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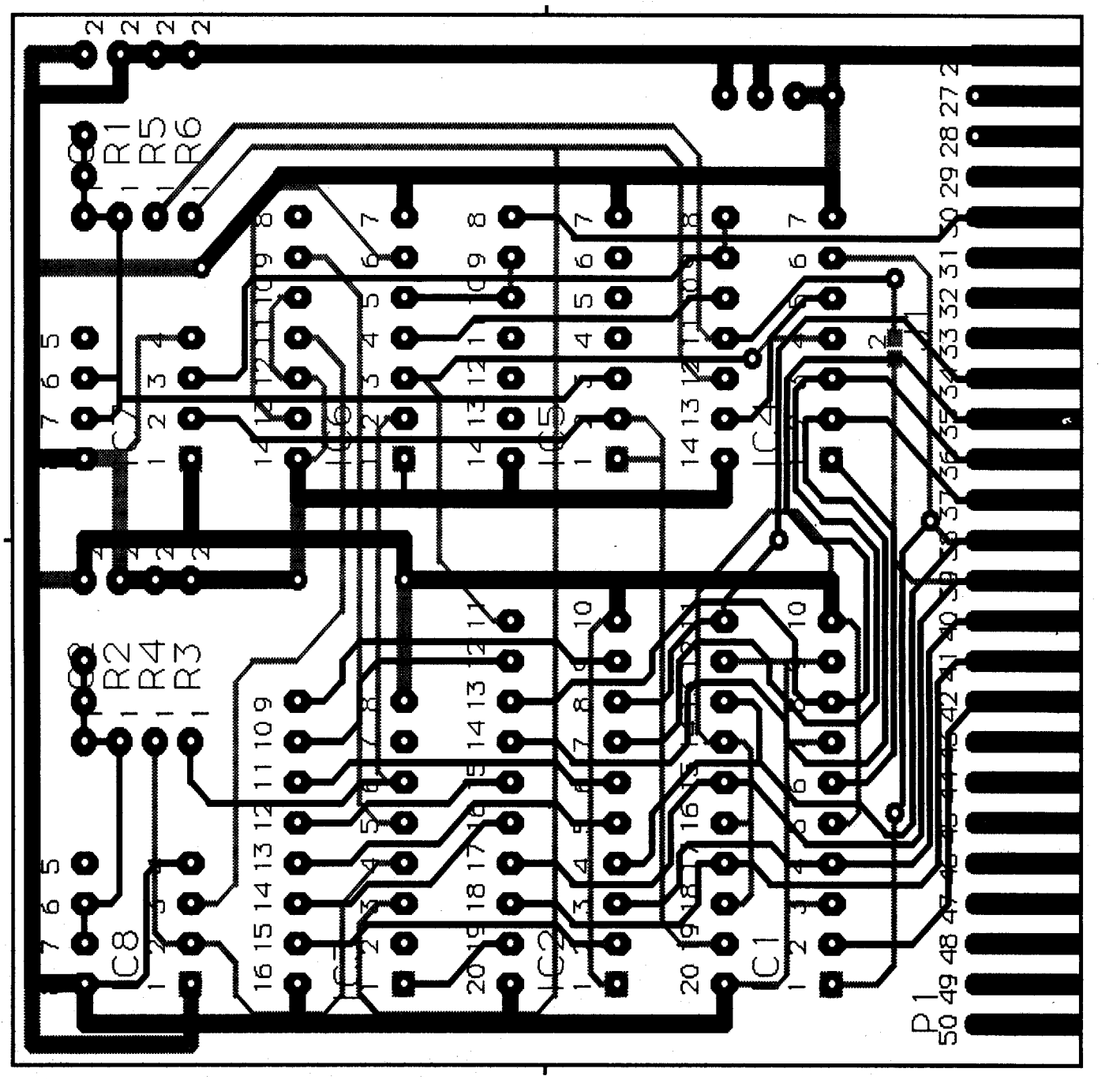

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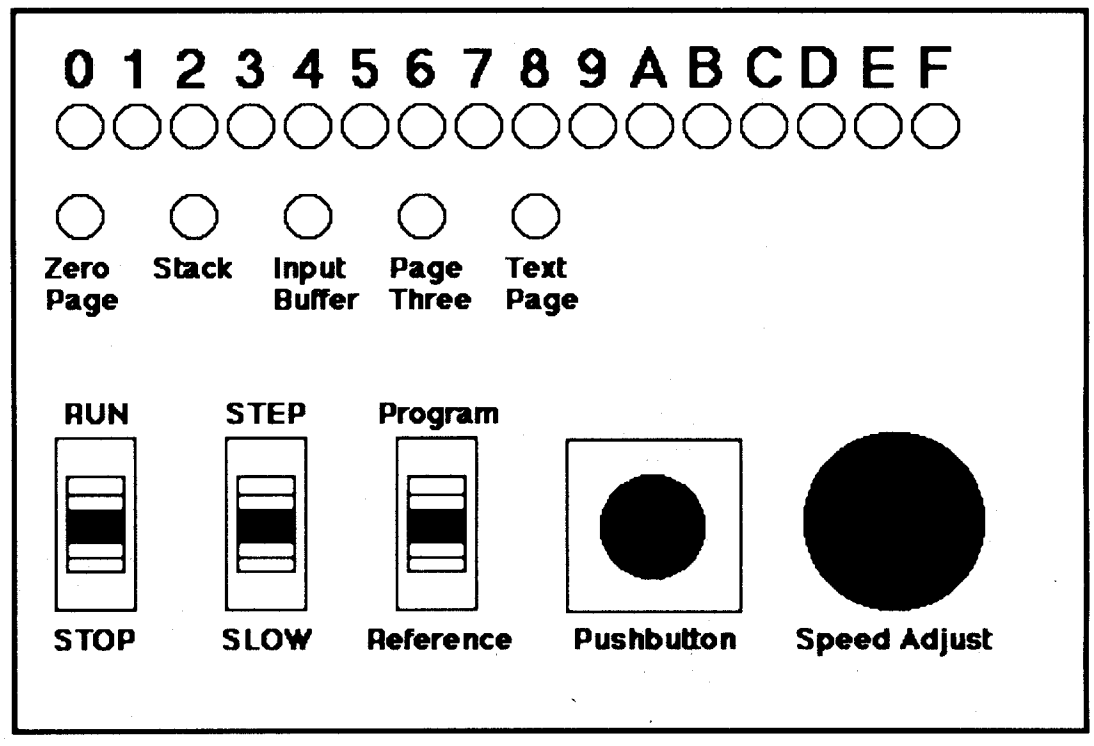

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COMPUTIST

Charles R. Haight ..... Editor
Tom Acree ..... Associate Editor
Karen Fitzpatrick ..... Circulation

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Readers Data EXchange

New COMPUTIST readers using Apple IIs are advised to read this page carefully to avoid frustration when attempting to follow a softkey or entering the programs printed in this issue.

What is a softkey, anyway?

Softkey is a term which we coined to describe a procedure that removes, or at least circumvents, any copy-protection on a particular disk. Once a softkey procedure has been performed, the resulting backup copy can usually be copied by the normal copy programs (for example: COPYA, on the DOS 3.3 System Master disk).

Commands and control keys

Commands which a reader is required to perform are set apart by being in boldface and on a separate line. The **return** key must be pressed at the end of every such command unless otherwise specified. Control characters are preceeded by "**ctrl**". An example of both is:

6 ctrl P

Type **6**. Next, place one finger on the **ctrl** key and then press **P**. Don't forget to press the return key.

Other special combination keypresses include **ctrl reset** and **open-apple ctrl reset**. In the former, press and hold down the **ctrl** key then press the **reset** key. In the latter, press and hold down both **ctrl** and **open-apple** then press **reset** .

Software recommendations

The Starter Kit contains most of the programs that you need to "Get started". In addition, we recommend that you acquire the following:

- Applesoft program editor such as "Global Program Line Editor (GPLE)".
- Assembler such as "Merlin/Big Mac".
- Bit-copy program such as "Copy II Plus", "Locksmith" or "Essential Data Duplicator".
- Word-processor (such as AppleWorks).
- "COPYA", "FID" and "MUFFIN" from the DOS 3.3 System Master disk.

Super IOB and Controllers

This powerful deprotection utility (in the COMPUTIST Starter Kit) and its various Controllers are used in many softkeys. (It is also on each Super IOB Collection disk.)

Reset into the Monitor

Softkeys occasionally require the user to stop the execution of a copy-protected program and directly enter the Apple's system monitor. Check the following list to see what hardware you will need to obtain this ability.

Apple II+, //e, compatibles: 1) Place an Integer BASIC ROM card in one of the Apple slots. 2) Use a non-maskable interrupt (NMI) card such as Replay or Wildcard.

Apple II+, compatibles: 1) Install an F8 ROM with a modified reset-vector on the computer's motherboard as detailed in the "Modified ROM's" article (COMPUTIST #6 or Book Of Softkeys III) or the "Dual ROM's" article (COMPUTIST #19).

Apple //e, //c: Install a modified CD ROM on the computer's motherboard that changes the open-apple ctrl reset vector to point to the monitor. *(This will void an Apple //c warranty since you must open the case to install it.)*

Apple //gs: If you have the 2.x ROM, there is a hidden classic desk accessory (CDA) that allows you to enter the monitor. In order to install the new CDA, you should enter the monitor (**CALL -151**) before running any protected programs and press **# return** . This will turn on two hidden CDAs, Memory Peeker and Visit Monitor. Thereafter press **open-apple ctrl esc** to go to the Desk Accessories menu. Select Visit Monitor and there you are. Use **ctrl Y** to exit.

Recommended literature

- Apple II Reference Manual (or IIe, IIc, etc.)
- DOS 3.3 or ProDOS manual
- Beneath Apple DOS & Beneath Apple ProDOS, by Don Worth and Pieter Lechner, from Quality Software

Typing Applesoft programs

BASIC programs are printed in a format that is designed to minimize errors for readers who key in these programs. If you type:

```
10HOME:REMCLEAR SCREEN
```

The LIST will look like:

```
10  HOME : REM CLEAR SCREEN
```

Applesoft inserts spaces into a program listing before and after every command word or mathematical operator. These spaces don't pose a problem except when they are inside of quotes or after a DATA command. There are two types of spaces: those that have to be keyed and those that don't. Spaces that must be typed appear in COMPUTIST as special characters (◊). All other spaces are there for easier reading.

NOTE: If you want your checksums to match, only type spaces within quotes or after DATA statements if they are shown as (◊) charactors. **SAVE** the program at periodic intervals using the name given in the article. All characters after a REM are not checked by the checksum program so typing them is optional.

Typing Hexdumps

Machine language programs are printed in COMPUTIST as hexdumps, sometimes also as source code.

