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for the serious Apple-user and hard-core computist 3

MAKING YOUR OWN ADVENTURE MAPS

PARAMETERS FOR COPY II PLUS

NO MORE BUGS: THE SEQUEL

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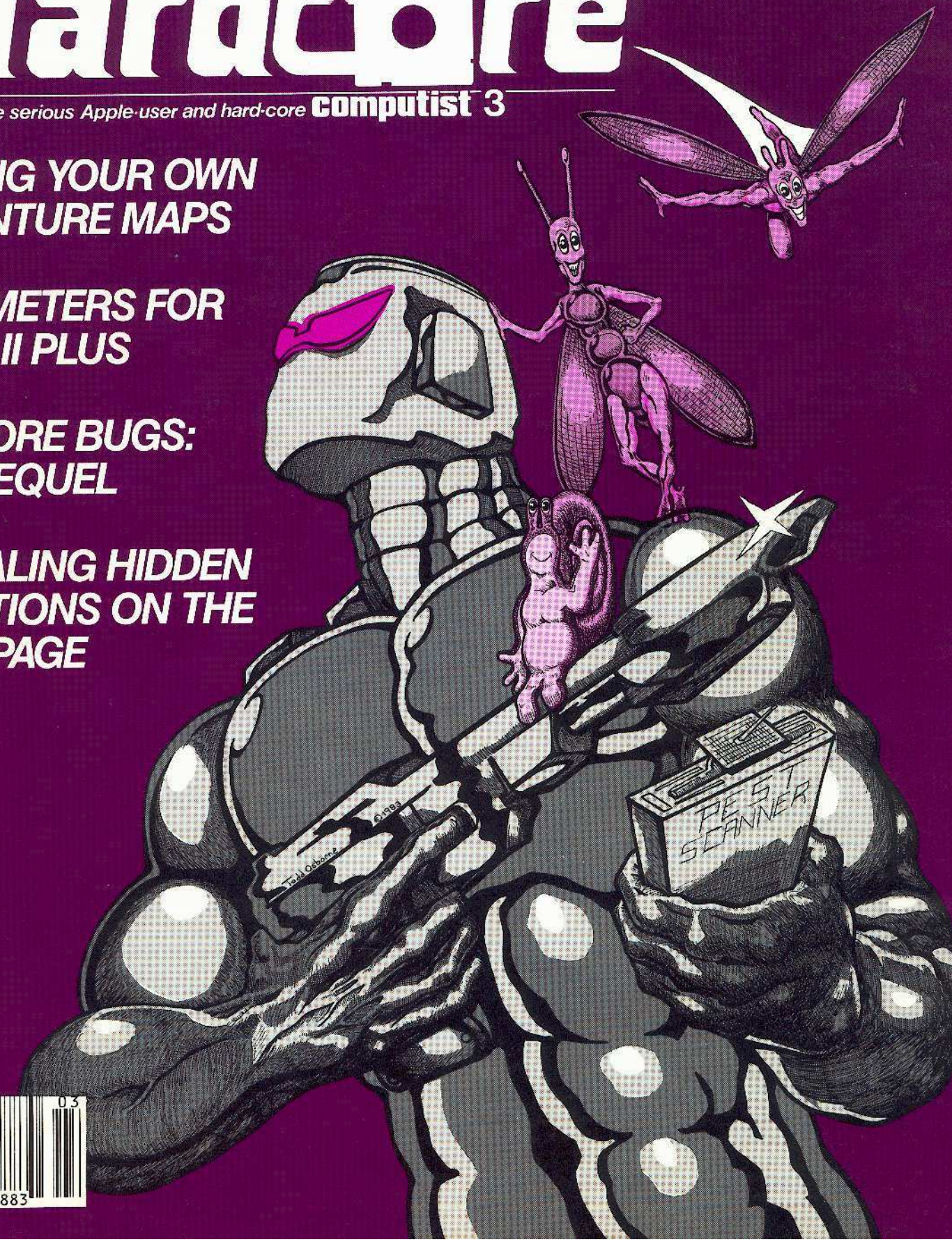

03
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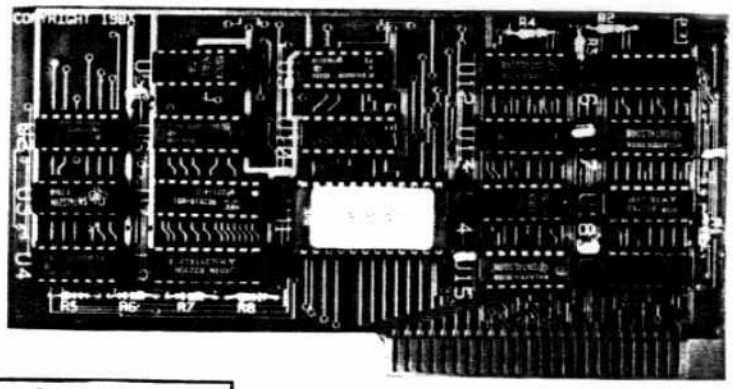
REPLAY II

Apple Program Copy And Development System

Now for IIe Also

- **Disk Formatting Irrelevant**
- **Does not interfere with other cards**
- **Card is transparent until copy is desired**
- **Copies all 64K with "no" compression**
- **Menu driven**
- **Copy and restart in under 15 seconds**
- **Copies memory resident programs**
- **Analyze programs**
- **Development tool**
- **Transparent step & trace**
- **Backwards & forward disassembly scroll**



Why ours is better!

1. Accurate copy of memory
2. Language card not needed to copy or run - when using Replay Card
3. Fast copy & restart - 15 seconds -
4. Analysis programs and 60 pages of documentation
5. Copy system in eprom - No need to boot other disks at copy time -

REPLAY II is an interface card that is slot independent. Users can stop a program, examine and change memory, or copy the program, and restart. Control of the APPLE is obtained by pressing the remote switch which comes on an 18 inch cord outside the APPLE. REPLAY II does not copy the original disk, rather it copies the program executing in memory. If a copy is desired a blank disk is inserted in drive 1 and the options on the menu are contained in the eprom on the REPLAY II card, no other disk needs to be booted for copying, unlike other copy cards. The very act of booting another disk alters memory which is detectable by some protected software.

REPLAY II does not change ANY memory. Extra memory is buffered to allow copying and analysis without altering the original memory contents. Other copy cards always change specific points in the original memory. REPLAY II faithfully reproduces the lower 48K of memory in a fast load format. The upper 16K can also be copied for a 64K copy. Standard DOS 3.3 files are created automatically for storage on floppy or hard disks. A RAM card is needed for this.

REPLAY II is fully documented in a 60 page manual. Utility programs supplied with the REPLAY II card include Program Analysis, Comparisons, Packing and Compression. A language card is not needed to run packed program copies.

Because most programs are written in Assembly language, the user should be familiar with Assembly in order to fully utilize the advanced Analysis and Packing programs. Users can now freeze a binary program and perform a transparent step or trace while continuous disassembly is shown. View text or hires during trace.

REPLAY II can automatically move protected APPLESOFT programs to a standard DOS 3.3 disk for listing or modification.

Now game players can save a game at any level and QUICKLY restart with the REPLAY II card. Users can freeze games, change variables to obtain unlimited ships or power, etc., then restart the program. Saving high scores is easy!

Minimum requirements are an APPLE II and a single disk drive.

To order or request info:
Write or call

Micro-Analyst, Inc.
P.O. Box 15003
Austin, TX 78761
(512) 926-4527

Dealer Inquiries Welcome

Cost:
$130.00 (includes postage)
Outside U.S./Canada add $10 shipping
Texas residents add $7.50 sales tax
VISA/MASTER CARD accepted!!

REPLAY II is intended to be used as an analysis tool, for program development, and for making archival backup copies.

*Apple is a registered trademark for Apple Computers Inc.

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for the serious Apple-user and hard-core **computist** 3

FOLLOW-UP

No More Bugs: The Sequel 4

A few glitches and some suggestions for improvement were incorporated into this article, which clarifies how to use SoftKey's checksums.

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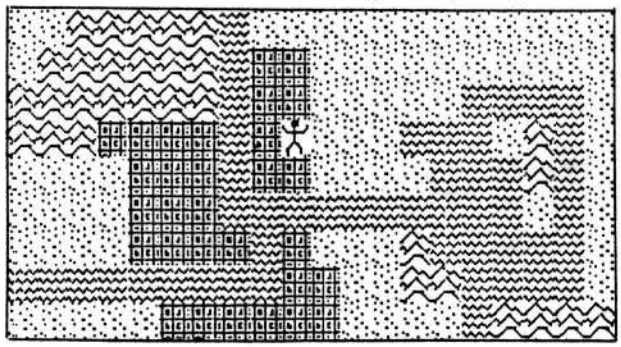

SPECIAL FEATURE

Map Maker. 26

For adventure game writers and enthusiasts, we present a program to construct one's own maps.

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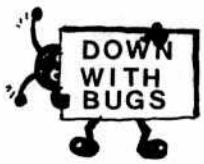

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Checksums for binary listings are found alongside the hexadecimal dumps, to the right of a dotted line. Checksums for Applesoft are listed separately. More information on SoftKey's Checksums can be found in HARDCORE COMPUTIST #1. To order back issues, send $2.50 (plus $1.00 for postage in North America; $2.00 for all others) to HARDCORE, P.O. Box 44549, Tacoma, Washington 98444.

Some Information for Subscribers

I just received my first issue of HARDCORE COMPUTIST. I think it's great, but I am slightly confused. I hope you can help me.

The issue I received says it's HARDCORE COMPUTIST #1 (the one with green bugs on the front). On page 3 it says that you just split HARDCORE COMPUTING into CORE and HARDCORE COMPUTIST.

On that same page it says that CORE's Graphics Issue and HC #1 make up the legendary HARDCORE COMPUTING #4. What I want to know is how to get the first three issues of HARDCORE COMPUTING plus the updates.

In addition, I recently received a gray flyer with a red apple on the cover from you. The flyer mentions that SoftKey made something called THE BEST OF HARDCORE COMPUTING, which is available for $9.95. Is this a consolidation of the first issues and their updates? If so, where can I buy it?

Vinny Perez
Alameda, California

We apologize to all those who have been confused by our recent format and name changes. As our original subscribers know, our magazine used to be published sporadically—as many as six months would elapse between issues. For commercial and production reasons, we decided to split the magazine content of the old HARDCORE COMPUTING. In this way we could publish our magazine monthly, make mass market distribution more feasible, ease our production headaches, and increase the advertising potential per issue. Thus far, the change has worked for the better and we have been coming out monthly (more or less) since April. To help those still confused, here is a complete list of HARDCORE/CORE publications.

HARDCORE COMPUTING #1 (old series)
Update 1.1 — newsletter
HARDCORE COMPUTIST #2 (old series)
Update 2.1 — newsletter
HARDCORE COMPUTIST #3 (old series)
Update 3.1 — newsletter
Update 3.2 — newsletter

CORE Graphics (Spring 1983)—late April
HARDCORE COMPUTIST #1—early June
HARDCORE COMPUTIST #2—early July
CORE Utilities (Summer 1983)—August
HARDCORE COMPUTIST #3—in your hands

Furthermore, since we have sold out of HARDCORE COMPUTING #1 and #2 (old series), we have decided to publish a consolidation of the old series, rather than reprinting them. THE BEST OF HARDCORE COMPUTING is available at a pre-publication price of $9.95.

Hopefully, this explanation will clear up some confusion. If you have any comments or suggestions for either of our magazines, please send them to us. And, once again, sorry for the confusion.

hardcore

Publisher/Editor:
Charles R. Haight

Managing Editor:
Dennis Bloomquist

Manuscripts Editor:
Julie Joringdal

Production Manager:
David C. Smith

Technical Editing:
Gary Peterson
Robb Canfield
Ray Darrah
Dave Thompson

Advertising:
Tanyalee Erwin
Hardcore Advertising
3710-100th Street SW
Tacoma, Washington 98499

Circulation Manager:
Tanya Goodroad

Illustrators:
Todd Osborne
Doug West
Luke West
Steve West

Cover Art:
Todd Osborne

Typeset via Modem:
Graphic Services
Tacoma, WA

Printing:
Grange Printing, Inc.
Seattle, WA

Publishing:
Softkey Publishing
P.O. Box 44549
Tacoma, WA 98444
(206) 581-6038

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INPUT INPUT INPUT

Zork Footnote

I would like to provide an epilogue to the "Zork Softkey" (HARDCORE COMPUTIST #1, page 5). The author noted that this method works for *Zork I, II,* and *III.* I have discovered that this method will also copy Infocom's *Deadline.* I have not tried this on *Starcross* or *Suspended* yet, but I would guess that they are protected similarly.

Mark Erdman
Geneseo, Illinois

Family Affair

I really enjoyed your magazine, even though I only ordered a sample issue. Therefore I am subscribing for an entire year. It's great when somebody can spot the articles from the ads in a magazine.

Richard Kahn
New York City

Your magazine is most informative. I especially appreciate Jerry Scott's column: "Using Visicalc for: Job Costing."

I can't wait for more information on data base programs. Would you recommend and explain the differences among those available?

Helen Kahn
(Mother of the above
trying to keep up.)
New York City

Hi, Mom! Our companion magazine, CORE, will publish a special issue devoted to data base information, programs, etc. We hope that issue will cover your needs.

Leaping Lizards!

I would like to bring some information to light. By accident I did not put a TAB over the write-protect notch on my copy of PFS, and despite the warning in HARDCORE COMPUTIST #1 (page 9), I did not turn into a lizard.

If anyone should turn into a lizard, I know a great zoologist.

David Muskatel
Westbury, New York

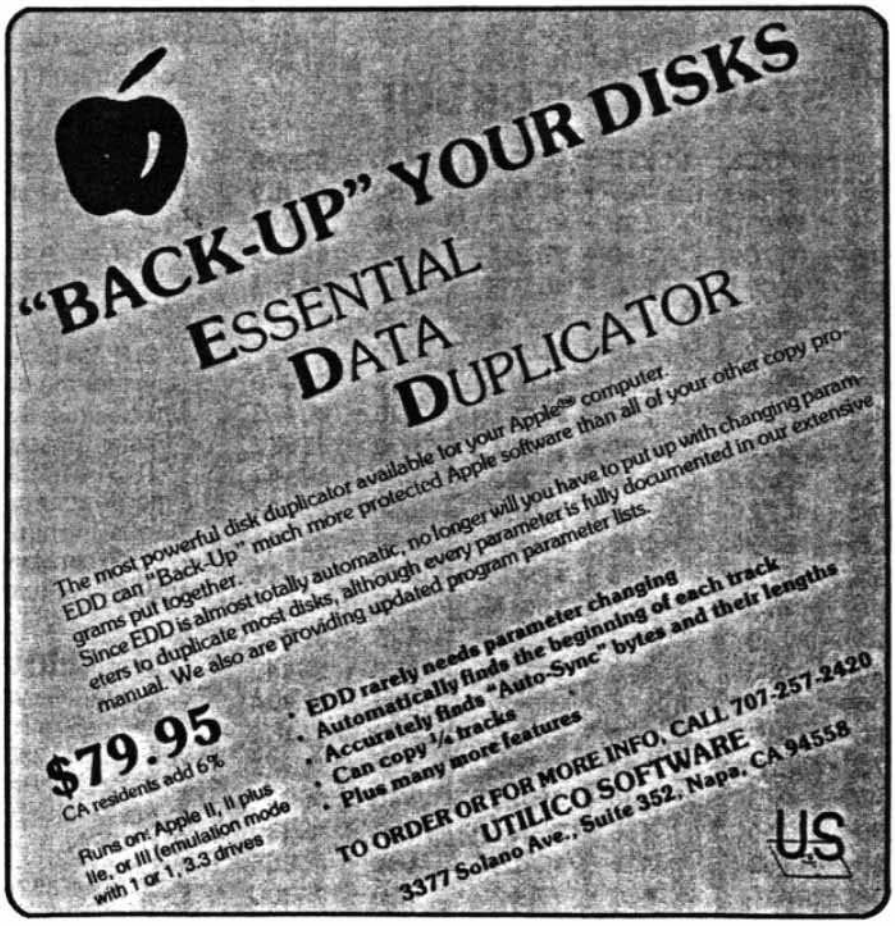
How Free the Press?

