E00BD007C92CD003	:REM*43	199	DATA 4D4F205041474553920D 0D202052455455524E20 53454C45435320494E	:REM*14
181	DATA 20D5F3A2FF20A89CA902 A8A20820BAFF209495A9 0185FDA9A085FEA9FDAC	:REM*217	191	DATA 4C00946C589E0000A97F A09E201EABA93FA09F20 1EABA961A098201EAB20	:REM*87	200	DATA 44455820504147450D0D 202012434E54524C923A 201249924E5345525420	:REM*40
182	DATA 02A0AE01A0E8D001C820 D8FF209B95AE3703E001 F005B0374C00944CE39D	:REM*160	192	DATA E4FFF0FBAD3503F00334C 10964C0094930DD0D1249 4E444558205041474592	:REM*211	201	DATA 12459244495420124492 454C4554452012509252 494E5420125192554954	:REM*192
183	DATA A981A09C201EAB20E4FF F0FBC959F002D0E8A202 8E3703A95BA09C201EAB	:REM*4	193	DATA 0D0D202020435552534F 522055502F444F574E0D 20202052455455524E20	:REM*111	202	DATA 0D0D202020202046312F 4637203D20435552534F 522055502F444F574E0D	:REM*227
184	DATA 20E4FFF0FB20D2FFC94E F0C7C959D0E94CE79CA9 6EA09C201EAB2060A5A2	:REM*26	194	DATA 53454C45435453204D45 4D4F2050414745D2020 2012519220544F205155	:REM*40	203	DATA 20202020204633292050 52494E54205041474520 46524F4D20435552534F	:REM*127
185	DATA FF20A89CA902A8A20820 B AFF209495A900AAA0A0 20D5FFB004C00C090034C	:REM*119	195	DATA 49540D0D202020202046 322920494E5354414C4C 20424C414E4B20424F4F	:REM*45	204	DATA 520D2020202020463529 205052494E5420424F4F 4B2046524F4D20435552	:REM*141
186	DATA 209E84FC8AA8A90085FB F04BA994A09C201EAB20 E4FFF0FBC959F0034C00	:REM*9				205	DATA 534F520D0D00	:REM*105
						206	DATA -1	:REM*60

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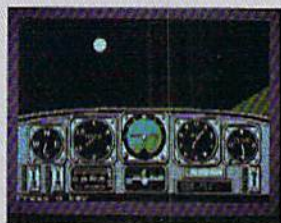
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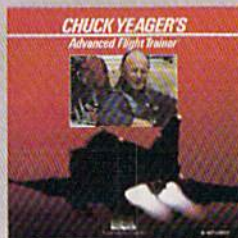
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Calendar Maker

*Make some dates with your Commodore
and get 1988 off to a good start.*



By BOB KODADEK

Let's start off the New Year with a seasonally appropriate application that most Commodore owners can enjoy—a C-64/C-128 calendar program. Calendar Maker employs a perpetual calendar to display and print out any month of any year you choose.

You can use it to create a 1988 calendar or to look into the future or the past to find out the day of the week of a particular event. Want to know if your birthday will fall on a weekend in the year 2001? Calendar Maker can promptly tell you.

The program can also help you organize your monthly schedule. For each day of the month you can enter up to six memos, each containing a maximum of ten characters. As the calendar is displayed on the screen, any date containing memos appears in reverse video, so you can easily select it to view, edit or delete the memos. All memos appear under the correct date when the calendar is printed.

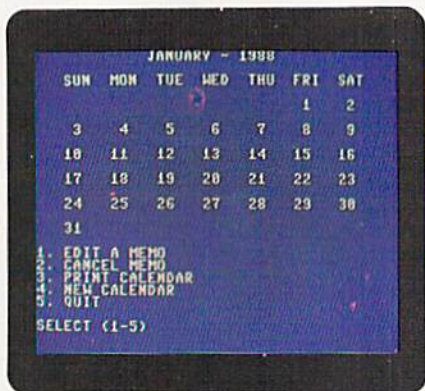
CREATING A CALENDAR

Type in and save Listing 1, being careful to include the semicolons in the Print and Print# statements. They suppress unwanted carriage returns, and if you inadvertently omit one, the ensuing text will appear on the line following where it should be. (Of course, this holds true for any Basic program listing you type into your Commodore.)

To use Calendar Maker, just load and run the Basic program. It will request the month and year of the calendar you want displayed and check to make sure your responses are in the proper range. You must enter the year as a four-digit number—such as 1988.

When the calendar you requested appears, it'll be accompanied by a menu with the following choices:

1. Edit a memo
2. Cancel a memo



Sample Calendar
Maker screen
display.

3. Print a calendar
4. New calendar
5. Quit

Each time you elect to edit or cancel a memo, Calendar Maker will prompt you to enter the date of that memo and make sure your input is in the correct range. The range is displayed in the prompt. Note that, since 1988 is a leap year, the range for February is 1-29.

If you choose to edit a memo, a block representing the date and containing six numbered lines will appear in reverse video, with any memos you've already input for that date displayed and the cursor poised on line 1. Enter or edit up to ten characters in line 1, remembering to enclose the text in quotes if it includes a comma or colon. (The quotation marks aren't counted in the ten characters.) When you're done with line 1, press the return key to advance to line 2. If you fail to press return, an error will occur.

You can enter text on each of the six lines, and the lines can constitute separate memos or all be part of one. Should you need fewer than six lines, just press return at each number to advance to the end of the list. When you

press return on line 6, the program will redisplay the lines and ask if they're all right. If you need to make corrections, press N.

Once you press Y, the calendar will appear again with the memo date in reverse video, showing that a memo exists in that spot. Then you can move on to enter or edit memos for other dates or choose a different menu option.

To cancel all the memo lines for a day, select the Cancel option in the main menu.

PRINTING A CALENDAR

When you're ready to print your calendar, turn on your printer and adjust the paper so the print head is one or two lines down from the top. Then select the Print Calendar option from the menu. The print routine is fairly universal, so it'll probably work on your printer.

If you'd like to alter the appearance of the printout, you can make your own substitutions for the CHR\$(221) in line 60, which creates the vertical lines, or the CHR\$(45) in line 90, which creates the horizontals.

It's also possible to alter the dimensions of the calendar by changing the number of lines printed per inch. If you have a Commodore 1526 or MPS-802 printer, try adding the following line ▶

RUN it right: C-64; C-128
(in 40- or 80-column mode);
printer optional

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EASY APPLICATIONS

to the Basic listing to change the line spacing:

```
455 OPEN 5,4,6:PRINT#5,CHR$(23):
CLOSE 5
```

This change remains in effect until

your printer is turned off or reset. If you don't have one of these printers, check your manual to see if and how you can make line-spacing modifications.

To erase the calendar in memory and create another, select the New Calendar

option from the main menu. When you are ready to exit the program, choose the Quit option. **Q**

Bob Kodadek is a computer programmer and freelance writer.