Hexdumps are the shortest and easiest format to type in. You must first enter the monitor:

CALL -151

Key in the hexdump exactly as it appears in the magazine, ignoring the four-digit checksum ($ and four digits) at the end of each line. When finished, return to BASIC with:

3D0G

BSAVE the program with the filename, address and length parameters given in the article.

Typing Source Code

The source code is printed to help explain a program's operation. To enter it, you need an "Assembler". Most of the source code in older issues is in S-C Assembler format. If you use a different assembler, you will have to translate portions of the source code into something your assembler will understand.

Computing checksums

Checksums are 4-digit hexadecimal numbers which tell if you typed a program correctly and help you locate any errors. There are two types of checksums: one created by the CHECKBIN program (for machine language programs) and the other created by the CHECKSOFT program (for BASIC programs). Both are on the "Starter Kit".

If your checksums do not match the published checksums then the line where the first checksum differs is incorrect.

CHECKSOFT instructions: Install Checksoft (BRUN CHECKSOFT) then LOAD your program. Press **&** to get the checksums. Correct the program line where the checksums first differ.

CHECKBIN instructions: Enter the monitor (CALL -151), install Checkbin at some out of the way place (BRUN CHECKBIN, A$6000), and then LOAD your program. Get the checksums by typing the **S**tarting address, a period and the **E**nding address of the file followed by a **ctrl Y** .

SSSS.EEEE ctrl Y

Correct the lines where the checksums differ.

Writing to the RDEX editor

RDEX (are-decks) stands for: **R**eader's **D**ata **EX**change. We print what you write. When you send in articles, softkeys, APTs, etc., you are submitting them for *free* publication in this magazine. RDEX does *not* purchase submissions nor do we verify data submitted by readers. If you discover any errors, please let us know so that we may inform our other readers.

Remember that your letters or parts of them may be used in RDEX even if not addressed to the RDEX editor. Correspondence that gets published may be edited for clarity, grammar and space requirements.

Because of the great number of letters we receive and the ephemeral and unpredictable appearance of our volunteer staff, any response to your queries will appear only in RDEX, so it would be more appropriate for you to present technical questions to the readers and ask for their responses which will then be placed in the Apple-RDEX.

How to get a free library disk

Whenever possible, send everything on Apple format (5.25" - DOS/ProDOS or 3.5" - ProDOS) or IBM format (3.5") disks. Other formats are acceptable but there may be some delay as we look for someone to translate it for us. *(If you use a 5.25" disk, we will return it with the current library disk copied onto it.)* Use whatever text editor you like, but tell us which one. Put a label on the disk with your name (or pseudonym) and address (if you want to receive mail). Don't reformat any programs or include them in the text of your letter. Send Applesoft programs as normal Applesoft files and machine language programs as normal binary files. We have programs to convert them to the proper format for printing. If you are sending source code files, and you are not using the S-C Assembler, send them as normal text files.

When to include a printed letter

Don't include hardcopy (printout) unless:

a. You are writing about a bug or other printing error.
b. You are writing to ask for help.
c. You are answering another readers help request.
d. You are writing about your subscription or sending an order for back issues or software.

Bugs, requests for help and answers to requests for help are bumped to the head of the line and go in the very next issue. All other letters are printed in the order that we receive them.

Writing to get help

When writing to request help, be sure to include ALL relevent information. The more information you include, the easier it is to find a solution. There's an old saying that goes "A properly framed question includes 90% of the answer".

How to get mail

If you are interested in receiving mail from other readers, be sure that we have a current address. If you use a pen name and want to receive mail, we need to have your address. Our readers privacy is important, so we will not print your address unless you specifically say too.

How to write to RDEX authors

When writing to one of the RDEX authors. Write your letter and seal it in an envelope. Put your return address, the authors name (as it appears in RDEX) and *the correct postage* on the envelope. Put this envelope into another and send it to RDEX. We will put the correct address on your letter and mail it for you.

You have a LEGAL RIGHT to an unlocked backup copy of your commercial software.

Our editorial policy is that we do NOT condone software piracy, but we do believe that users are entitled to backup commercial disks they have purchased.

In addition to the security of a backup disk, the removal of copy-protection gives the user the option of modifying programs to meet his or her needs.

Furthermore, the copyright laws guarantee your right to such a DEPROTECTED backup copy:

..."It is not an infringement for the owner of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:

1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or

2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.

Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner."

United States Code title 17, §117

Charles R. Haight

Editorial

Back on schedule

Well, this is it! Our first issue, back on schedule. It's a little sparse but it's on time, and the next issue will be too.

Mail Dates

Some of you may have noticed that the code numbers on your label look a little different. You're right, we've made a change. On the top line of your label we're putting the date (in day/month format) that the list is printed. This is, usually, the day before the issue is mailed. When you receive your issue, check this date. The difference between that date on your label and the current date is the time it took to get to you.

Hardware Again?

It's the "Return of the Hardware Corner". I've finally gotten enough time to start learning how to use the electronic CAD program that we acquired. I can finally use all of the schematics and data sheets laying around here. The CAD package comes with a schematic simulation program as well as a program to help draw the circuit board layout.

Since this is one more program that I'm on the bottom of the learning curve for, I'm going to start with an easy circuit and work up from there. Our first project is a pseudo front panel called the "Display" card. It divides memory into 16 blocks ($0 thru $F) and shows when the Apple is executing or referencing memory in each block. It has a few other bells and whistles. See the article for more info on that. If anyone is interested in working with me on the hardware, give me a call or send me a postcard.

Computist BBS

There is a continuing high interest in the Computist BBS but there is a lot of misinformation and some people seem to have and odd idea of what it will be. I'd like clear that up but I don't know what it will turn out to be either. How about if you tell me what you think the BBS should be? Tell me what services it should offer and how they should be made available. I look forward to hearing your ideas.

Jeff Hurlburt

The PRODUCT MONITOR

RATINGS

☆☆☆☆☆	**SUPERB**
☆☆☆☆	**EXCELLENT**
☆☆☆	**VERY GOOD**
☆☆	**GOOD**
☆	**FAIR**
?	**POOR**
??	**BAD**
X	**DEFECTIVE**

Keef the Thief

by Naughty Dog

$49.95 **Electronic Arts**

☆☆☆ **PG-13**

Requirements:
512K Apple IIgs,
one 3.5" drive.
Second drive recommended.

When council elders tell the youthful Keef to seek his thieving fortune elsewhere (i.e. kick him out of town), your first response is sympathy. The jungle-strangle Tri City Area boasts little 'civilization', monster bands are thicker than flies, and, besides, YOU are Keef! Too bad. Everyone agrees that local crime will plummet, net GNP will benefit, AND that Keef could perform a valuable service. Thanks to insatiable lusts for wealth and power (to say nothing of sex and violence), the town's most talented juvenile delinquent just may, more or less by accident, polish off an EVIL Magician King before he consolidates his dark forces and enslaves the entire region. Well, who knows?! Geopolitics was never your strong suit; but, alone and unarmed, you've already decided to become the land's first Teenage God-King!

Barely five minutes into "Keef'", a check of the credits merely confirmed what I already 'knew': the creators of "Dream Zone" had struck again. Beautiful artwork and yet another entertaining rock music score are your 'up-front' tip-offs; but the clincher is style. The 'Dream Team' delights in producing oddly 'different' little worlds which quickly seem very familiar. Soon you are steeped in the mythos of Telloch (a legendary Emperor God-King) and roving the Tri City Area on mini-quests to recover the six pieces of his awesomely powerful Artifact. That Tel Mercon is the only real city in the "Tri City Area" and that the TCA is a horseshoe of land wrapped around "The Sea" surrounded by Nothing (i.e. the world ends!), naturally, make perfectly good sense.

Like "Dream Zone", the new release employs a user-friendly 'command button' interface to handle movement and other activities (e.g. Look, Talk, Cast, Fight, Run, etc.). In "Keef'", however, the reams of artwork depicting scenes in special places like Tel Mercon, the Dark Fortress, and Mem Santi (a tree-top temple complex) amount, almost, to 'icing on the cake'. The game is chiefly a map/maze adventure offering simple 'trees-and-vines' forward views in the jungle and high-perspective forward views (alla "Bard's Tale"/gs) when you are exploring one of the several mazes. Similarly, Keef is a 'for real' character constantly in search of better weapons and armor, hungry for gold, and with attributes and skills to develop.

Though forty or so hours spent in the pursuit of Teenage God-Kinghood can be very enjoyable, "Keef'" does seem to have been plucked from EA's game tree prior to full ripeness. A clever new scheme for tactical combat— you get a "helmet view" of nearby monsters with a 'radar screen'-type insert to locate all participants and obstacles in the area— works well; as does the full-featured magic system built around combining ingredients in various 'spell circles'. The same is NOT true for the numerous detrapping challenges you encounter.

In residences and 'treasure rooms', Keef, must occasionally remove traps in order to obtain essential artifacts, keys, weapons, gold, and other goodies. Yet, there are no guides to choice of detrap method; and failure is often fatal. Speedy SAVE and reLOAD help; but, when the site is deep inside a maze (where SAVE is not allowed), you can expect some frustrating expeditions until you either 'get it right'. Possibly, the game's cluebook (which, by now, may be available) is a good investment. I finally resorted to DSR's "Diversi-Hack" to get into the program (during play) and 'pull the plug' on many of the traps. (Much to Naughty Dog's credit, EVERYTHING in this program is 'open' and easy to find. Even the on-diskette PIC and music files can be 'lifted' for viewing or playback via "816 Paint" and "Music Studio", respectively.)

Supplied with illustrated maunal, "Keef the Thief"'s 'adult humor' (e.g. a "Nudus Bunsus" girl-undressing spell) and the singularly selfish, greedy role a player must adopt justify the PG-13 rating addendum. (And, no, the NB spell doesn't work on all the pictures.)

500XJ

$39.95 **Epyx**

X

(Game joystick for Apple II series and IBM)
Size: 3.1"W x 5.0"D x 1.75"H x 2" Handle
Centering Tension: approx. 100 gm.
Handedness: right
Centering Error: 9.8%H, 8%V
Centering Defeat: lever on top
Movement Range (H): 60 degrees
Useful Range (H): 56 degrees
Centering Adjust: one pushbutton
Connector: Apple DIN & 16-pin plus IBM adapter
Case Access: two screws, slit cover label

Aiming for a blatantly 'game stick' look, Epyx goes for red finger-molded buttons, a red knob-tipped handle, and tops everything with a red racing-stripe stick-on. The 500XJ's comma-shaped case fits your left hand like a Mark IX phaser, placing its two long snap-action buttons (e.g. for PB0 and PB1) comfortably beneath the first and second fingers. A cable adapter and diode network take care of IBM compatibility without an on-case switch.

While left-handed buttoning offers speed equivalent to in-handle switching and the benefits of unfettered righthand handle manipulation, there is one noteworthy limitation. Like it or not, most game players must make do with just two hands. When, in the midst of combat, racing, etc., a game requires keyboard or mouse inputs (as, increasingly, many do), something has to give.