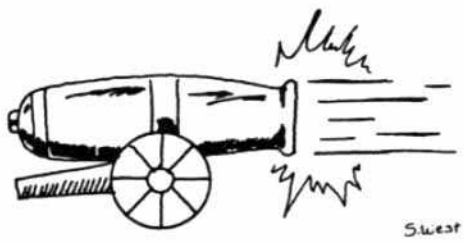
I am convinced that a subscription to your publication will be a worthwhile expense—not so much from what your publication will cover, but from the resistance that you ran into from other sources when you attempted to publish the data. I too have run into that same resistance when I attempted to publish my own federal income tax software program without "screwing" the public by going through a middle man and charging them an arm and a leg to purchase the program. I too have some interesting stories to tell about coming up against the establishment and trying to market something worthwhile and reasonably priced.

Stanley M. Janow
TAXMAN
Hayward, California

Correction

The cover of the last issue of HARDCORE COMPUTIST was showered with compliments and praise; however, we incorrectly identified the cover artist in our masthead as Steve West. The actual illustrator was his brother, Luke West. Steve is working on the cover for HARDCORE #4. Our apologies to the West brothers for this mistake.





NO MORE BUGS: the sequel

Well, we tried. HARDCORE COMPUTIST #1, our "No More Bugs" issue, contained two extensive utilities to help readers identify their typographical errors in listings from our magazines. Unfortunately, our "Start Checksoft" listing had two (gasp!) bugs in it, and there was some confusion over how to use the two programs. The following should help eradicate any problems users may face in operating these programs.

The Bugs

Simply add line 575 below to get the program in running condition:

575 IF A$ = "N" THEN 640

Perfectionists should also add a quotation mark to the end of line 180 so that it reads:

180 IF PEEK (846) = 0 THEN RM$ = "YES"

Your program will now run correctly and its checksums should match those reproduced below.

START CHECKSOFT

```
1   - $97CE
2   - $F48B
3   - $B8EC
10  - $E7C9
20  - $DCE6
30  - $781C
40  - $A12C
50  - $C14E
60  - $30A3
70  - $D960
80  - $D228
90  - $CC76
100 - $E735
110 - $FFB5
120 - $41CB
130 - $7AD8
140 - $9536
150 - $4F85
160 - $817F
170 - $C8EA

180 - $740C
190 - $F3D4
200 - $A2CF

210 - $0C12
220 - $C7E7
230 - $6177
240 - $E1D7
250 - $D19F
260 - $1798
270 - $C0BC
280 - $DD2C
290 - $8C51
300 - $B821
310 - $2222
320 - $633C
330 - $DCC6
340 - $29D7
350 - $3516
360 - $12EC
370 - $0437

380 - $A7F2
390 - $8042
400 - $9523
410 - $DDC5
420 - $C2C5
430 - $9567

440 - $2F6D
450 - $83C9
460 - $5AAC
470 - $81AA
480 - $A263
490 - $5173
500 - $7B2F
510 - $9CF0
520 - $04EE
530 - $E8E2
540 - $B594
550 - $DC0F
560 - $2540
570 - $3519

575 - $C744
580 - $5443
590 - $F90A
600 - $11D8
610 - $6B79
620 - $ED97
630 - $233D
640 - $5EC6
650 - $D88D
```

How to Use the Checksoft Program

Checksoft is our program to inspect your Applesoft listings for any typographical errors. Using Checksoft is extremely easy if you follow the three steps below.

In the first issue of CORE (Spring 1983), we published a program entitled "Faster Shapes". That program will serve as an example of how to use Checksoft.

1) Since we always list our checksums in the default configuration (Configuration 1), you do not need to run "Start Checksoft".

Thus, you only need to

BRUN CHECKSOFT

to enable the program.

2) Type in the "Faster Shapes" Applesoft listing on pages 36-37 of CORE. If you have already typed in that listing, simply load it into memory.

3) Press the ampersand key (&) and return. The checksums for the first twenty lines will appear. Compare the checksums on your screen with the checksums for "Faster Shapes" on page 32 of HARDCORE COMPUTIST #1. If they match exactly, your program has been typed in correctly up to line 200, so press the space bar to display the next twenty lines.

If the checksums don't match, then there is an error in the first line in which your checksums disagree from ours.

How to Use Checkbin

Checkbin is our program to inspect your binary listing for typographical errors. Like Checksoft, Checkbin is very easy to use.

Before starting, however, modify the Checkbin hex dump which appears on page 22 of HARDCORE COMPUTIST #1.

0370: 0A 85 0A AD 00 C0 10 FB

Note that the last two values have changed. The complete hex dump and its checksums appear below.

Now you are ready to use the Checkbin program.

1) First BRUN the Checkbin program. Many of our machine code listings are loaded into the same area of memory which contains Checkbin (300-3C8). Thus, you should always BRUN Checkbin at some out-of-the-way location, so that the listing you are checking does not overwrite the Checkbin routine. To do this, simply

BRUN CHECKBIN, A$8000

2) Now type in the "A.L.Shapes" hex dump which appears on page 36 of the Graphics Issue of CORE. If you have already typed it in, BLOAD A.L.SHAPES from the monitor.

3) The last step is to enable the Checkbin routine. To do this, you must specify where "A.L.Shapes" begins and ends in memory. Look on page 32 of HARDCORE COMPUTIST #1 to find those values (300,3BA) above the checksums for "A.L.Shapes."

You should still be in the monitor. To start the Checkbin routine, type in

300.3BA <ctrl Y, return>

Checksums for Checkbin

BEG: *300.3CD END: 3C8

```
0300- 20 58 FF BA CA BD 00 01   $B2E1
0308- 18 69 1F 8D F9 03 85 62   $286C
0310- E8 BD 00 01 69 00 8D FA   $D2ED
0318- 03 85 63 A9 4C 8D F8 03   $68E2
0320- 60 20 8E FD A9 0A 85 0A   $2066
0328- A0 00 84 31 20 A7 FF A9   $5284
0330- FF 85 31 A5 3C 85 0B A5   $0223
0338- 3D 85 0C 20 A7 FF A0 55   $D448
0340- A9 10 91 62 A9 FB C8 91   $6CDF
0348- 62 A0 00 F0 45 A5 3C 29   $E502

0350- 07 D0 42 38 A9 1F E5 24   $E2B6
0358- AA 20 4A F9 A9 A4 20 ED   $3E81
0360- FD A5 0B A6 0C 20 41 F9   $459D
0368- C6 0A D0 26 20 8E FD A9   $2DD5
0370- 0A 85 0A AD 00 C0 10 FB   $C644
0378- 8D 10 C0 C9 83 F0 48 C9   $DD18
0380- A0 F0 BB C9 9B D0 0B A9   $F4A9
0388- EA A0 55 91 62 C8 91 62   $3194
0390- A0 00 20 92 FD A9 A0 20   $68CA
0398- ED FD B1 3C 48 20 DA FD   $F970

03A0- 68 6A 45 0B 2A 45 0C 85   $5DC3
03A8- 0B 45 0C 6A 85 0C 20 BA   $1DC9
03B0- FC 90 9A A9 1F E5 24 AA   $5D93
03B8- 20 4A F9 A9 A4 20 ED FD   $95A4
03C0- A5 0B A6 0C 20 41 F9 20   $B271
03C8- 8E FD 8D 10 C0 60         $78EC
```

The ctrl Y works in the same way as the ampersand does for Checksoft.

The first ten lines of the hex dump for "A.L.Shapes" will appear with the checksums on the extreme right of every line. Use these checksums exactly the same way you used the checksums for Checksoft. Press the space bar to examine the next ten lines.

Hopefully, this explanation will have eliminated any problems you may have experienced in using our checksum programs. We appreciate the help of Tom Mackie from Dayton, New Jersey, whose calls helped us locate the bugs and omissions in the original article, as well as Bill Mullica of Antioch, California, and Martin Halpern of Tustin, California, for their suggestions.

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READER'S SOFTKEY AND PARAMETER EXCHANGE

Backing Up Visiplot/Visitrend

Anthony L. Barnett
Australia

VisiCorp
2895 Zanker Road
San Jose, CA 95134

Requirements:

48K Apple with Applesoft in ROM
One disk drive
Visiplot/Visitrend
One blank disk

I work for a government department which recently purchased ***Visiplot/Visitrend.*** Naturally, a back-up disk was desired. However, the only "legal" way of obtaining one appeared to be making an overseas order directly to VisiCorp.

This is by no means an easy procedure, so a letter was sent to VisiCorp at the address in the manual. This was promptly returned by the U.S. Post Office as "undeliverable at this address." Recent magazines were perused to find VisiCorp's current address and the letter was posted again.

VisiCorp was asked whether the order for a back-up could be placed through an Australian agent. Eventually, the terse reply of "no" was received scribbled over a standard form which advised among other things that our request could not be met as we had not sent our disk back-up order form!

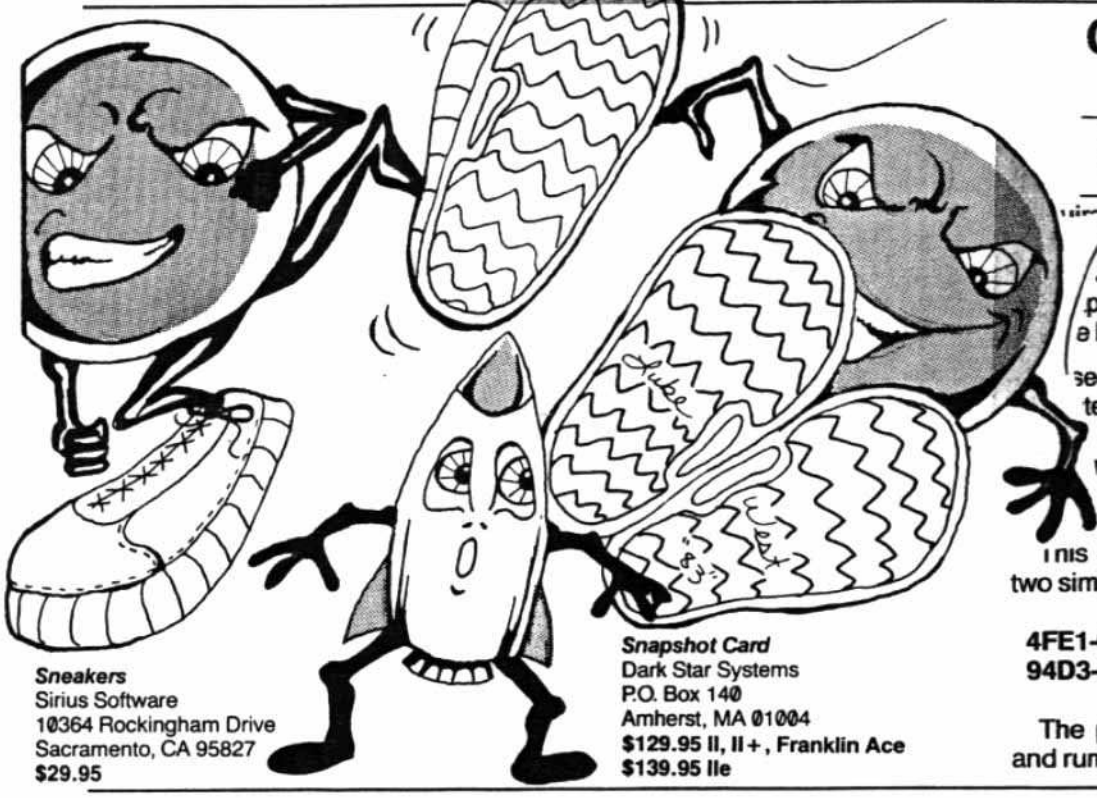
Not knowing the *Locksmith* parameters, I began to examine this curious disk for other means to back it up. All the programs are quite listable and FIDable, but a disk check causes a spectacular crash if the original disk is not used.

I determined that the disk check [illegible] the main storage program [illegible] studying the listing for about an hour I determined that six bytes needed to be altered to get the back-up to run.

In line 4, the "& A" should be replaced with two colons and, in line 2300, the "CALL 960" should be replaced with four colons.

As the disk check is now eliminated, the back-up works slightly faster when switching to and from main storage. It is also possible to use Speed-DOS from HARDCORE COMPUTING Update 3.2 (old series), and the switching between programs is then quite fast and tolerable.

It is my view that no program should be protected. Failing this, at least two copies of a business program should be provided. This can be done in the package or as a free back-up on receipt of registration. Another less satisfactory means is to provide a special user copy program (usually "once only" like *Multiplan).*



Sneakers
Sirius Software
10364 Rockingham Drive
Sacramento, CA 95827
$29.95

Snapshot Card
Dark Star Systems
P.O. Box 140
Amherst, MA 01004
$129.95 II, II+, Franklin Ace
$139.95 IIe

Copy Tip for Sneakers

David E. Rentzel
W. Jefferson, OH

[illegible]ents:
[illegible]th Applesoft in ROM
[illegible]disk drive
[illegible]pshot Card
[illegible]e blank disk

[illegible]sed Snapshot to make a non-[illegible]ted file of ***Sneakers.*** The prob-[illegible] that during portions of the [illegible] game the disk is accessed [illegible]-protected data to verify the [illegible] disk's presence.

This can be defeated by making two simple monitor changes:

4FE1-60
94D3-60

The program can now be saved and run without further disk access.

Using Locksmith to Copy Wizardry

John Samborski
Prospect Heights, Illinois

Wizardry
Sir-Tech
6 Main Street
Ogdensburg, NY 13669
(315) 393-6633

Locksmith 4.1
Omega Microware, Inc.
222 South Riverside Plaza
Chicago, IL 60606
(312) 648-4844
$99.95

Requirements:
48K Apple, Applesoft in ROM
Locksmith 4.1
One blank disk, initialized
At lease one disk drive
Possibly one small Phillips screwdriver and one small standard screwdriver (see step 7, option C)

According to the authors of ***Wizardry,*** their program uses "state-of-the-art copy-protection." This label fits very well, as it is truly a state-of-the-art program. Robert Woodhead and Andrew Greenberg anticipated the popularity of Wizardry when they designed their protection scheme. It's the hardest disk back-up chore I've ever faced.

For all who want the security of a back-up of Wizardry, this article provides a complete set of instructions for making a copy. The boot side, then the scenario side will be duplicated using ***Locksmith 4.1.***

Copying the Boot Side

1) Boot Locksmith 4.1.
2) If using one drive, remove Locksmith and insert the Wizardry disk. If two drives are available, insert the Wizardry disk in drive 2.
3) Use the "Automatic Error Retry" option on all tracks listed.
4) Copy tracks 0-22 unsynchronized.
5) If all is well (it should be), set parameter 36 to 01.
6) Copy tracks 0A-0E synchronized.