Listing 1. Calendar Maker program. (Note: Checksums are for RUN's new checksum program.)

```

10 REM CALENDAR MAKER :REM*77
20 REM BY: BOB KODADEK :REM*116
30 REM 3164 SURREY LANE:REM*200
40 REM ASTON, PA 19014 :REM*200
50 : :REM*108
60 DIM MO$(12),ND(12),MM(50),XM
$(50,5):US$=CHR$(221):REM*227
70 FOR I=1TO12:READ MO$(I),ND(I)
:NEXT :REM*45
80 FOR I=0TO6:READ D$:DY$=DY$+D
$+"{2 SPACES}":PD$=PD$+D$+"{
3 SPACES}":NEXT :REM*202
90 FOR I=0TO9:S$=S$+" ":NEXT:FOR
I=0TO7:H$=H$+CHR$(45):NEX
T :REM*127
100 US$=US$+S$:PRINT"{SHFT CLR}{
2 CRSR DNs}RUN - CALENDAR M
AKER":PRINT:GOSUB 590:REM*0
110 GOSUB 690 :REM*208
120 GOSUB 330:K=VAL(A$):IF K<1
OR K>5 THEN 120 :REM*204
130 IF K=4 THEN PRINT"{SHFT CLR
}ONE MOMENT...":RUN:REM*103
140 IF K=5 THEN END :REM*208
150 ON K GOSUB 180,380,430:GOTO
110 :REM*228
160 : :REM*218
170 REM ----- EDIT MEMOS -----
:REM*60
180 GOSUB 300 :REM*245
190 PRINT"{SHFT CLR}{2 CRSR DNs
}MEMOS FOR "MO$(MO)DT
:REM*86
200 PRINT"{CRSR DN}{3 SPACES}>-
-----<{2 SPACES}10 CHAR
ACTERS EACH":GOSUB 270
:REM*116
210 PRINT"{7 CRSR UPs}":FOR I=0
TO5:INPUT"{2 CRSR RTs}";X$:
X$=LEFT$(X$,10) :REM*122
220 IF LEN(X$)<10 THEN X$=X$+C
HR$(32):GOTO 220 :REM*157
230 XM$(DT+J,I)=X$:NEXT:PRINT
:REM*5
240 GOSUB 270:PRINT"{CRSR DN}IS
THIS CORRECT? (Y OR N)"
:REM*19
250 GOSUB 330:IF A$ <> "Y" THEN
190 :REM*210
260 RETURN :REM*147
270 FOR I=0TO5:IF XM$(DT+J,I)="
" THEN XM$(DT+J,I)=S$
:REM*163
280 PRINT I+1 SPC(1) CHR$(18) X
M$(DT+J,I):NEXT:RETURN
:REM*100
290 : :REM*93
300 PRINT"ENTER MEMO DATE{2 SPA
CEs}1 -"ND(MO):INPUT DT
:REM*16
310 IF DT <1 OR DT >ND(MO) THEN
PRINT"{3 CRSR UPs}":GOTO 3
00 :REM*182
320 MM(DT)=1:RETURN :REM*81
330 : :REM*133
340 A$="":GET A$:IF A$="" THEN
330 :REM*94
350 RETURN :REM*237
360 : :REM*163
370 REM ----- CANCEL MEMO ----
-- :REM*85
380 GOSUB 300:MM(DT)=0:FOR I=0T
O5 :REM*69
390 XM$(DT+J,I)=S$:NEXT:REM*209
400 RETURN :REM*28
410 : :REM*213
420 REM ----- PRINT CALENDAR -
----- :REM*127
430 PRINT"{SHFT CLR}{3 CRSR DNs
}TURN ON PRINTER":PRINT"{C
RSR DN}READY? (Y OR N)"
:REM*194
440 GOSUB 330:IF A$ <> "Y" THEN
RETURN :REM*101
450 CLOSE 4:OPEN 4,4:C=0:C1=1:N
=0 :REM*117
460 L=LEN(MO$(MO))/2:PRINT#4,CH
R$(14) SPC(16-L) MO$(MO)" -
" YR :REM*22
470 PRINT#4,CHR$(13) CHR$(13) C
HR$(14)LEFT$(PD$,39):PRINT#
4,CHR$(15):PRINT#4,H$
:REM*166
480 FOR I=1TOY:FOR T=0TO6:C=C+1
:REM*19
490 IF C=<J OR N=>ND(MO) THEN P
RINT#4,US$;:GOTO 520:REM*88
500 N=N+1:N$=" "+MID$(STR$(N),2
):REM*145
510 PRINT#4,LEFT$(US$,7)CHR$(14
)RIGHT$(N$,2)CHR$(15);
:REM*248
520 NEXT T:PRINT#4,U$ :REM*180
530 FOR T1=0TO5:FOR T2=0TO6
:REM*173
540 IF XM$(C1+T2,T1)=" "THEN PRI
NT#4,US$;:GOTO560 :REM*7
550 PRINT#4,U$+XM$(C1+T2,T1);
:REM*46
560 NEXT T2:PRINT#4,U$:NEXT T1:
C1=C1+7:PRINT#4,H$ :REM*9
570 NEXT I:PRINT#4:CLOSE 4:RETU
RN :REM*68
580 : :REM*124
590 REM ----- GREGORIAN DATE -
----- :REM*43
600 INPUT"ENTER MONTH (1-12)";M
O:IF MO <1 OR MO >12 THEN PR
INT"{2 CRSR UPs}":GOTO600
:REM*194
610 INPUT"ENTER{2 SPACES}YEAR (
YYYY)";YR:IF YR <1583 THEN
PRINT"{2 CRSR UPs}":GOTO610
:REM*147
620 Q=YR+(MO<3):J=INT(275*MO/9)
-INT((7*Q+7)/4)+367*YR+1-IN
T((INT(Q/100)+1)*3/4)
:REM*189
630 J=J-4-7*INT((J-4)/7):X=(ND(
MO)+J)/7:Y=INT(X):IF X>Y TH
EN Y=Y+1 :REM*62
640 IF(YR/100)-INT(YR/100)=0 AN
D (YR/400)-INT(YR/400)<>0 T
HEN RETURN :REM*19
650 IF (YR/4)-INT(YR/4)=0 AND M
O=2 THEN ND(MO)=29 :REM*134
660 RETURN :REM*33
670 : :REM*218
680 REM ----- PRINT SCREEN ----
- :REM*167
690 L=LEN(MO$(MO))/2:PRINT"{SHF
T CLR}"SPC(16-L) MO$(MO)" -
" YR :REM*207
700 PRINT:PRINT SPC(3) DY$:PRIN
T:C=0:N=0 :REM*41
710 FOR I=1TOY:FOR T=1TO7:C=C+1
:IF C=<J THEN PRINT SPC(5):
GOTO 750 :REM*2
720 IF N=>ND(MO) THEN 750
:REM*192
730 N=N+1:N$=" "+MID$(STR$(N),2
):IF MM(N) THEN PRINT CHR$(
18); :REM*176
740 PRINT SPC(3) RIGHT$(N$,2) C
HR$(146); :REM*147
750 NEXT T:PRINT:PRINT:NEXT I
:REM*13
760 PRINT"1. EDIT A MEMO":PRINT
"2. CANCEL MEMO":PRINT"3. P
RINT CALENDAR" :REM*88
770 PRINT"4. NEW CALENDAR":PRIN
T"5. QUIT" :REM*116
780 PRINT"{CRSR DN}SELECT (1-5)
":RETURN :REM*100
790 : :REM*83
800 DATA JANUARY,31,FEBRUARY,28
,MARCH,31,APRIL,30,MAY,31,J
UNE,30,JULY,31 :REM*217
810 DATA AUGUST,31,SEPTEMBER,30
,OCTOBER,31,NOVEMBER,30,DEC
EMBER,31 :REM*93
820 DATA SUN,MON,TUE,WED,THU,FR
I,SAT :REM*48

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GEOWATCH

Advice on using printers and the 1581 disk drive with GEOS highlights this month's column.

By MATTHEW STERN

THE GEOWATCH MAILBAG has been overflowing, with most of the questions concerning hardware, especially printer, compatibility. Answering is difficult, because of the variety of printers available, all of which work somewhat differently. However, I do have some general suggestions.

First, use printers and interfaces that have been proven compatible by Berkeley Softworks, the developer of GEOS. You'll find a list in your *GEOS User's Guide* and in last August's *geoWatch*.

Second, make sure your interface is set correctly. Printer interfaces are normally configured with DIP switches. For my Epson RX-80, I turn the automatic linefeed off and Transparent mode on, and I set the device number to 4.

Finally, use the correct printer driver. There are now three sets of printer drivers for GEOS: the original set that comes with the boot disk, an enhanced set that comes with *Writer's Workshop* and a special set for the *geoPrinter Cable*. If you're using *Writer's Workshop* and some of the newer GEOS applications, you need the new drivers; the original ones on the boot disk won't work. If you're using the *geoPrint Cable*, use a driver with a filename ending in (GC). Copy the driver so it's the first file on the boot disk, and it'll be selected automatically when you start GEOS.

Now, for some questions:

Q I'd appreciate answers to the following questions relating to GEOS: 1. Besides using the space bar (which is slow), is there any way to position the cursor beyond the last character in a line, for purposes like placing the return address in the upper-right portion of a letter. Also, is there a quick way to set the cursor? 2. When bringing a graphic into a *geoWrite* file, I've noticed that it's always centered horizontally and that only one graphic can be placed on the line. Can I change its position, and is it possible to locate more than one graphic on a line?

—S. E. FELLERMAN
KENSINGTON, MD

A To move the cursor within a line of existing text, you can either

move the pointer to the desired location and click, or, with *geoWrite* version 1.3 or later, use the cursor keys. Pressing *control/l* moves the cursor beyond the last character to the next tab stop. *GeoWrite* positions a pasted-in photo scrap between the margins, and, by moving the margins, you also move the graphic. If you want a graphic to be flush left, move the right-margin icon to the left until the graphic is in the correct position. Changing the margins reformats all the text below the ruler. *Writer's Workshop* lets you use various margin settings in your document. With *geoWrite* 1.2 and 1.3, you have to use the same settings throughout.

With *geoWrite*, you can have only one photo scrap in a line. However, you can have a second picture or some text alongside a graphic if it's in the same *geoPaint* file and included as part of the photo scrap. For laser-printed quality, use the overlay feature in the *Writer's Workshop geoLaser* program.

Q I just updated my system from a C-64/1541 combination to the C-128/1581, and I noticed rather quickly that it's impossible, using any copy program, to transfer the GEOS boot disk over to the micro-floppies. Not only that, even the latest GEOS update (from the mouse package) doesn't let me take advantage of two disk drives. I hope you can answer the following questions concerning these problems: 1. Is any form of GEOS compatible with the 1581 drive? 2. If I update my boot disk to 128 mode, will it work on a 1541 drive, or must I change over to a 1571? 3. Is GEOS going to be made available on micro-floppies?

—JOSEPH C. HAMPTON, JR.
JERSEY CITY, NJ

A The GEOS 128 with *deskTop* 1.4 is the only version that supports the 1581 drive. With GEOS 128, you get two 5¼-inch boot disks that run on the 1541 or 1571. There's no 3½-inch boot disk available now, and Berkeley hasn't announced any plans to offer one.

In the meantime, you can use your 1581 as a second disk drive with GEOS.

Set your 1541 or 1571 as device 8 (which will appear as drive A on the *deskTop*) and your 1581 as device 9 (drive B). Boot with the original GEOS disk in the 5¼-inch drive, and use the 128 *Configure* program on the original disk to check and save your disk drive configuration. As formatted by GEOS, 3½-inch disks can store up to 790K, which provides plenty of space for files, fonts and applications.

You need to be aware of a few things as you use 3½-inch disks with GEOS. First, it doesn't support partitions. If you partition a 3½-inch disk with *Basic*, it won't convert properly to GEOS format. Second, you can't copy a 5¼-inch disk directly to a 3½-inch disk. Instead, you must copy files individually by dragging them to the disk icon. (You don't have to swap disks while doing this, which is the beauty of having two drives.)

Use a good quality double-sided, double-density 3½-inch disk. (I prefer Sony MFD-2DDs.) They may cost more than single-sided disks, but I find them more reliable.

The 1581 drive is considerably faster than the 1541 and 1571. In spite of some limitations, its speed and storage capabilities make it an excellent enhancement for GEOS.

Thanks to all of you who've taken the trouble to write; I appreciate your questions and comments. In next month's column, I'll take a look at the latest third-party GEOS software and hardware. Keep watching! ■

The monthly *geoWatch* column addresses the needs of *RUN* readers who use GEOS, Berkeley Softworks' alternative operating system for the C-64 and C-128. Your questions and comments are welcome. Send them to:

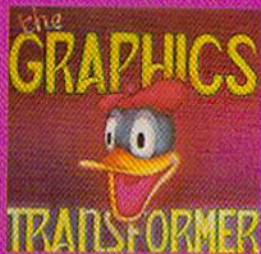
Matthew Stern
geoWatch
RUN Magazine
80 Elm St.

Peterborough, NH 03458

You can also contact Matthew Stern on *QuantumLink*. His online name is *Matt S3*.

CDA COMES TO EARTH

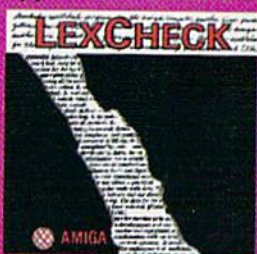
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THE GRAPHICS TRANSFORMER — \$34.95
(C-64/C-128)

★★★★★ (Megagalactic Software Weekly)

THE GRAPHICS TRANSFORMER is the greatest graphics utility since the release of OMNI-PAINT. It allows you to quickly and easily convert between ALL of the popular drawing programs (over 25 supported), and does other neat things as well. I highly recommend it to all software consumers.



LEXCHECK — \$29.95
(Amiga)

\$\$\$\$\$ (Business Software & Galaxian Report)

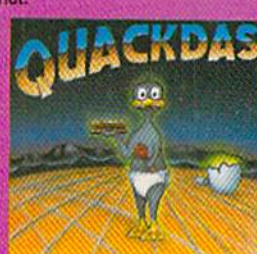
[LexCheck] will help you do [everything] that you need to do with your [word-processing] programs. It will [rapidly spellcheck] all of your documents [with its 100,000 word dictionary]. I would [buy two of them] if I were you.



MOVING PICTURES — \$29.95
(C-64/C-128)

★★★★★ (Transmission — The Intelligence Journal)

Chris Zamara & Nick Sullivan (of Transactor Magazine, Earth) did it again with the most comprehensive animation program yet available for any silicon based unit. Unfortunately, you don't have to be intelligent to use it.



QUACKDAS — \$39.95
(C-64/C-128 mode/1541/1571 mode)

★★★★★ (Operating Systems & Intergalactic Insight)

Finally a cartridge that speeds up SAVE's as well as LOAD's (fast format, included FREE!). QUACKDAS comes complete and ready to use with its blinding speed, built in DOS wedge, sector editor, and a token disk copier! Definitely something to write home about.



NEOFONT — \$29.95
(C-64/C-128/GEOS compatible)

+ + + + + (Crabnebula Computer Art & Design)

NEOFONT is the most artistic and well designed collection of fonts for the GEOS operating system. It contains over 23 different fonts, that are simply sublime. Do yourself a favor, and appreciate some REAL art.



1541 AUNTIE BUMP BOARD — \$49.95
(C1541 compatible)

★★★★★ (BuyIt Magazine)

It's surprising that the generic mortal species hadn't come up with a device to ELIMINATE the damaging knock on the 1541 disk drive before now. After looking at the circuit board, I've come to the conclusion that they did it almost as good as the vorkons could've.



ENTROPY — \$29.95
(Amiga/C-64/C-128 compatible)

? ? ? ? ? (The Hitchhiker's Guide to Galaxian Software)

an interesting implementation of an adventure game. It's hard to believe that so many abstract perversions can be contained in one place. ENTROPY is destined to become another milestone in the realm of interactive fiction.



THE MANDELBROT POSTER — \$9.95
(compatible)

★★★★★ (Fractagalactic & Surfer Weekly)

what can you say about a software company that markets posters. The fabled Mandelbrot Set is now captured on paper (where available — some restrictions might apply), using the highest resolution ever experienced to date.

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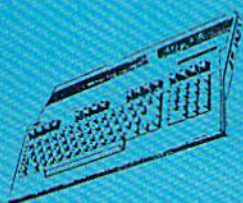
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TELECOMPUTING WORKSHOP

This month: interfacing a C-64 and a Macintosh through a modem, uploading difficulties with Xmodem, and more.

By DAVID BRADLEY

HAPPY NEW YEAR, EVERYONE! As we enter 1988, one of my fondest wishes is that the FCC doesn't decide to make online systems like QuantumLink and PeopleLink too expensive to be used by the people.

I've received many letters relating to my answer in last September's issue to Jake Stack, who was having trouble getting his VicModem 1600 to work.

Jim Stevens from Sanford, North Carolina, reports that if you have a "newer" phone system and you follow the instructions in the modem manual (disconnect the cord from the handset and plug it into the modem after you hear a carrier), you'll never get onto a BBS, because the phone system will hang up as soon as you disconnect the cord.

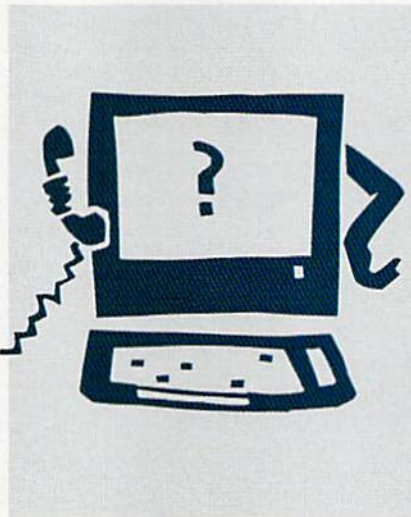
Marvin Forman of Jackson, Michigan, thinks the 1600 may not work with electronic phones.

John Riederer of Streamwood, Illinois, suggests that Jake run an experiment by pretending a friend's phone is a BBS. When the friend answers, Jake can disconnect his handset as if he were calling a BBS, then plug it back in as if the handset were the modem. If he hears a dial tone, that's because when the caller disconnects, even for an instant, the phone hangs up.

John continues, "I realize that some modems are cheaper, but remember, you get what you pay for. I used to own a VicModem, but now I have the Volks 6480. However, I'm not happy with that, either, because it's not compatible with any software (to my knowledge) other than the software packed with it. I hear that Anchor has a new program for it. I wish they'd given us that one in the first place!"

In response to John's letter, there are more and more programs available all the time for the Volks 6480/Aprotek 12C. I'm now aware of four or five public domain and shareware programs that work with it. Of course, I know of 30 or more that work with the Commodore 1650 and at least 25 that work with the 1670.

Now for this month's questions and answers:



Q I was just reading your article "Plug into Telecommunications" in last September's issue of RUN, in which you stated that the Volks 6480 isn't easy to use. Boy, are you wrong! My Volks came with Commterm 64, and it holds up to 30 BBS phone numbers. I use it to talk to friends and BBSs with no problem at all.

—MARVIN AUERBACH
NEW YORK, NY

A I'm glad you're enjoying your modem and telecomputing, but many people have had a lot of trouble with the Volks 6480/Aprotek 12C when they've tried to use other software with it. As I've said before, it is a fine modem; it just doesn't work like any others, so you're limited when it comes to software.

Q I own a C-64 and a MasterModem, which is a 110/300-baud unit from Video 7. I'm ready to dive into the 1200-baud craze, but I'm not ready to spend the money on a new modem. I know I can run my computer at 1200 baud via programming, and I'm not worried about the software for the modem, because I can write my own. I can also do circuitry work, as I've built my own memory expanders before. Is it feasible to disassemble the housing on my modem (at

my risk of course) and change the circuitry to operate at 1200 baud?

—EARL BUCKELAW
SIOUX FALLS, SD

A I think you'll find there's more to making your modem operate at 1200 baud than making slight changes in the circuitry. The company that manufactures the Pocket Modem (a Commodore 1650 clone) offers an upgrade service for their 300-baud model to 300/1200-baud. From what I've heard, the operation involves removing one chip and replacing it with an entirely different circuit board that plugs into the empty socket. They may be able to offer some help or guidance with your project. Contact Bot Engineering, 7393 Twiss Rd., Campbellville, Ontario, Canada L0P 1B0; 416-876-4301.

I'm not saying that what you want to do can or cannot be done; just about anything is possible. However, you may find that the parts and time involved in converting your modem may make the project more expensive than picking up another unit like the 1670, which now sells in a lot of places for less than \$150.

Q I'd like to get into telecommunications and join Q-Link, but I live in a small town and the nearest Q-Link outlet is 50 miles away. The long-distance phone bills would be much more than I could afford. Does Q-Link have a toll-free log-on number for all of us who don't live near a large city, or do they plan on providing this service? I think if they did, they'd attract many more patrons.

—ANDY SWENSON
WHITEHALL, WI

A Q-Link has a voice 800 number for users with questions, but they don't have an 800 log-on number. If they did, they'd have to pay the long-distance phone bills, and then they'd have to turn around and charge a lot more for access via the 800 number. That would probably cost you just as much as, if not more than, the present system.

I suggest that, if you want to get into ►

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telecommunications, you get a modem and use a local bulletin board system. You can get a lot out of a free BBS.

If there isn't a BBS in your area but you have a friend in that large city, perhaps you could occasionally take your computer and modem to visit him or her for a day.

Q I have a C-64 and am planning to get an Apple Macintosh, too. When I have both machines, I'd like to interface them through a modem. Will that be possible, and if so, will I be able to transmit at 2400 baud? Also, my father works for a company that makes modems for the Macintosh and the IBM-PC. Would one of those work with my Commodore?

—MARK ZELLER
DUNSTABLE, MA

A Interfacing the C-64 and the Macintosh by modem should be possible, but you will need an RS-232 interface for both machines. The Macintosh comes with an RS-422 interface, which is just a souped-up version of the RS-232. You can get an RS-232 interface for your C-64 from Aprotek (1071-A Avenida Acaso, Camarillo, CA 93010; 805-987-2454) or Omntronix (760 Harrison St., Seattle, WA 98109; 206-624-4985). You could also build one following the instructions in the November 1987 issue of *The Transactor* (501 Alden Rd., PO Box 3250, Markham Industrial Park, Markham, Ontario, Canada L3R 9Z9).

Another alternative would be to buy a Commodore-specific modem, like the Commodore 1670 or the TCM-1200H (a Hayes clone with a Commodore-ready interface from Trans Com, Inc., 703-13 Annoreno Drive, Addison, IL 60101; 312-543-9055) and an interface for connecting it to any computer with an RS-232 port. Write to LRA Enterprises (35615 Ave. D, Yucaipa, CA 92399) for more information about this RS-232-to-Commodore interface. You should choose a modem that will go directly to the computer you'll use most for telecommunicating.

If the company your father works for makes modems with an RS-232 port, they should have one that you can use with your computers. Internal modems, which plug into a slot inside the computer, might not work, but from what I've seen, most companies make both internal and external units.

I'd suggest you get a 2400-baud modem, if your particular C-64 can communicate that fast and you can afford it. The Macintosh can handle that

speed, and, while 2400 baud isn't used extensively in the home market now, it's becoming more and more popular all the time. Even if you get a modem that supports 2400 baud but can't use it right away, you'll be ready when everybody else moves up to that speed.

Q I own a C-128, a 1571 disk drive and a 1670 modem. I can call local BBSs with no problem, but I can't upload files to them. When I use the Xmodem protocol and try uploading, my modem stops about half-way through the file.

The read channel to the 1571 stays open (green light on, no flashing), the DIP switches on the back of my 1670 are set correctly, and I establish Xmodem with each BBS before I send. I've tried to upload to several BBSs running on various machines (IBM, Commodore and TRS-80), but the transfer stops half-way through the file every time. The SYS-OPs say there's nothing wrong at their end.

What might be wrong with my 1670, and how might I fix it? The 1670 manual is no help.

—GREG GILES
TYLER, TX

A I could answer your question better if you'd given me more information, such as the name of the terminal program you're using, but I'll do my best. Before you blame your modem, try a different terminal program. If you're using Common Sense (the program Commodore sends with the 1670), you might switch to a public domain program such as Third Term or Multi-Term. Both are popular, and you should be able to find them in the TPUG section of Q-Link, from your local user's group or perhaps on a local BBS. To be quite honest, I'm not a big fan of Common Sense. I think Commodore could have provided a more friendly program and should have done a better job on the manual.

You could also try repeating exactly what you have been doing, but on a different C-128 system. The chances of this being a hardware problem are slim, but it's best to explore every avenue.

Another thing you didn't mention was the sort of file you were trying to send and whether it's always the same file that stops in the middle of the transfer. If it is, try another file on a different disk.

Q I have a C-64, a 1541, an Epson FX-80 printer, a Magnavox 80 monochrome monitor, a Cardco G-Wiz interface and the PaperClip word processor. I've seen

80-column boards advertised and am wondering if they work well. Also, could you recommend an 80-column adapter, and is there an 80-column word processor that would work with the adapter? I use my computer primarily for word processing and telecomputing.

—JERRY SMITH
WAGONER, OK

A Batteries Included, the developer of PaperClip, at one time made an 80-column adapter for the C-64 called the BI-80. It came with Basic 4.0 and looked fantastic in monochrome. I have one of these interfaces and use it all the time.

Check your original PaperClip disk to see if there's a file called PCLIP64-E-SC-80, or something similar, on it. This is an 80-column version of PaperClip, and it and the BI-80 were made for each other.

Batteries Included has been bought out by Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404; 415-571-7171). Contact EA for more information or for the 80-column version of PaperClip, if it isn't on your disk.

I doubt they'll have a BI-80, though. To find one, you'll probably have to check the used market or poke around on the dusty shelves of your local Commodore dealer (if you have one).

If you can't find the adapter, you can also achieve 80 columns with a C-128 and PaperClip II (the special PaperClip for 128 mode). In fact, depending on how much you have to pay for a BI-80, you might be better off with the C-128. The BI-80 used to cost \$200, and if you still have to pay anything like that, you can have a C-128 with all its capabilities for just a bit more.

Also, the BI-80 draws quite a bit of electricity, and if you have a lot of other devices connected to your C-64, it might zap the computer's power supply. If you do get the adapter, you may be able to plug an external power supply into it directly. Later BI-80s included this feature. ■

We invite you to submit your telecommunications tragedies, triumphs and thoughts to:

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

David Bradley can be contacted on Quantum Link and PeopleLink as DavBradley, on Delphi as DavidBradley and on his own BBS as SYSOP. His BBS number is 813-377-5941, and it operates at 300 and 1200 baud.



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Notice that somebody just stole second base. Funny, it was here a minute ago.



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RUN'S CHECKSUM PROGRAM

By BOB KODADEK

RUN'S ORIGINAL PERFECT TYPIST programs have been valuable aids, but they're not as perfect as one would like. To improve the situation, we're introducing a new entry program, RUN's Checksum which all programs listed in RUN will use beginning with this issue. The most noticeable difference between our new program and the Perfect Typist is that RUN's Checksum serves for both the C-64 and the C-128.

A less obvious difference is that RUN's Checksum uses an algorithm that ensures that every byte of data entered has a unique value, depending on its position in the line. As with Perfect Typist, all you need to do is compare the checksum that appears with the value presented as REM*### at the end of each line in the program listing.

HOW TO USE RUN'S CHECKSUM

Type in RUN's Checksum in either 64 or 128 mode and save it to disk before running. When you're ready to type in a program from RUN, first load and run RUN's Checksum. It will automatically detect which computer it's running on, make the necessary adjustments and display either the 64 or 128 version on the screen. At this point, you'll also see a SYS number that displays the starting address for activating the checksum. Always use this SYS number to toggle the Checksum on and off.

Pressing the run-stop and restore keys will not disable this utility. In order to turn off RUN's Checksum, enter the SYS command and press the return key. Entering this SYS command again will re-activate the checksum. Be certain to disable RUN's Checksum before attempting to run another program from Basic.

SIMILARITIES AND DIFFERENCES

RUN's Checksum retains the features of Perfect Typist and functions in exactly the same way, except that it produces different checksum numbers. Therefore, you cannot use RUN's Checksum to type in listings from any RUN issues prior to this one. On the other hand, all listings starting with the January 1988 issue cannot be

entered with either the 64 or the 128 Perfect Typist.

Keep the following in mind when you're entering listings: Basic keywords can be abbreviated; spaces affect the checksum only if they appear within quotes; and the order of characters will affect the checksum value. After entering a Basic line and pressing the return key, a one-, two- or three-digit number from 0 to 255 appears in the left-hand margin directly below the line you entered.

If the number matches the checksum value in the program listing, the line is correct, and you may continue. You enter the next line by typing it in directly over the previous line's checksum value. If the number that appears doesn't match the listing's checksum value, then proofread the line, comparing it with the magazine listing. Then move the cursor back up to the line and make your corrections. After you press return, the correct checksum value should appear. Continue entering the listing in this manner until all the program lines have been entered, and then deactivate RUN's Checksum, using the SYS number. Save the finished program.

LIMITATIONS

While our new checksum utility can find any entry errors, it won't detect an omitted line. If all the checksums match and the program still won't run, look carefully to see that you've entered every line from the listing. Another problem that may occur is a conflict with another resident program, such as the DOS Wedge.

Also, before you attempt to run a new program for the first time, it's good practice to remove any resident programs and cartridges. This can be done by turning the computer off and then on again or by performing a system reset. On the 128, press the reset button on the right-hand side of the computer. 64 users can enter SYS 64738 and press the return key. But, before doing this, make sure you've saved a copy of the new program. □

Bob Kodadek has authored many RUN programs, including the highly popular 64 Notepad.

Listing 1. RUN's Checksum program.

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

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Now that you're able to do all those stand alone applications with your Commodore, like word processing, spread sheet analysis, and many others, you are probably thinking "It would sure be nice if I could expand the amount of data I have access to." You are quite right, everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on line to the small computer owner. You can even send and receive messages anywhere in the world. All you need is a telephone and a modem which allows your computer to communicate with others through these many services.

The next question is: "Which modem is best for me?" Let us first say that almost all modems (and services) are set up to communicate in one of three speeds; 300, 1200 and 2400 Baud. If you look around you will find that there is a flood of 300 baud modems on the market and sometimes at very low prices. The reason is simple, they are being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend about 1/4 the time and money getting the data you want and more time enjoying it.)

You may also be wondering about getting a 2400 Baud modem. 2400's are great (and quite expensive), only if you have a dedicated, data-grade phone line. Here's why. The regular phone system doesn't have the signal clarity and bandwidth to support more than about 1200 baud and as a result, 2400 Baud modems will usually run at either 1200 or, on a real bad line, 300 Baud. They adapt to the worst-case line conditions and will slow transmission accordingly. Why buy a 2400 Baud modem for a lot more money when it's going to transmit at 1200 Baud most of the time anyway? (Kind of like buying a sports car then always running at lower speed).

You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. The reason is that they are either not truly Hayes and/or

Commodore 1670 compatible therefore not usable in all situations and with all services. The Arotek Minimodem-C™ is both Hayes and Commodore 1670 compatible and 1200 baud. Why not get a modem that will satisfy your present AND future needs by going directly to an inexpensive Arotek Minimodem-C™ especially when we have it on sale?

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COMMODORE CLINIC

Is there an expansion cartridge for GEOS 128? Where can you get the discontinued Super Expander graphics cartridge for your C-64?

RUN's new Clinic columnist has the answers.

By LOU WALLACE

SOFTWARE

Q Will the new 1581 drive work with a fast-load cartridge on my C-64?

—MICHAEL DI PAOLA
WESTWOOD, NJ

A Not at this time. Fast-loaders (software or hardware) make extensive use of the ROM routines built into the 1541 and 1571 drives. That's why some of the so-called "compatible" disk drives don't work properly with all software. The 1581 has a new ROM, very different from the 1541 and 1571, and uses a different disk format, so it's incompatible with the current fast-load packages. However, if enough 1581s are sold, companies like Epyx or Access Software (who produce fast-load cartridges for the 1541) will very likely make one for the 1581.

Q I've looked far and wide for a copy of the Super Expander graphics cartridge for my C-64, without any luck. Do you know where I can get one?

—KEN GREEN
GAINESVILLE, FL

A The Super Expander cartridge, which gave the C-64 a set of excellent bit-map and sprite graphics commands, is no longer produced by Commodore. However, on the day your letter arrived, another letter came from Malcolm Kroeber, a Super Expander enthusiast, who reports that the Super Expander is available from Tenex Computer Express (PO Box 6578, South Bend, IN 46660; 800-348-2778) for only \$7.95! I called the mail order firm and was told they do indeed have the Super Expander for \$7.95 and have plenty in stock.

Q I just began using RUN Script 128, version 2.56, from your Productivity Pak III. I followed the sequence for saving a file to disk (i.e., I pressed F1, followed by s for save). When the Filename prompt ap-

peared, I entered "LETTER" with the double-quotation marks. Now the filename appears on my disk directory as ""LETTER. Note the twin set of quotes in front of the filename. Needless to say, I can't load the file. Help!

—BOB CARROLL
THEODORE, AL

A Having made the same mistake myself, I know it's very easy to fix, regardless of the version of RUN Script you use. Boot RUN Script, press F1, followed by an I to load the file. When prompted for the filename, enter ?LETTER, and the file will load perfectly. Scratch the old file with ?LETTER for the filename, and resave the new one.

HARDWARE

Q My disk drive is failing the 1541 Demo Disk performance test. I can load from the drive, but I can't save anything. The drive passes the Demo Disk's mechanical test, but when I load a program, the computer sometimes locks up, and, worst of all, it keeps corrupting my disks. What's happening?

—RONALD FORTUNE
SAN LEANDRO, CA

A Stop using your disk drive! You'll just corrupt more of your disks. It sounds like your drive's out of alignment and may even be suffering from chip failure. Take it to your local Commodore service center immediately. There's one called PET VET that's about five miles from you, at 4043 Rhoda Ave., in Oakland; their phone number is 415-530-8119.

Q Does it matter which serial port of my 1541 I connect my 64 to?

—JASON OEHLI
HIGHLAND, CA

A You can use either port. The reason there are two serial ports is to "daisy chain" a printer or multiple disk drives.

Q When the C-128 came out over a year ago, I thought that besides being able to use my C-64 games and programs on it, I could also take advantage of its 80 columns for word processing and its superior graphics to play better games. I'm having no problems using my 128 word processor, but I am having trouble with games.

For example, while the 64 mode may be compatible with C-64 programs, the 1571 disk drive, apparently, is not. Many of my games do not work on the 128 in 64 mode when I use them with the 1571.

Since almost all computer outlet stores won't take back a program package that's been opened, it seems to me that it is up to the software manufacturers to alert the consumer to any quirks.

—SCOTT ANGSTREICH
CHERRY HILL, NJ

A The problem you're having with software loading is related to the problem with returning it to a store once it's been opened—software piracy. In an effort to stop the wanton copying of software (particularly games), manufacturers resort to various copy-protection schemes. Many of these techniques utilize specific areas of memory or specific routines within the 1541. If everything isn't just perfect (such as a printer not connected or a cartridge not plugged in or there's a full moon), the program won't load. Even if the drive is slightly out of alignment, it might not load. So you shouldn't be surprised that some software won't work on the 128 in 64 mode when you use a 1571.

However, there are a couple of tricks you can try to get your 1571 to load 1541-formatted programs. Sometimes the 1571 is still in 1571 mode, which might be the case, for example, if you started out in 128 mode and typed in GO 64. The drive may not have been set to 1541 mode when you entered GO 64. If that's the case, type in

OPEN 15,8,15,"U0>M0":CLOSE15

to reset the disk drive to single-sided, 1541 mode.

Another trick is to hold down the Commodore key when you power up ►

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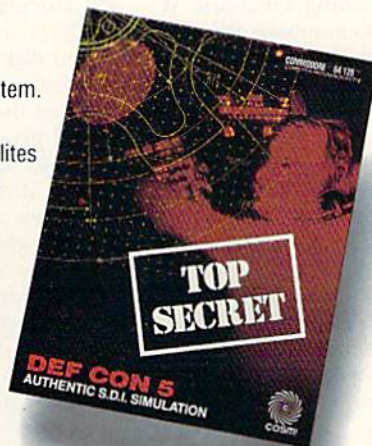
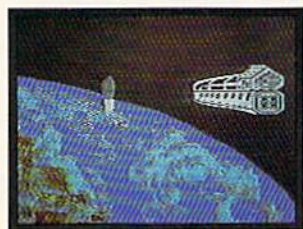


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or reset the computer. That will take you directly to C-64 and 1541 modes.

If you're still experiencing problems, there may be subtle differences between the 1541 and 1571 ROMs. Take the 1571 ROM to a Commodore service center for upgrading. There will be a charge, however, since it is not a free upgrade.

Q *I just bought the new GEOS 128, and already I'm tired of loading and re-loading it. I've looked in vain for an expansion cartridge to hold GEOS in both 64 and 128 modes. Is there such a cartridge?*

—BILL SLAUGHTER
ARLINGTON, TX

A Yes. It's Commodore's 1750 512K RAM expansion cartridge. The 1750 works with GEOS 64 (on a 128 in 64 mode) and with GEOS 128 in 128 mode. You can use the cartridge as a 350K RAM disk with GEOS 128 or as a 174K RAM disk with GEOS 64. They make using GEOS much faster and much more productive. Just be sure you save the contents of the RAM disk files to a real disk drive before you turn off the computer, otherwise they'll be lost.

Q *When I insert a program disk into my 1541 disk drive and turn the computer on in 128 mode, the drive light blinks a couple of times and the drive head bangs. What causes this and how can I cure it?*

—GENE ULAT
CORPUS CHRISTI, TX

A What you are observing is the 1541 trying to autoboot a program. I spoke with the experts at Commodore about your problem, and they suggest you turn on your 128 *before* turning on the 1541. Then the computer, realizing that no disk drive is available, will give you the Ready prompt. You can then turn on the disk drive without head banging or light flashing. Of course, if you do want a disk to autoboot, turn on the drive first, insert the disk and then turn on the C-128.

Q *I have two questions. First, I've seen C-64 software available for SAT preparation. Is there any company that offers C-64-compatible software for preparing for the GRE (Graduate Record Examination)? Second, I'm thinking about getting the Educator 64 for classroom use. However, the ads don't specify what, if any, form of storage device it comes with or uses. Since it appears to be a C-64 in a CBM PET case, I was wondering if*

it uses a 1541 serial drive, as the C-64 does, or a 2031-style IEEE drive, like the PET?

—JACK DAVIDSON
WABASH, IN

A I checked with Beth Jala, *RUN's* Review Editor about GRE preparation software, but she wasn't aware of any for the C-64 or C-128. As for the Educator 64, it's a C-64 in an old style PET case, but it still uses standard 1541 disk drives. Unless the ad explicitly states it includes a drive, you should assume you must buy it separately.

Q *When I turn on my C-64, all I see are strange characters on the screen! I've sought every possible method to solve this problem, but I couldn't. Is my power supply damaged, or what?*

—PATRICK LEUNG
NEW YORK, NY

A There are a number of possibilities, of which the power supply is one. You could try a friend's power supply on your computer, and if it works, you could conclude that, yes, you need a new power supply. But there are other possible problems. You could be experiencing a CPU failure. If that's the case, you'll need a new 6510 microprocessor. Whatever the problem, I strongly suggest you take it to your local CBM service center and let them take a look at it.

Q *I own a C-128 and a 1541. I want to upgrade my drive, as well as buy a new monitor. What are the differences between the 1571 and 1581 drives, and the 1902 and 2002 monitors? I've noticed that the 1581 is less expensive than the 1571, but I'm told it has more storage! Is it completely compatible with 64 and 128 software?*

—MICHAEL GREENSTEIN
ORANGE PARK, FL

A The major difference between the 1571 and 1581 is the greatly increased disk storage capacity (350K vs. 800K) of the 1581. But you should realize that there are not yet many commercial programs available on the 3½-inch disks accommodated by the 1581. Another difference is the 1581's faster load times. Also, the 1581 can be partitioned, which lets you use subdirectories on your disks.

As for software compatibility, no, the 1581 is not completely compatible. Software with disk-based copy-protection schemes probably won't work. However, unprotected software or software

that can use the 1581 as a secondary data drive should work well.

As for the 2002, it is Commodore's "universal" monitor. It has composite, RGBI and RGBA connections, allowing it to work with both the C-64 and the C-128. Commodore is no longer manufacturing the 1902, which is becoming very difficult to get.

The October 1987 issue of *RUN* reviews the C-128D, 1581 drive and the 2002 monitor. Refer to it for additional information.

PROGRAMMING

Q *I'm a 13-year-old programmer and I think your magazine is great! I'm writing a program and I want to know how to keep the listing from prying eyes.*

—BRIAN LEABY
N. BABYLON, NY

A On the C-64, use POKE 775,1 to disable program listing capability. To restore it, use POKE 775,167. On the C-128, use POKE 775,139 to disable and POKE 775,81 to restore.

Q *I accidentally used Save with Replace (SAVE "@:FILENAME",8) on a C-64 program when I typed it in for the first time, not knowing I shouldn't have. Now I can't get the filename off the disk! Can you tell me how? Also, should I make a backup before scratching the program?*

—NANCY A. KUSCHE
GLENDALE, AZ

A The easiest way is to simply rename the file. Use this command line in Direct mode:

```
OPEN 15,8,15, "R0:NEWFILENAME = 0:@:FILENAME":CLOSE 15
```

Now you can scratch the old file without worrying about erasing the program with the filename "Filename". ■

Do you have a problem or question about your Commodore computer system, software or programming? Just send your questions on a postcard to:

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

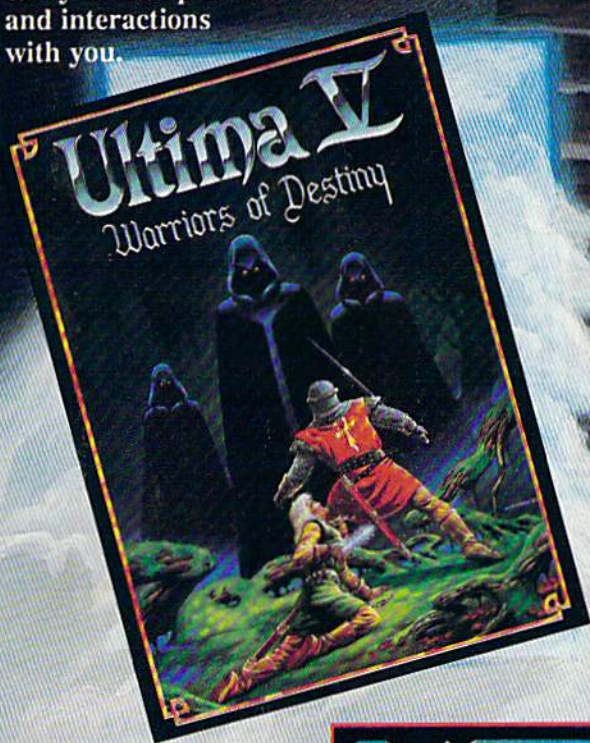
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RUN TERM 128

From p. 54.

Listing 1. RUN Term 128 Boot program.

[Note: Checksums are for RUN's new checksum program.]

0 REM RUNTERM BOOT PROGRAM	40 BLOAD"RUNTERM128"	:REM*235
	:REM*94	45 POKE22003,7:REM PRINTER SECO
10 BLOAD"TABLES",B0,P(DEC("0E00	NDARY ADDRESS	:REM*96
"))	:REM*212	46 POKE22004,4:REM PRINTER DEVI
20 BLOAD"PUNTER128"	:REM*1	CE NUMBER
30 BLOAD"WXMODEM128"	:REM*124	:REM*168
	50 BANK0:SYS22000	:REM*81

Listing 2. RUN Term 128 main program.

10 OPEN 8,8,8,"RUNTERM128,P,W"	D2156A90085B0A90485 B120035	
	:REM*167	D20183020945D :REM*71
15 FAST	:REM*86	110 DATA 208C5AA91A85FAA95685 F
20 READ A\$:IF A\$="-1" THEN CLOS	E8:END	:REM*176
25 IF LEN(A\$)<62 THEN 55		111 DATA 85FBA90085FCA9FAA209 A
	:REM*232	0042065FF207DFF930D 0D72756
30 B\$=MID\$(A\$,1,20)+MID\$(A\$,22,	20)+MID\$(A\$,43,29)	:REM*35
35 N=LEN(B\$)/2	:REM*38	112 DATA 32380D62590D744F4D20 6
40 FOR I=1 TO N	:REM*20	2524F574E0D00207F62 20605B2
45 H\$=MID\$(B\$,I*2-1,2):H=DEC(H\$)	:REM*73
	:REM*222	113 DATA 27A9C020D2FF88D0F8A9 0
50 PRINT#8,CHR\$(H);:NEXT:GOTO 2	0	:REM*34
	:REM*100	114 DATA 7465726D20313238202D 2
55 IF LEN(A\$)<20 THEN B\$=A\$:GOT	O 70	:REM*65
60 IF LEN(A\$)<42 THEN B\$=MID\$(A	\$,1,20)+MID\$(A\$,22,(LEN(A\$)-	:REM*148
21):GOTO 70		115 DATA 4F4C4420444F574E2061 6
65 B\$=MID\$(A\$,1,20)+MID\$(A\$,22,	20)+MID\$(A\$,43,LEN(A\$)-42)	:REM*80
	:REM*67	116 DATA 4F57494E473A0D020207 5
70 N=LEN(B\$)/2	:REM*73	7207DFF61203D206155 544F444
75 FOR I=1 TO N	:REM*251	9414C2020202020 :REM*206
80 H\$=MID\$(B\$,I*2-1,2):H=DEC(H\$)	:REM*67
	:REM*251	117 DATA 20202020DD2073203D20 7
85 PRINT#8,CHR\$(H);:NEXT:GOTO 2	0	:REM*120
	:REM*129	118 DATA 455220744F47474C4520 2
100 REM RUNTERM 128 DATA		020DD2074203D207449 4D45207
	:REM*143	345540D63203D :REM*22
101 DATA E2554C00260000000000 0		119 DATA 20634F4E464552454E43 4
0000000000004C645607 0423564		5207445524D20DD2075 203D207
5594559415444	:REM*175	5504C4F41440D :REM*228
102 DATA 0000000000008F000000 0		120 DATA 64203D20644F574E4C4F 4
0000000000001300 00000000		1442020202020202020 DD20762
00000000008541	:REM*149	03D2076494557 :REM*10
103 DATA 544450000000004CB15C 4		121 DATA 206255464645520D020 7
8A212AD035620CCCE8 AD02562		DF65203D206543484F 2028645
0CCCE6820CACD	:REM*123	5504C45582920 :REM*0
104 DATA A212A9004CCCCDA9028D 0		122 DATA 2020DD2077203D206255 4
0FF20E559A9008D00FF 4C65FA0		646455220775241500D 66203D2
0000048A9008D	:REM*156	066494C452072 :REM*31
105 DATA 00FF6820E255A9028D00 F		123 DATA 454144455220202020 D
F60A00FB94156996E0A 8810F7A		D207A203D207A45524F 2062554
00FB954569900	:REM*228	64645520D6820 :REM*116
106 DATA 268810F7201E68A9FF8D F		124 DATA 3D206F4E2F6F46462068 4
D12A9008D0056A9288D 0F56A93		F4F4B2020202020DD20 40203D2
C8D1056A050A9	:REM*211	06449534B2063 :REM*197
107 DATA 2099001B8810FAA5D710 0		125 DATA 4F4D4D414E440D6B203D 2
DA9508D0F568D0056A9 138D105		066554E4354494F4E20 6B45595
6A90E20D2FFA5	:REM*65	3202020DD202A :REM*29
108 DATA F18D0456AD05568D21D0 A		126 DATA 203D2064454641554C54 5
9FF8D2056A9008D08DC 8D08DD8		30D6C203D206C4F4144 2062554
D2F2820605B20	:REM*190	6464552202020 :REM*161
109 DATA 7DFF13139300A90185E5 8		127 DATA 2020DD205E203D206241 5
		54420724154450D020 4757207
		DF6275666665 :REM*236

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RUN TERM 128

128	DATA 7220706F696E7465723A 2 DFF2028656E64 :REM*173	151	DATA 14A91820CCCD20CA910 2 0CCCD20EA9104CCCD 20965BA D0056F00320C4 :REM*14	174	DATA 209A5EF026A900AA2068 F FAD6A76A200A01D20BD FFA900A 208A00020BAFF :REM*124
129	DATA 3D3630313630290D0020 4 757A5EB8D0756A5EC8D 0856A90 08D1F5660EAAD :REM*160	152	DATA 5920507920895DC911D0 0 620597A4CDE5BC991D0 0620797 A4CDE5BC913D0 :REM*159	175	DATA A98CAE685EAC695E20D8 F FB09560207DFF0D0D65 4E54455 22066494C454E :REM*72
130	DATA 0056F00320C45920605B 2 05E5C20D459C91BD001 60C985D 0036CF755A215 :REM*149	153	DATA 0620035D4CDE5BC92BD0 0 CEE4F79AD4F79C9EF90 CEF0EAC 92DD00DCE4F79 :REM*85	176	DATA 414D453A2000A9108D69 7 6206B76602C532C5200 8DBA5E8 CBC5EA000AE6A :REM*18
131	DATA DD8159F009CA10F86CF9 5 54C4559A95948A94448 BD97594 8BDAD59486041 :REM*220	154	DATA AD4F79C904B0BE4CF95B 2 0D45960CE5D5CAD5D5C D008A90 48D5D5C4CD75A :REM*16	177	DATA 76B9B95EF0079D001DC8 E 8D0F4A9009D001D8E6A 7660A90 08D1556A9018D :REM*3
132	DATA 4243444546484B4C5354 5 5575A402A5E56313233 4A656F7 86E6F616F5D5F :REM*15	155	DATA C901D0034CA65AC902D0 0 6AD215685E560AD0456 85F1604 8A9A220D2FFA9 :REM*78	178	DATA 1356A20820C6FF20E4FF 4 8A590D00F6820105DAD 1356D0E FA9008D135660 :REM*24
133	DATA 5F626D6F5D776F6F5B6A 6 A6A750306294C1E4585 B50AC27 EA612489DAA2A :REM*146	156	DATA 9D20D2FF686048A920D0 F 104A9048D5D5CAE1F56 F00DA20 08E1F56A99320 :REM*172	179	DATA 68A9008D13566020965B 2 07DFF0D0D615050454E 4420736 5712046494C45 :REM*93
134	DATA CF7FA8AEF56048AE11D0 2 96F8D11D0A9018D3D00 686048A 9008D3D0DAD11 :REM*83	157	DATA D2FF4C895CAE075686EB 8 6E8AE085686EC86E920 5CC1205 7CD20245C20B7 :REM*95	180	DATA 20544F20625546464552 0 D0D00209A5ED00160A9 53A0522 0BE5EA900AA20 :REM*48
135	DATA D009108D11D0686000A2 2 0AD01DD2910D002A203 8E401BA DE459F025A900 :REM*211	158	DATA FF2908D029A20520C6FF 2 0E4FF297FAAB000FF0 E9AE135 6F00A4820105D :REM*221	181	DATA 68FFAD6A76A200A01D20 B DFFA908AA820BAFF20 C0FF901 EA90820C3FF20 :REM*169
136	DATA 8DE459AD0056D01A000F B 9401B09809918048810 F5A017B 9001B09809900 :REM*25	159	DATA 68486CF5556820D2FFA9 0 085F44C895C20CCFF20 4B5C20E 4FF20585CF00B :REM*78	182	DATA 7DFF0D0D6C4F41442065 5 2524F52210D0020CCFF 206F5D6 020DE5EA90820 :REM*177
137	DATA 048810F560A9018DE459 A D0BDCAA290F1869308D 441B8A1 004A2101002A2 :REM*12	160	DATA A6D3E000BD00BA6EB8E07 5 6A6EC8E085660C985D0 0620565 74C895CAE1656 :REM*148	183	DATA C3FF60000020C459A900 8 5FAA90485FBAE126120 C9FFA00 0A5D3D0272052 :REM*158
138	DATA 018E4E1BA2202910F002 A 2318E431BAD0ADCAA29 0F69308 D471B8A4A4A4A :REM*144	161	DATA F0054820D2FF68AABD00 0 E48A20520C9FF6820D2 FF20CCF F4C895CA9048D :REM*247	184	DATA 7A2C13611004AABD000E 2 0D2FFA590D014E6FAD0 0E26FBA 5FBCD805F90DA :REM*88
139	DATA 4A1869308D461BAD09DC A A290F69308D4A1B8A4A 4A4A4A1 869308D491BAD :REM*235	162	DATA 4F79A9008D4E794C5079 A 2B08EB902A201A00020 77FFE6B 0D01FE6B1A6B1 :REM*213	185	DATA A5FACD7F5F90D320D459 6 020965BA9088D12618D 1361207 DFF0D0D734156 :REM*199
140	DATA 08DC69308D4C1BA93A8D 4 51B8D481BA92E8D4B1B A90D8D4 F1B6078A96E8D :REM*132	163	DATA E0EF9017AE1556D013A2 E E86B1A22FF86B0A2008E 13564CD 75A86B160A204 :REM*73	186	DATA 4520625546464552D0D 7 36176653A203C313E3D 744F206 2554646455220 :REM*218
141	DATA 1403A90A8D1503586078 A 9658D1403A9FA8D1503 5860AD0 056D00160A04F :REM*34	164	DATA 86B1A20086B00EAA900 8 D1556A9018D1356A904 85B1A90 085B0A90D2010 :REM*112	187	DATA 654E440D202020202020 3 C323E3D744F20775249 5445207 04F494E54452 :REM*112
142	DATA A9008D0356B9001B0980 8 C0256202656A9088D03 56AD045 62026568810E2 :REM*143	165	DATA 5DAD1356D0F6A90485B1 A 90085B060207DFF0D0D 614E592 04B455920544F :REM*163	188	DATA 0D0D0020895DC931F005 C 932F00E60A9EF8D0805F A9008D7 F5F4C3860A5B1 :REM*173
143	DATA 6030333030031323030 0 0A028A920098099001B 8810FAA 003AD1456D00B :REM*135	166	DATA 20434F4E54494E55450D 0 020CCFF20E4FFF0FB60 0800A90 2A292A05D20BD :REM*80	189	DATA 80805FA5B08D7F5F207D F F0D0D7345E4420744F 3A0D3C2 031203E203D20 :REM*5
144	DATA B9CD5A99001B8810F730 0 9B9D25A99001B8810F7 A220AD1 356F002A2028E :REM*191	167	DATA FFA2002068FFA905A202 A 00020BAFF20C0FFA900 8D14564 C616F20965B20 :REM*54	190	DATA 7052494E5445520D3C20 3 2203E203D206D4F4445 4D0D3C2 033203E203D20 :REM*228
145	DATA 061BA220AD1656F002A2 0 58E081BA220AD1556F0 02A2178 E0A1BA220AD0A :REM*217	168	DATA 7DFF930D0D0D66554E43 5 4494F4E206B4559533A 0D0D3C2 073203E415645 :REM*170	191	DATA 6449534B0D0020895DC9 4 1D00D206162B0032081 5FA9044 CC3FFC932D00D :REM*103
146	DATA 0FF002A20A8E0C1BA220 A D07281002A2148E0E1B A220AD0 9281002A2048E :REM*151	169	DATA 20203C206C203E4F4144 0 D0020895DC953D00034C 475EC94 CF00160207DFF :REM*54	192	DATA A9058D1261A9FF8D1361 4 C815F209A5EF084A953 A05720B E5EA900AA2068 :REM*170
147	DATA 0F1BA220AD2F283002A2 1 38E101BA220AD2256F0 02A2128 E121B6000A900 :REM*63	170	DATA 0D0D6C4F414420662D6B 4 559530D0020095E6020 9A5EF0E 4A900AA2068FF :REM*254	193	DATA FFAD6A76A200A01D20BD F FA908AAA820BAFF20C0 FF901EA 90820C3FF207D :REM*200
148	DATA 8D5F5BA90185E5A9168D 1 8D08D2C0AA9048D3B0A A214A90 820CCCD20CA9 :REM*213	171	DATA AD6A76A200A01D20BDF F 900A208A00FF20BAFFA9 0020D5F F90C4207DFF0D :REM*138	194	DATA FF0D0D73415645206552 5 24F52210D0020CCFF20 6F5D602 0815FA9084CC3 :REM*65
149	DATA 0020CCCD20EA90020CC C DA9088D2F0AA9008D2E 0A60A90 18D5F5BA90085 :REM*157	172	DATA 0D6C4F4144206552524F 5 2210D0020CCFF206F5D 60207DF F0D0D73415645 :REM*211	195	DATA FFA20820C6FF20E4FF48 A 5908D136120CCFF6820 146120E 1FFF005AD1361 :REM*133
150	DATA EA5A93C8D3B0AA9188D2F 0 AA9108D2E0AA99320D2 FFA9F68 D2C0A8D18D0A2 :REM*206	173	DATA 20662D6B455953D000A9 0 08D685EA0118C695E88 206A5E6 00000858C848D :REM*147	196	DATA F0E120CCFFA90820C3FF A 90420C3FF600000048AE 1261D00 4684CD2FFE004 :REM*90

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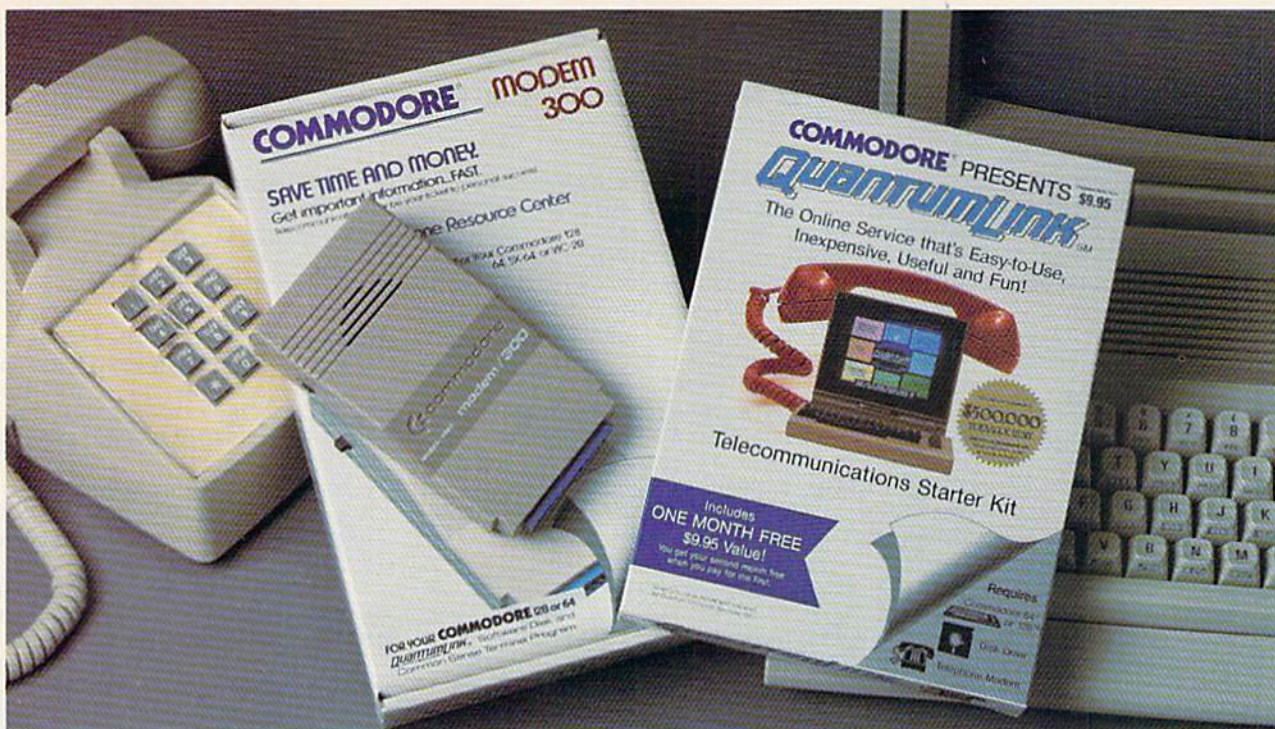
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F35520BAFFA90002068FF A 90020BDDFF4CC0FF0000 0020965 B207DFF930D0D :REM*219</p> <p>209 DATA 0D3C2061203E4D204F52 2 03C2070203E4D3F0D0D 0020895 DA200C941F011 :REM*147</p> <p>210 DATA A280C950F00BA203A900 9 D08DCCA10FA608E7D62 207DFF0 D0D7748415420 :REM*194</p> <p>211 DATA 49532054484520684F55 5 23F2028312D3132293A 200020C CF201D63AD7C :REM*65</p> <p>212 DATA 620D7D628D0BDC207DFF 0 D0D7748415420495320 5448452 06D494E555445 :REM*179</p> <p>213 DATA 3F2028302D3539293A20 0 0201D63AD7C628D0ADC A9008D0 9DC8D08DC60A9 :REM*137</p> <p>214 DATA 028D6976206B76F037E0 0 2F00BAD001D8D011DA9 308D001 DAD001D205063 :REM*105</p> <p>215 DATA 0A0A0A0A8D7C62AD011D 2 050630D7C628D7C6260 C930900 8C93AB00438E9 :REM*163</p> <p>216 DATA 30606868686860000000 0 0000000AD09DCCD09DC F0FBBCAD 0F560A8AD6163 :REM*23</p> <p>217 DATA 8D01DD209563AD62638D 0 1DD20A06388D0EBA900 85A2A5A 2C92890FA60A9 :REM*253</p> <p>218 DATA 0085A2A5A2C90390FA60 A 90085A2A5A2C902D0FA 60AD636 3F0034C7164EE :REM*6</p> <p>219 DATA 6763A9008D6563AD6263 8 D01DDA90085A2A5A2C9 6490FAA 000B9001DF024 :REM*31</p>	<p>220 DATA C92AD006205B644CEE63 C 930900EC93AB00A38E9 30D002A 90A207463EE65 :REM*29</p> <p>221 DATA 63AC6563D0D7203864AC 6 663AD01DD2910F004A5 D3F0016 0205B6488D0EE :REM*95</p> <p>222 DATA 202464AD61638D01DDA9 0 085A2A5A2C9B490FA4C B363207 DFF0D72454449 :REM*87</p> <p>223 DATA 414C494E472E2E2E2020 0 060207DFF0D6E554D42 4552204 F462054524945 :REM*233</p> <p>224 DATA 533A2000A9000AE676320 3 28EA90D4CD2FFA90085 A2A5A2C 93C90FA60A900 :REM*124</p> <p>225 DATA 85A2A5A2C91490FA60EE 6 76320CCFFA20520C9FF A94120D 2FF206664A954 :REM*144</p> <p>226 DATA 20D2FF206664A90D2D2D F FA90085A2A5A2C95A90 