Evidently, the same thought occurred to 500XJ's designers; and, believe it or not, they came up with a reasonably viable solution. Located just above the handle, within easy reach of your left thumb, is a centering defeat lever. Should you be executing a steep evasion turn and need to execute an Arm Decoys keyboard command, flicking the release lever will leave handle position unchanged while you press the key. Another flick restores centering. Anyone who has encountered the multiple levers and special handle positioning required to toggle centering defeat on most joysticks will appreciate that 500XJ's approach is something of an innovation.

Yet another interesting experiment is the Epyx stick's single-button scheme to adjust X-Y center values. You just move the handle until on-screen activity indicates adequate centering and lock-in new values by pressing the "Center Adj" button (placed just below the handle). Tests show adjustment range is entirely adequate for normal applications; but, for accelerator board play of some action games (e.g. "Elite") the 500XJ, like many sticks, cannot quite center at the low X-Y values required.

Innovation, naturally, entails risk; and, despite Epyx's best efforts, its foreign 500XJ supplier has yet to solve quality control difficulties. In the first sample, a weak spring on the centering defeat mechanism allowed the stick to lose return tension at extreme handle positions (i.e. it got stuck). In the second sample, the centering problem was fixed; but, now, one of the pots was slipping on its control shaft! Fixing the defects was not especially difficult. The listed performance specs are from sample #1.

Konix (the manufacturer) employs the time-tested "slotted bands" mechanism, still a very popular design for analog sticks. When the 500XJ works properly, you can expect smooth response with the right levels of tension and axis-crossing 'bump' for a firm, low-fatigue, high-feedback 'action stick feel'. An unusually generous "useful" handle swing range boosts positioning accuracy (e.g. for 'targeting' bogies, etc.); but this advantage is partly offset by a slightly high tendency to 'pull' X-Y center outputs in the direction of most recent stick travel (i.e. Centering Error).

For games which require infrequent keyboard or mouse inputs, it IS nice to be able to lean back, twiddle the 'XJ's handle, and run things 'by remote control'. Eventually, the stick may actually come assembled and ready for use. I'll let you know when I find one.

FAST FRAMES, UPDATES, ETC.

Woodpusher Worm

"What?!" Thus responded the Software Toolworks "Chessmaster 2100" boss when informed that the program fails to remember who plays what color when it loads saved games. Actually, a Toolworks programmer was aware that the new "Chessmaster" saves only player names and moves; but knowledge of this deficit had not yet trickled up to project management. (The programmer suggests that users SAVE games under names which indicate sides and then do a Change Color, if necessary, after loading.) According to the project manager, no fix is currently planned.

Romancing the Mug

It is hardly a secret that many people are less than pleased with Apple's II series policy, which may explain the enthusiasm which has greeted rumors that II products may soon become the responsibility of Claris. Anyway, when (as reported earlier this year) Baywoof announced that he was 'mad as hell and not going to take it any more', his IIgs system was not the only item on the dump list. "Everything," he insisted, "EVERYTHING with 'Apple' on it (key ring, ballpoint pen, books, coasters, etc., etc.) goes!"

"What," I asked (casting a covetous eye toward the kitchen), "about your Apple Mug?"

"When I sell the IIgs, you can have the #@* mug!" he declared.

Well, he did it. Baywoof is now the contented owner of a '386 clone system purchased with the proceeds of his sale and claims to be having loads of fun. I, of course, have The Mug!

Gravis Maintenance Ploy

Periodically, any joystick which employs potentiometers to generate X and Y outputs will require a few squirts of Control Cleaner to restore smooth pot response. In last issue's review of the Advanced Gravis stick I noted that case access is via four screws and that the feet must be removed. Unfortunately (i.e. the 'bad news'), AG's foam rubber feet can easily be ruined in the process; AND the Gravis is not especially easy to 'slap together' when you're finished. The 'good news' is that you need not open the case to apply cleaner! Just insert the Control Cleaner's flexible tube through the adjustment hole on the side opposite the cord. It should go in about 1.25" (at, roughly, a 45 degree angle in the horizontal plane) before it bumps into a face-down board-mounted pot. Coming in at a slight angle from above helps keep the tube next to the board for best cleaner delivery. You will need to do two insertions, one from the left and one from the right, to reach both pots.

Monitor Blues

No doubt about it; when your IIgs monitor bombs, the effect is not unlike getting whopped by an earthquake. Suddenly, the window into your system's functioning, your number one trouble shooting component, is, itself, in trouble! What to do? Just possibly, you are experiencing (or, eventually, will experience) one of the problems described below. If so, the fixes could minimize down time and save you many quatloons in repair bills, even if someone else does the repairing.

First, "The Blues": One day I turned on the computer and, gasp!, was greeted by a pure BLUE screen! Intensity/brightness controls had no effect, which, typically, indicates that something is amiss near the final BLUE output to the CRT. The problem was an 'open' choke at the input (base) of Q2B, one of three heatsink-mounted driver transistors located on the chroma board (i.e. the board behind the CRT). With no control signal, the BLUE output runs at full ON. (For an all-RED screen, check the corresponding choke near Q2R; for all-GREEN, look at the one near Q2G.)

Replacing the choke, a small epoxy encapsulated unit, did the trick. I am not sure about the choke's value; so the best idea is to take it to your favorite parts shop and 'get one like it'. OR, to make your own, wrap 25 or so turns of #30 wire on a pencil lead-size ferrite core.

The second problem was more subtle. During long "Might and Magic II" sessions, my dad noticed that the screen would occasionally 'glitch' (i.e. squeeze together briefly). This seldom actually produced a horizontal line. Rather, it was as though someone were rocking the vertical height control. Any guesses?

Yes, the height control pot does come under suspicion; but the fault proved a bit harder to nail down and, for all IIgs monitor owners, more ominous. With the monitor out of its case and ON, a bit of CAREFUL poking around (using a plastic rod) zeroed-in on the High Voltage power supply module. Close examination of the main board (bottom) revealed a nearly invisible circular crack in the solder surrounding one of the module connections— just the kind of flaw which would produce intermittent, temperature/shock sensitive glitching. Repairing the break with good quality solder ended the problem.

Unfortunately, there are several such HV module connections to the main board; and all of them are dependent upon overly wide, thin-film solder bridges. (A correct design would leave little or no gap between module pins and circuit board eyelets. Instead, the pins sit like islands in tiny lakes of solder.) Normal temperature changes and vibration can easily produce cracks resulting, eventually, in all sorts of malfunctions! If your color monitor starts to behave strangely, resoldering ALL of the HV module contacts may be your best bet.

NOTE: When working on your color monitor, allow an hour or more after the unit is disconnected and unplugged before removing the case. It's a good idea to assume that high voltages may remain. Use insulated tools, avoid touching two circuit points at once, etc.. The most hazardous aspect of monitor repair (both to you and the unit) is probably the danger of breaking the CRT. Avoid putting stress on the CRT neck, don't use large, clumsy tools, and wear goggles.

Keef 'Visits' YOCSS

Boy was that close! Ye Olde Computists Scroll Shoppe must have more traps than the Tel Mercon treasury. Now, to see if it was worth the trouble.

The first scroll says "After what she says, this may sound dippy: to please the Princess, think like a hippy!

The second scroll reads "North, South, or West, Mem Santi Maze drives you mad, at best. To find Mem's First, young man, go East. That way there's a chance at least." (Gosh, what really excellent poetry!)

Your last prize isn't a scroll at all, just a rolled-up yellow legal pad sheet with some crude notes: "You always see an orange flash when you walk into a wall, right? Uh uh, not if the wall conceals a secret door!" and "Talk to the Smith in TM to find out about guards and bridges." and "Check out Al Handratta's hut near the sea in the southwest."

Next

Next issue I'll try to help you spend all that 'Christmas money'. There will also be more on ideas for the (inevitable) IIgs upgrade. (To contact Bill Mensch's 'IIgs Working Group', write him at the address shown below.)

VENDORS

Diversified Software Research: 4880 Bunker Hill, Farmington, MI 48018-2728 (800-835-2246, ext. 127)

Electronic Arts: 1820 Gateway Drive, San Mateo, CA 94404 (415-571-7171)

Epyx: 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063 (415-366-0606)

Software Toolworks: 19808 nordhoff Place, Chatsworth, CA 91311 (818-885-9000)

IIgs Working Group: Bill Mensch, Western Design Center, 2166 East Brown Road, Mesa, Arizona 85203

Nathaniel Rutman

Custom Character Sets for the Apple II+

Before you begin: *The Apple II, in it's many revisions, has used several different Character ROMs. See the shaded box for more information. .....RDEXed*

Requirements:
Apple II, II+
2716 EPROM
EPROM burner

For those of you with archaic machines, here is your chance to finally get lower case, or even design your own customized text character set. (IIe users, this may even apply to you, depending on how your computers are built—I don't know if you use the same 2K character ROM.) Your new set will replace the boring, standard text that you normally see on the text screen of your computer at all times; when you first turn on your computer, the words "Apple II" will appear at the top of the screen in your new gorgeous typeface. I'll warn you now, this exercise is not for the meek–but then again, how many of you meek own EPROM burners anyhow?

In concept, the operation is simple. First, create a new character set. I'll explain how to do this in a moment. Next, burn this into a 2716 EPROM. And finally, swap out the ROM chip labelled "8228GAP", and replace it with the new EPROM. Easy.

But the fun starts at the gory details. The character set for the old Apple II series is stored on a 2K ROM (yeah, the one labelled "8228GAP".) Each character in the set is made up of eight consecutive bytes. Each byte is made up of eight bits, by definition. Taken together, this group of eight by eight bits make up a "bitmap" of one character. For example, the standard Apple letter "A" would be represented by the following eight bytes: (in hex) 00 08 14 22 22 3E 22 22.

To see why, draw the binary representation of the bytes, one on top of the next:

hex	binary
00	00000000
08	00001000
14	00010100
22	00100010
22	00100010
3E	00111110
22	00100010
22	00100010

See that "A" in there? Well, you can design your own letter "A" within that 8x8 grid of bits, and then convert it back to hexadecimal. The problem is that you probably want to design more than just a unique "A". You probably want a whole unique alphabet, and lower case too, so that's 52 of these suckers to design. You can even change all those other fun symbols (38 of them, I think, like !@#$%^&*()_+=-][,.<>...) In fact, you can conceivably have different characters for inverse and flashing also (I haven't actually tried this myself - someone tell me if it works.) Make sure that you leave a border along at least two of the edges of the grid, so that your characters don't run together on the screen (it's hard to read.) I suggest leaving the bottom open so that you can make true lower case descenders (for "g","j", etc.) Also, make sure that you leave the left hand column all 0's, because I've been lying to you - only the rightmost seven bits of the characters are displayed.