Step 7: Adjusting the Drive Speed

The Wizardry program checks for "preservation of nibble count." Unfortunately, when this kind of protection scheme is used, the drive speed must be absolutely perfect to make a successful copy. Locksmith will do the normal analysis, but when it reaches the point of writing and verifying, some strange digits will be printed on the screen, such as >001D or <000A. These figures indicate the speed difference between the original recording drive and the drive you are using. If the sign is ">", the drive is running slow. If "<" appears, it's running fast. At this point, there are three options available. Read each before deciding which is appropriate.

A) Do nothing. The Apple will try to compensate the speed. Judging by the difference in drive speed, this can take anywhere from three minutes to three weeks. This is recommended only for perfectly adjusted drives.

B) Use the "<" and ">" keys to correct the drive speed. To do this, look at the sign in front of the digits and hit that key. For example, if >001A appears on screen, hit the ">" (shifting is unnecessary). When this key is hit, the bell will ring. Press the space bar to continue. The longer you let the bell ring, the more the speed will be adjusted. Repeat this as needed. When the speed is adjusted to within 0006 (>0006 - < 0006), leave it alone and let the drive try to compensate the remainder by itself.

NOTE: For option C, use a blank disk.

C) If the drive speed is substantially off, step B is impractical. The speed will have to be compensated by adjusting a screw inside the drive with a small Phillips screwdriver and a small standard screwdriver. Follow these steps:

—Turn the Apple off.

—Unscrew the four Phillips-head screws which hold the drive cover in place.

—Slide the cover to the rear and off of the drive, so that the tiny screw which controls drive speed can be located. (It's not on the circuit board —leave all screws on the circuit board alone.) It is by the rear cover, mounted horizontally with its head to the right side of the drive. This screw will be used later to correct the drive speed.

—Turn the Apple on and boot Locksmith 4.1.

—Set parameter 36 to 01.

—Copy tracks 0A-0E synchronized.

—When the digits appear on screen showing how far off the drive speed is, use the standard screwdriver to turn the small screw which controls speed. Turn the screw in the direction that was indicated by the ">" or "<" —right increases the speed, left slows it down.

continued on page 13

Softkey for Bag of Tricks

by Neil Taylor

Bag of Tricks
Quality Software
6660 Reseda Blvd., Suite 105
Reseda, CA 91335
(213) 344-6599
$39.95

Requirements:
Apple II, II+ , IIe or compatible
Blank disk initialized with 48K slave DOS
Bag of Tricks disk

Have you ever booted the ***Bag of Tricks*** disk and received an irritating message to use the original, when it's already in the drive? Have you ever wanted to avoid the menu and skip right to the needed program? Perhaps you are afraid of crashing the original and can't get a good copy. Here is an easy (albeit somewhat long) way to get an unprotected version.

Basic Procedure

To unprotect the programs on the original disk, each one will have to be loaded by its DOS and then saved by a normal DOS.

The programs loaded by the Bag of Tricks DOS are put at $800 in memory, which normally is overwritten during the boot process. Before they can be saved, they must be moved to a safe area of memory. Then the programs can be run by a normal DOS.

Loading and Saving

The following procedure for loading and saving TRAX is used in a slightly different form for each of the remaining Bag of Tricks programs: INIT, ZAP, and FIXCAT.

TRAX

1) Boot the 3.3 master, then type **FP.** Insert the blank disk and **INIT HELLO.**

2) Boot the Bag of Tricks disk (the menu will be displayed).

3) After the light goes off, open the drive door.

4) Press reset once, wait a couple of seconds, and press it again.

5) **CALL -151** to enter the monitor.

6) **9489:4C 59 FF**

7) Close the drive door.

8) **9400G**

9) Type **T** to load TRAX.

10) **3800<800.2AFFM**

11) **6700<8700.93FFM** ***(for TRAX only)***

12) Place the blank disk into the drive and boot it with C600G.

13) **BSAVE TRAX,A$3800,L$2300**

14) **BSAVE TRAX.SUP,A$6700,L$D00** (TRAX and INIT only)

INIT

The same format can be used for INIT, ZAP, and FIXCAT with changes in steps 9, 10, 13 and 14. Step 11 is not necessary.

Complete steps 2 through 8 for each of the remaining programs, then follow the special steps listed under the program title.

Complete INIT first:

9) Type **I** to load INIT.

10) **3800<800.325EM**

11) **BSAVE INIT,A$3800,L$2B00**

12) Place the blank disk into the drive and boot it with C600G.

14) **BSAVE SUPPLEMENT,A$7600,L$A00**

ZAP

The supplement is the same for INIT, ZAP and FIXCAT, so step 14 can be eliminated. For ZAP:

9) Type **Z** to load ZAP.

10) **5000<800.4CFFM**

12) Place the blank disk into the drive and boot it with C600G.

13) **BSAVE ZAP,A$5000,L$4500**

FIXCAT

9) Type **F** to load FIXCAT.

10) **4800<800.1FFFM**

12) Place the blank disk into the drive and boot it with C600G.

13) **BSAVE FIXCAT,A$4800,L$1C00**

To get the picture, complete steps 2 through 4. Then boot the backup. When the Applesoft cursor is displayed (]), type in **BSAVE PICTURE,A$2000,L$2000** and return.

For the HELLO program, enter the listing on the opposite page as a normal Applesoft program (type FP first). Now save the program as HELLO.

Getting Into the Program

An alternate copy method would be to boot code trace the DOS. The boot process of Bag of Tricks is relatively simple but tedious, especially since it would have to be done five times (once for each program and once for the picture).

That problem can be bypassed by taking advantage of an oversight by the authors. When reset is pressed, the Apple tries to boot because the power-up byte is not set correctly. This is the byte that tells the Apple when it has been turned on. (See page 37 of the Apple II reference manual). When the power up byte is set improperly, the Apple will try to boot regardless of the address pointed to by the reset vector. When reset is hit from the menu, the Apple acts like it has just been turned on and tries to boot. When reset is pressed the second time, the Apple is put into Applesoft.

Loading the Programs

In the sixth step of the save/load procedure, the three bytes, 4C 59 FF, represent the machine language op-codes, which tell the computer to jump to the routine that causes it to stop and enter the monitor (acting like a stop from Applesoft). Now, after the DOS has loaded any of the programs, control will be given to the user, not to the program.

Saving to Normal Disk

The program is now in memory and the Apple is under control with the modified Bag of Tricks DOS in the machine. Unfortunately, it is far from normal and has no convenient SAVE or BSAVE.

What now? Save it to tape? Perish the thought — a normal DOS can be rebooted.

Since the booting process uses page 8 ($800-$8FF) in memory, which is exactly where the program starts, a special routine in the Apple's monitor is used for moving memory out of the way. It simply transfers the part of memory which the program resides in byte by byte from one place in memory to another. By moving the programs higher in memory, they are put in a safe area not used by the boot. That is what steps 9 and 10 are for. Once the program is moved, the backup disk can be safely booted.

Backup Files

There should be eight files on the backup now: TRAX, TRAX.SUP, INIT, SUPPLEMENT, ZAP, FIXCAT, PICTURE and HELLO. The HELLO program is simply a menu that allows the backup to imitate the original disk. The picture is the same as the one on the original disk.

The other six files make up the four major Bag of Tricks programs (the other files are routines). Each program is in two parts, a main section and a supplement, but the supplements for INIT, ZAP and FIXCAT are the same. To run any of these programs, the accompanying supplement must also be loaded. To use TRAX, TRAX.SUP must be loaded first. For the other three programs, SUPPLEMENT must be loaded first.

How to Run the Programs

Because the programs were moved before they were saved, they will be loaded into the wrong spot if just BRUN or BLOADed. To make sure everything is in the right place, DOS has to be told where to place the program. For example, to run TRAX, first load in the supplement with BLOAD TRAX.SUP,A$8700. This loads the supplement into the correct place in memory. Then the TRAX program can be run with BRUN TRAX,A$800.

Similarly, the supplement for INIT, ZAP and FIXCAT would be BLOAD SUPPLEMENT,A$7600. To run the program: BRUN INIT,A$800 (ZAP or FIXCAT can be substituted for the title INIT.)

Final Analysis

All four Bag of Tricks programs are extremely useful. ZAP is an excellent disk editor with convenient help pages. It also has definable commands, a nice touch. INIT is the program that you needed to convert all your disks to DOS 3.3. It allows reinitialization without loss of data. FIXCAT is great for doing all of those tedious chores related to recovering crashed disks.

There is only doubt about TRAX. Its sole use seems to be looking at the protection schemes on disks (it gives a great output for users of IOB). However, TRAX will not analyze the Bag of Tricks disk. If the authors couldn't figure out how to analyze their own protection schemes, TRAX can't be all that good. On the other hand, maybe it was deliberate. Maybe the authors are trying to say, "Break and copy other disks, but not ours!"

Hello Program

```
10  D$=CHR$(13)+CHR$(4)
20  HOME:VTAB 12:HTAB 12:PRINT
    "LOADING MENU ..." :PRINT
    D$"BLOADPICTURE,A$2000"
30  POKE -16302,0:POKE -16300,
    0:POKE -16297,0:
    POKE -16304,0
40  GET A$
50  IF A$="T" THEN TEXT:HOME:
    VTAB 12:HTAB 12 :PRINT
    "LOADING TRAX ...":PRINT
    D$"BLOAD TRAX.SUP,A$8700"
    :PRINT"BRUN TRAX,A$800"
60  IF A$<>"I" AND A$<>"Z" AND
    Z$<>"F" THEN 40
70  IF A$="I" THEN A$="INIT"
80  IF A$="Z" THEN A$="ZAP"
90  IF A$="F" THEN A$="FIXCAT"
100 HOME:TEXT:VTAB 12:
    HTAB 11:PRINT"RUNNING "A$;
    " ..."
110 PRINT D$"BLOAD SUPPLEMENT,
    A$7600"
120 PRINT D$"BRUN "A$",A$800"
```

HIDDEN LOCATIONS REVEALED

This article is intended for advanced users who are familiar with the internal hardware of the Apple. SoftKey Publishing is not responsible for any damage done to the computer while following the outlined procedure.

Requirements:
Apple II or II+ only (will not work with the IIe or Apple-compatibles)
Disk Organizer II by Sensible Software
Some small-gauge insulated wire; i.e. No. 24
16-pin DIP socket

We've been taking for granted that it's possible to break into any program by just switching to the old monitor F8 ROM and hitting reset (see Issue 1 of HARDCORE COMPUTING, old series). Unfortunately, with *Disk Organizer II* this causes a carriage return and, subsequently, the text page to scroll; thus losing any information placed on the first line of text page 1. This information is vital when trying to perform a softkey.

To solve the scrolling problem, I discovered a before-inaccessible set of locations for the first line on the text page. My technique involves gaining control over the screen soft switches to cause the display of text page 1, preventing it from scrolling and allowing recovery of the needed information from the first line. I'm sure this technique is used by many other programs, so read on even if you don't own *Disk Organizer II*.

Hidden Addresses

My clue to the use of this kind of protection came when I noticed some indirect references in the assembly code to locations $400-426.

Examine the ***partial machine language listing.*** The makers of Disk Organizer II tried to conceal the highlighted jump addresses by storing them in the plowable first line of the

by Enrique Gamez

text page. These are the crucial entry points to the routines which are designed to perform the delete, rename, exhume, move, purge and change boot tasks labeled in the partial machine code listing.

What you'll attempt to do in following this procedure is force the Apple to display the text page, no matter what the program in memory would like to do. Perhaps you'll learn a little about soft switches on the way — and, most importantly, how to gain control over them.

Technical Background

Having a memory-mapped screen is very convenient; writing to any position on any screen is as simple as POKEing a value or LDAing a specific byte. However, not so convenient is the experience of having some locations self-modify as you're trying to read them. Have you ever done a hex dump of the $400 to $7FF area while viewing the text page? Total nonsense.

The screen soft switches are what allow you a "window" into the Apple. By flipping a switch here and there you can literally browse through memory (without changing anything there).

Screen Switching Demo

Type in the "Screen Switching Demo" and watch what happens. If you goof up, just turn off the computer, reboot, and start over. In the course of this little demo you might

Partial Machine Code Listing

```
1281: 20 72 19   JSR $1972    ; KEY INPUT ROUTINE
1284: C9 D1      CMP #$D1     ; "Q" QUIT COMMMAND?
1286: D0 05      BNE $128D    ; NO
 .     .     .     .     .
 .     .     .     .     .
 .     .     .     .     .
12B1: C9 C4      CMP #$C4     ; "D" DELETE COMMAND?
12B3: D0 03      BNE $12B8    ; NO
12B5: 6C 0E 04   JMP ($040E)  ; YES, actually $1702
12B8: C9 D2      CMP #$D2     ; "R" RENAME COMMAND?
12BA: D0 03      BNE $12BF    ; NO
12BC: 6C 20 04   JMP ($0420)  ; YES, actually $1BBC
12BF: C9 C5      CMP #$C5     ; "E" EXHUME COMMAND?
12C1: D0 06      BNE $12C9    ; NO
12C3: 8E 0C 02   STX $020C    ;
12C6: 6C 10 04   JMP ($0410)  ; YES, actually $1852
12C9: C9 CD      CMP #$CD     ; "M" MOVE COMMAND?
12CB: D0 03      BNE $12D0    ; NO
12CD: 6C 1C 04   JMP ($041C)  ; YES, actually $1AA2
12D0: C9 D0      CMP #$D0     ; "P" PURGE COMMMAND?
12D2: D0 06      BNE $12DA    ; NO
12D4: 8E 0C 02   STX $020C    ;
12D7: 6C 1E 04   JMP ($041E)  ; YES, actually $1A1E
12DA: C9 C2      CMP #$C2     ; "B" CHANGE BOOT?
```

lose sight of what you're typing. Have faith and keep going — you'll just need to be a more careful typist.

What controls and decodes these little switches you've just been throwing is the IC F14 chip (labeled SN74259N). Each switch controls a different aspect of what is placed on the screen. That's why a certain byte can show up as a flashing character if in the text mode, as colored blocks if the lo-res graphics switch has been thrown, or even as a series of dots if $C057 is accessed.

Figure 1 is a diagram of the chip in question.

The integrated circuit (IC) gets its power through the two pins not shown; 8 and 16. By convention, in a 16-pin package the +5V, or Vcc, connection goes to pin 16 ("HI"). Pin 8 is 0V, or ground ("LO"). Notice the half-moon notch in Figure 2; it should point toward the keyboard.

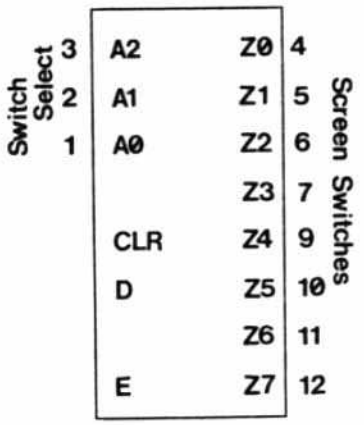
One nice thing about working with logic circuits at such low voltages (0-5 volts) is that you can force certain lines low or high without any damage to the ICs, if you're careful.

IMPORTANT: Don't connect pin 8 to pin 16. This will short out the power supply.

As you may have noticed from following the screen-switching demo, you need to throw two or three switches to get to a certain point. With the chip disconnected, there's no circuitry to hold the switches "in position," so to speak, so you'll have to physically wire some pins HI and some LO. Needless to say, it could get rather hairy.