FAA000B 9FB55F0092D0D2 :REM*0</p> <p>227 DATA FF206664C8D0F2A000B9 0 01DF00920D2FF206664 C8D0F2A 90D2D2FFA900 :REM*187</p> <p>228 DATA 85A2A5A2C95A90FA20CC F F203864AC6663AD01DD 2910F00 4A5D3F0016020 :REM*217</p> <p>229 DATA 5B6488D0EEA20520C9FF A 94120D2FFA90D2D2FF A90085A 2A5A2C9B490FA :REM*236</p> <p>230 DATA 2024644C716420965B20 7 DFF930D0D0D72756E74 65726D2 D313238206175 :REM*73</p> <p>231 DATA 746F6469616C6572D2D2 2 D2D2D2D2D2D2D2D2D2D 2D2D2D2 D2D2D2D2D2D2D :REM*129</p> <p>232 DATA 2D00D0D0D73656C656374 3 A0D3C2031203E203D20 3136353 0206449414C45 :REM*22</p> <p>233 DATA 520D3C2032203E203D20 3 1363630206449414C45 520D3C2 033203E203D20 :REM*121</p> <p>234 DATA 313637302F6841594553 2 06449414C45520D0020 895DC93 1F009C932F025 :REM*235</p> <p>235 DATA C933F04160207DFF0D31 3 63530206D4F44454D0D 00A9208 D6263A9008D61 :REM*214</p> <p>236 DATA 638D63634C0166207DFF 0 D31363630206D4F4445 4D0D00A 9208D6163A900 :REM*74</p> <p>237 DATA 8D62638D63634C016620 7 DFF0D313637302F6841 5945532 06D4F44454D0D :REM*185</p> <p>238 DATA 00A9208D6263A9008D61 6 3A9018D63634C1666A9 208D03D DAD61638D01DD :REM*20</p> <p>239 DATA A90085A2A5A2C96490FA A 9008D6763207DFF0D0D 656E746 5722072656469 :REM*74</p> <p>240 DATA 616C2064656C61792028 4 352203D203230205345 4353293 A2000A0148C66 :REM*0</p> <p>241 DATA 63A9008D6976206B76F0 0 6206E728C6663207DFF 0D0D617 5746F6469616C :REM*185</p> <p>242 DATA 6572206D656E750D0D73 6 56C6563743A0D3C2031 203E203 D20654E544552 :REM*217</p>	<p>243 DATA 206E554D42455220544F 2 06449414C0D3C203220 3E203D2 06449414C2066 :REM*166</p> <p>244 DATA 524F4D2070484F4E4520 6 24F4F4B0D3C2033203E 203D206 C4F4144204120 :REM*209</p> <p>245 DATA 70484F4E4520624F4F4B 0 D3C2034203E203D2073 4156452 0412070484F4E :REM*80</p> <p>246 DATA 4520624F4F4B0D3C2035 2 03E203D206544495420 4120704 84F4E4520624F :REM*23</p> <p>247 DATA 4F4B0D0D0020895DC931 9 010C936B00C38E931AA BD19674 8BD1E67486067 :REM*217</p> <p>248 DATA 686A6868224B1CB2E920 7 DFF0D0D0D654E544552 2023205 44F204449414C :REM*166</p> <p>249 DATA 3A2000A91E8D6976206B 7 6F034207DFF0D0D6449 4120494 E472E2E2E0D0D :REM*50</p> <p>250 DATA 684F4C4420444F574E20 7 348494654204B455920 544F204 1424F5254210D :REM*251</p> <p>251 DATA 0D0020AB6360000001F 1 E3E4EA9008D7A678D7B 67207DF F0D0D0D73454C :REM*35</p> <p>252 DATA 454354206E554D424552 2 028312D39293A200D00 20895DC 9319011C93AB0 :REM*135</p> <p>253 DATA 0D38E931AA8D7B670940 8 D7A6760A90060A9FF8D 7B67EE7 B67AD7B67C909 :REM*209</p> <p>254 DATA F01F4818693120D2FF20 7 DFF203D2006809408D 7A6720F 067A90D20D2FF :REM*197</p> <p>255 DATA 4CC66760AD7D67AC7A67 4 CB56AAD7C67AC7A674C B56AAD7 E67AC7A674CB5 :REM*127</p> <p>256 DATA 6AAD7F67AC7A674CB56A A D8067AC7A674CB56A60 A9028D0 0FF60A90085FA :REM*218</p> <p>257 DATA A94085FBA900A891FAC8 D 0FB6E6FBA6FBE04AD0F3 A002B94 8689900498810 :REM*4</p> <p>258 DATA F76054464200207DFF0D 0 D0D6449414C2066524F 4D20704 84F4E45424F4F :REM*209</p> <p>259 DATA 4B0D0020476A20C16720 8 167D0034C0166207DFF 0D0D6E4 F57206449414C :REM*144</p> <p>260 DATA 494E473A200020F067A9 0 D20D2FF201E68A000AD 7A6785F BAD7C6785FAB1 :REM*140</p> <p>261 DATA FAF00699001DC8D0F699 0 01D201D6820AB636020 7DFF0D0 D0D7341564520 :REM*143</p> <p>262 DATA 5448452070484F4E4542 4 F4F4B0D0020476A201E 68A9008 D685EA94A8D69 :REM*250</p> <p>263 DATA 5EA900A040206A5E201D 6 84C0166207DFF0D0D0D 6544495 4205448452070 :REM*183</p> <p>264 DATA 484F4E45424F4F4B0D00 2 0476A2008167D0034C01 66207DF F0D0D62627320 :REM*33</p> <p>265 DATA 6E414D453A200020F067 A 9108D6976207DFF0D0D 6262732 06E414D453A20 :REM*213</p>
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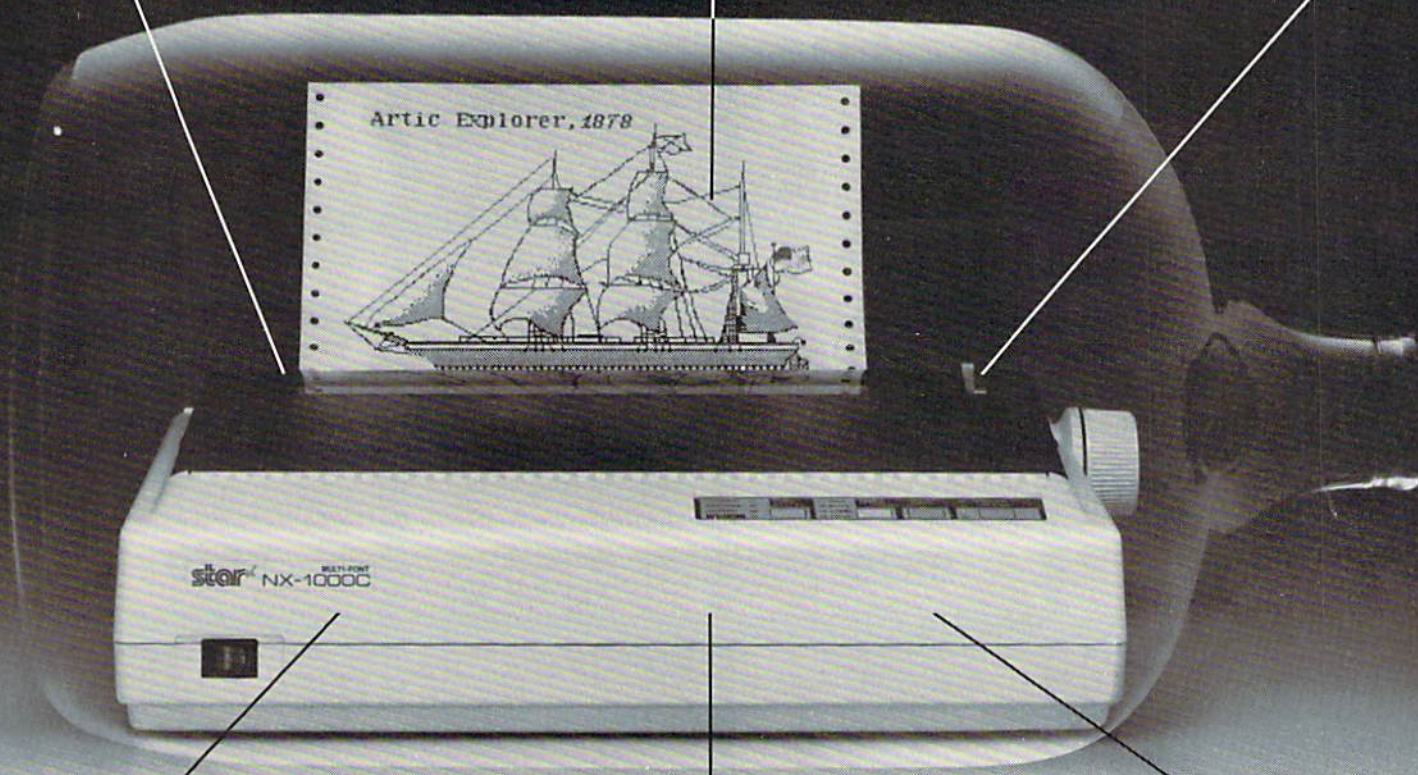
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267	DATA 1E8D6976207DFF0D0D70 4 84F4E4520233A200020 6B76F00 6AD7C6720076A :REM*228	290	DATA 06304CD76B20D56A207D F F0D0D0D70554E544552 20644F5 74E4C4F414421 :REM*250	313	DATA 206344845434B53554D0D 3 C2033203E203D20784D 4F44454 D206372630D3C :REM*194
268	DATA 207DFF0D735452494E47 2 023313A2000202068A9 108D697 6207DFF0D0D73 :REM*197	291	DATA 0D00203C6B9008A90F20 C 3FF4CC66A2015302009 30AD000 2C901F02BAD1B :REM*89	314	DATA 2034203E203D2077784D 4 F44454D0D0D020895D C931B00 34CC66AC935B0 :REM*68
269	DATA 5452494E472023313A20 0 0206B76F006AD7E6720 076A207 DFF0D73545249 :REM*185	292	DATA 38AABD386BA05720BE5E A D6A76A200A01D20BDFF A200206 8FFA902A208A8 :REM*95	315	DATA F938E931F00AAABDA36D 8 D06284C506D4C0B6CA2 01AD135 6F001CA8E1356 :REM*24
270	DATA 4E472023323A2000200B 6 8207DFF0D0D73545249 4E47202 3323A2000206B :REM*7	293	DATA 20BAFF20C0FF901020F2 6 AA90220C3FFA90F20C3 FF4CC66 A20F26AB0EEA2 :REM*241	316	DATA 60A201AD1556F001CA8E 165 55660A201AD1656F001 CA8E165 660A201AD1456 :REM*249
271	DATA 76F006AD7F6720076A20 7 DFF0D735452494E4720 23333A2 000201468207D :REM*6	294	DATA 0120686320C2E6201530 2 00330A2012068634C6B 6C207DF F931111111111 :REM*171	317	DATA F001CA8E1456203A6F60 8 AF024A9088D100AA954 8D003BA 9038D013BA937 :REM*189
272	DATA FF0D0D735452494E4720 2 3333A2000206B76F006 AD80672 0076A4C016685 :REM*103	295	DATA 1111111111111111111 1 111111117452414E53 4645523 A2000A900A01D :REM*166	318	DATA 8D160AA9038D170AA946 8 D120AA9018D130A60A9 068D100 AA9518D003BA9 :REM*250
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276	DATA 4E47206E45572070484F 4 E45424F4F4B2E2E2E0D 0020246 868684C016660 :REM*39	299	DATA 44210D00203C6B9008A9 0 F20C3FF4CC66AA05220 C26C901 02F26AA90820 :REM*229	322	DATA 6C74733A0D2D2D2D2D2D 2 D2D2D2D2D2D2D2D2D2D 2D2D2D2 D2D2D0D0D3C20 :REM*161
277	DATA AD7E6785FAAD7A67D000 6 085FBA20520C9FFA0000 B1FAF00 DAABD00E20D2 :REM*62	300	DATA C3FFA90F20C3FF4CC66A 2 0F26AB0EE20DE6C2093 6C20032 820F16C4C2F6D :REM*104	323	DATA 31203E203D2073455420 6 34F4C4F52530D3C2032 203E203 D2070554E5445 :REM*240
278	DATA FF206664C8D0EF20CCFF 6 0AD7F674C836AAD8067 4C836A8 4FB85FAA000B1 :REM*208	301	DATA 20D56A207DFF0D0D0D78 4 D4F44454D20644F574E 4C4F414 4210D00203C6B :REM*127	324	DATA 5220624C4F434B53495A 4 50D3C2033203E203D20 784D4F4 4454D20745241 :REM*136
279	DATA FAF00620D2F0C8D0F660 2 07DFF0707070700208C 5A60493 000A20F20C3FF :REM*57	302	DATA 9008A90F20C3FF4CC66A A 05720C26C901020F26A A90820C 3FFA90F20C3FF :REM*142	325	DATA 4E534C4154450D3C2034 2 03E203D20784D4F4445 4D20646 C652073435245 :REM*252
280	DATA A902A2D2A06A20BDDFFA9 0 FA208A820BAFF20C0FF 20F26A6 020CCFFA5BA20 :REM*0	303	DATA 4CC66A20F26AB0EE20DE 6 C20936C2000202820F16C 4C826D0 015435730995A :REM*9	326	DATA 4540E0D3C2035203E203D 2 0784D4F44454D207041 4420735 452495050494E :REM*135
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283	DATA 1860000050505350209A 5 ED0023860207DFF0D0D 73656C6 563743A203C70 :REM*148	306	DATA 2D0D0D73656C6563743A 0 D3C2031203E203D2070 554E544 5520D3C203220 :REM*225	329	DATA 48414E47452073544F50 2 0624954530D3C203920 3E203D2 06C494E454645 :REM*114
284	DATA 3E524F4752414D203C73 3 E455155454E5449414C 0D00208 95D4820D2FFA9 :REM*173	307	DATA 3E203D20784D4F44454D 2 0634845434B53554D0D 3C20332 03E203D20784D :REM*98	330	DATA 454453206F4E202F206F 4 6460D3C2030203E203D 2064454 C455445206B45 :REM*42
285	DATA 0D20D2FF8C953D00AA2 0 28E366B8E376B1860A9 50A2008 E366BE8E376B :REM*212	308	DATA 4F44454D20637263D0D 0 020895DC931B0034CC6 6AC934B 0F938E931F00A :REM*182	331	DATA 592076414C55450D0D0D 0 0895DC9309010C93AB0 0C38E93 0AABDF67048BD :REM*201
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287	DATA 9008A90F20C3FF4CC66A A D6A76A200A01D20BDFF A200206 8FFA902A208AC :REM*243	310	DATA 4C4F414420412046494C 4 52066726F6D20534F4D 454F4E4 5210D2D2D2D2D :REM*143	333	DATA 0D0D0D6368616E676520 7 3637265656E20636F6C 6F72732 10D0D70524553 :REM*150
288	DATA 366B20BAFF20C0FF9010 2 0F26AA90220C3FFA90F 20C3FF4 CC66A20F26AB0 :REM*202	311	DATA 2D2D2D2D2D2D2D2D2D2D 2 D2D2D2D2D2D2D2D2D2D 2D0D0D7 3656C6563743A :REM*197	334	DATA 53203C2031203E20544F 2 04348414E474520666F 7265677 <i>Continued on p. 98.</i>

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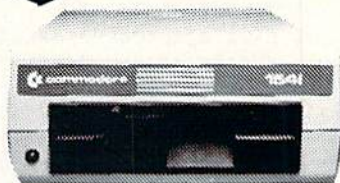
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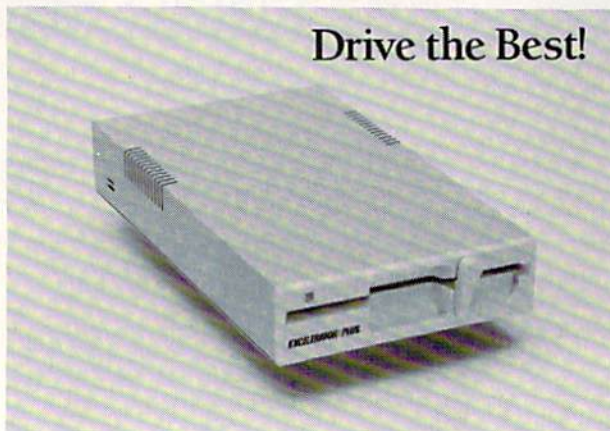
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0109005A2008E0B7120 D1714C0	86D6B728D6B72 :REM*111	94C452070414444494E 473F207
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9060105030E20 :REM*69	350 DATA 52414E534C415445204F 4	D0D6348414E47 :REM*115
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7452070554E54455220 624C4F4	54C5420495320 :REM*39	3555252454E54205345 5454494
34B2073495A45 :REM*214	351 DATA 6E6F207472616E736C61 7	E473A2000AD11 :REM*32
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0AE2056A90020 :REM*7	352 DATA 2860207DFF0D0D0D6348 4	4004CAA74C960 :REM*189
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	06D41534B494E472028 464F522	363 DATA D00C207DFF7350414345 0

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```

04CAA74207DFF3F3F3F 3F00207 373 DATA 6374203C2030203E204F 5 DFF0D0D644953 :REM*243
DFF0D73656C65 :REM*236 2203C2031203E207374 6F70206 383 DATA 4B206449524543544F52 5
364 DATA 63743A0D0D3C2030203E 2 269743A0D00200 :REM*29 93A0D755345203C6E6F 2073637
03D206E4F4E450D3C20 31203E2 374 DATA 895DC930D009AD100A09 8 :REM*20
03D206F44440D :REM*146 08D100A060AD100A297F 8D100A06 384 DATA 4F2050415553452C0D41 4
26B0D3C203420 :REM*202 0A20AAD0A0FF0 :REM*189 E44207368696674206B 6579205
365 DATA 3C2032203E203D206556 4 375 DATA 02A2008E0A0F60207DFE 9 44F2041424F52 :REM*115
54E0D3C2033203E203D 206D415 30D0D0D6348414E4745 2064454 385 DATA 540D0D1200A200A01DAD 6
24B0D3C203420 :REM*202 C455445206B45 :REM*233 A7620BDFFA900A2008A0 6020BBAF
366 DATA 3E203D2073504143450D 0 376 DATA 592056414C55452E0D0D 6 :REM*142
D0020895DC930900EC9 35B00A3 3555252454E54207641 4C55453 386 DATA 0020C6FF20B4B8A00384 6
8E930AABD2A74 :REM*196 A20000AE140EA9 :REM*103 3A5D3D03C20CFFF8560 A590D03
367 DATA 8D110A6000000000000000 4 377 DATA 0020328EA9038D697620 7 :REM*174
020000AD100AA2052960 DD1075F DFF0D0D654E54455220 4E45572 387 DATA 90D02AC663D0EA2007BA A
005E8E00990F6 :REM*37 076414C55453A :REM*4 900A2008A003205DBAA9 2020D2F
368 DATA 8E1856207DFF0D0D0D63 4 378 DATA 2000206B76F00B206E72 8 F20CFFF009A6 :REM*137
8414E474520774F5244 206C454 C140EA91499000F6000 00A90008 388 DATA 90D0C20D2FF90F220B4 B
E4754483A0D0D :REM*210 D6A7620CCFF20 :REM*98 8A002D0BE20CCFFA900 3820C3F
369 DATA 63555252454E54206C45 4 379 DATA 4B5C20E4FFF0FB20585C C F206F5D602096 :REM*164
E4754483A2000AE1856 A900203 90DD00F20D2FFAE6A76 A9009D0 389 DATA 5BA2088660A900856285 B
28E207DFF0D6E :REM*113 01DAB6A7660C9 :REM*145 7AA2068FF207DFF930D 0D654E5
370 DATA 554D424552204F462064 6 380 DATA 14D00620D3764C7376C9 1 4455220644953 :REM*244
1746120424954532028 352D382 8D00A20D376AD6A76D0 F8F0CAA 390 DATA 4B20634F4D4D414E4420 2
93A2000D002089 :REM*249 C6A76CC6976D0 :REM*221 84F522024293A2000A9 1E8D697
371 DATA 5DC9359019C939B01538 E 381 DATA 08A90720D2FF4C7376A8 2 6206B76AD001D :REM*212
930AABD10758D1075AD 100A299 F0D10758D100A :REM*54 97F920B0034C737698 AE6A769 391 DATA C924D0034CE476A900A2 0
F0D10758D100A :REM*54 D001D20D2FFEE :REM*197 08A00F20BAFF20C0FFB0 35A2002
372 DATA 60207DFF0D0D0D634841 4 382 DATA 6A764C7376AE6A76F00B C 0C9FFB02EA2FF :REM*49
E47452073544F502062 4954533 E6A76A99D0D2D2FF2058 5C60207 392 DATA AD001DC940F00BE8BD00 1
A0D0D73656C65 :REM*154
    
```