The next job is to arrange all those sets of eight binary numbers so that a "G" looks like a "G", and not a "S", for example. If you are a long-time COMPUTIST subscriber, pull out your CORE Utility Chart - it makes things very easy. You can see that the first 64 characters are the inverse set, going like this:

@ABC...YZ[\]^_{space}!"#$%&'()*+,-./0123456789:;<=>?

Note: {space} means just a normal space (usually shown as a "◊" when required in BASIC listings), and {delete} means that little speckled box shape on later Apples.

I started my list of hexadecimal numbers at $2000, because that is a standard location to send stuff to the EPROM burner. So, if you wanted the regular "A", you would do this: 2000:00 08 14 22 22 3E 22 22, and then you would enter the bytes for a "B": 2008:00 whatever... After the inverse set comes the flashing set, same order. Really, it's easiest to use the same set for inverse, flashing, and normal, but it's up to you. After flashing comes control characters, but these are only @A...Z[\]^_. Next comes normal characters, but these go:

{space}!"#$%&'()*+,-./0123456789:;<=>?@ABC...YZ[\]^_

And finally come the lower case characters:

'abc...yz<|>~{delete}

Now the easy way. If you don't want to involve yourself with that big hassle of designing your own character set, maybe you can find one that already exists. I personally used a font from a program called Higher Text, which uses small fonts stored as eight hex bytes also (except that all their characters are mirrored backward, beware. I wrote a little program called REVERSER that fixes this problem, but if you've gotten this far, you can probably write one yourself.)

If you want the same character sets in normal, inverse, and flashing (you probably do), then you can do this: Make your set, starting at $2000, according to the order for inverse set, as above. The last byte of the 64th character ("?") should end up at $21FF. Assuming that you are already in the monitor, type:

2200<2000.21FFM
2400<2000.22FFM

Then enter the lower case set, starting at $2700, and ending at $27FF.

Unfortunately, another complication sets in. When I was looking at my old character set, those leftmost bits I told you to leave as 0's were set high for some of the characters. I am not sure if this matters, but in case it does, I'll tell you which ones: the flashing characters, all of them, and the second half of the normal characters, from @ABC on, and the lower case characters. I have included a program, HIGHSETTER, that will set the correct leftmost (high) bits after you have typed in all your hex numbers starting at $2000. BSAVE your set, A$2000, L$800 before running this program, just in case something happens. BSAVE your set.fixed, A$2000,L$800 after running it.

Any time as you are typing in your set, or after you run HIGHSETTER, you can run the program DISPLAY, which will print out the bitmaps of all the characters, to make sure that everything is cool.

Okay, so now you have your complete character set, with the right high bits set, starting at $2000. Following the instructions that came with your EPROM burner, burn $0800 bytes of memory (2K), starting at $2000, into your 2716 EPROM. Now switch off your computer, undo all those little screws on the bottom, and unfold the keyboard+case from the bottom+motherboard. Be careful not to crimp the little ribbon cable running from the motherboard to the keyboard. Now, right around that little ribbon cable, is the "8228" chip that I mentioned before. It will be sitting in a socket called, of all things, "CHARACTER ROM" (or something like that. It'll be obvious.) Now, swap the EPROM with the "8228", making sure that you insert it with the same orientation (the notch must face the original direction.)

Put your computer back together, turn it on, and enjoy a personalized Apple.

I've sent some sample character sets along with this text. They're too long to print as hex dumps but the RDEXed can put them on this issues library disk for those of you who are interested. The files with the word CHARSET in their name are complete, fixed sets, ready to be burned into an EPROM.

DISPLAY

```
2 REM "DISPLAYS BITMAPS OF ALL CHARACTERS,
  FROM $2000 TO $2800
5 Q = 0
10 FOR X = 8192 TO 10240
20 Y = PEEK (X)
25 D = 128
30 R = INT (Y / D)
35 IF R THEN INVERSE
40 PRINT R;
45 NORMAL
50 Y = Y - R * D
60 D = D / 2
70 IF D > = 1 THEN 30
80 PRINT
85 Q = Q + 1
87 IF Q = 8 THEN Q = 0: PRINT
90 NEXT
```

Checksums

2-$9AC9	35-$4CA4	80-$3DE6
5-$657A	40-$9A7E	85-$5A93
10-$A7F8	45-$7E0C	87-$DCE0
20-$137D	50-$57DD	90-$6AB4
25-$70C9	60-$5031	
30-$714A	70-$F143	

HIGHSETTER

```
5 REM "SETS THE CORRECT HIGH BITS FOR THE FULL
  SET, STARTING AT $2000
10 H = 8192
20 X = 0
21 PRINT
25 PRINT "CHAR◊#" ;X; "◊◊◊◊LOC." ;H + 8 * X
30 FOR Y = 0 TO 7
40 D% = PEEK (H + 8 * X + Y)
50 GOSUB 100
55 POKE (H + 8 * X + Y),D2
60 NEXT Y
80 X = X + 1: IF X = 256 THEN END
90 GOTO 21
100 IF D% > 127 THEN D% = D% - 128
110 IF ((X > 63) AND (X < 128)) OR (X > 190)
  THEN D% = D% + 128
120 D2 = D%
140 RETURN
```

Checksums

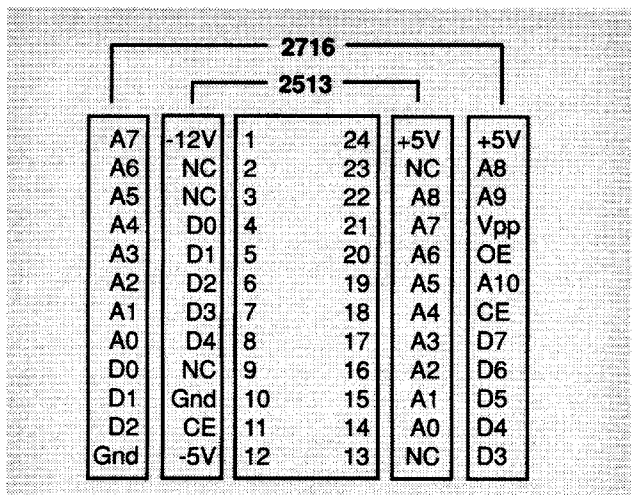
5-$87C4	40-$6EFE	100-$45D0
10-$A33E	50-$CE7A	110-$9742
20-$4C39	55-$9681	120-$4443
21-$52F3	60-$3C6B	140-$EED4
25-$CA3F	80-$B065	
30-$A7AC	90-$DA38	

REVERSER

```
5 REM "REVERSES FULL CHARACTER SET, STARTING
  AT $2000
6 REM "THAT IS, MIRROR REVERSAL OF EACH
  CHARACTER
10 H = 8192
20 X = 0
21 PRINT
25 PRINT "CHAR◊#" ;X; "◊◊◊◊LOC." ;H + 8 * X
30 FOR Y = 0 TO 7
40 D% = PEEK (H + 8 * X + Y)
50 GOSUB 100
55 POKE (H + 8 * X + Y),D2
60 NEXT Y
80 X = X + 1: IF X = 256 THEN END
90 GOTO 21
100 D2 = 0:D1 = D%
110 FOR A = 7 TO 0 STEP - 1
115 E% = 2 ^ A
120 Z% = INT (D% / E%)
130 D% = D% - Z% * E%
140 D2 = D2 + 2 ^ (6 - A) * Z%
145 PRINT Z%;
150 NEXT A
155 PRINT
160 PRINT D1; "—>◊" ;D2
170 RETURN
```

Checksums

5-$87C4	50-$D38D	120-$0EAA
6-$46C5	55-$6172	130-$7CC3
10-$B2EF	60-$FFEC	140-$F93E
20-$CBF4	80-$73E2	145-$0D38
21-$93F2	90-$D7FF	150-$FA4A
25-$09B8	100-$CF45	155-$6520
30-$141B	110-$8E1C	160-$C1BF
40-$D923	115-$69BF	170-$52E2



Character ROMs and the Apple II

The Apple II and the Apple II+, up until the revision 7 board, used a dedicated 2513 (64 character-Upper case only) character ROM. This ROM is very different from the 2716 EPROM that Mr. Rutman is talking about.

Starting with the revision 7 board, the Apple II+ used a 2516 PROM. The pinout of this PROM is the same as the 2716 EPROM except that the polarity of the chip enable (CE) and the output enable (OE) is programmable. According to the schematic in "The Apple II Circuit Description" by Winston D. Gayler, the 2516 pinout is programmed to be the same as the 2716. I believe Mr. Rutman must have a revision 7 or later board in his Apple.

The story gets more complicated. Starting with the Apple IIe, the character ROM used is a 2732 EPROM. This EPROM has the same pinout as the 2716 except that pin 21 (Vpp) is used as an additional address input (A11). This doubles the size of the EPROM from 2K to 4K. According to the schematic in "Understanding the Apple IIe" by Jim Sather, the upper half of the EPROM is used to translate the Hires data before it is sent to the screen. The lower half is used as a character ROM.

What does all of this mean? If you have a 2513 in your Apple, you're out of luck! Not only is the ROM incompatible with the 2716 EPROM, but only 6 of the 8 character data bits are actually connected to the 2513 ROM. This means that you can't just make a header to change the pin order. Since only 6 bits go to the ROM, only 64 characters can be addressed. It's possible to pick-up the other two bits at the data latches but now we're really getting complicated.

If you own a Apple IIe with the 2732 EPROM, you can change the bottom half to your own character set in a similar manner as Mr. Rutman. .....RDEXed

Robert Leo Manchester

I recently became a subscriber and love the Startup Utilities, after I received the second disk, which now loads.

? I purchased a copy of COMPUTIST #23, which contains a softkey for the Newsroom program disk.I would like to report that the Softkey does not work on version 1.6 of that program. Have any other corrections or additions occured since COMPUTIST #23 concerning the Newsroom program? I am using an original disk to make the copy, but it will not load and the video goes ka-plooie during the loading.

There is a second softkey in COMPUTIST #27, pg 4, that used COPYA and some edits to the epilog bytes on the copy. Have you tried that one yet! .....RDEXed

John Dilsaver

? I recently purchased a used Strobe 100 Plotter, with not too much in the way of information coming with it. I have several programs that work with it, but not much in the way of documentation. I would like to correspond with others who are writing/have written programs for it. A letter to the company came back "forwarding order expired". Does anyone know if they are still in business at another location?

Fred Sheim

? Can you provide some help with The Observatory (Lightspeed Software) by Mindscape? It's really tough. Please put it on the Most Wanted List. Thank you.

R. H. Mitchell

I don't much care for the "Tabloid" format! It makes it extremely difficult to archive (and I have them ALL!), plus the "Pony

Express" (Read "Postal Service") really does a number on them. How about expanding to the Mac Series?