Because of this, I've figured out the correct combination for this application and soldered a jumper-socket that I can quickly plug in to check if a

Figure 1



SN74259-F14

Screen Switching Demo

```
Type:          Explanation of Mode              View Window
CALL -151      GO INTO MONITOR                  $400-7FF
C054:0         SET TO PAGE 1. NOTHING
                  HAPPENS.
C053:0         SET TO MIXED SCREEN.
                  NOTHING HAPPENS.
C051:0         SET BACK TO TEXT.
C050:0         LO-RES GRAPHICS, MIXED.
C052:0         FULL SCREEN GRAPHICS.
C051:0         BACK TO TEXT.
C055:0         TEXT PAGE 2. WHAT A MESS!        $800-BFF
C050:0         LO-RES GRAPHICS, PAGE 2.
C053:0         MIXED WITH TEXT, PAGE 2.
C052:0         FULL SCREEN AGAIN.
C057:0         HI-RES, PAGE 2.                  $2000-3FFF
C054:0         HI-RES, PAGE 1.                  $4000-5FFF
C053:0         MIXED, PAGE 1.          part of $2000-3FFF
                                          and $400-7FF
C055:0         MIXED, PAGE 2.          part of $4000-5FFF
                                          and $800-BFF
```


BEEP! LOST YOUR PROGRAM?

BUS RIDER
LOGIC ANALYZER FOR THE APPLE II

The Bus Rider is a self diagnostic development tool that allows real time analysis of software and hardware in the Apple II computer.

The Bus Rider provides:

- Monitors and saves 512 cycles of the address and data bus, NMI, IRQ, DMA, R/W and 4 external lines.
- Pretrigger viewing of up to 512 samples.
- 4 external inputs with variable threshold reference.
- Display cycle by cycle execution or 6502 disassembled code.

The Bus Rider comes complete with Bus Rider circuit card, reference manual, Bus Rider software diskette, and 10 easy hook external input cable. The total system price is **$395.00**

Bus Rider – Disassembled Display

MC

RC Electronics Inc.
5386 Hollister Avenue, #D
Santa Barbara, CA 93111
(805) 964-6708 TELEX 295281

Visa

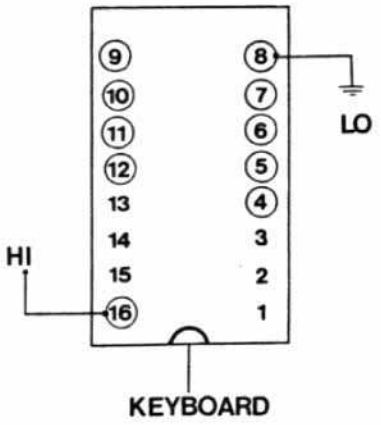
particular program tries to use this protection technique. *Disk Organizer II* does.

Controlling the Soft Switches

1) Turn off the computer.

2) Carefully remove IC F14.

Figure 2



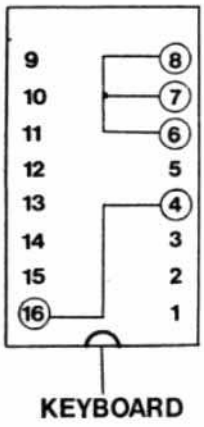
Remember, without this decoder chip any page flipping signals sent by the program (or ROM) to pins 1, 2, and 3 have no physical connection with the output pins 4-7 and 9-12. You are therefore free to throw your own.

3) You may now turn on the computer and carefully experiment with pins 4-7 and 9-12, connecting some HI (to pin 16) or LO (to pin 8). Watch the results on your screen. When you want to continue, plug in an IC socket that has been wired as shown in Figure 3. Be sure it is oriented via the tab cutout toward the keyboard.

4) Once installed, boot the program in the usual way. Now convert the various screen characters back into hex code using a chart like the one in HARDCORE COMPUTING Update 2.1 (old series) or most Apple manuals.

These jumpers will show you the hidden information you've been missing.

Figure 3



Epilogue

Just when you think you've got it beat you always bump into another scheme, and this one has me stumped. *Disk Organizer II* has also cleverly hidden an important byte at $200. This is the first location in the input buffer, which is snuffed as soon as a key is typed. Any ideas?

Bibliography

Apple Computer, Inc. *Reference Manual,* part #A2L0001A, pp. 12-14, 79, 98-99 and schematic.

Lancaster, Don, *Enhancing Your Apple II,* Indiana: Howard W. Sams & Co., Inc., 1982, p. 83.

Luebbert, William F., *What's Where in the Apple,* Massachusetts: MicroInk, Inc., 1981.

Signetics Corp., *Signetics Logic IC Data Manual.*

This chart gives the results of the author's own experimentation with the graphic switches.

0 Open (no connection)
+HI
−LO

4	5	6	7	9	10	11	12	<Effect>
+	0	−	0	0	0	0	0	Text page 1
+	0	0	0	0	0	0	0	Text page 2
0	−	−	−	0	0	0	0	Lo-res page 1
0	−	0	−	0	0	0	0	Lo-res page 2
0	0	−	−	0	0	0	0	Lo-res page 1, mixed
0	0	0	−	0	0	0	0	Lo-res page 2, mixed
0	−	−	0	0	0	0	0	Hi-res page 1
0	−	0	0	0	0	0	0	Hi-res page 2
0	0	−	0	0	0	0	0	Hi-res page 1, mixed
0	0	0	0	0	0	0	0	Hi-res page 2, mixed

More on Multiplan

Multiplan, Microsoft Corporation,
10700 Northup Way,
Bellevue, Washington 98004
$275.00

Apparently, our IOB for ***Multiplan*** (HARDCORE COMPUTIST #2, page 8) did not work on all copies of that Microsoft program. The first byte of the address epilogue varies with each Multiplan disk and, as a result, some users were unable to get a clean copy.

Those users may wish to try this alternative controller for the IOB program listed in that issue. Remember to delete lines 1000-1030 in the original IOB listing. By NOPing DOS's check, this controller takes into account various bytes.

```
1000  POKE 47504,234: POKE 47505,
      234: POKE 47506,234: POKE
      47507,234
1010  FOR TK = 0 TO 34
1020 DV = 1:CD = RD: GOSUB 50: GOSUB
      80
1030  IF TK = 0 THEN POKE 10765,
      222
1040 DV = 2:CD = WR: GOSUB 50: GOSUB
      80
1050 NEXT
```

WIZARDRY

continued from page 7

—When the speed comes within 0009 (>0009-<0009), use the "<" and ">" keys for fine adjustment.

—Replace the drive cover.

Back to the Original Procedure

8) When the digits indicate >0000, the track has been copied. The user will be prompted to insert the source disk (one drive) or, if two drives are being used, jump to the source drive. Assure that >0000 is printed on screen before reading the next track. Sometimes the program "gets tired" of trying to synchronize the drive speed (some drives only). If >0000 isn't printed, the copy probably didn't work.

9) Finish copying the boot side, then put a write-protect tab on the copied disk.

10) Place the copy in the drive and boot it.

If you see that pretty picture and the menu, congratulations! You're now half done.

If the copy wasn't successful, repeat the ten steps. It works about three times out of five for me. The protection scheme is a tough one.

Copying the Scenario Side

The scenario side of Wizardry can be copied using the same basic procedure that was used for the boot side. Repeat steps 1-10, but leave out step 9 since the program writes to the disk as it goes along.

Don't be discouraged if it doesn't work the first time. This side is even tougher to copy than the boot side. On my attempts, it worked about two out of nine times.

Enjoy the added peace of mind you have with a back-up copy of Wizardry. I only use my back-up; the original sits in a dark, dry place, safe from magnetic fields.

GOT A FUNNY DISK?

... WANT TO KNOW MORE ABOUT IT?

Then you need the

(Confidential Information Advisors)

CAN YOU . . .

- **edit normal or protected disks?**
- **quickly find and recover any intact file, however badly the disk is corrupted?**
- **list programs directly from any disk - protected or not?**
- **examine textfiles directly from any disk - protected or not?**
- **analyse the formatting of normal or protected disks?**
- **decrypt commercial software - or encrypt your own?**
- **rapidly auto-search normal or protected disks for anything you like?**
- **understand & use the latest copy protection methods?**
- **use your Apple as a powerful document retrieval system?**
- **make use of an exhaustive knowledge of disk lore?**

YOU CAN NOW — with a little help from these 5 sophisticated disk utilities:

TRICKY DICK examines, records, deletes, and edits. It can: (1) read individual sectors from normal and most protected disks, (2) list their contents in BASIC, assembler, ASCII, or hex, (3) edit them; (4) write them back to the disk. Tricky Dick cunningly bypasses most protection systems, allowing you to work on disks with nonstandard formatting, half-tracks, and altered DOS marks. It is also a chief executive program that directs the following undercover agents:

THE LINGUIST reads in a trackful of raw data for your scrutiny, translates all the address information, and allows you to inspect the track's formatting. It also translates all 3 types of DOS encoding (6 & 2, 5 & 3, 4 & 4), and works with Tricky Dick to list and examine programs or textfiles on any protected disk. You can use The Linguist to recover valuable files from blown disks, improve your programming skills by studying commercial software, and analyse standard or altered formatting.

THE TRACER rapidly searches normal and most protected disks for up to six strings of your choice simultaneously (specified in ASCII or hex). The Tracer also verifies disk formatting, and sniffs out all hidden catalog or VTOC sectors. When it finds something, it transfers control to Tricky Dick and puts the cursor over the object of your search. A few further keystrokes allow you to make any necessary changes and write the sector back to the disk.

THE CODE BREAKER keeps your programs and textfiles from prying eyes by enabling you to translate them into a "secret code" during disk storage. This utility also deciphers encrypted commercial programmes, allowing you to use Tricky Dick to read, list, and edit software never before accessible to any disk utility.

THE TRACKER closely shadows the disk drive arm, carefully recording all its movements and operations. The Tracker's job is to display, on either your screen or printer, a list of every track and sector accessed during a LOAD, RUN, SAVE, or any other DOS operation. This utility also tells you exactly where a read or write occurred during any disk access. Use The Tracker's services to locate the precise trouble spots on a clobbered disk, to determine sector skew patterns, to discover the location of hidden "nibble-count" tracks on protected disks, and to learn much more about how DOS works. You'll be surprised to see just exactly where the disk arm really does go!

What's more, you get permanent access to:

THE CIA FILES, a 50,000+ word book designed to turn you into a disk expert. In addition to complete instructions for the 5 CIA utilities, the book contains an easy-to-follow hand-holding tutorial (written in plain English!) on all aspects of the Apple disk. Using the CIA utilities as your personal guides, you progress step-by-step to total disk mastery. You'll acquire a wealth of skills and information relating to disk repair and file recovery, DOS patches, copy protection, disk formatting, program encryption, and other vital topics. Much of the material has never before appeared in print.

All programs are UNPROTECTED, and hence can be copied, listed, and modified at will. (special patches are described in the manual). They require one drive, DOS 3.3, and 48K of RAM.

TO GET THE CIA ON THE TRAIL OF YOUR DISKS, SEND $65.00 TO:

Golden Delicious Software, Accts. Dept.
350 5th Avenue
Suite 3308
New York, NY 10001

No credit cards accepted.

MORE PARAMETERS

Copy II Plus
Central Point Software
P.O. Box 10730, #203
Portland, Oregon 97219
(503) 244-2782 **$39.95**

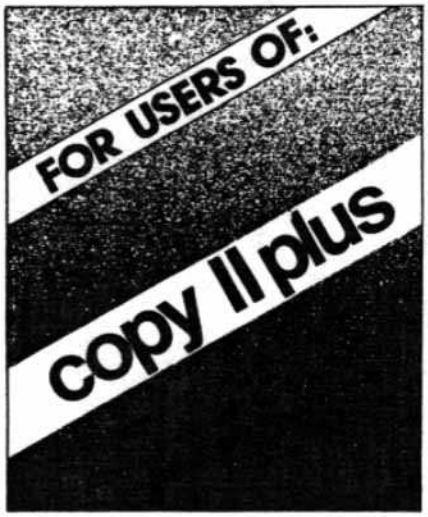
The new version of *Copy II Plus* is an excellent multi-function disk utility package, as well as a bit copy program. (In a recent review, Peelings II gave the package an A+ rating.) In addition, Copy II Plus is unique because it is not copy-protected for back-up.

On the following pages, we have printed the bit copy program parameters which were not included in our first list in HARDCORE COMPUTIST #1. Most of these parameters were submitted by users to Central Point Software and have not been tested by our staff.

When making any back-up, be sure to follow the steps in order. Often a parameter will not be relisted if it is set for a prior range of tracks.

To back up a commercial program, first find its name in the list of parameters. Directly below the name is a list of the tracks to copy and the parameters to change. If the word STEP is used, set the increment to the value that follows. Use the default increment of 1 if no other figure is given.

When the word SECTMOD appears, a sector should be changed using the Track Sector-Editor. Be sure to patch the read/write routines if the listing shows PATCHED and to use the correct DOS (3.2 or 3.3). Place the destination disk in drive one, then perform the changes listed.



The command format for this procedure is:

SECTMOD [T=n, S=n] DOS 3.n
PATCHED
CHANGE ADDRESS A1 FROM A2
TO A3

The meaning of the variables are explained below:

S Sector to be read.
T Track to be read.
A1 Location to be changed in the buffer.
A2 Old value.
A3 New value.

Some diskettes can be duplicated using the default parameters (select the Bit Copy option from the main menu). If the diskette you wish to back up is not listed, try the default settings anyway.

HARDCORE COMPUTIST encourages its readers to send any parameters for programs not on this list. For more information on how to use Copy II Plus, consult the user manual.

abbreviations of publishers

AC Apple Computer
ADA Scott Adams
AG Avante Garde
AM Anthro-Magical
ART ARTSCI
AUT Automated Simulations
AVH Avalon Hill
BC Budgeco
BS Broderbund Software
CAI Computer Applications
CC Cavalier Computer
CP California Pacific
CPS Central Point Software
CTS Continental Software
DAT Data Transforms
DM Data Most
DY Dynacomp
EIN Einstein Computer
FR Franklin Ace
GB Gebelli
HN Hayden
HOW Howardsoft
IC Infocom
IDSI IDSI
IN Insoft
L10 Level 10, Dakin5
LJK LJK Enterprises
LOG The Logical Choice
LOT Lotus
MF Micro Fun
MIN Mind Systems
MIS Microsoft
ML Micro Lab
MS Mind Systems
MU Muse
MWS Midwest Software
OD Odesta
PEN Penguin Software
PHO Phoenix Software
QS Quality Software
SAM Sams Book & Software
SEN Sensible Software
SL Sub Logic
SIR Sir-Tech
SMI Smith Micro Software
SOF SOF/SYS
SOL Sierra On-Line
SPT Spectrum
SRS Sirius Software
SS Sentient Software
SSI Strategic Simulations
SVS Silicon Valley Software
SW Stoneware
SY Synergistic Software
TSR TSR Games
UNK Unknown
USA USA
VCP Visicorp
VX Videx
XPS XPS, Inc.