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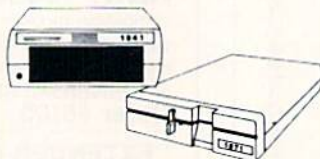
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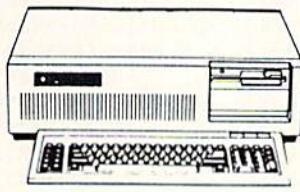
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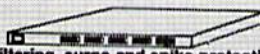
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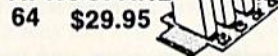
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R U N T E R M 1 2 8

```

DF00520D2FF90F520CC FFA2002 402 DATA 6820CCCCDA212A90020CC C 409 DATA B1B220CACDC8D0F8E6B3 A
0C6FFB01020CF :REM*249 DA212A90820CCDCDE898 20CCCCDA 5B3C919D0F0B1B220CA CDC8C0E
393 DATA FF20D2FFC90DF006A590 2 21FAD045620CC :REM*242 0D0F6A918A212 :REM*24
9BFF0F04C917700A903 85E520D 403 DATA CDA212A9004CCCCD00000 0 410 DATA 20CCCCDE8A90020CCCCDA9 1
C7820EC78AD04 :REM*57 000AD4E79A2018E4C79 85FAAD4 385B3AD045620CACDC8 D0F7E6B
394 DATA 5685F1A90085F420B7FF 2 F7985FBA95085 :REM*171 3A5B3C919D0FEF :REM*212
908D020A20520C6FF20 E4FF297 404 DATA B2AD105685B3A0008E4C 7 411 DATA AD045620CACDC8C0E0D0 F
FAABD000FF010 :REM*153 920527AAE4C79C90DD0 09A91F9 5AD4F79AE4E79604829 804A85F
395 DATA AE1356F0054820105D68 2 9000BC84C8E79 :REM*36 E68293F05FE60 :REM*248
0D2FF4C347820E1FFD0 06A9018 405 DATA 20467A99000BC8CC0F56 D 412 DATA A9FAA2014C74FFAD4E79 1
D1F566020CCFF :REM*5 0DE88C884FE88B9000B 91B2881 86D4D798D4E79AD4F79 6900C9E
396 DATA 20E4FFF0BAC90DD00620 A 0F8A4FE189865 :REM*230 FD007A9008D4E :REM*202
E784C2E78C914D0034C 9D78C91 406 DATA FA85FAA5FB6900C9EFD0 0 413 DATA 79A9048D4F794C5079AD 4
8F0F2AE29789D :REM*219 2A90485FBE001D0038C 4D79CC0 E7985FAAD4F7985FB20 A17A20A
397 DATA 001DE8E050F0E48E2978 4 F56F008A92091 :REM*95 17AB009A00020 :REM*96
C3178AE2978F009CE29 78CAA92 407 DATA B2C84CB479A92091B218 A 414 DATA 527AC90DD0F2A5FA8D4E 7
09D001D4C3178 :REM*116 5B26D0F5685B29002E6 B3E8E01 9A5FB8D4F794C5079C6 FAA9FFC
398 DATA A20520C9FFAE2978F01C A 6F0034C6879AD :REM*50 5FAD014C6FBA5 :REM*150
000B9001DAABD000E20 D2FFA90 408 DATA 0056D0034C3F7AA910A2 1 415 DATA FBC904B00AA90485FBA9 0
085A2A5A2C904 :REM*205 220CCCCDE8A90020CCCC A00084B 085FA386085FB1860 :REM*138
399 DATA D0FAC8CC2978D0E6A90D 2 2A91385B3A050 :REM*28 416 DATA -1 :REM*19
0D2FF4CCCF050A920 99001D8
810FAA2008E29 :REM*31
400 DATA 7860AD0056F013A000B9 0
01D20467A0980201779 C8C050D
0F060A000B900 :REM*34
401 DATA 1D20467A0980992804C8 C
050D0F06048A212A900 20CCCCDE
89820CCCCDA21F :REM*166
    
```