About the only softkey item that I know about the Mac (so far) is that if a program asks for your name (to personalize the copy) before it will startup, type an option-space or two. After that it will startup and display nothing as the owners name. I tried using spaces but they trapped that out. Other than that, if you'll talk someone into writing something about the Mac, we'll print it here. ... RDEXed

Jeffrey M. Katz

I have been a subscriber to COMPUTIST (Hardcore, etc.) almost from the beginning. But, you are about to lose me. I will not subscribe if you continue to publish in the newspaper format. The reason is, it can't be stored efficiently! A publication such as yours should be kept for a long time, perhaps years. I never know when I will run across an old program that needs to be backed up. I can sympathize with your problems, but the newspaper style is out for me. My opinion would be for you to publish double size issues every two months. So, I have to wait two months to back something up. Big deal! I could also accept smaller print size.

In summary, my sub runs out with issue #69. If you haven't gone back to the magazine format by then, bye-bye.

Blane C. Miskell

I want to let you know first thing, I think the new printing format stinks. And that is being mild. I understand your concern and reasoning but 8 "newspapers" I can buy a lot cheaper than your subscription rates.

The magazine is priced high enough already, this is true. But the quality and the quantity of the contents make it worth the price.

The new format won't stand on the computer table shelves neatly. You have to read it at the table or else the pages don't behave. If you drop it, it's an instant mess with paper everywhere.

My own personal opinion is to leave the format basically the same as it was before.

Norman F. Hogarth

If the current publication of COMPUTIST is all you're offering in the future then I'm discontinuing my subscription when it expires. I want a magazine, not a tabloid, and I would like to see more articles not just letters.

If management is having money problems, look to reducing expenses by doing phases of work, in-house, instead of sub-contracting it out. Naturally every sub-contractor has to make a profit in order to stay in business and you are paying for that profit margin many times over instead of just once!

Look to purchasing older equipment yourselves and hiring retired persons with publishing knowledge to run the operation. There is a tremendous knowledge base out there going to waste; motivate and utilize!

P.S. I'll even donate towards equipment.

I'm sorry that you feel that way, but the tabloid format is probably going to be it for now. We receive more material from our readers than we can print in the old 8.5" x 11" format. We had to go to the tabloid. As to reducing expenses, we've done everything humanly possible to reduce expenses. Everything is done in-house, by volunteers, except for the final typesetting (on film from WYSIWYG), the printing (by Pierce County Herald) and the bulk mailing (by Mail Media - $80/issue). Even our typesetting is done on a Mac (on loan from a subscriber). We've started the legal proceedings to return the (expensive) Compugraphic Typesetter.

As for letters or articles, all of our material is submitted by our readers as letters. There are no staff writers or paid professional writers, although we could use a few more editors. If there are any people out there with publishing experience going to waste, we would be glad to employ them, provided their salary requirements are modest (free). We can always use some more help.

You just have to realize that COMPUTIST is an all volunteer newsletter. The quality goes up and down according to how much time is spent by the writers before they send their letters and the number of volunteers that show up in any given month and their relative skill/knowledge level. For all that, I think we (all 3800 of us) are doing a pretty good job and COMPUTIST can only get better as more people participate. ..... RDEXed

Lord Hermes

Thank you very much for sending the missing issue so promptly. It contained the softkey for Deathlord which I had been looking for. If you have a way of contacting Blain Johnson, its author, please send him the following request:

Dear Blain:

I was extremely interested in your deprotection of Deathlord. It worked as advertised. We are now looking for help with Legacy of the Ancients by the same Electronic Arts. I have examined the disk, and the protection scheme is almost identical (4&4 Trk $00, Addr Field, etc.) I have even captured the RWTS and found only about 15 different bytes from Deathlord. It did require interrupting the boot sequence instead of waiting until the disk drive stopped. I have been unable to make the necessary changes to make a successful copy. Please give it a try, and publish it in COMPUTIST if you are able to.

Bill Jetzer

A Revelation

Today I made an amazing discovery. I asked myself, "Why is COMPUTIST my favorite magazine?" The answer was surprising, yet obvious. It's not because of the wealth of useful information in each issue. It's not because they print all my articles. It's not because of the feeling I get when my softkeys help others. No, the true reason COMPUTIST is at the top of my list is because there are absolutely no business reply cards!

You might think COMPUTIST is a bit skimpy, being typically under 50 pages. Well, take an issue of Nibble, A+, or Incider and remove all the business reply cards. You'll find that there are about 15 pages left.

Today in school, they were passing out this magazine called "Guide to the Real World" or something. It was about 46 pages long and contained 12 business reply cards. A bit excessive? I thought so. I wondered, "Do people actually use these?"

To find out, I ripped out all the cards from 20 of the magazines (it took about 45 minutes, working straight through). I then put them all on a pile next to a sign saying "Free! Take one." At the end of the day the pile was still 14 inches high, indicating that no one had taken one.

I then came up with a scheme to get more subscribers for COMPUTIST. If everyone who has this issue shows it to a friend, that friend will subscribe for the simple pleasure of having a magazine he can page through without having small pieces of cardboard fly out and hit him in the face.

Eoadis Adapter Bug

I noticed that a bug slipped into my EOADIS Adapter article (COMPUTIST #64, pg16). At the end of step 8, somebody inserted a save command. After typing in the new commands, CAPTURE must be used, as stated, to save the Applesoft lines as a text file.

Pronto Update

I recently bought Pronto-DOS and I found a bug. Line 31157 of the PRONTO UPDATE program is missing a poke . As it is , pressing ESC to stop a runaway EXEC file not only stops reading, but crashes you into the monitor. Here is the fix:

```
LOAD PRONTO UPDATE
31157 POKE L1 + 23,76: POKE L1 + 24,140: POKE L1 + 25,166: POKE
    L1 + 26,141: POKE L1 + 27,16: POKE L1 + 28,192: POKE L1 +
    29,169: POKE L1 + 30,0: POKE L1 + 31,96: CALL DING
SAVE PRONTO UPDATE
```

ProDOS and Clones

To Gitana: I have a IIc, so I don't know if this patch will work or not. I got it from the ProDOS file on Copy II Plus v.8.2:

```
BLOAD PRODOS,A$2000,TSYS
CALL-151
282B:EA EA (was D0 03)
BSAVE PRODOS,A$2000,TSYS
```

Paul D. Dillon

You have the best Apple II magazine I have ever seen. I enjoy reading all of the softkeys, but prefer the in-depth articles. COMPUTIST #57 would be an excellent issue for any beginner to purchase. The articles by Bill Wilson, Joe Walters, Phil Goetz, Jolly Roger of the Curse, Jim Hart, & others were super! Other favorite authors of mine are Bud Myers, Edward Teach, Gerald E. Meyers (COMPUTIST #59), Stephen Lau, Clay Harrell, Bill Jetzer, and all the others who explain their articles so well. Please keep up the good work.

Bug in Ultima V softkey

There is a typo error in COMPUTIST #62, p17, in Peter Pebler's Ultima V softkey. After CALL-151 in Step 1, the address in the first part of the line should be B98B instead of 898B. I made this correction on my copy of Ultima V and it worked OK.

Softkey for...

Ultima I (new release versions),

Origin Systems

I also have a short modification of Jim Hart's softkey in COMPUTIST #52 for the re-released version of Ultima I. My copy had an altered address header and epilogue so I just made an addition to step #1. Step 2 & 3 are from Mr.Hart's softkey.

1. Boot DOS 3.3 System Master.

```
Call 151                    Enter the monitor
B954:29 00                  Ignore first byte of address header
B988:18 60                  Ignore both bytes of address epilogue
B942:18                     Ignore DOS read error
3D0G
Run COPYA
```

2. Boot your ProDOS file-copying program. (I used Copy II Plus vs 8.4.)

3. Copy the ProDOS file from your file-copying program disk onto the copied Ultima I disk.

John T. Chiao

Please put Mavis Beacon Teaches Typing for the IIgs back on your Most Wanted List. The softkeys published in prior issues of COMPUTIST did not work for my copy. The same story for Crossword Magic v4.0 (Please put back on the Most Wanted List.)

One thing to watch for, when a softkey procedure using COPYA and POKE 47426,24 is used, is that the COPYA copy is good. Since the POKE 47426,24 causes DOS to ignore checksums as well as epilogs, it is possible to get a sector of bad data. Sometimes the softkey will work, if you repeat the COPYA step. ..... RDEXed

Michael Korvac

Playing Tips for...

Neuromancer

Interplay

Neuromancer is an intriguing game based on the trilogy of books by William Gibson. The plot revolves around Chiba City, Japan, in the year 2058 when hacking can be lethal. The following are link codes for various databases and the passwords required for getting into higher levels of the database:

Cheapo (cheap hotel):	1-Guest	2-Cockroach
Regfellow (regular fellows):	1-Visitor	
Consumerev (consumer review):	1-Review	
Asanocomp (Asano Computing):	1-customer	2-vendors
Worldchess (WCC):	1-Novice	2-Member
Chaos (panther moderns):	1-Mainline	
Freematrix (CFM):	1-CFM	
IRS (Internal Revenue):	1-tax info	2-Audit
Fuji (Fuji Electric):	1-romcards	2-uchikatsu
Hosakacorp (Hosaka):	1-biosoft	2-fungeki (?)
Musaboriind (Musabori):	1-Subaru	
Keisatsu (police):	1-(?)	
Voyager (unknown):	1-(?)	
Yakuza (unknown):	1-(?)	
Hitachibio (Hitachi Biotech):	1-genesplice	2-biotech

There are probably many more than this. Please send the others you find in for the benefit of all those cowboys out there. Here are some other helpful hints:

When in the CHEAPO database: Use the Edit Bill option to clear up your problems. It's easier to do this at the Gentleman Loser. As opposed to selling your lugs at Hitachi just to use the jack.

At the Hotel: Order Room Service (in CHEAPO). Crazy Edo will give you Comlink 2.0 for the caviar.

Larry Moe has the CopTalk skill chip. After getting it ($100). you can talk to the cop in the Donut Shop for info.

Be careful what you ask for at the massage parlor: You may get arrested. Every time you DO get arrested you are fined $500 from your bank account. Eventually you may get fined $20.00: After that comes the death penalty.

Shiva at the Gentleman Loser has the Cryptology skill chip and the guest pass for the Matrix Restaurant. Both are free. For $1000 she'll sell a Hardware Repair chip.

Julius Deane knows about Japanese companies, ICE-breaking and Debug chips. and the Holy Joystick (give it to the Pong Monk for free chips).

Asano will sell for less if you really hate Edo.

At the Matrix Restaurant: Emperor Norton has chips for sale and can also answer some questions. You'll need the Musicianship skill when you go to the Zion Cluster (play Dub Music there for a free trip to Freeside).

The REGFELLOW database has a chess program that can be used to win some cash on WORLDCHESS. REGFELLOW also has Scout 1.0. a program that tells you how many levels a base has, including secret ones.