Parameters for Copy II Plus

```
3-D GRAPHICS SYSTEM  (CP)
  0-8
  11-12
  15-17

Alternative Method
  0-2
  4-8
  11-18

A2-PB1 (PINBALL)  (SL)
  0 ......... 10=96
  1-15 ...... A=3, E=DB, F=AB, 10=BF,
              44=1, 45=D, 46=F

ACE WRITER (FR)
  0-22 ...... 10=96

AIR SIMULATOR  (MS)
  0-F

AIR TRAFFIC CONTROLLER  (AG)
  0-22 ...... 10=96
  23 ........ 31=0, 50=1, 10=96

AKALABETH  (CP)
  0 ......... 9=0, 31=0
  2-3 ....... E=DE, F=AA, 10=AD
  6-18

ALGEBRA SERIES  (EW)
  0-22 ...... 10=96, 9=0, 24=96, D=1,
              31=0

ALKEMSTONE  (L10)
  0-22 ...... A=3, 10=96

AMPERMAGIC  (AM)
  0-22

APPLE CILLIN II  (XPS)
  0-C

APPLE //e BUSINESS GRAPHICS  (AC)
  0-22 ...... D=1, 10=96, 24=96

APPLE /// BUSINESS GRAPHICS  (AC)
  0-22  (ERROR 2 OKAY)
```

continued on page 18

Version 4.0

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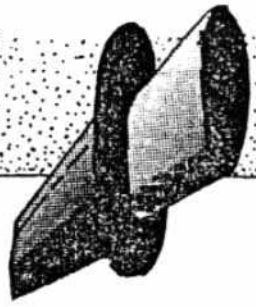

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( ) #17 Merlin's Castle
( ) #18 Hogarth Castle
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( ) #21 The Quest for Marron
( ) #22 The Senator's Chambers
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( ) #25 Nuclear Nightmare
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continued from page 15

```
APPLE LOGO  (AC)
  0-22
  1 ........, A=1, 4B=1, 50=1, E=FC,
              19=FD, 1C=AA, 1F=EE

Alternative Method
  0-22
  1 ......... A=1, 4B=1, 50=1, E=AA,
              1C=AA

Alternative Method
  0-22
  1 ......... A=1, 4B=1, 50=1, 3B=1,
              4D=8
```

NOTE: We have been told that Apple Logo requires persistence! Keep trying track 1 until the disk works.

```
APPLE PANIC  (BS)
  0-D

Alternative Method
  0-5 ....... 9=0, F=0
  6-D ....... E=DE

APPLE PILOT  (AC)
  0-22

Alternative Method
  0-22 ...... 10=96, 24=96, D=1

APPLE WORLD  (USA)
  0-23

APPLEWRITER II AND //e  (AC)
  0-22 ...... 10=96

APPLEWRITER II PRE-BOOT  (VX)
  0-22 ...... 10=96, 9=0

APVENTURE TO ATLANTIS  (SY)
  0-22 ...... 10=96, 24=96, 9=0, 31=0,
              D=1

AUTOBAHN  (SRS)
  0
  4-6 ....... D=1
  9.5-C.5

AUTOMATED ACCOUNTING FOR
MICROCOMPUTERS  (UNK)
  0-22 ...... 10=96
```

B

```
BACK-IT-UP II  (SEN)
  0 ......... 10=96, 9=0
  1.5-B.5 ... 10=B5, A=3

BACK-IT-UP II+ 2.3 (SEN)
  0-D ....... 10=96, 9=0 (ERROR on T1
              okay)
```

Note: Sensitive to drive speed.

```
BANDITS  (SRS)
  0
  1.5-1A.5
  1C.5-1F.5   D=1

BATTLE OF SHILOH  (SSI)
  0-22 ...... E=D4, 10=B7

BILL BUDGE'S TRILOGY OF GAMES
  0-A

BIRTH OF THE PHOENIX  (PHO)
  0-9

BOMB ALLEY  (UNK)
  0-22 ...... E=D4, 10=B7, 34=1, 37=6E,
              38=FE

BORG  (SRS)
  0 ......... 10=96, 9=0
  1.5-B.5 ... D=1, 24=96, A=3, E=DD,
              F=AD, 10=DA, 3B=40
  D-20

BRIDGEMASTER (DY)
  0-22
```

C

```
CASTLE OF DARKNESS  (LOG)
  0 ......... D=1, 24=96, 10=96, 9=0
  1-22 ...... E=AB, F=AB

CASTLE WOLFENSTEIN (MU)
  0-22 ...... D=1, 31=0

CAVES OF OLYMPUS  (SAM)
  0-22 ...... 10=96, 9=0

CHESS 7.0  (OD)
  0-22 ...... 10=96, 9=0

Alternative Method
  0-22 ...... 10=96, 9=0, 8=1, 3E=2
```

```
CONGO  (SS)
  0-22 ..... D=1, 9=0, 24=96, 10=96

COPTS AND ROBBERS  (SRS)
  0 ......... 10=96, 9=0
  1.5-F.5 ... D=1, 24=96, A=3, E=DD,
              F=AD, 10=DA, 3B=40

COPY II PLUS  (CPS)
  see manual pages 2-4, 2-6

CRIME WAVE  (PEN)
  0-10 step 2    E=D5, F=AA, 10=96,
                 9=00, 6=04, 31=00
  1-11 step 2    E=D4, F=AA, 10=96,
                 9=00, 6=04, 31=00

CRUSH, CRUMBLE, AND CHOMP  (AUT)
  0-22 ..... 10=96, 9=0

Alternative Method
  0-22 ..... 10=96
```

D

```
DARK CRYSTAL  (SOL)
  Use Copy Disk from main menu for all
four disks.
  SECTMOD DISK 1A:
    [T=5, S=F; CHANGE ADDRESSES A8-AA
  ALL TO EA]
    [T=7, S=C; CHANGE ADDRESSES 22-24
  ALL TO EA]

DAWN PATROL  (TSR)
  0-22 ..... 9=0, 10=96

DEADLINE  (IC)
  0-22 ..... 10=96, 1E=BC

DLM SOFTWARE
  0-22

DRAGON FIRE  (L10)
  0-22

DUNG BEETLES  (UNK)
  0
  1 ......... A=3, E=F5, F=F6, 10=F7
  4-22
  SECTMOD [T=0, S=1] DOS 3.2
  CHANGE ADDRESSES:
    6D FROM 01 TO 7B
    6E FROM 61 TO 69

DUNGEON  (TSR)
  0-22 ..... 10=96, 9=0
```

E

```
EARLY GAMES
  Use Copy Disk from main menu.

EDUCATIONAL ACTIVITIES SOFTWARE
  0-22
```


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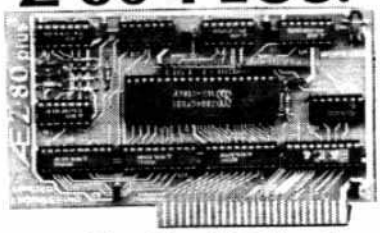

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```
EINSTEIN COMPILER  (EIN)
  Use Copy Disk from main menu.
  SECTMOD [T=8, S=4]
  CHANGE ADDRESSES:
    2A FROM BD TO 4C
    2B FROM 8C TO E2
    2C FROM C0 TO 91

ELECTRIC DUET  (IN)
  Use Copy Disk from main menu.

ELIMINATOR  (ADA)
  0-21
  SECTMOD [T=3, S=0D] DOS 3.3 PATCHED
  CHANGE ADDRESSES:
    2E FROM 20 TO EA
    2F FROM 30 TO EA
    30 FROM 72 TO EA

ESCAPE FROM RUNGISTAN  (SRS)
  0-2 ..... 10=96
  3-22 ..... 10=F7

EXECUTIVE BRIEFING SYSTEM  (LOT)
  0-22 ..... 9=0
  SECTMOD [T=21, S=0] DOS 3.3
    CHANGE ADDRESS 27 FROM FB TO 22

EXECUTIVE SECRETARY  (SOF)
  0-22 ..... 9=0, 8=1, 10=96

E-Z DRAW 3.3  (SRS)
  0-22 ..... 9=0, E=D7, 10=96, 8=1,
             A=2, 4=F3, 3A=3, D=1,
             24=96, 31=0
```

F

```
FASTGAMMON  (QS)
  0-22

FIREBIRD  (GB)
  0-0D ..... 10=96, 9=0
  1.5-B.5 ... D=1, 24=96, A=3, E=DD,
             F=AD, 10=DA, 3B=40

FIRST CLASS MAIL  (CTS)
  0-22

FORMAT II (Version 7)  (KN)
  0-22 ..... 10=96
  SECTMOD [T=B, S=5] DOS 3.3
  CHANGE ADDRESSES:
    04 FROM A9 TO 4C
    05 FROM 03 TO 31
    06 FROM BD TO 68
```

G

GALACTIC ATTACK (SIR)
0-22 ..... 10=96, 24=96, D=1

GALACTIC GLADIATORS (SSI)
0-20 ..... 10=B7, E=D7, 9=0, 31=0
21-22 ..... 34=1

GAME SHOW (CAI)
0-22 ..... 9=0

GENERAL MANAGER (SOL)
Use Copy Disk from main menu for working program and sample files.

Master program:
0-22 ..... 9=0

Alternative Method
0-22 ..... 10=96
SECTMOD [T=1F, S=0E] DOS 3.3
CHANGE ADDRESSES:
C1 TO 4B
C2 TO E0
C3 TO 49
SECTMOD [T=21, S=01] DOS 3.3
CHANGE ADDRESS 2E TO 60

GOBBLER (SOL)
0-22 ..... 9=0
3 ..... 3B=1, A=1, 4B=1, 4D=8, 50=1 (ERROR 6 OKAY)

GRAPHTRIX (DAT)
0-22

GRAPHICS PROCESSING (SW)
Main Disk:
0-22 ..... 19=DD, 1A=AA
Utilities disk is not protected.

H-I

HADRON (SRS)
0 ..... 10=96, 9=0
1.5-E.5 ... D=1, 24=96, A=3, E=DD, F=AD, 10=DA, 3B=40

HELLFIRE WARRIOR (AUT)
0-22

HI-RES COMPUTER GOLF (AG)
0-22 (both sides)

Alternative Method
0-22 ..... 19=DF, D=1, 34=1

HI-RES FOOTBALL (SOL)
0-22

HI-RES SECRETS (AG)
0-22 ..... 10=96, 4=FB, 19=DF, 1F=DF, A=1

HOME ACCOUNTANT (CTS)
0-22 ..... 9=0, 10=96

HOME ACCOUNTANT 2.0 (CTS)
0-22

HOME ACCOUNTANT 2.01 (CTS)
Use Copy Disk

HOME MONEY MINDER (CTS)
0-22 ..... 10=96, 9=0

INCREDIBLE JACK (UNK)
0-22
Write protect copy before using.

INTERACTIVE FICTION (ADA)
0-22

INVASION ORION (AUT)
0-22

INVOICE FACTORY (ML)
0-22

J-K

JIGSAW (ML)
0
1-17 ..... D=1, 24=96, E=D3, F=96, 10=F2, 9=0, 31=0

KABUL SPY (SRS)
Side One:
0
1-21 ..... 10=F7
22 ..... A=5, E=AA, F=D5, 10=D5, 11=BD, 12=BD
SECTMOD [T=0, S=0] DOS 3.3 PATCHED
CHANGE ADDRESSES:
49 FROM 20 TO EA
4A FROM 03 TO EA
4B FROM 20 TO EA

Side Two:
0-21 ..... 10=F7

KNIGHTS OF DIAMONDS (SIR)
(both sides)
0-22 ..... 10=96, 24=96, D=1
Write protect disk before using.

KRELL LOGO (new) (KL)
0-22 ..... 10=96
SECTMOD [T=2, S=3]
CHANGE ADDRESSES:
5B FROM D0 TO EA
5C FROM 03 TO EA

L

LETTER PERFECT (LJK)
0-22 ..... 10=96, 9=0

LIST HANDLER AND UTILITY (SVS)
(older version)
1-11
0 ..... 9=0, A=3, 44=1, 45=D, 50=3
12-22.5 step .5 D=1, E=F5, F=D7, 10=F7, 45=8, 46=D, 51=1
See note for Seafox.

M

MAGICALC (ART)
0-22 ..... 9=0

MAGIC MAILER (UNK)
0-22

MAGIC WINDOW I & II (ART)
0-22

MARAUDER (SOL)
0-22 ..... 10=96, 9=0
SECTMOD [T=3, S=7] DOS 3.3
CHANGE ADDRESS 90 FROM A8 TO 60

MARS CARS (DM)
0-22 ..... 10=96

MASTER TYPE (old) (LNS)
0-2
3-22 ..... E=D4 (ERROR on track 1B okay)
SECTMOD [T=0, S=3] DOS 3.2 PATCHED
CHANGE ADDRESS 63 FROM 38 TO 18
SECTMOD [T=2, S=A] DOS 3.2 PATCHED
CHANGE ADDRESS 2E FROM 23 TO 2E

MATH STRATEGY (AC)
0-22 ..... 10=96, 24=96, D=1

MECC (Vol. 1 & 2)
0-22
2 ..... 10=96, 9=0

MICROSOFT ADVENTURE (MIS)
0-22

MICRO WAVE (CC)
0-22
11 ..... 3B=1, A=1, 4B=1, 4D=8, 50=1

Alternative Method
0-22 ..... 10=96
SECTMOD [T=2, S=1] DOS 3.3
CHANGE ADDRESSES:
DA FROM A9 TO AD
DB FROM 60 TO 03
DC FROM 8D TO 81
DD FROM 7E TO 60

MILLIKEN SERIES (ML)
0-22

MINER 2049ER (MF)
0 ..... 4B=1, 10=96
1-22 ..... 4B=0, E=D3, F=96, 10=F2, A=3, 9=0, 31=0, 8=1, D=1, 24=96, 6=6

MISSILE DEFENSE (SOL)
0-22 ..... D=1

MISSING RING (UNK)
0-22 ..... D=1, 24=96, 10=96, 34=1
Do not write protect!

MISSION: ASTEROID (SOL)
0-22

MIX AND MATCH (UNK)
Use Copy Disk from main menu.

Alternative Method
0-22 ..... 9=0, 10=96

MULTI-DISK CATALOG (SEN)
0-8
3 ..... A=1, E=AF, 3B=1, 4B=1, 4D=8, 50=1

N-O

NIBBLES AWAY I (CAI)
0-22

NIGHTMARE ALLEY (SY)
0-22 ..... 10=96, 9=0, 34=1, 31=0

OLYMPIC DECATHLON (MIS)
0-22 ..... 9=0

OO-TOPOS (SS)
0-22

```
OPERATION APOCALYPSE  (SSI)
  0-22 ..... E=DB, F=D5, 10=DE, 8=1

ORBITRON  (SRS)
  0-1 ..... 9=0, 31=0
  1.5-F.5
  (Write protect copy!)

OUTPOST  (SRS)
  0 ......... 10=96
  1.5-B.5 ... D=1, 24=96, A=3, E=DD,
              F=AD, 10=DA, 3B=40
```

P

```
PEEPING TOM  (ML)
  0
  1 .......... E=F5, F=AB, 10=BE, 9=0
  4-22
  SECTMOD [T=0, S=1] DOS 3.2
    CHANGE ADDRESS 6E FROM 60 TO 68

PEGASUS II  (SOL)
  0-22
  3 ......... 3B=1, A=1, 4B=1, 4D=8,
              50=1 (ERROR 6 OKAY)

PERSONAL FINANCE MANAGER  (AC)
  0-22 ..... 10=96

PIK (APPLE /// BOOT PROGRAM)  (UNK)
  Use Copy Disk from main menu.