Listing 3. RUN Term 128 Punter program.

```

10 OPEN 8,8,8,"PUNTER128,P,W" E8:END :REM*176
:REM*168 25 IF LEN(A$)<62 THEN 55
15 FAST :REM*86 :REM*232
20 READ A$:IF A$="-1" THEN CLOS
    
```

Continued on p. 106.

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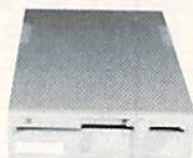
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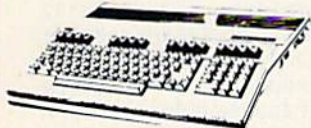
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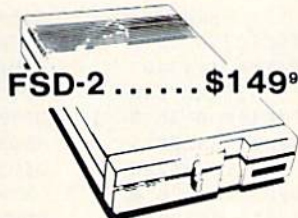
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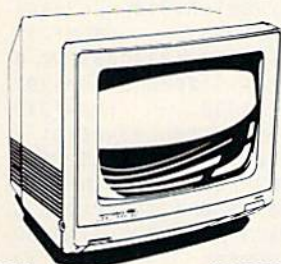
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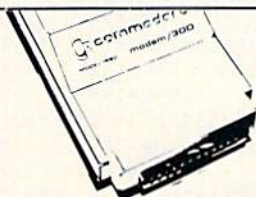
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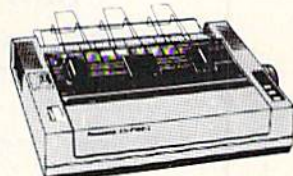
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From p. 102.

30 B\$=MID\$(A\$,1,20)+MID\$(A\$,22,20)+MID\$(A\$,43,29) :REM*35	103 DATA D6334CD4344C1D354CB0 3	:REM*84	C4831A009202A :REM*92
35 N=LEN(B\$)/2 :REM*38	54C9536474F4F424144 41434B5		113 DATA 31AD0D38F005AD0838F0 1
40 FOR I=1 TO N :REM*20	32F4253594E8D :REM*230		FAD04398D09388D1738 208532A
45 H\$=MID\$(B\$,I*2-1,2):H=DEC(H\$)	104 DATA 0538A9008D00388D0138 8		596C901F00CC9 :REM*122
) :REM*222	D0238A9008D06388D07 3820813		114 DATA 02F0DBC904F004C908F0 D
50 PRINT#8,CHR\$(H);:NEXT:GOTO 2	620F830A596D0 :REM*228		360A910205730A596D0 C9A90A8
0 :REM*100	105 DATA 58AD01388D0038AD0238 8		D0938A00C202A :REM*24
55 IF LEN(A\$)<20 THEN B\$=A\$:GOTO 70	D0138AD00028D0238A9 008D043		115 DATA 31A908205730A596F005 C
:REM*65	8A9018D0338AD :REM*60		E0938D0ED60A9018D0B 38AD1E3
60 IF LEN(A\$)<42 THEN B\$=MID\$(A\$,1,20)+MID\$(A\$,22,(LEN(A\$)-21)):GOTO 70 :REM*148	106 DATA 05382C0338F016AC0438 A		8F005A000202A :REM*213
65 B\$=MID\$(A\$,1,20)+MID\$(A\$,22,20)+MID\$(A\$,43,LEN(A\$)-42) :REM*80	200BD0038D94830D009 C8E8E00		116 DATA 31A90B205730A596D0ED A
70 N=LEN(B\$)/2 :REM*67	3D0F24CC4300E :REM*78		9008D1E38AD0438C900 D035AD0
75 FOR I=1 TO N :REM*73	107 DATA 0338AD04381869038D04 3		D38D068EE1938 :REM*47
80 H\$=MID\$(B\$,I*2-1,2):H=DEC(H\$)	8C90FD0D24C6530A9FF 8D06388		117 DATA D003EE1A38206A33A005 C
) :REM*251	D07384C6D30EE :REM*199		8B166C9FFD016A9018D 0D38AD1
85 PRINT#8,CHR\$(H);:NEXT:GOTO 2	108 DATA 0638D003EE0738AD0738 0		63849018D1638 :REM*241
0 :REM*129	D0638F013AD0638C907 AD0738C		118 DATA 206A33204A334C083220 0
100 REM PUNTER PROTOCOL FOR RUN TERM128 :REM*182	9149082A90185 :REM*187		533A92D2CA93A208C35 A006202
101 DATA 0030A9002CA9032CA906 2	109 DATA 964C6435A900859660EA 9		A31A908205730 :REM*249
CA9092CA90C2CA90FEA 4C1B304	848AD180ACD190AF016 AC190AB		119 DATA A596D0EA206A33A004B1 6
CA1354C953685 :REM*53	1C848EE190AA9 :REM*22		68D0938207733A20520 C9FFA000
102 DATA 64BA8E1C38A933186564 8	110 DATA 008596688D000268A84C 2		0B16620D2FFC8 :REM*60
D3130A93069008D3230 4C39304	331A9028596A9008D00 0268A84		120 DATA CC0938D0F520CCFFA900 6
	8A90385BA6860 :REM*31		0A92A208C35A006202A 31A9082
	111 DATA A20520C9FFA200B94830 2		05730A596D0ED :REM*113
	0D2FFC8E8E003D0F44C CCF8D00		121 DATA A90A8D0938A00C202A31 A
	838A9008D0B38 :REM*20		910205730A596F005CE 0938D0E
	112 DATA A9028564AC0838202A31 A		DA9038D0938A0 :REM*236
	904205730A596F007C6 64D0F34		122 DATA 09202A31A9000205730CE 0
			938D0F1A90160A000A9 008D063