CHAOS has Comlink 3.0 and, if you have the right deck, two other programs. That's about it.

? If anyone finds out how to use the Bargaining chip, how to get on the payroll of ANY company, or where Comlink 4.0 is, please send it in!

I really enjoy your magazine. It has helped me through a number of tight spots (not to mention helping me make Supermonks in Bard's Tale!). I hope these hints generate a lot of response. Watch for more later!

Gunther W.Roth

? Is there somebody out there who owns an old edition of "Pacman" for Apple II with the manual? Price to be discussed.

Todd Silverstein

I enjoy your magazine thoroughly, and was wondering if you could help me with a few problems. Also, I would like to say that I like the new tabloid format of COMPUTIST.

? 1. Can someone out there tell me how to win at Alternate Reality? I have been playing the game off and on for about a year now and still have no idea of my ultimate goal.

? 2. I just purchased Archon, and couldn't get the Archon editor from COMPUTIST #28 to work. Is this due to a programming change or an error on my part?

Software companies often change their protection schemes when we print a softkey. Usually, this does not cause any problem, since someone will just send in another softkey. How about it readers, does anyone have any ideas about this one? ..... RDEXed

George Cawthorne

Softkey for...

Geopaint

Berkley Software

Bitkey for...

Geowrite
Geospell

Berkley Software

I just recently purchased the GEOS package program. The first thing I wanted to do was to make a backup copy. I found the softkey in COMPUTIST #60. It worked fine for/geos. boot and/geos. backup. No softkey was shown for the other disks programs that came with the package. Assuming no copy protection, I made a copy of the disks and found that they would not 'install'. Nothing was mentioned in the article about this problem because I found out later that 'installed' programs can be copied once they are 'installed', (that is, having your name stamped on the disk so that it only runs with the main boot program that has your name on it). I wanted to see if I could make a copy before it was 'installed'.

The article in COMPUTIST #63, "Deactivating Signature Checks", gave me an idea to try.(I would like to see more articles like that.) I did a disk search for $C08C on the Geopaint disk and found some on track $0A, sector $0F. I then dumped the sector to my printer. I circled all the $C08C's (8C C0) and then looked for all JSR'S and JMP'S. I found a JMP that I suspected and NOPed (EA) it out. The program 'installed'. No problem!

I then did the same search on the other disk but, no good. It must use a similar type of protection that the boot program uses. I noticed on my 'Trak Star' that when I press return to 'install' the

program, the head always jumped to track zero, stopped, and I got a "cannot install---" message on the screen. I figured that the bit pattern that it is looking for must be on track zero. I tried Copy II Plus and EDD 4+ auto nibble count on track zero but they didn't work. I found out however that using EDD 4+ "manual nibble count with bit copy tracks" worked just fine on track zero! I guess this will have to do for now until I or somebody else can break the code. This procedure worked for Geowrite and Geospell. Geodictionary had no copy protection.

For Geopaint:

1. Copy disk using COPYA.

2. Sector edit:

Trk	Sct	Byte(s)	From	To
0A	0F	86-88	4C 8E 0D	EA EA EA

I also have two questions:

? To Frank Thompson: In COMPUTIST #64, your softkey for Paper Boy worked just fine on my copy. However, instead of just deprotecting my copy, I wanted to use it to learn how to deprotect. I tried to follow it step-by-step to see how to logically approach the problem. However I got lost when I got to where it said to use the Copy II Plus sector editor "search" utility to search for the HEX bytes at the beginning of the PBLOAD.SYSTEM to find the track and sector numbers for the first portion of the files. What are those Hex bytes and how did you find the track and sector numbers from that? How did you identify track $14 and sectors $01, $04, $05, and $0F by searching for what Hex bytes at the top or the next portion of the program?

? 2. In your magazine listing softkeys for ProDOS programs, we're supposed to look for blocks and bytes such as "Block $12B, bytes 1C6". How do you read "block and bytes" on a ProDOS disk with a sector editor that only shows "track and sector" such as Copy II Plus? I called Central Point Software and they said that the 5 1/4 inch Copy II Plus disk won't do it. I was told to look for some type of cross reference chart that will cross "block and byte" to "track-sector-byte". Is there a 5 1/4 inch disk sector editor available that will read block and byte? If not, is there a cross reference chart available somewhere?

Thank you for such a fine magazine.

How about it readers, could someone make a cross-reference chart and send it to George?.....RDEXed

Steven Kahn

I have some good news for all you Apple II+ computer owners out there! (If you have purchased a Transwarp Card from Applied Engineering.) I have version 1.3.

You can now run 128K programs on your Apple II+ computer, as long as the program doesn't require double-res graphics or an extended 80-column card. The following programs runs fine: Wings of Fury, Movie Monsters Game, Marble Madness, Fooblitsky. The following programs don't run: Pirates, Soko-ban. Before you run programs that use a joystick, make sure you do a POKE 49268,1 before booting the disk. Turn on the computer and hit reset; when the disk drive goes on, do the poke and PR#6, and enjoy the 128K programs. I am in the process of writing to the different software companies to see what their programs require before I purchase them, now that I know what to look for. Maybe you could make a list of the requirements for the programs that you review in your magazine? All I need to know is if the programs uses double-res graphics or extended 80 card.

That's all for now. Keep the programs cracking!!

Moonglum

Softkey for...

The Last Ninja GS

Activision

Requirements:
512K Apple IIGS
3 1/2" disk copier
3 1/2" disk editor

The Code look like this:

```
JSL   $E100A8  Call ProDOS $22 (read block)
      $0022
      $0000C4F1
BCC   {-$40}   Carry=1 any error found
CMP   #$0027   I/O error (=$0027)?
BNE   {-$45}
LDA   $C4EF
BEQ   {+$0C}   OK, continues
```

Blk	Byte(s)	From	To
$CD	$1BA	$90	$24
	$1BF	$90	$24
	$1C4	$F0	$80

Softkey for...

California Games GS

Epyx

Requirements:
512k Apple IIGS
3 1/2" disk copier
3 1/2" disk editor

Blk	Byte(s)	From	To
$D2	$95	$90	$80

The Code:

```
LDA   $013A
JSR   $51FB  Test original disk (carry=0 ok; carry=1 bad)
BCC   (+$03)
JMP   $00B2  Bomb
JSR   $098E
```

Softkey for...

Paper Boy GS

Mindscape

Requirements:
512k Apple IIGS
3 1/2" disk copier
3 1/2" disk editor

Blk	Byte(s)	From	To
$D0	$A3	$20	$2C
	$1CB	$00	$9A

E. N. Hondrick

Perhaps some notes are in order.

If the IBM section ever expands to four pages (including advertisements), I'd like to see it moved to the centerfold, as someone has already suggested, and don't even number the pages. The added income and readers is a "plus" and I pity anyone with such a user-hostile machine anyway (imagine having to install a new chip just to change DOS!), but I sure don't need to keep IBM softkeys after I'd given the machine itself away, if I had one.

I've bought Quick Loader and it's great! DOS is there without waiting (like IBM!), and FID, COPYA, and Integer are two keystrokes away, along with any of your favorites such as Super IOB, Locksmith Fastcopy, Copy II Plus, etc, or just use it like a NMI card. It has no separate button like CopyMaster or Instant Replay, so Locksmith and a few others, can detect it, but not many. It's the best utility card I've seen, and probably rivals Senior Prom. Look for advertisements by SCRG (Southern California Research Group).

I don't mind softkeys for the MAC at all. At least they're part of the "family" and the poor things don't even have a built-in monitor!

'Til next year.

Paul R. Wilson

Here, in order, are a tip, an A.P.T., some Core advice, a complaint, and an alert!

Playing Tip for...

The Tarturian

Highland Computer Services

In The Tarturian by Highland Computer Services, a poorly-written Applesoft adventure game, there are a number of moves that the player will not be likely to find by trial and error. The most important is:

The strongman should push a spider.

I had to cheat to find this and a lot more out, not only in Tarturian, but in Creature Venture and Oldorf's Revenge, also by Highlands. I also had to open up the cheat-protected code.

Advanced Playing Technique for...

Thief

Datamost

At last, I have the way to unlimited games lives in Thief, once I run-traced the code from its entry point ($5B00). A diligent search of the code uncovered the following two gems:

```
$407F:A9 03 8D 1A 03
$4873:CE 1A 03 30 34
```

The former sets the number of games lives at 3 spares and stores the data. The latter decrements the tally each time you get whupped by robot , a blob, or the ding wall, and if you had been on your last game life, branches to a jump to the reinitialization code.

Changing $4080 to 4 or more is NOT a hot idea. It sometimes worked, but the graphics showing remaining lives, score, etc., at the bottom of the screen got messed up. Once the game suddenly ended with game lives left to go and I saw instead the message to press a key to start. A search for the game life decrement code (and ZAP refused to look for CE 1A 03 for some odd reason!) uncovered it.

Just NOPing the decrement command out did not suffice; once the game found a way to get to the jump to the restart code-and I saw PRESS KEY TO START. The branch had to be crippled. I patched in the following:

```
$4873:EA EA EA 30 00
```

Which did the trick. Thief has no pause or restart commands, so I played until I got tired! If you get de-rezzed by touching or getting hit by anything, you merely reappear in the next room. Thief is machine-simple. To start, enter $5B00G.

CORE ADVICE to users of the antique Integer BASIC. While this BASIC is faster than Applesoft, because it does not endlessly check perfectly-good syntax, it has some bugs. In addition to getting uptight about "illegal" commands (and even an illegal character in a string!), it also has problems handling more than one user-written Call in a line. You may or may not encounter meaningless and frustrating error messages like *** stopped at error or a loop overflow or a RETURN WITHOUT GOSSUB. Apparently more than one user-written Call per line might upset the registers handling GOSUB stack or FOR-TO-NEXT loops. The trouble, which may sour enterprising Appleteers off hand-compiling a program, will vanish if the line is broken up so only one user-written Call is on each. The same applies for more than one illegal command per line, sneaked in.

A complaint: Whenever I complained in the past about the slowness of Applesoft (I once spent an entire evening on a single Life pattern which was being evolved by an Applesoft program, and fume that 1/3 of that time was syntax-checking) to a magazine in an article, that article was never published! There seems to be a conspiracy of silence.

I subscribed to InCider for the express purpose of writing articles for it. That purpose was defeated. I was given runarounds, a request for a disk copy A.S.A.P. (I have no word-processor software!), rejections with no explanation, and one article was apparently trashcanned and I could not get InCider to even admit they received it! I did not renew my subscription.

Alert! A number of times I've seen softkeys for Aztec in COMPUTIST. When I played the game, I never won. The one time I found the idol, there was no way out of that bottom level. I had to contend with broken stairs and other breakdowns that no amount of dexterity could suffice to overcome. I even found goofy errors; a stunned man might float or fall through the floor, you could walk on top of the bottom of screen graphics if a hole is blown down into the floor, or even walk on top of a monster unharmed!