PINBALL CONSTRUCTION  (BC)
  0-22 (or use Copy Disk)

POOL 1.5  (IDSI)
  0-15
  1E-21
  SECTMOD [T=0B, S=7] DOS 3.2 PATCHED
    CHANGE ADDRESS 6A FROM 8D TO 60
  SECTMOD [T=0, S=3] DOS 3.2 PATCHED
    CHANGE ADDRESS 63 FROM 38 TO 18

PRISONER I & II  (EW)
  0-22 ..... 10=96
  SECTMOD [T=1F, S=0E] DOS 3.3
  CHANGE ADDRESSES:
    D5 FROM AD TO 2F
    D6 FROM 99 TO AF
    D7 FROM F0 TO 32
```

R

```
RENDEZVOUS  (EW)
  0-23 ..... 10=96, 9=0
Alternative Method
  0-22 ..... 10=96, 24=96, D=1, 9=0
             31=0

ROACH HOTEL  (ML)
  0
  1 ......... A=3, E=EE, F=EA, 10=FE
  4-22
  SECTMOD [T=0, S=1] DOS 3.2 PATCHED
  CHANGE ADDRESSES:
    75 FROM 01 TO 7B
    76 FROM 61 TO 69

ROBOT WARS  (MU)
  0-22 ..... D=1, 31=0
```

S

```
SARGON  (HN)
  0-1A ..... 10=F7
```

ADVANCED PLAYING TECHNIQUES

Choplifter, Broderbund Software, 1938 Fourth Street, San Rafael, California 94901, (415) 456-6424.

Choplifter

Sean Williams of Austin, Texas passes on this truly malicious *Choplifter* A.P.T., which might be subtitled "Turning Your Friends into Enemies."

Using *ctrl A* and *ctrl V,* it is possible to reverse the joystick controls, causing the helicopter to fly in the opposite of the chosen direction. The best time to use this technique would seem to be after your turn and before your opponent's.

Sean relates, "You should see friends' faces when they pull up on the stick and crash into the ground."

```
SCREENWRITER II  (SOL)
  Use Copy Disk from main menu.
  SECTMOD [T=3, S=B] DOS 3.3
  CHANGE ADDRESSES:
    94 FROM 20 TO EA
    95 FROM 00 TO EA
    96 FROM 7F TO EA
  SECTMOD [T=13, S=4] DOS 3.3
  CHANGE ADDRESSES:
    4D FROM 20 TO EA
    4E FROM 00 TO EA
    4F FROM 60 TO EA

SEAFOX  (BS)
  0 ......... A=3, 44=1, 45=D, 9=0, 0=F,
              50=3
  1-8 ....... 4=FD, 31=0, 43=0, 45=10,
              4F=1, 46=12
  9 ......... 45=8, 46=D
  A-B ....... 45=2
  C-1E.5 step .5   45=8, 10=D4, 51=1,
                   D=1
  20 ........ 45=6, D=0, 4F=0

NOTE: Seafox and Spider Raid use track
arcing and are very sensitive to drive
speed. If you have problems, try
reversing drives.

SENSIBLE SPELLER (older version)  (SEN)
  0-10 ...... 10=96, 9=0

SNACK ATTACK (old version)  (DM)
  0-12
  SECTMOD [T=0, S=3] DOS 3.2 PATCHED
    CHANGE ADDRESS 63 FROM 38 TO 18

SNACK ATTACK  (DM)
  0-12
  SECTMOD [T=1, S=3] DOS 3.2 PATCHED
    CHANGE ADDRESS 39 FROM 38 TO 18

SNOGGLE  (BS)
  0-9 ....... 9=0, 8=1

SPACE INVADERS  (UNK)
  0-22 ...... 10=96

SPACE VIKINGS  (SL)
  0-22
Alternative Method
  0-22 ...... 10=96, 21=DA, 8=1, A=3

SPECTRE  (DM)
  0-2 ....... 10=96, 9=0, 8=1
  3-22 ...... 31=0, E=C5, 10=B5

SPEED READING  (UNK)
  0-22 ...... 9=0, 10=96

SPELLING STRATEGY  (AC)
  0-22 ...... 10=96, 24=96, D=1

SPIDER RAID  (IN)
  0
  1-17 ...... A=3, E=92, F=93, 4F=1,
              10=95, 44=1, 46=A, 9=0,
              8=1, D=1, 24=96, 3F=1,
              34=1, 36=2A, 37=97, 31=0,
              43=0
  1.5-17.5 .. E=95, 10=92
  Works only for new versions.
  See note for Seafox.

SPITFIRE SIMULATOR  (MIN)
  0-F
  15

SPY'S DEMISE  (PEN)
  1-11 step 2  9=0, 10=96, E=D4
  0-12 step 2  6=4, 31=0 (ERROR 2 on
               track 12 okay)

STARCROSS  (IC)
  0-22 ..... 10=96

STARSHIP COMMANDER  (UNK)
  0-22 ..... D=1, 10=96, 24=96

STELLAR INVADERS  (AC)
  0-22

STERLING SWIFT PRODUCTS
  0-22

STOCK PORTFOLIO SYSTEM  (SMI)
  3-22
  0-2 ...... 4=FD, 8=1, 10=AD

SUPER PILOT  (AC)
  0 ......... 10=96
  2-22
  SECTMOD [T=O, S=A] DOS 3.3 PATCHED
  CHANGE ADDRESSES:
    79 FROM 43 TO EA
    7A FROM 41 TO EA
    7B FROM C6 TO EA

SUPER TEXT 40/80  (MU)
  0-22 ...... 9=0

SUSPEND  (UNK)
  0-22 ...... 10=96, 1E=BC
```

SWASHBUCKLER (DM)
0-22
SECTMOD [T=0, S=3] DOS 3.3 PATCHED
CHANGE ADDRESS 42 FROM 38 TO 18

T

TAWALA'S LAST REDOUBT (BS)
0-22 ..... D=1

TAX MAN
0-22

TAX MANAGER (ML)
Use Copy Disk from main menu

TAX PREPARER (HOW)
Use Copy Disk from main menu

TEMPLE OF APSHAI (AUT)
0-22 ..... A=3, 10=96

THUNDERBOMBS (PEN)
0-12 step 2 E=D5, F=AA, 10=96, 9=00, 6=04, 31=00
1-11 step 2 E=D4, F=AA, 10=96, 9=00, 6=04, 31=00

TORPEDO FIRE (STS)
See three alternatives for Warp Factor

Alternative Method
0-22 ..... E=D4, 10=B7, 34=1

TRANSYLVANIA (PEN)
0-22 ..... E=0, 10=96

Alternative Method
0-22 step 2 10=96
1-21 step 2 E=D4

U-V

ULTIMA II (SOL)
Use Copy Disk, then
SECTMOD [T=3, S=0C]
CHANGE ADDRESSES 84, 85, 86 ALL TO EA.

Alternative Method
0-22 ..... 10=96, 9=0, 34=1, 31=0

ULYSSES & GOLDEN FLEECE (SOL)
0-22 ..... 9=0
3 ..... 3B=1, 0A=1, 4B=1, 4D=8, 50=1 (ERROR 6 OKAY)

Alternative Method
Use Copy Disk from main menu
3 ..... 3B=1, 0A=1, 4B=1, 4D=8, 50=1 (ERROR 6 OKAY)

V.C. (AVH)
0-22

VISICALC FOR THE APPLE ///
(Advanced) (VCP)
0-22 ..... 10=96, 24=96, D=1

VISISCHEDULE /// (VCP)
Copy disk from main menu.

W

WARP FACTOR (STS)
0-22

Alternative Method
0-22 ..... E=DB, F=D5, 10=DE

Alternative Method
0
1-22 ..... E=DB, F=D5, 10=DE, 8=1

WINDFALL (UNK)
0-22 ..... 10=96

continued on page 32

Adventure Tips

Cranston Manor:

The cat's eyes are a treasure. In order to retrieve them you will need the screwdriver from the shed and the inflatable raft from the children's playroom on the second floor.

"INFLATE RAFT," "GO NORTH," and "PRY EYES" to retrieve the treasure.

Cranston Manor
Sierra On-Line, Inc.
26575 Mudge Ranch Road
Coarsegold, California 93614
(209) 683-6858

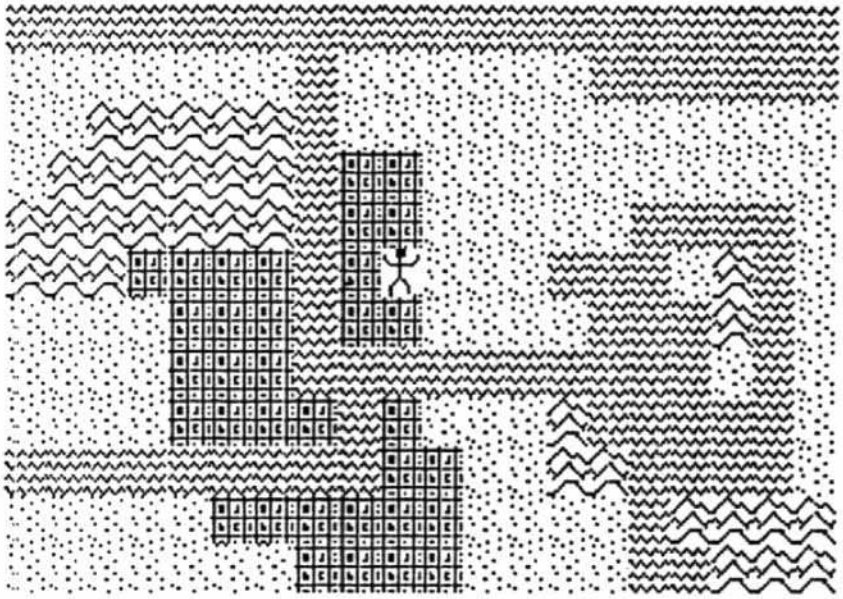
Thomas Kelly II
Titusville, NJ

Strange Odyssey:

When you find the derelict spaceship, DO NOT connect the hose to the space suit and then push the black button on the machine.

Glenn Cummings
Detroit, MI

Strange Odyssey
Adventure International
Box 3435
Longwood, Florida 32750
(305) 830-8194



MAP MAKER

A feature to create terrain for hi-res adventure games

by Robb Canfield

Requirements:
Apple II, 48K
Disk drive
Quick Draw (from CORE Graphics issue; only needed to modify or add to the map's character set)

Usually the hardest part of composing one's own fantasy game is writing a routine to draw the actual terrain. To aid the future software author or game hobbyist, we present ***Map Maker,*** a program that displays a terrain and allows the user to draw a "map" of his own.

Map Maker uses a display similar to the one used by several commercial games (the *Ultima* series is an example). The screen depicts a character surrounded by a landscape, which the user fills with mountains, towns, and lakes. When "moved," the character remains in the center of the screen, and the landscape changes around it.

Entering the Program into Memory

To start, boot the 3.3 master disk and clear the program from memory (**FP**).

1) Enter and save the BASIC program, "Editor" (DO NOT run this program yet).
SAVE EDITOR

2) Clear memory (**FP**) and enter the listing for "Make Tables." (Note: this program differs significantly from the "Make Tables" program in the Graphics issue of CORE.)
First save, then run the program.
SAVE MAKE TABLES
RUN MAKE TABLES
The program will relocate itself and then will create and save "Tables."

3) Clear memory again (**FP**) and enter the monitor (**CALL-151**). Now enter and save the hex dump for "Display Map."
BSAVE DISPLAY MAP,A$803,L$C7

4) Enter and save the hex dump for Clear.Obj.
BSAVE CLEAR.OBJ,A$300,L$1E

5) Enter "Editor.C," page 30 and save it, allowing enough memory so that the "QD.Editor" (presented in the Graphics issue of CORE) will still read and write to it without increasing the size of the character set.
BSAVE EDITOR.C,A$E00,L$200

To use the program, RUN EDITOR.

Using Map Maker

Map Maker reloads itself above page 2 of hi-res and loads all the needed files. You must then answer YES when the program asks if you wish to erase the screen. (This feature erases all the garbage which would be on the hi-res screen; it also allows the user to leave the map in memory if he accidentally exits from the program.)
Once in memory the hi-res screen should be displayed. To move the character, use any of the motion commands on page 27. To draw a map, first press one of the terrain keys (P,M,W,T), then move the character over the blocks of the map on which you wish to draw that terrain.

How Map Maker Creates Terrain

The variable CO$ (line 30) defines the keys which identify various terrain types. Currently, CO$ contains the string "PMWT". A loop (lines 470 to 490) checks the key press against those key presses identified in the string. Thus, if P is pressed, terrain type 0 (plains) is drawn; if M is pressed; type 1 (mountains) is drawn, etc.

How to Examine or Modify the Terrain Types

Since *Quick Draw* (CORE Graphics issue) was used to create the terrain for Map Maker, it is easy to modify or add to the character set "Editor.C." The current character set only defines four types of terrain and the character, but Map Maker can identify up to sixteen.

In order to examine, modify, or add to Map Maker's character set, run the *Quick Draw Editor.*
EXEC START

The size of the blocks used by Map Maker are two by two. Once the block display appears on the screen, ctrl D will allow the user to load the character set, EDITOR.C. The locations for the various terrain types are given below:

Terrain	ASCII Code	Figure
0	#00	Prairies
1	#04	Mountains
2	#08	Water
3	#12	Towns
-	#60	Character

To display the block containing the prairie terrain, press G (GET block) and enter the ASCII code #00. The block containing the "prairie" will appear. Should you wish to modify this drawing, use the normal *Quick Draw* commands (CORE Graphics issue, page 42). When you have completed your revision, you will need to put (P) the character back in the set and save (ctrl D) the newly revised "Editor.C".

Creating New Terrain

New terrain types should be stored in ASCII locations #16-#56. For example, if you wish to add a castle to your list of figures, press G (GET) and enter #16. The letters P through S will appear. Erase these figures by pressing the ! key. Now draw your dream castle!

When you have completed your castle, press P (PUT) to store the figure to the character set at location #16. Then save (ctrl D) the new "Editor.C".

In order to use your castle, change CO$ at line 30 to "PMWTC" and SAVE EDITOR. Your castle will be drawn exactly as the other terrain types, using the C key.

The Display Routine

The display routine in "Editor" draws on both of the hi-res pages. This prevents any flickering effect but takes up a tremendous amount of space (16K). The sequence for this routine is presented here:

lines 320-330 Draw on the hi-res page not currently on the screen.
line 340 Call Display Map.
line 350 Flip to the new page.

Location 230 contains the offset of the page on which the user wants to draw. POKE 230,32 will draw on page one, while POKE 230,64 will draw on page two. Both "Display Map" and Applesoft use this location when determining the page to draw on. Likewise, there are two pokes that control which page is being viewed: POKE -16299,0 displays page one, POKE -16300,0 will display page 2.

Lines 270 to 350 control the actual drawing of the map. Every time the map is to be drawn, this routine is called. X and Y point to the position on the map. "Display Map" shows a predetermined terrain type (water) when the character wanders off the screen.

Map Maker should make it easy to create a map to be used for your own adventures. Now all that remains is to write the game!

Make Tables

```
1   HOME
6   DEF  FN MOD(A) =  INT ((A / 8 -
      INT (A / 8)) * 8 + .05) *  SGN
     (A / 8)
8 YL = 2306:YH = YL + 192
9   FOR Y = 0 TO 191
10 A =  FN MOD(Y)
20 B =  FN MOD(Y / 8)
30 C =  INT (Y / 64)
40 YA = A * 1024 + B * 128 + C *
     40
50  POKE YH + Y,YA / 256
60  POKE YL + Y,YA -  INT (YA / 2
     56) * 256
65  VTAB 12: HTAB 10: PRINT Y"  "
70  NEXT
75  HOME
80  FOR Y = 0 TO 23: POKE 2250 +
     Y,Y * 8: VTAB 12: HTAB 10: PRINT
     Y" ": NEXT
85 YL = 2274:YH = YL + 16
90  FOR Y = 0 TO 15
95  IF Y > 7 THEN T = 12
100 A =  INT ((Y * 32 + 2816) / 2
     56):B = (Y * 32 + 2816) - A *
     256
102  POKE YL + Y,B: POKE YH + Y,A
105  VTAB 12: HTAB 10: PRINT Y" "
110  NEXT
120  PRINT  CHR$ (4)"BSAVE TABLES
     ,A$8CA,L$1B8"
```

KEYS TO CREATE TERRAIN

P Terrain type 0: PLAIN
M Terrain type 1: MOUNTAINS
W Terrain type 2: WATER
T Terrain type 3: TOWNS
ESC Turns off any drawing in effect

MOTION COMMANDS

ctrl Q	UP
ctrl A	LEFT
ctrl S	RIGHT
ctrl Z	DOWN

OTHER FEATURES

@ Erase the current map. This command must be verified by typing the full word YES or NO when asked.
ctrl X Exits the program.
ctrl P Shows the current position and terrain numbers and allows the user to move to another location on the map (RETURN defaults to the current position).
ctrl D Allows the loading and saving of maps (ESC or N exits from this mode).