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R U N T E R M 1 2 8

88D0738208136 :REM*230	C0938D0DAA000 :REM*121	C38A907186901 :REM*33
123 DATA 20F830A596D03CAD0002 9 90039C003B01C990038 C002D01 5AD0038C941D0 :REM*224	133 DATA AD12389166C8AD133891 6 6C8AD14389166C8AD15 3891666 0A9008D0D388D :REM*241	143 DATA 8D0439A900204031AD0D 3 8D020208A34D010AD07 398D1B3 8A9018D0D38A9 :REM*248
124 DATA 0EAD0138C943D007AD02 3 8C94BF00BC8CC0938D0 C2A9018 59660A9FF8D06 :REM*34	134 DATA 0C388D1D38A9018D1638 A 9FF8D19388D1A382077 33A004A 9079166206A33 :REM*110	144 DATA 004CEF34AD17388D0439 A 9034CEF34A9008D0002 60A9008 D0D388D0C38A9 :REM*164
125 DATA 388D07384C8F32EE0638 D 003EE0738AD06380D07 38F01BA D0638C906AD07 :REM*179	135 DATA A005A9009166C8916620 B 231F0FBA9008D000260 A9018D1 938A9008D1A38 :REM*208	145 DATA 018D16388D1D38A9FF8D 1 9388D1A38207733A004 A907186 9019166206A33 :REM*73
126 DATA 38C910D09EA9028596C0 0 0F004A90485964C6435 A908859 660AD16384901 :REM*158	136 DATA 8D0D388D16388D05398D 0 6398D0C38A9078D0439 A900204 031AD0D38D0D2 :REM*194	146 DATA A005A9FF9166C89166A0 0 7AD1B389166A9018D1E 3820B23 1F0FBA9008D00 :REM*13
127 DATA 8D1638206A33A005AD19 3 81869019166C8AD1A38 6900916 6A20220C6FFA0 :REM*238	137 DATA 208A34D03C20CCFFAD09 3 8C907F016A20220C9FF A007B90 03920D2FFC8CC :REM*170	147 DATA 0260EE0C38AD0C38C903 9 00CA9008D0C38AD0B38 F007D01 1AD0B38F00CA2 :REM*64
128 DATA 0720CFF9166C820B7FF D 00ACC1838D0F098484C 4B33984 8A005C8A9FF91 :REM*152	138 DATA 0938D0F420CCFFAD0639 C 9FFD008A9018D0D38A9 2A2CA92 D20D2FF20A135 :REM*91	148 DATA 00A000C8D0FDE8E078D0 F 66048AD19380D1A38F0 0AAD1D3 8D0056820D2FF :REM*194
129 DATA 664C4B334820CCFF20A1 3 5207F3520A135A004B1 668D093 820773368A004 :REM*219	139 DATA A9004C2E3420CCFFA93A 2 0D2FFAD17388D0439A9 034C2E3 4AD00398D0E38 :REM*135	149 DATA 48686020C2E6AD0F0AC9 8 0F0F6C992F0F260206D 3620F73 0A596D014AD00 :REM*218
130 DATA 916620863360A9008566 A D1638186939856760A9 008566A D163849011869 :REM*67	140 DATA AD01398D0F38AD02398D 1 038AD03398D1138206A 33AD173 88D0938208633 :REM*127	150 DATA 02297F8D0002C908F00B C 90DF007C92010034C1B 36C9619 00DC97BB00938 :REM*47
131 DATA 39856760A9008D12388D 1 3388D14388D1538A004 AD12381 871668D123890 :REM*208	141 DATA AD0039CD0E38D01BAD01 3 9CD0F38D013AD0239CD 1038D00 BAD0339CD1138 :REM*98	151 DATA E9208D00024CF035C941 9 00AC95BB0061869808D 0002C90 8D005A9148D00 :REM*13
132 DATA 03EE1338AD143851668D C 438AD15382A2E14382E 1538C8C	142 DATA D003A90060A90160A900 8 D19388D1A388D0D388D 16388D0	152 DATA 02C922D00A20D2FFA914 2 0D2FFA922AD0002C90D D007A92 ▶

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R U N T E R M 1 2 8

```

02D2FFA9D20      :REM*166
153 DATA D2FF206D3620E4FFF093 8
D0002C913F045C94190 0DC95BB
0091869208D000   :REM*241
154 DATA 024C4936AD0002C9C190 0
AC9DBB00638E9808D00 02C914D
005A9088D0002    :REM*209
155 DATA C983D005A9108D0002A2 0
520C9FAD00022D2FF 20CCFF4
CB03560A91220    :REM*137
156 DATA D2FFA9B82D2FFA99D20 D
2FFA99220D2FFEA5D3 C902D00
768BAEC1C38D0    :REM*14
157 DATA F9A9018D000260AD2603 C
9BAD007AD2703C936F0 16AD260
38D023BAD2703    :REM*218
158 DATA 8D033BA9BA8D2603A936 8
D27036048A59AC903D0 04686C0
23B9004686C02    :REM*185
159 DATA 3B4A68859E8A48984890 2
320BEE9D00E2015EAB0 0EA902A
00091B2C884A6    :REM*196
160 DATA A59E91B21868A868AAA5 9
E9002A900602001374C EC36201
237AC1B0AC8CC    :REM*131
161 DATA 1A0AF0F48C1B0A88A59E 9
1CAAD0F0A4AB01EA910 8D0EDDA
D003B8D04DDAD    :REM*251
162 DATA 013B8D05DDA981207FE6 2
04AE6A9118D0EDD6007 0000000
000000033        :REM*198
163 DATA -1      :REM*17
    
```

Listing 4. RUN Term 128 Xmodem program.

```

10 OPEN 8,8,8,"WXMODEM128,P,W"
      :REM*100
15 FAST      :REM*86
20 READ A$:IF A$="-1" THEN CLOS
  E:END      :REM*176
25 IF LEN(A$)<62 THEN 55
      :REM*232
30 B$=MID$(A$,1,20)+MID$(A$,22,
  20)+MID$(A$,43,29) :REM*35
35 N=LEN(B$)/2 :REM*38
40 FOR I=1 TO N :REM*20
45 H$=MID$(B$,I*2-1,2):H=DEC(H$
  ) :REM*222
50 PRINT#8,CHR$(H);:NEXT:GOTO 2
  0 :REM*100
55 IF LEN(A$)<20 THEN B$=A$:GOT
  O 70 :REM*65
60 IF LEN(A$)<42 THEN B$=MID$(A
  $,1,20)+MID$(A$,22,(LEN(A$)-
  21)):GOTO 70 :REM*148
65 B$=MID$(A$,1,20)+MID$(A$,22,
  20)+MID$(A$,43,LEN(A$)-42)
      :REM*80
70 N=LEN(B$)/2 :REM*67
75 FOR I=1 TO N :REM*73
80 H$=MID$(B$,I*2-1,2):H=DEC(H$
  ) :REM*251
85 PRINT#8,CHR$(H);:NEXT:GOTO 2
  0 :REM*129
100 REM XMODEM PROTOCOL FOR RUN
  TERM128 :REM*63
101 DATA 00284C30284CED2A0000 0
0004000000000008000 0000008
4830000040043 :REM*146
102 DATA 43330000000000000001 0
000000000000000000 A9008D0
F288D11288D1F :REM*243
103 DATA 288D20288D2B288D2C28 8
D2D288D2E288D14288D 2A28206
C2E20E02DA980 :REM*102
104 DATA 8D1028A9008D13288D17 2
88D182820E82920E1FF D0034CB
22AAD1728D038 :REM*219
105 DATA AD0B28C904D0034C9C29 C
918D00320B72AC916D0 034C5B2
8C901D0D4A904 :REM*232
106 DATA 8D2528AD1428D00FAD29 2
8C955F00820732DA955 8D2928A
D0B2820BA2CCD :REM*36
107 DATA 1528D0B0AD0104186D02 0
418C9FFF006204F2A4C 5B28EE1
428AD0104CD14 :REM*81
108 DATA 28F009CE1428204F2A4C 5
B28AD0628C915F00D20 322E204
92EC900D0E64C :REM*8
109 DATA FD28AD182838ED830418 C
D8304D0D6AD0628C957 D03A20F
52EAD0A28C940 :REM*95
110 DATA F004C980F00B20A02A4C 1
D29A90020732DEE2A28 AD2A28C
904D014AD0A28 :REM*234
111 DATA C980D005A90720732DA9 0
08D2A28203E2F4C5B28 AD0F28F
042A000A204BD :REM*8
112 DATA 8504DD1928D005CA10F5 A
0068C0D28A20820C9FF AE0D28B
D85042C072810 :REM*133
113 DATA 0320CE2920D2FF20B7FF D
027EE0ED28AD1028CD0D 28D0DF2
C112810034CC8 :REM*245
114 DATA 2AA200BD03049D8504E8 1
0F78E0F2820882A4C5B 2820B22
AA9808D1128A2 :REM*18
115 DATA 7FAD2F28D00EBD85048D 1
228C91AF007C900F003 4CC729B
D8504CD1228D0 :REM*27
116 DATA 06CA10F54CC82AE88E10 2
84C4329297FC9419013 C95BB00
F09204CE729C9 :REM*198
117 DATA 619006C97BB00229DF60 2
07C2C20E1FFF05C2067 2CD02AA
D0928C980F007 :REM*39
118 DATA AD0628C957D01BAD0B28 C
910D00CE2E829AD0B28 49408D0
B2860C911F0CE :REM*229
119 DATA C913F0CA6020762C90C7 A
D0628C957D01CA91820 832CA91
820832C203E3F :REM*212
120 DATA A91820832CA91820832C 6
8684CE32A68684C5328 4CB22AE
E1328A90ACD13 :REM*76
121 DATA 28F059AD0A28C940D006 2
07C2A4C6B2AA9012073 2DAD062
8C957D004200F :REM*192
    
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8D003EE2E28206A2F60 AD0A28C
940D00620A02A :REM*89

123 DATA 4C9A2AA90020732DA906 2
0832C60EE2B28D003EE 2C28206
A2F60A9042083 :REM*209

124 DATA 2C60A91820832CA90420 E
52A209F2D6868602903 20832C6
0A90620832CAD :REM*56

125 DATA 0628C957D00F20E829C9 0
4D0F9A90620832C20BA 2EA9032
0732DA9084CC3 :REM*100

126 DATA FF20E1FFD00320B72AAD 1
90A8D180AA9008D1F28 8D20288
D2B288D2C288D :REM*53

127 DATA 2D288D2E28A9018D0004 8
D010449FF8D020420E1 FFD0062
0AC2A20B72A20 :REM*189

128 DATA 672CD0F0AD0B28C918D0 0
320B72AC943F004C915 D0DE8D0
628206C2EAD29 :REM*17

129 DATA 2820732DA9038D1728A2 0
08E18288E0C2820E1FF D0034C2
22C20CCFFA208 :REM*142

130 DATA 20C6FF20E4FF4820CCFF 6
82C0728100320CE298D 0B2820B
7FF29C38D0C28 :REM*248

131 DATA D00CAD0B2820BA2CC983 D
0C9F02AAD0B2820BA2C CD1628F
01FA91A8D1228 :REM*27

132 DATA AD0B28C91AD005A9008D 1
228AD12288D0B2820BA 2CCD162
8D0F8AD0628C9 :REM*110

133 DATA 15F0092032E205F2E4C D
02BAD18288D8304A900 8D0D282
0E1FFF048AE0D :REM*13

134 DATA 28BD00420832CEE0D28 A
D1528CD0D28D0E7207C 2C20672
CF00C20E1FFF0 :REM*184

135 DATA 2720762C90F1B0B8AD0B 2
8C915D015AD0A28C940 D006207
C2A4CBA2BA901 :REM*203

136 DATA 20732D4CBA2BC918D003 2
0B72AC906D0C8AD0A28 C940D00
620A02A4C3B2C :REM*188

137 DATA A90020732DAD0C28F019 2
0AC2A207C2CA5A13005 20672CD
0F7AD0C282940 :REM*22

138 DATA F0CC4CE32AEE0104A9FF 4
D01048D02044C4A2BA2 0520C6F
F20E4FF8D0B28 :REM*38

139 DATA 20B7FF60A5A1CD252860 A
90085A185A26048A205 20C9FFA
D0F0A2903D0F9 :REM*249

140 DATA 68A8AD0928C980D01C98 C
910F00FC916F00BC911 F007C91
3F0034CB52C49 :REM*40

141 DATA 40A8A91020D2FF9820D2 F
F60AD0B28AE17289D00 04A8AD0
628C915D00898 :REM*223

142 DATA 186D18288D1828EE1728 E
88A60EF2CF32CF52C0A 2D1F2D3
42D492DF12C5E :REM*220

143 DATA 2D662D6F2D2D002B003A 0
057584D4F44454D2050 524F544
F434F4C202020 :REM*119

144 DATA 0D005452414E53464552 2
0434F4D504C45544520 200D005
452414E534645 :REM*222

145 DATA 522041424F5254454420 2
020D000584D4F444454D 2050524
F544F434F4C20 :REM*58

146 DATA 2020200D004352432050 5
24F544F434F4C202020 2020202
0D000424C4F43 :REM*3

147 DATA 4B5320002004552524F52 5
3200020910D0048AD08 28F0026
860A20320C9FF :REM*16

148 DATA 680AAABDD92C85C3E8BD D
92C85C4A000B1C3C900 F0082D0
2FFC8C000D0F2 :REM*0

149 DATA 60207C2C24A210FC60A9 0
08D21288D2228A9108D 2328A92
18D242860A208 :REM*212

150 DATA 4D21288D21280E22282E 2
1289012AD23284D2128 8D2128A
D24284D22288D :REM*197

151 DATA 2228CAD0E360AD1428F0 0
34C592AAD062820832C EE2728A
D2728C903D039 :REM*34

152 DATA A9008D2728AD0628C957 D
010A9068D2928A9438D 0628A90
18D252860C943 :REM*1

153 DATA D019A9058D2928A9158D 0
628A9038D2528A9848D 1528A98
38D16286020A7 :REM*229

154 DATA 2DA200BD03048E272820 B
A2DAE2728E8E00D0EF 60AD222
8CD8404D00BAD :REM*124

155 DATA 2128CD8304D003A90060 A
90160AD21288D8304AD 22288D8
4046020AA2EA9 :REM*179

156 DATA 008D2728A9858D1528A9 8
48D1628A9018D2528AD 0628C95
7D006A9028D29 :REM*205

157 DATA 2860C943D006A9068D29 2
860A9058D2928A9848D 1528A98
38D162860A985 :REM*163

158 DATA 858BA904858C60E68BD0 0
2E68C60A58BC985D007 A58CC90
4D00160A58B8D :REM*168

159 DATA 0D28A58C8D0E28A20820 C
9FF20AA2EA000B18B20 D2FF20B
32EA58BCD0D28 :REM*202

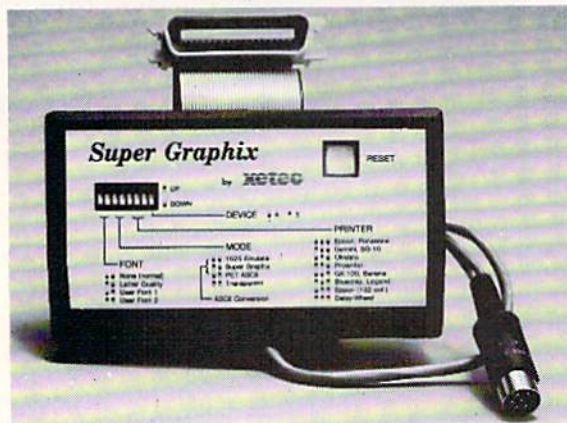
160 DATA D0EFA58CCD0E28D0E820 A
A2E60A000B903042C07 2810032
0CE29A200818B :REM*188

161 DATA 20B32EC8C08D0E96020 A
A2EA9018D2528207C2C 20672CF
0FB20762C90F6 :REM*143

162 DATA A9048D2528AD142838ED 2
A288D1428A91520832C A90120C
22A6020BA2EA9 :REM*182

163 DATA 0620832CA90020C22AA9 0
620832CA90220C22AA9 0620832

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MAGIC

From p. 16.

\$463 HOW MANY COLORS, COMMODORE?

Everyone knows the C-64 and C-128 offer only 16 colors. My program creates practically every color in two or three shades. Try it on your C-64 or C-128. You'll be surprised that no one has discovered this trick before now!