It is my suspicion that part of Aztec's copy protection was to make the game unwinnable if it was cracked enough to run at all! I was never able to get a "random" floor layout generated that enabled me to get back to the surface even after descending a few levels. The game selected from a handful of different layouts. A small handful.

The goofy errors may be just bugs, but I think that a thwarted nibble count set a flag to break stairs, etc., so the game could not be won. Games have used this subtle method. Has any reader encountered this problem? Let me know. I also was never able to set off dynamite!

Bob Igo

Softkey for...

The Rings of Zilfrin

SSI

The Rings of Zilfin boot disk was the only one protected. I scanned the disk with the Copy II Plus nibble editor. It let me know that even tracks were standard except for the altered epilogs. It didn't matter what they were altered to in order to ignore them. Odd tracks were similar, but with a data prolog of $D4 AA 96, instead of the normal $D5 AA 96. Using my limited knowledge of cracking, and Bill Jetzer's article in COMPUTIST #60, I loaded COPYA off of my ancient system master, went into the monitor and started poking about.

Since the data given in the article says that you may ignore certain portions of data prologs (stated as address markers #1,2,3, which correspond to D5, AA, 96), and the last two bytes of the prolog are the same (differing only by the initial D4/D5), we can use location $B957. So, store $00 in that location. To ignore the altered epilogs, store $0E and $6A in locations $B98F and $b933 respectively. Just to be safe, you might want to ignore the checksums, track checkers, etc. After you have modified DOS, run COPYA and follow the "extremely complex" instructions that follow.

I would also like to address a small "magazine virus". It seems some people have been sending in their names (usually fake), saying that certain things on the Most Wanted list can be copied using a softkey for another piece of software. In most cases, they will work, but when they don't, it comes to mind that some egotistical idiot is sitting back laughing at his little prank he has pulled at the expense of a real softkey. The standard defense is, "Well, it worked on my version!" I am referring specifically to someone called "Doodlebug" in COMPUTIST #60. No wonder, the controller only reads up to track $00, sector $0F, and then breaks. (Re. Mr. Thanski's comment in COMPUTIST #63.) The reason is, because it is a fake softkey! He didn't even have enough creativity to make his own; he used a previously-made one! If, by some off chance, I am wrong, Mr. Doodlebug, then please defend your honor by explaining just how and why the Sword of Kadash, side B, controller should work on Crossword Magic v4.0. Now let the rest of us try to keep COMPUTIST bug (Doodlebug?)-free.

Daniel Currier

GEOS Notes

In regard to the Apple GEOS v2.0 in COMPUTIST #63, p. 26, the deprotection works very well, at least it did on my disk. I do have something to add but not to the deprotection.

The name that you put into the GEOS program, upon booting it for the first time is, written back to disk and saved there. The protection changes your name around and hides it there. It is changed to lower case alphabet letters. They rearrange the alphabet, I believe, on each letter, not just the whole alphabet. I still cannot figure out how it is changed and read, I only know where it is on the disk. It is on track $02, sector $0E, bytes 80 to 9D (maybe 9F). If you search the disk for some "&" sign symbols which on my disk is hex #26 you should find your name encoded just before them and you can easily figure out what hex #'s represent your name. Since all names are different the "&" symbols will vary as to how many there are. But even if you would search for 3 to 5 "&" signs you should easily find your name. If I figured right, on the original disk there should be 30 of them and when your name is placed in the title page it is centered. If you remove all 30 bytes, your name, or whatever you put in its place, is placed only on the left side. If you only replace your name it is centered then.

Also just for fun when GEOS is first booted up you see:

BOOTING GEOS...

This can be found on T$00 S$01 bytes 18 to 26 the hex #'s are 2E 71 4F BA BA 46 A9 D3 4F 65 C6 AD 0E BD D0

Again these are encoded and do not spell "BOOTING GEOS...", but instead look like ".qO::F)SOeF-.=P".

You could add anything you like instead of "BOOTING GEOS", but use the same spacing.

Even after changing these items around the program still operates correctly.

Gary Hieber

I've been playing Might and Magic II (Might and Magic: Book One, also) from the original disks because I am unable to successfully copy disk A. The disk C copy refuses to read consistently, as well. Could you add Might and Magic II to your list of Most Wanted Softkeys. Or, perhaps, with the release of M&M II, a reprinting of Might and Magic I would be in order, should the softkeys be the same.

? Could you ask if anyone knows the solution to the magic square under Hawkseye Hills in Might and Magic I? I solved it for 33 and 34, but nothing happened when I pulled the Platinum Lever.

Thank you for your time and consideration.

George Sabeh MD

Softkey for...

Street Sports Soccer

EPYX

Requirements:
CopyA
blank disk
sector editor

EPYX continues to use Prolok copy protection on their new releases. This has been explained previously.

1. Boot DOS and POKE 47426,24 to ignore epilogue errors.

2. Run COPYA.

3. Sector edit:

Trk	Sct	Byte(s)	From	To
00	05	71-72	D0 F4	EA EA
		7A-7B	D0 2C	EA EA
		83-84	D0 23	EA EA
		96-97	D0 F4	EA EA
		98-	A0 07 BD 8C C0	EA EA A9 FC 85
			10 FB D1 1E D0	F0 85 F3 A9 EE
			05 88 10 F4	85 F1 85 F2

4. Hide your original and enjoy.

Softkey for...

The Games: Winter Edition

Epyx

Requirements:
COPYA
A sector editor
Blank disks

EPYX continues to use the same protection, discussed earlier in COMPUTIST, called "Prolok". A copy can be made with Essential Data Dupicator (EDD) version 4 by using Preanalyze 00=90 or it can be unprotected as follows:

1. Boot DOS.
POKE 47426,24 *ignore errors*
RUN COPYA *and copy all sides.*

3. Sector edit side 1 of disk A.

Trk	Sct	Byte(s)	From	To
00	05	43-44	D0 F4	EA EA
		4C-4D	D0 4A	EA EA
		55-56	D0 41	EA EA
		68-69	D0 F4	EA EA
		6C-	A0 07 BD 8C C0	EA EA A9 FC 85
			10 FB 99 F0 00	F0 85 F3 A9 EE
			EA 88 10 F4	85 F1 85 F2

4. Write the changes back to disk.

Softkey for...

Pirates!

Microprose

Requirements:
Pirates! original disk
Two blank disks
ProDOS IOB 5.25 from COMPUTIST #62

I recently purchased Pirates! by Microprose and attempted to unprotect it using the softkey in COMPUTIST #61, page 7, by Dan Halfwit. I was unable to follow his softkey. I have an Apple IIc with Senior Prom. I have since unprotected it using Bill Jetzer's ProDOS IOB with Swap Controller published in COMPUTIST #62, page 33.

Pirates! is an excellent program with the annoying habit of producing access error upon booting. I understand this is related to the protection. Instructions from Microprose tell us to:

"Turn off the computer for at least 10 seconds, then start the loading process again. If the program still doesn't load or run correctly, turn off your computer and all attached equipment. Disconnect attached periphal device, such as printer, modems, light pens, graphic tables, mice, etc. Some of these hardware items may conflict with the software settings of Pirates!."

This can become very discouraging and annoying. To make matters worse, my saved game would not load because of the protection. After calling Microprose, they informed me that all my difficulty was related to the protection scheme.

This left me with only one choice, to unprotect the program. Fortunately, my COMPUTIST #62 had arrived as I was going through this, and it had a simple answer to my problem. So, when my replacement disk arrived one month later,I used the swap controller and it worked! Also note that the "Save game" disk needs to be formatted twice, once with ProDOS and again with Pirates!.

Procedure:

1. Format the blank disks with ProDOS. Use any name for the volume. ProDOS IOB 5.25 will format as explained in the article accompanying the program.

2. Boot Pirates! and after the ProDOS logo appears, press "Open Apple-Control-Reset" followed by "Control-Reset". This will place you in the monitor.

3. Type the patch as per COMPUTIST #62, p.33, to move the driver to $8000.

4. Remove the Pirates! game disk and put the ProDOS disk with your ProDOS IOB 5.25 disk in the drive.

C600G
CALL-151
1900<8000.86FFM
BSAVE DRVR, A$1900, L$700

Use the same name you used in the swap controller in line 10010.

5. Run ProDOS IOB 5.25 with the swap controller installed and copy Pirates! to the formatted blank disks.

Now your copy is unprotected, can be cataloged, and will boot every time. I hope this information will help some of your readers who encountered difficulty following the previously published softkey.

Harry M. Randel

Caution!!! Free software costs somebody money. I would hope that all of us can work to increase the membership in your great publication—just for the want of keeping it going. I find invaluable and worth every cent that you ask for it.

I wish that I knew more about the art of deprotection and would welcome additional information, utilities and or the ability to contact the individual who has submitted a softkey for pubication and for which I am having trouble in putting it to use. For this I would contribute to your fund gladly, and if I knew enough to write softkeys, I would gladly offer them to you with the idea that an individual could contact me for information providing he submitted a fee to you. How is that for a money-raising idea?

With this in mind, as a teacher in the elementary schools, I have need for deprotection of the program Cranston Manor. It is too bad that this program is no longer available (Sierra has advised me of this problem and has not released it to Public Domain as they did with Mystery House) It can be copied with an old copy program called KOPY ROM, but I would like to deprotect it for everyday use.

The Data Base from Mr. Hopkins shows the softkey for this program in issue #40 February '87 Page 7. So into the files I went (I have your issues way back to the early CORE days) and out with the appropriate book. Many hours later, I am taking the time to write this letter–the write up as it appears leaves much to be desired. I have the original DOS 3.2.1 SYSTEM MASTER disk-the original DOS 3.3 SYSTEM MASTER DISK-BOOT 13-MUFFIN, etc.- all of the old programs- but where in the world can you find RWTS. 13,A$1900 as listed in the controller?

Anyway, I'm against the stone wall. If you can contact Mr. Clark who wrote the original softkey for me and if he will send me either the clue or the RWTS.

? Also, while we are looking for things and need money — how about a softkey for Didatech's "Quiz Castle"? I have the Lab Pack for this program and the kids are constantly blowing the disk because they must write their name to use the program and the disk cannot be write-protected. The only reprieve for the disk is to send them back to Canada and pop out $10.00 a disk for a recopy. Once or twice is enough!! Especially when the 4th graders can blow a disk in the first 30 seconds of a period and never get to play the game.

Hope you can help with this problem—you have been most helpful in the past. Your latest edition is great—content superb—my only problem is now how do I properly protect these valuable issues? Hard cover binders have done their duty in the past—but now a tabloid!!! We shall find a way!