```
10  REM

        PLACE PROGRAM HIGH IN MEM

20  IF  PEEK (103) = 1 AND  PEEK
     (104) = 96 THEN 40
30  POKE 103,1: POKE 104,96: POKE
     24576,0: PRINT  CHR$ (4)"RUN
     EDITOR"
40 D$ =  CHR$ (4): REM  CTRL D
50 CO$ = "PMWT": REM TERRAIN LIST
60 HP = 16 * 14 + 6: REM  HIRES P
     AGE (32=PAGE 1, 64=PAGE 2)
70 PG =  - 16300: PRINT : PRINT D
     $"PR#0": PRINT D$"IN#0": REM
      DISCONNECT PLE
80  IF  PEEK (2051) +  PEEK (2052
     ) +  PEEK (2053) = 296 THEN
     110
90  PRINT D$"BLOAD TABLES": PRINT
     D$"BLOAD EDITOR.C,A$800"
100  PRINT D$"BLOAD CLEAR.OBJ,A$3
     00": PRINT D$"BLOAD DISPLAY
     MAP,A$803"
110 G$ =  CHR$ (7): REM  BELL
120  POKE 5,2
130  HGR
140  POKE  - 16302,0
150 X = 0:Y = 0
160 TR =  - 1
170 CV = 2:CH = 4
180  POKE CH,247:Y3 =  - 5 * 64 +
     4096
190  POKE CV + 1,Y3 / 256: POKE C
     V,Y3 -  INT (Y3 / 256) * 256
200  POKE HP,64: POKE CV + 1,Y3 /
     256: POKE CV,Y3 -  INT (Y3 /
     256) * 256
210  POKE  - 16304,0
220  POKE PG,0: REM  USE HIRES PA
     GE 1 OR 2
230  POKE  - 16302,0
240  IF Y < 0 THEN Y = 64 + Y: GOTO
     260
250  IF Y > 63 THEN Y = Y - 64
260 LO = Y * 64 + X + 4096
270  IF TR < 0 THEN 290
280  IF Y < 64 AND X < 64 THEN  POKE
     LO,TR
290 X2 = X - 9: IF X2 < 0 THEN X2
     = X2 + 256
300 Y2 = Y - 5
310  POKE CH,X2
320 Y3 = Y2 * 64 + 4096
330  POKE CV + 1,Y3 / 256: POKE C
     V,Y3 -  INT (Y3 / 256) * 256
340  IF  PEEK (HP) = 32 THEN  POKE
     HP,64:PG =  - 16299: GOTO 36
     0
350  POKE HP,32:PG =  - 16300
360  CALL 2051
370  IF QQ = 0 THEN QQ = 1: GOTO
     650
380  POKE PG,0
390  REM
        GET COMMAND AND PROCESS
400  GET A$
410  IF A$ =  CHR$ (17) THEN Y =
     Y - 1: GOTO 240
420  IF A$ =  CHR$ (26) THEN Y =
     Y + 1: GOTO 240
430  IF A$ =  CHR$ (1) THEN :X =
     X - 1: GOTO 540
440  IF A$ =  CHR$ (19) THEN X =
     X + 1: GOTO 540
450  IF A$ =  CHR$ (27) THEN TR =
      - 1: GOTO 240
460  IF A$ = "@" THEN 650
470  IF A$ =  CHR$ (24) THEN  TEXT
     : HOME : PRINT "GOOD BYE": END
480  IF A$ = D$ THEN 720
490  IF A$ =  CHR$ (16) THEN 850
500  FOR I = 1 TO  LEN (CO$)
510  IF A$ =  MID$ (CO$,I,1) THEN
     TR = I - 1: GOTO 240
520  NEXT
530  PRINT G$: GOTO 240
540  IF X < 0 THEN X = 64 + X: GOTO
     240
550  IF X > 63 THEN X = X - 64: GOTO
     240
560  GOTO 240
570  REM
        FIND OUT WHAT IS WHERE
580  REM  X2=HORZ POS, Y2=VERT PO
     S ON MAP
590  REM  R1=VALUE HERE (TERRAIN)
     , R2=SUB TERRAIN
600 LO = Y2 * 64 + X2 + 4096:R2 =
     PEEK (LO)
610 R1 = R2 -  INT (R2 / 8) * 8
620 R2 = R2 - R1
630  RETURN
640  REM
        CLEAR MAP MEMORY
650  TEXT : HOME
660  VTAB 12: INPUT "ERASE MAP (Y
     ES/NO)? ";A$
670  IF A$ <  > "YES" THEN 210
680 X = 0:Y = 0
690  CALL 768
700  NORMAL : GOTO 210
710  REM
        CALL DOS
720  TEXT : HOME
730  PRINT : PRINT D$"CATALOG"
740  GET A$
750  VTAB 22: CALL 64578: PRINT "
     LOAD OR SAVE A MAP ?";: GET
     A$: PRINT
760  IF A$ =  CHR$ (27) OR A$ = "
     N" THEN 210
```

Checksums for Make Tables

1 - $B25C	50 - $4754	95 - $EAB6
6 - $3802	60 - $434E	100 - $8405
8 - $A0BB	65 - $0B28	102 - $C17C
9 - $7BBB	70 - $4A99	105 - $09A8
10 - $2C22	75 - $17A8	
20 - $45A4	80 - $C441	110 - $7AD7
30 - $9D66	85 - $A31D	120 - $D3BB
40 - $95FB	90 - $AC80	

```
770  IF A$ < > "S" AND A$ < > "
     L" THEN  PRINT "ILLEGAL ENTR
     Y";G$;G$: FOR I = 1 TO 700: NEXT
     I: GOTO 750
780  IF A$ = "S" THEN A$ = "BSAVE
     ":L$ = ",A$1000,L$1000"
790  IF A$ = "L" THEN A$ = "BLOAD
     ":L$ = ",A$1000"
800  PRINT : PRINT "ENTER MAP TO
     ";A$;
810  INPUT " >";NA$
820  PRINT D$A$NA$L$
830  GOTO 210
840  REM

          SHOW POSITION IN MAP


850  TEXT : HOME
860  PRINT "CURRENT POSITION IS"
870  HTAB 5: PRINT "X POS:"X
880  HTAB 5: PRINT "Y POS:"Y
890  GOSUB 1060: IF ER THEN 910
900 X2 = X:Y2 = Y: GOSUB 580
910  PRINT : PRINT "TERRAIN TYPE
     IS: "R1: PRINT "SUB-TERRAIN
     IS: "R2
920  PRINT : PRINT : PRINT "CHANG
     E POSITION (Y/N)?";: GET A$
930  PRINT
940  IF A$ < > "Y" THEN 1030
950  PRINT
960  INPUT "ENTER X POS:";X$
970  IF X$ = "" THEN 990
980 X =  INT ( VAL (X$))
990  CALL 64538: PRINT "ENTER X P
     OS:"X: PRINT : INPUT "ENTER
     Y POS:";Y$
1000  IF Y$ = "" THEN 1020
1010 Y =  INT ( VAL (Y$))
1020  CALL 64538: PRINT "ENTER Y
     POS:"Y
1030  GOSUB 1060: IF ER THEN  PRINT
     G$: FOR I = 1 TO 900: NEXT I
     : GOTO 850
1040  PRINT : PRINT : PRINT "PLEA
     SE PRESS A KEY TO CONTINUE";
     : GET A$: PRINT
1050  GOTO 210
1060  PRINT :ER = 0: IF Y > 63 THEN
      PRINT "YOU ARE OFF THE BOTT
     OM OF THE SCREEN": PRINT :ER
      = 1
1070  IF Y < 0 THEN  PRINT "YOU A
     RE OFF THE TOP OF THE SCREEN
     ": PRINT :ER = 1
1080  IF X < 0 THEN  PRINT "YOU A
     RE OFF THE LEFT EDGE OF THE
     SCREEN": PRINT :ER = 1
1090  IF X > 63 THEN  PRINT "YOU
     ARE OFF THE RIGHT EDGE OF TH
     E SCREEN":ER = 1
1100  RETURN
```

Checksums for Editor

```
10  - $BADD
20  - $6FA1
30  - $A40B
40  - $840E
50  - $5C9C
60  - $35BE
70  - $F79D
80  - $A092
90  - $31FE
100 - $7756
110 - $93F8
120 - $A286
130 - $172B
140 - $817E
150 - $3690
160 - $9E55
170 - $D39C
180 - $0029
190 - $6071
200 - $2572
210 - $DC5A
220 - $A1C0
230 - $6E77
240 - $1422
250 - $441E
260 - $B41E
270 - $2D5C
280 - $08C9
290 - $9C9D
300 - $4902
310 - $003F
320 - $74BB
330 - $C862
340 - $B9EF
350 - $2F61
360 - $B33F
370 - $5F4C
380 - $6881
390 - $6D5D
400 - $65FC
410 - $CAB9
420 - $07F5
430 - $7F9C
440 - $911B
450 - $4558
460 - $2D9B
470 - $7315
480 - $61EF
490 - $5A44
500 - $9EC2
510 - $960C
520 - $2B81
530 - $EDD4
540 - $425D
550 - $C526
560 - $302D
570 - $4618
580 - $EF1F
590 - $940D
600 - $635F
610 - $E2B1
620 - $B3E8
630 - $BC22
640 - $FD93
650 - $516F
660 - $F69A
670 - $A049
680 - $5CCE
690 - $C7C6
700 - $84FE
710 - $895C
720 - $C0BA
730 - $189F
740 - $EC62
750 - $B645
760 - $F5B0
770 - $3A0C
780 - $7CDD
790 - $59A1
800 - $BD1D
810 - $698D
820 - $EAF2
830 - $ADB4
840 - $991F
850 - $35A2
860 - $7156
870 - $2500
880 - $F2A2
890 - $BD18
900 - $54D8
910 - $C8C5
920 - $675F
930 - $2E8E
940 - $23CC
950 - $81DE
960 - $F0FE
970 - $B8D8
980 - $0918
990 - $4396
1000 - $42AF
1010 - $D6DF
1020 - $B75D
1030 - $E43D
1040 - $6A6E
1050 - $54CB
1060 - $9092
1070 - $F23B
1080 - $FF93
1090 - $C78D
1100 - $0A23
```

Display Map

BEG: 803 END: 8C9

```
0803- A2 00 86 24 86          : $88D2
0808- 25 A6 04 86 06 A2 02 86 : $CAF7
0810- 08 A5 25 C9 0A D0 0A A5 : $07E2
0818- 24 C9 12 D0 04 A9 0F D0 : $1BCF
0820- 20 A4 06 C0 40 90 04 A5 : $8735
0828- 05 10 14 A6 03 E0 20 90 : $24D2
0830- 04 A5 05 10 0A E0 10 B0 : $5E8B
0838- 04 A5 05 10 02 B1 02 29 : $21F6
0840- 0F A8 84 01 B9 E2 08 8D : $4481
0848- 6D 08 B9 F2 08 8D 6E 08 : $3CF2

0850- A2 00 86 00 A6 25 BC CA : $182D
0858- 08 84 D3 A6 00 B9 02 09 : $E8BF
0860- 85 D4 18 B9 C2 09 65 E6 : $A5E0
0868- 85 D5 A4 24 BD FF FF 91 : $3304
0870- D4 E6 D3 A4 D3 E8 E0 10 : $239B
0878- 90 E3 F0 08 E0 20 90 DD : $BFE2
0880- A2 00 86 00 C6 08 F0 0E : $545F
0888- A4 24 C8 C0 28 F0 14 84 : $E01B
0890- 24 18 86 00 90 BE E6 24 : $EAD6
0898- A4 24 E6 06 C0 28 B0 03 : $A6C8

08A0- 4C 0D 08 A0 00 84 24 A4 : $DB28
08A8- 25 C8 C8 84 25 C0 18 90 : $A75A
08B0- 05 C6 25 C6 25 60 A5 03 : $6A57
08B8- C9 20 B0 0B A5 02 18 69 : $66E3
08C0- 40 85 02 90 02 E6 03 4C : $708B
08C8- 09 08                   : $38E6
```

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Editor.C BEG: E00 END: FFF

```
0E00- A4 80 80 84 A0 80 80 84 : $A2C6
0E08- 80 88 80 80 80 82 88 80 : $1E6F
0E10- 80 A0 82 80 80 88 80 81 : $8F79
0E18- 80 88 80 A1 80 80 A0 82 : $0994
0E20- A0 D0 88 84 82 81 C0 A2 : $5B05
0E28- 95 88 84 C0 A0 90 88 87 : $E0C7
0E30  80 80 89 96 A0 C1 82 84 : $2454
0E38- C8 B0 A0 8F 88 90 A0 C0 : $6FBC
0E40- 80 A2 D5 88 80 91 AA C4 : $3FCA
0E48- 80 A2 D5 88 80 91 AA C4 : $6F5C

0E50- 80 C4 AA 91 80 A2 D5 88 : $5FB0
0E58- 80 C4 AA 91 80 A2 D5 88 : $6F9C
0E60- C2 FF C2 DA DA DA C2 FF : $8FD6
0E68- C2 CA DA DA C2 FF C2 DA : $BE16
0E70- 90 FF 90 D4 94 D6 90 FF : $9611
0E78- 90 D6 D2 D6 90 FF 90 D2 : $1EE7
0E80- E1 DD DD E1 FD FD FD FF : $6668
0E88- E3 DD DD DD D5 ED D3 FF : $BC77
0E90- E1 DD DD E1 F5 FD DD FF : $20D0
0E98- E3 DD FD E3 DF DD E3 FF : $2D9C

0EA0- C1 F7 F7 F7 F7 F7 F7 FF : $REC8
0EA8- DD DD DD DD DD DD E3 FF : $273F
0EB0- DD DD DD ED EB F3 F7 FF : $8387
0EB8- DD DD DD D5 D5 C9 DD FF : $F5A8
0EC0- DD ED EB F7 EB ED DD FF : $899E
0EC8- DD ED EB F7 F7 F7 F7 FF : $0A2B
0ED0- C1 EF EF F7 FB FD C1 FF : $940C
0ED8- C1 F9 F9 F9 F9 F9 C1 FF : $2AFF
0EE0- FF FD FB F7 EF DF FF FF : $88AF
0EE8- C1 CF CF CF CF CF C1 FF : $54A8