```

Ø REM HOW MANY SCREEN COLORS? - AL SPEICHE
R                                     :REM*5
1Ø PRINT"{SHFT CLR}":T=1             :REM*164
2Ø Q$="(2 COMD Gs){2 SHFT Ts}{SHFT G}{2 SH
FT Bs}{SHFT H}{SHFT Y}{3 COMD Ms}{SHFT
Y}{SHFT H}{2 SHFT Bs}{SHFT G}{SHFT T}{C
OMD G}":Q$=Q$+Q$:POKE53281,T-1:POKE5328
Ø,T-1                                 :REM*18
3Ø T=T+1:POKE646,T:FOR S =1 TO 5Ø:Q$=MID$(
Q$,2,55)+LEFT$(Q$,1)                 :REM*226
4Ø PRINTQ$:NEXT                       :REM*68
5Ø GOTO 2Ø                             :REM*174
  
```

—AL SPEICHER, SALINE, MI

\$464 LOU'S SEQUENTIAL SAGA

If you want to convert a Basic program on disk into a sequential file for reading it unaltered into a word processor or terminal program, use this one-liner:

```
OPEN 8,8,"FILENAME,S,W":CMD8:LIST:PRINT#8:CLOSE8
```

Enter it in Direct mode and be sure you already have a program in memory.

—LOUIS WALLACE, RUN STAFF

\$465 C-64 SEQUENTIAL DIRECTORY CREATOR

My program, Sequential Directory Creator, is an alternative to Lou's Sequential Saga. Suppose you want filenames from disk directories incorporated into word processors in text form. Run my program once for every disk you want to capture filenames from, and it will automatically create a sequential file of each disk's directory.

A write-protect tab cannot be on the disk to be cataloged, because the filename you enter at the first prompt will be written to disk as a sequential file that contains all the filenames from that disk. After running my program and creating a sequential file of the directory, simply read that file into your word processor.

```

1Ø REM SEQUENTIAL DIRECTORY - AL FORTIER
                                     :REM*245
2Ø PRINT"{SHFT CLR}INSERT DISK TO READ"
                                     :REM*172
3Ø INPUT"{CRSR DN}ENTER A FILENAME FOR THE
DISK";F$                             :REM*233
4Ø DIMD$(144):OPEN1,8,Ø,"$Ø"        :REM*73
5Ø GET#1,A$,A$                       :REM*241
6Ø GET#1,A$,A$:IFA$=""THEN CLOSE1:GOTO 12Ø
                                     :REM*183
7Ø GET#1,A$,B$                       :REM*28
8Ø C$=MID$(STR$(ASC(A$+CHR$(Ø))+ASC(B$+CHR
$(Ø))*256),2)+CHR$(32)               :REM*145
9Ø GET#1,A$:IFA$=""THEN 11Ø         :REM*82
1ØØ D$(I)=D$(I)+A$:GOTO 9Ø          :REM*21Ø
11Ø D$(I)=C$+D$(I):PRINTD$(I):I=I+1:GOTO 6
Ø                                     :REM*196 ▶
  
```



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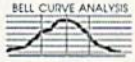

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MAGIC

```
12Ø OPEN 2,8,2,F$+",S,W"           :REM*176
13Ø FORJ=Ø TO I-1                   :REM*131
14Ø PRINT#2,D$(J):NEXT              :REM*35
15Ø CLOSE 2:END                      :REM*76
```

—AL FORTIER, BOISE, ID

\$466 ALTERNATIVE RESET

Are you tired of resetting your C-128 with the reset button? My program literally provides an ALT-ernative by letting you press the ALT key at the top of the keyboard to accomplish the same thing. Type in the program and save it to disk before running it. When you run it, pressing the ALT key in 128 mode resets the system. You can use run-stop/restore to disable it and the F4 key or SYS 4864 to re-enable it.

```
Ø REM ALT RESET - NELSON SEARCY     :REM*144
1Ø KEY 4,"BANK15:SYS4864"+CHR$(13):REM*211
2Ø FOR B= 4864 TO 4892:READ K$:A=DEC(K$):C
=C+A:POKEB,A:NEXT:IF C<>2566 THEN PRINT
"ERROR IN DATA":END                :REM*177
3Ø BANK 15:SYS4864                  :REM*121
4Ø DATA 78,A9,D,8D,14,3,A9,13,8D,15,3,58,6
Ø,AD,D3,Ø,C9,8,FØ,3,4C,65,FA,4C,Ø,EØ,Ø,
Ø,Ø                                  :REM*151
```

—NELSON SEARCY, FOREST CITY, NC

\$467 CONTROL-G ON THE 64

Most C-128 owners know that if they press control-G on their computers, it rings the C-128's ROM bell. My little routine gives the C-64 a control-G key combination that sounds identical to the C-128's bell.

```
Ø REM C128 BELL FOR THE C64 - BARBARA SCHU
LAK                                   :REM*199
1Ø PRINT"{SHFT CLR}PRESS CTRL-G TO HEAR TH
E C-128'S BELL."                   :REM*241
2Ø GET K$: IFK$<>"{CTRL G}" THEN 2Ø :REM*Ø
3Ø GOSUB 5Ø                          :REM*164
4Ø GOTO 2Ø                            :REM*164
5Ø V=54273:POKEV+23,21:POKEV+4,9:POKEV+5,Ø
:POKEV,48:POKEV+3,32:POKEV+3,33:REM*2Ø9
6Ø RETURN                              :REM*2Ø2
```

—BARBARA SCHULAK, PEPPER PIKE, OH

\$468 WEAR-'N'-TEAR SAVER

When I need to leave my computer for a while, I use my Magic trick, Wear-'n'-Tear Saver, to minimize stress on computer peripherals by keeping them cool when they're not in use. And it saves electricity, as well.

When I want to stop working at my computer for a while, I save my work, turn off the video monitor, remove the disk and turn off the drive. Of course, I always leave the computer on.

When I return, I just turn on the monitor, and my video display instantly appears with the cursor located right where I left it. I then switch on the disk drive, pop in my work disk, initialize it and resume working.

—ALF, MELMAC ■

Magic is the original column of reader-submitted hints and tips. Each month we present brief, useful computer tricks to help you get the

MAGIC

most out of your Commodore system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for RUN's imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:

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

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

MEGA-MAGIC

*Protect your monitor
from screen burn.*

BLANK-IT! 64

A monitor screen at a computer-controlled radio station in my home town is permanently damaged by "screen burn," a condition caused by leaving unchanging data on the screen for long periods of time, which literally burns into the screen. Normally, screen burn can be prevented simply by turning down the brightness of the monitor, regularly changing the screen display or turning the monitor off when not in use.

Sometimes, however, you find you need an extended screen display, and these methods won't work. So I wrote Blank-it!, an extension of the normal C-64 interrupt request (IRQ) routine that blanks the screen about three minutes after the last keypress. Pressing a key brings back the display just as you left it.

The program has three small, machine language routines in the top 134 bytes of the cassette buffer. The first routine installs the program as part of the IRQ routine and is activated by the SYS 890 command. Next, a second routine counts the minutes and blanks the screen. A third routine deactivates Blank-it! with SYS 1009.

After you've saved Listing 1 to disk, place a work disk in the drive, load Blank-it! with "BLANK-IT 64(890)",8,1 and run it with SYS 890 to save a one-block machine language file to your disk.

Once the program is activated, you may change the time between screen blanks by typing in POKE 948,X, where X may range from 1 (a four-second interval) to 43, the de-

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fault value (about three minutes). Enter SYS 1009 to disable Blank-it.

Next month, Mega-Magic will feature a C-128 version of Blank-it.

—ROBERT DAVIS, SALINA, KS

Listing 1. Blank-it! 64 program.

```

10 REM BLANK-IT 64 BY ROBERT V. DAVIS
:REM*51
20 PRINTCHR$(147)CHR$(142) :REM*0
30 PRINT"FILE WRITER FOR BLANKIT.":REM*166
40 PRINT"INSERT FORMATTED WORK DISK"
:REM*237
50 PRINT"THEN PRESS RETURN." :REM*128
60 GETK$:IFK$<>CHR$(13)THEN60 :REM*48
70 PRINTCHR$(17);"WORKING" :REM*243
80 OPEN5,8,2,"0:BLANK-IT 64(890),P,W"
:REM*77
90 PRINT#5,CHR$(122);CHR$(3); :REM*110
100 FORX=1TO134 :REM*197
110 READY:PRINT#5,CHR$(Y); :REM*175
120 NEXTX :REM*171
130 CLOSE5 :REM*141
140 PRINTCHR$(17);"{SHT CLR}NOW LOAD BLAN
K-IT 64(890),8,1" :REM*132
150 PRINTCHR$(17);" SYS 809 TO ACTIVATE -
SYS 1009 TO STOP" :REM*210
160 DATA 120,173,20,3,172,21,3,141,238,3,1
40,239,3,169,155,160,3,141,20,3
:REM*176
170 DATA 140,21,3,169,0,141,236,3,141,237,
3,88,96,173,17,208,41,16,240,43:REM*16
180 DATA 165,203,201,64,208,57,238,236,3,2
08,3,238,237,3,173,237,3,201,43:REM*46
190 DATA 208,50,173,32,208,141,240,3,169,0
,141,32,208,173,17,208,41,239 :REM*196
200 DATA 141,17,208,108,238,3,165,203,201,
64,240,22,173,240,3,141,32,208:REM*238
210 DATA 173,17,208,9,16,141,17,208,169,0,
141,236,3,141,237,3,108,238,3,2
:REM*213
220 DATA 0,49,234,254,120,173,238,3,172,23
9,3,141,20,3,140,21,3,88,96 :REM*143 ■
    
```

RUN it right: C-64



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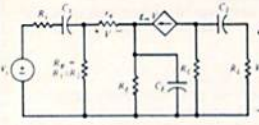
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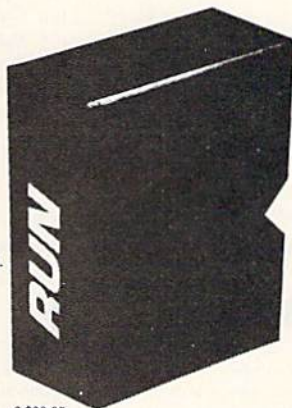
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Perhaps the fastest growing category of game software over the past year has been simulations. In our February issue, we'll examine the reasons for this popularity and look at some programs that simulate naval, flight and sports scenarios.

A BETTER BACKUP—

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HEARTY GREETINGS—

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INVESTMENT SOFTWARE—

If last October gave you the willies, now, more than ever, you want to pick winning stocks and keep careful track of your investment transactions. Next month, we'll provide a roundup of software that will help. And, for the less adventuresome, we'll survey simulation programs that let you play Wall Street tycoon without taking any risk.

INDEX REVISITED—

Due to space constraints in this issue, we were unable to include the 1987 RUN Index. Next month, we plan to bring you this list of all the articles and reviews we published last year.

REGULAR FEATURES—

Also watch for our many columns and departments, packed with interesting and useful Commodore computing information.

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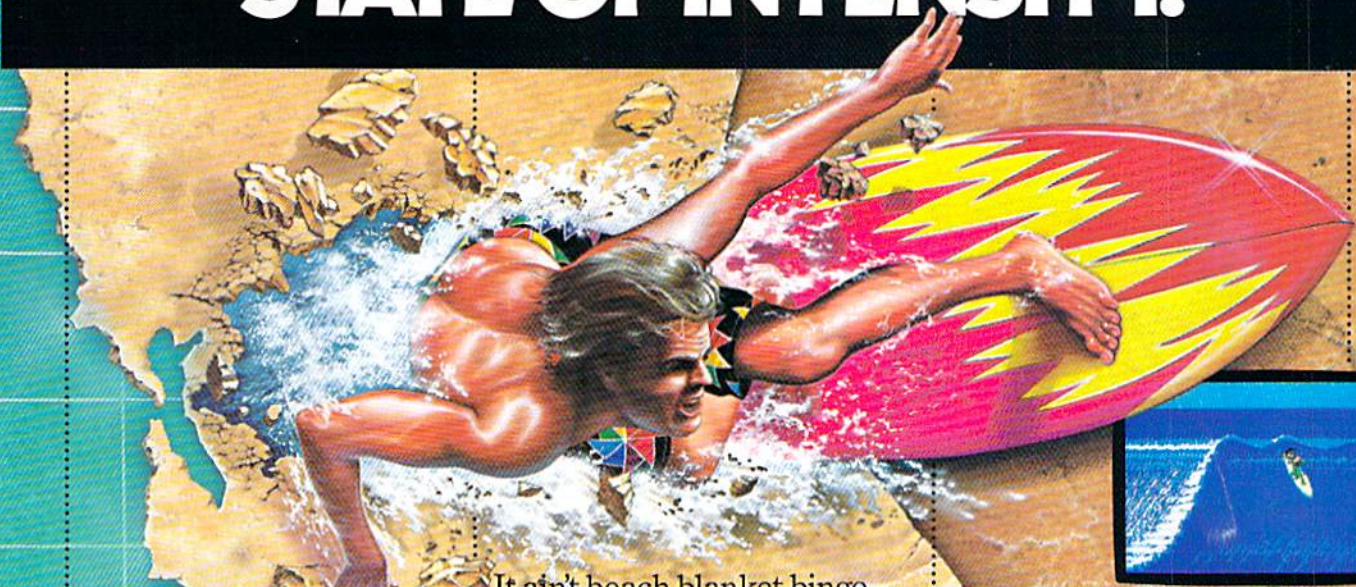
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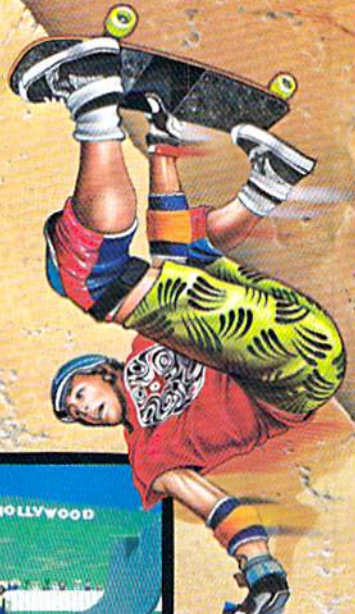
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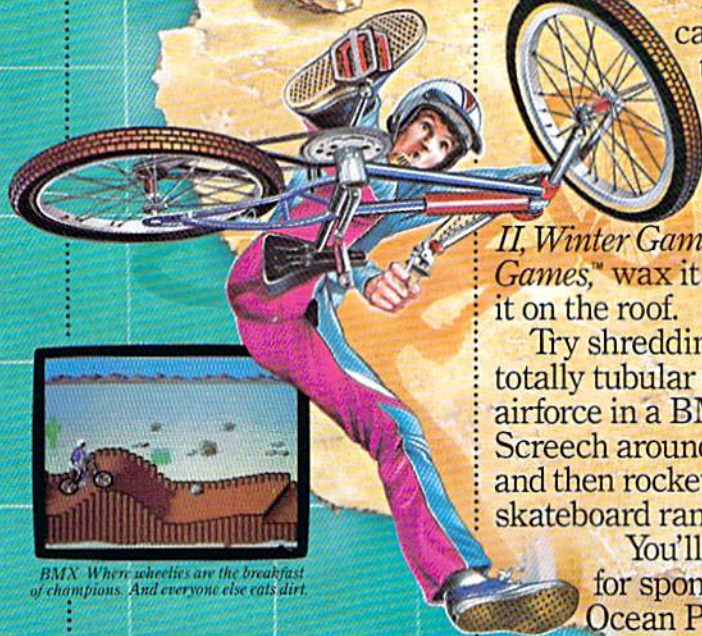
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