0EF0- FF FF F7 EB DD FF FF FF : $C19A
0EF8- FF FF FF FF FF FF FF 80 : $6E35
0F00- 00 00 00 00 00 00 00 00 : $8E25
0F08- 08 08 08 08 08 00 08 00 : $A685
0F10- 14 14 14 00 00 00 00 00 : $C6FB
0F18- 28 94 7E 14 BF 8A 0A 00 : $4848
0F20- 08 3C 0A 1C 28 1E 08 00 : $5E22
0F28- 06 26 10 08 04 32 30 00 : $D7F8
0F30- 04 0A 0A 04 2A 12 2C 00 : $83C4
0F38- 08 08 08 00 00 00 00 00 : $F3C8

0F40- 08 04 02 02 02 04 08 00 : $2557
0F48- 08 10 20 20 20 10 08 00 : $C53F
0F50- 08 2A 1C 08 1C 2A 08 00 : $1D3B
0F58- 00 08 08 3E 08 08 00 00 : $E3A0
0F60- 00 00 00 00 00 8C 88 84 : $F3B4
0F68- 00 00 00 3E 00 00 00 00 : $D0E7
0F70- 00 00 00 00 00 00 8C 00 : $935B
0F78- 00 20 10 08 04 02 00 00 : $C1EA
0F80- 8C 92 22 22 22 92 8C 00 : $A7FD
0F88- 08 0C 08 08 08 08 1C 00 : $5DFF

0F90- 1C 22 20 10 84 82 3E 00 : $A2E0
0F98- 3E 90 10 18 20 22 1C 00 : $5310
0FA0- 10 18 14 12 3E 10 10 00 : $C875
0FA8- 3E 02 1E 20 20 22 1C 00 : $9603
0FB0- 18 04 82 1E 22 22 1C 00 : $2E21
0FB8- 3E 90 10 88 08 84 04 00 : $2F53
0FC0- 1C 22 22 1C 22 22 1C 00 : $1777
0FC8- 1C 22 22 3C 90 10 0C 00 : $C2E6
0FD0- 00 00 8C 00 00 8C 00 00 : $F414
0FD8- 00 00 8C 00 00 8C 88 84 : $F28C

0FE0- E0 E0 E2 C2 C4 F8 C0 C0 : $EB37
0FE8- C0 C0 A0 90 88 88 88 88 : $5397
0FF0- 81 81 A1 A0 90 8F 80 80 : $75E8
0FF8- 80 80 81 82 84 84 84 D0 : $050E
```

Display Map.S

```
1000 ************************
1010 *                      *
1020 *   HI-RES CHARACTER   *
1030 *      GENERATOR       *
1040 *    DISPLAY MAP.S     *
1050 *                      *
1060 *         BY           *
1070 *                      *
1080 *   ROBB S. CANFIELD   *
1090 *                      *
1100 *                      *
1110 *                      *
1120 ************************
1130
1140
1150
1160 *
1170 * LOCATIONS USED IN THE PROGRAM
1180 *
1190
1200 WNDBTM   .EQ $23       BOTTOM OF TEXT WINDOW
1210
1220 INV.FLAG .EQ $32       THE INVERSE FLAG.
1230
1240
1250
1260 B        .EQ $B00
1270 VERTSAVE .EQ $D3       VERTICAL POSITION SAVE AREA
1280 SPOT     .EQ $D4       LOCATION TO PLACE CHARACTER
1290 CV       .EQ $25       CURSOR VERTICAL POSITION
1300 CH       .EQ $24       CURSOR HORIZONTAL POSITION
1310 HORZ2    .EQ $8        BLOCKS HORIZONTALLY
1320 CHAR     .EQ $01       CHARACTER WE ARE ON
1330 TEMP     .EQ $00
1340 MAP      .EQ $02,$03   LOCATION OF START OF MAP
1350 HORZ.POS.ORG .EQ $04   ORIGINAL HOZ POS
1360 RANGE    .EQ $05       CHARACTER TO PRINT
1370 HORZ.POS .EQ $06
1380 HIRES.PAGE .EQ $E6
1390
1400
1410
1420
1430 VERTICAL .EQ $8CA      VERTICAL LINE OFFSET
1440 CHRLOW   .EQ $8E2
1450 CHRHIGH  .EQ $8F2
1460 TABLELOW .EQ $902
1470 TABLEHIG .EQ $9C2
1480
1490
1500
1510
1520          .OR $803
1530          .TF DISPLAY MAP
1540 *
1550 * SET FOR HOOK UP WITH PRINT
1560 *
1570
1580 MAKE.MAP LDX #$00      HOME SCREEN
1590          STX CH
1600          STX CV
1610 DRAW1    LDX HORZ.POS.ORG
1620          STX HORZ.POS
1630
1640 DRAW     LDX #$2       GET BLOCK SIZES
1650          STX HORZ2
1660          LDA CV        CHECK FOR CENTER
1670          CMP #10
1680          BNE TABLE
1690          LDA CH
1700          CMP #18
1710          BNE TABLE
1720          LDA #$0F      PRINT CHARACTER
1730          BNE CHARTBL1  ...ALWAYS
1740 TABLE    LDY HORZ.POS
1750          CPY #64       CHECK FOR HORZ RANGE
1760          BLT .4
1770          LDA RANGE
1780          BPL .2        ...ALWAYS
1790 .4       LDX MAP+1     CHECK RANGES (ABOVE)
1800          CPX #$20
1810          BLT .1
1820          LDA RANGE
1830          BPL .2        ...ALWAYS
1840 .1       CPX #$10      (LOW)
1850          BGE .3
1860          LDA RANGE
1870          BPL .2        ...ALWAYS
1880 .3       LDA (MAP),Y   TABLE LOCATION
1890 .2       AND #$0F      CLEAR HIGH NIBBLE
1900 CHARTBL1 TAY
1910          STY CHAR
1920          LDA CHRLOW,Y FIND WHERE CHARACTER IS
1930          STA GET+1
1940          LDA CHRHIGH,Y GET HIGH BYTE POSITION
1950          STA GET+2
1960          LDX #$00
1970          STX TEMP
1980 AGAIN    LDX CV        FIND VERTICAL POSITION ON
1990          LDY VERTICAL,X
2000          STY VERTSAVE
2010          LDX TEMP      RESET LOOP FOR CHARACTOR
2020 PUTCHAR  LDA TABLELOW,Y GET ACTUAL LOCATION
2030          STA SPOT
2040          CLC
2050          LDA TABLEHIG,Y
2060          ADC HIRES.PAGE GET HIRES PAGE TO DRAW TO
2070          STA SPOT+1
2080          LDY CH        GET HORIZONTAL POSITION
2090 GET      LDA $FFFF,X   GET CHARACTER
2100          STA (SPOT),Y
2110          INC VERTSAVE GET NEXT LINE ON SCREEN
2120          LDY VERTSAVE
2130          INX           DONE?
2140          CPX #16
2150          BLT PUTCHAR   DONE? NO SO CONTINUE
2160          BEQ .1
2170          CPX #32       DONE?
2180          BLT PUTCHAR
2190          LDX #$00
2200          STX TEMP
2210 .1       DEC HORZ2
2220          BEQ GOODBYE
2230          LDY CH
2240          INY
2250          CPY #40
2260          BEQ CR
2270          STY CH
2280          CLC
2290          STX TEMP      SAVE CURRENT PLACE IN CHARACTER
2300          BCC AGAIN
2310 GOODBYE  INC CH        MY OWN ADVANCE ROUTINE
2320          LDY CH
2330          INC HORZ.POS
2340          CPY #40
2350          BCS CR        SIMULATE A LONG BCC TO DRAW
2360          JMP DRAW
2370 CR       LDY #$00      MY OWN CARRIAGE RETURN CONTROL
2380          STY CH
2390          LDY CV        MOVE DOWN TWO
2400          INY
2410          INY
2420          STY CV
2430          CPY #24       AT END OF SCREEN?
2440          BCC CONTINUE
2450
```

```
2460            DEC CV
2470            DEC CV
2480 GOODBYE2   RTS
2490
2500
2510 CONTINUE
2520            LDA MAP+1       GET NEXT LINE
2530            CMP #$20        CHECK FOR OVER RANGE
2540            BGE .1
2550            LDA MAP
2560            CLC
2570            ADC #64
2580            STA MAP
2590            BCC .1
2600            INC MAP+1
2610 .1         JMP DRAW1
2620            }
```

Clear

```
1000 *-------------------------------
1010 * THIS ROUTINE FILLS MEMORY
1020 * FROM $1000 TO $1FFF WITH THE
1030 * CHARACTER AT $0
1040 *-------------------------------
1050
1060
1070
1080
1090            .OR $300        PLACE   THE ROUTINE AT PAGE 3
1100            .TF CLEAR.OBJ
1110
1120
1130 REPLACE.BYTE .EQ $00       THE CHARACTER TO PLACE
1140
1150 TARGET     .EQ $3C         THE LOCATION TO PLACE DATA
1160
1170 CLEAR      LDA #$00        RESET TARGET LOCATION TO $1000
1180            STA TARGET
1190            LDA #$10
1200            STA TARGET+1
1210            LDA REPLACE.BYTE GET THE REPLACE BYTE
1220            LDX #$10        COUNTER FOR NUMBER OF PAGES
1230 LOOP       LDY #$00        RESET OFFSET
1240 LOOP1      STA (TARGET),Y SAVE BYTE
1250            DEY             GET NEXT BYTE
1260            BEQ NEXT        DONE?, IF SO UPDATE TARGET BYTE
1270            JMP LOOP1       REPLACE NEXT  BYTE
1280
1290 NEXT       DEX             DECREMENT COUNTER FOR PAGES
1300            BEQ END         IF  ZERO THEN WE ARE DONE
1310            INC TARGET+1 OTHERWISE, UPDATE THE HIGH BYTE
1320            BNE LOOP        AND DO ANOTHER PAGE
1330
1340 END        RTS             RETURN TO CALLER)
```

Clear.Obj

BEG: 300 END: 31D

```
0300- A9 00 85 3C A9 10 85 3D : $51E3
0308- A5 00 A2 10 A0 00 91 3C : $A4E7
0310- 88 F0 03 4C 0E 03 CA F0 : $F8CB
0318- 04 E6 3D D0 EF 60       : $2D0E
```

Copy II Plus Parms

continued from page 25

```
WIZARD & PRINCESS  (SOL)
  0-22

WIZARDRY  (SIR)
  Boot Side:
  0-23 ..... 10=96, 24=96, D=1
  Write protect back-up before using.

  Scenario:
  0-22 ..... 10=96, 24=96, D=1

  Alternate for Boot Side
  Use Copy Disk, then
  A-E ..... 10=96, 24=96, D=1, 4B=1
  Write protect copy before using.

  Alternate for Scenario Side
  A-E ..... 10=96, 24=96, D=1, 4B=1
  DO NOT write protect.

WIZ MAKER  (UNK)
  0-22 ..... D=1, 24=96, 10=96, 34=1,
             8=1

WRITE AWAY  (MWS)
  Use Copy Disk
```

Z

```
ZARGS  (IN)
  Same as Spider Raid

ZOOM GRAPHICS  (PHO)
  0-22 ..... 10=96, 9=0

ZOOM GRAPHICS (New version)  (PHO)
  0 ......... 10=96
  2-22 step 2  9=0, 8=1, 3E=2
  1-21 step 2  E=D4

ZORK I, II, III  (IC)
  0-22 ..... 10=96, 1E=BC

Alternate Method for Zork II
  0-23 ..... 10=96, 9=0, 3F=1
```

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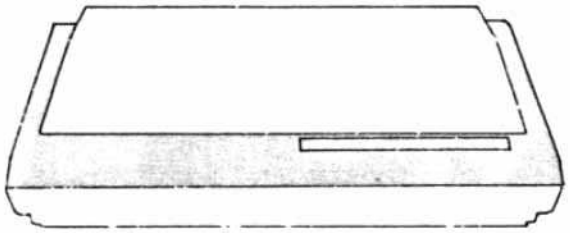

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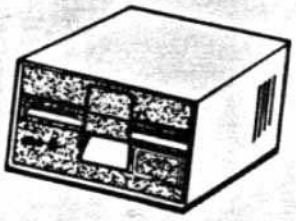

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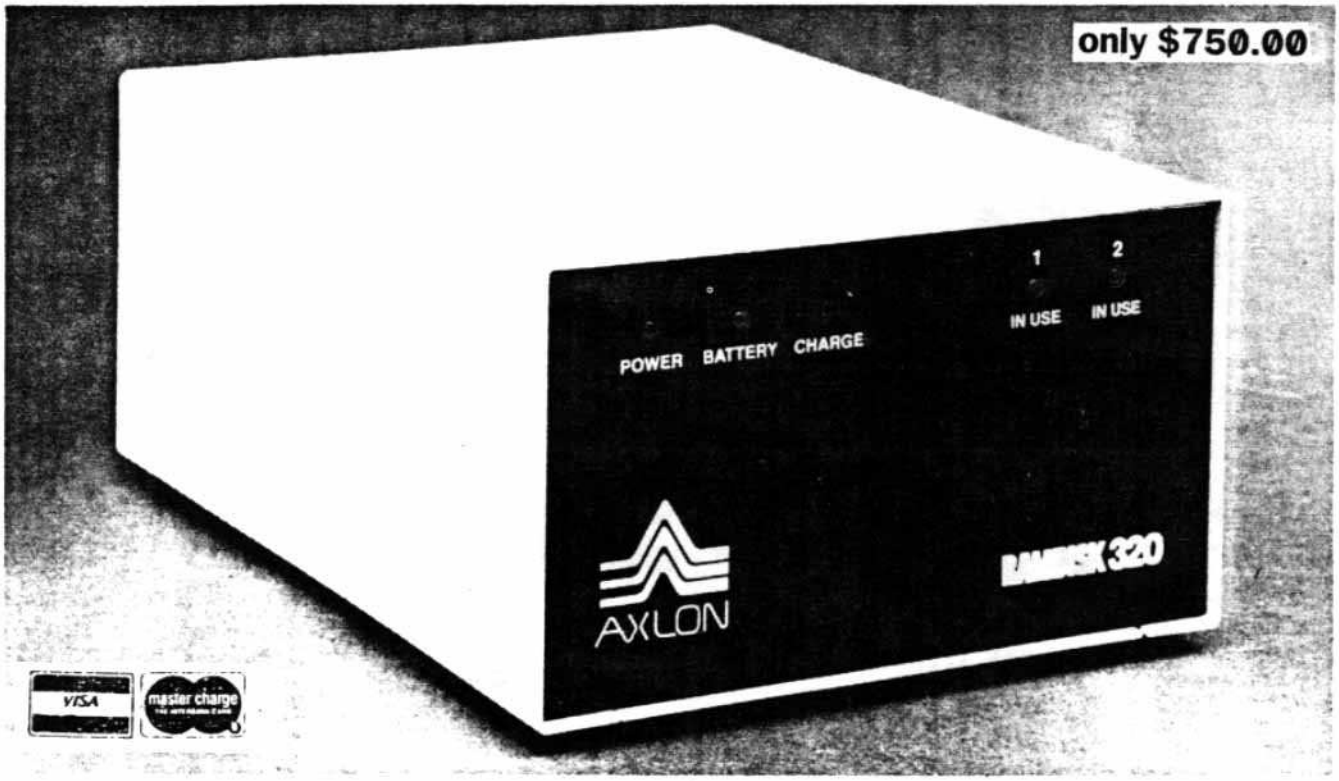

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