RWTS.13 is a binary file that contains the DOS 3.2x Read/Write Track/Sector routines. You capture it from the DOS in memory after you boot the DOS 3.2 master disk. (BSAVE RWTS.13, A$B800, L$800) Then you move it to a DOS 3.3 disk with MUFFIN (found on the DOS 3.3 Master disk). .....RDEXed

Jonathan Trappe

I would like to answer a few questions asked by readers and also to correct a couple of things.

Playing Tip for...

Wasteland

E.C.A.

•**Todd Grant** asked how to repair a toaster in ECA's Wasteland. That's a piece-o-cake. In the Guardian Citadel, go right twice after going up the stairs to the second level. There is a table that is used as a repair station. Simply go to the table with the toaster (strap it down) and use toaster repair skills. You will be able to dislodge a plasma coupler, some fruit, and a couple of Visa cards that were stuck in it, and you will have a working (useless) toaster. You will also have a plasma coupler that is needed.

•To increase AT skills, get some howitizer shells (you can find them or buy 'em in the black market in Darwin) and go to the howitizer in Needles. Use the shells and after a couple of times, your AT skill will go up. You need the base level of this skill to do this, and it will only go up so far.

•To increase Climbing skills, go to the sand dunes in southern Needles and repeatedly run into them. Characters with base level climbing will have to go up, one level at a time, to level 3.

•Always have the characters with the highest Luck loot first. It can make a big difference in how many things you get.

Notes on Ultima V

Brandon LaCava (COMPUTIST #63) said a lot of confusing things about Origin's Ultima V. First of all, you can attack and kill, temporarily, the shadowlords with weapons other than the glass sword. It takes a long time and you need a strong party to do it, but it certainly can be done. Second, what Black Badge? I have gone through the entire game twice without finding any badge. Third, the only intact shrine at the beginning is Spirituality? Not so, in my experience. Unless I gave Blackthorn the mantra, no shrines ever got destroyed. Fourth, seal all the dungeons? They were all sealed to start with! Last, why play Stones (678 987 876 7653) in LB's room to get the wooden box at 12:45? You can do it at any time! Maybe I'm just missing it. Please explain.

To answer Doc Devious' question (also in COMPUTIST #63) about the sandlewood box, you give it to Lord British at the end of the game. He uses the Orb of the Moons, contained within the box, to free himself, and also your party, from captivity.

To expound on his answers: You don't always need to attack the guards in Blackthorn's castle. After you talk to Blackie himself, (you need to say you have joined the oppression) you can simply talk in the direction of the guards when they approach you and that group won't attack. Be careful though, if you walk up to them instead of having them approach you, they will still attack.

Settlements	Virtues:
New Maginicia	Humility
Skara Brae	Spirituality
Britan	Compassion
Moonglow	Honesty
Minoc	Sacrifice
Trinsic	Honor
Jhelom	Valor
Yew	Justice

•You can get a spy glass from the lord in Farthing (location: 40 F0). With it you can examine the stars whenever it's dark.

•When Aulnie (Shadowlord of Falsehood) is attacking a city, the populace will rob you blind.

•You can tell where a secret door is by a tiny dot on the wall. Not all monitors will be able to show this dot, because it is so tiny and it will blur with the bricks.

? Does anybody out there have an idea of what the plot will be on Lord Cambridgian British's Ultima VI? Let me know!

Leo & Eric Van Der Loo

Softkey for...

Starglider

Rainbird/Firebird Software

We noticed Edward Croft's softkey for Starglider in COMPUTIST #64. We have this game and made a softkey for it some time ago, but I do not like the game and forgot to send in the softkey. Anyway, if you change the first 3 bytes on track $10, sector $0F, from 4C 04 60 to 18 60 EA, then the program will not ask for anything and will go directly to the begining of the game.

Have fun and please keep those sofkeys coming.

Paul R. Wilson

A Bug in the Thief Softkey

In checking out Brian Troha's update of my Thief softkey (COMPUTIST #33, update COMPUTIST #49), I was amazed to find a bug that nobody to this day has bothered to mention to you. I hope you're not acquiring the habit of *ignoring* bug input.

The defunct MICRO magazine ignored the bugs I submitted on 2 programs and never published any bugs on Castle Adventure, a program that obstinately refused to run on the Apple II; it just would not engage the input loop, but ran amuck instead. Two letters to its author, David Malmburg, were never answered. A third letter contained the torn up pages of his article. I understandably did not wish to have this lemon around, after I spent hours trying to get it to work. The same issue also had a Tower of Hanoi move generator that would not work. I usually do not encounter programs that plainly have not been tested for the computer in question.

Far more serious was Phil Yeh's Catalorganizer, a catalog-sorting utility written in slow Applesoft for the ABACUS club newsletter. Both the printed text and the disk file had the same horrible bug. The results, some disks improperly sorted and one with massive trashing of the catalog, resulting in loss of an Appletalker — which injury was only repaired by the article in COMPUTIST #10 (ApplEar). I didn't have Bag of Tricks in those far-off days. ABACUS never apologized for the defective lemon program, nor published any bug patches, though I waited. It was one of the reasons I let my membership in ABACUS expire the next time it was up for renewal. If anyone knows if ABACUS or CIDER is extant or not, let me know.

We print what you (our readers) send, with the least amount of editing changes (no censorship). Information, complaints or kudos, it all goes into the issue. Only once have we refused to print a letter. Someone wanted help in writing a virus and we decided that the request was in p-ss poor taste and had no redeeming value. .....RDEXed

OK, the fatal bug in Troha's Thief merging of files was discovered when I could not get a working copy of Thief with it. The program would start producing the hires arena screen and then crash or lock-up, sometimes blanking the screen if play was attempted. I did some checking and found that the MSSL.OBJ0 code (moved from $5300 to $800) was not copied completely. I checked out Troha's move routine and found it to be self-modifying (a definite no-no)! Rather than try to fix it, I opted to replace it with an algorithm that is built into the Apple II toy computer (48K RAM). I've used it before, so I know I can trust it.

Here is the amended file-merging by Troha. The new move code starts at $5B3A.

```
BLOAD ROBOT, A$2000
BLOAD MZ. OBJ0, A$4000
BLOAD TBLGEN. OBJ0, A$4C00                    not TBGEN
BLOAD MSSL,OBJ0, A$5300
BLOAD MZS.OBJ0, A$5C00
BLOAD DROUTS.OBJ0, A$6000                     not DROUTS
5B00: 2C 50 C0 2C 52 C0 2C 54   $FDC3
5B08: C0 2C 57 C0 2C 10 C0 A2   $188F
5B10: FF A9 60 20 A8 FC AD 00   $2EE3
5B18: C0 30 03 CA D0 F3 2C 10   $6CE6
5B20: C0 A2 06 A0 00 B9 00 4C   $B679
5B28: 99 00 08 C8 D0 F7 EE 27   $CFEC
5B30: 5B EE 2A 5B CA D0 EE 20   $C26F
5B38: 00 08 A0 00 A9 53 85 3D   $C60A
5B40: A9 00 85 3C A9 5B 85 3F   $D888
5B48: A9 52 85 3E A9 08 85 43   $35F7

5B50: A9 00 85 42 20 2C FE 4C   $BCE4
5B58: 00 40                     $443C
BSAVE THIEF, A$1FFD, L$4DE0
```

I have reason to believe that there are only 4 levels. I reached 8350 points without exiting that level and a correspondent claimed to have gotten higher than 16,000 pts, still in level 4!

Perhaps if somebody got generous and found a fix for unlimited game lives, this deception, though Datamost is long defunct, can be investigated for certain, and not subject to extreme good luck in playing. Neither my correspondent nor I were able to repeat these all-time hi-scores.

I wish to state that David's Midnight Magic is by Broderbund, copy-protection paranoia, Incorporated. I'm still waiting for a crack and a way to erase the high-scores so I can use the high-score recording utility again.

I'd like to see a crack for Space Eggs (Sirius), Country Fair (Datamost), and Sea Fox (Broderbund). I may someday buy an Apple IIe and if my Apple II+ toy computer breaks down, I cannot use the originals on the new systems.

? I mentioned some magazine programs and a club program that refused to work. This is why I prefer professional products to amateur efforts. One such pro release, Disk Organizer by Sensible Software, has done wonders for me over the 5 1/2 years I had it. I recommend it highly. It is everything Phil Yeh's travesty wasn't—with one glitch, you have to format the disk with the DOS you are using. Some DOSes are close enough thtat it will let it pass. But if it's formated for DOS 3.3, it won't work on DOS 3.2 disk, and vice versa. The manual tells clearly how to format and reformat it. But if you use 2 or more DOSes fairly regularly, you'll have to have 2 or more copies each with its own DOS formatting. Does someone have a full crack?

? A crack of Computer Check-up by Power-up would be nice. The protected disk has some real bugs. There is quite a lot of annoying recalibration noise at the start of some tests and after each pass. You once published a fix (COMPUTIST #46) to eliminate I/O recalibration noise from the disk drive (a smarmy gimmick put in by the writers of DOS?). Power-up sent an idiotic reply to my letter about the bugs in the utilities, and they no longer have my patronage.

Last of all I wish software mail outfits would not assume that I'm interested, especially when all they offer is stuff that will not fit on my Apple II+, as the 6502 CPU will not drive more than 64K (ROM & RAM combined).

Ray Ryland

Playing Tip for...

Alien Mind

PBI Software

Alien Mind is the first of what I call a IIgs Arcade game. With its smooth animation and great sound effects, it is a game worth getting and winning.

Here are the passwords to Alien Mind:

1. Telegram
2. Hammock
3. Elevator
4. Siren
5. CDEFGAB
6. Bio-Lab
7. Glass
8. Ear
9. Atlantis
10. Oasis
11. Easel
12. Anthill
13. Aqua
14. Radiation
15. Judy
16. Biologist Ho
17. Light
18. Sumbrero
19. MCLXXIV
20. Telescope
21. Transit
22. Hieraglyphics
23. Ark
24. Igloo

Another helpful hint is to enter GREEN as the password, this will automatically send you to the next level.

And, if you really get sick of it, try this;

Advanced Playing Technique for...

Alien Mind

PBI Software

Edit block $0004 on the save game disk for game one. Other saved games are in increments of 4 (i.e. $0008, $000C, etc.).

Item	byte location
Number of Cartridges	$010-011
Energy	$00A-00B
Number of Key Cards	$008-009
Level saved at	$022

For those that know a little about machine language, in order to get $4360 in energy, you must put $60 in $00A and $43 in $00B.

Bruce L. Menard

Playing Tip for...

Might & Magic II

Activision

When I transferred my characters I sure missed my sorcerers with level nine spells; my party used two. Here is how I solved my problem:

1. Party must include at least one sorcerer with spell 3-4, and a robber; fill the remaining roster positions with rolled-up sorcerers. Be sure two members have Mountaineering skills, learned in Middlegate.

2. To complete this quest you must free the good wizard Yekop (Pokey) and the evil wizard Ybmug (Gumby), and then meet the Jurors of Mt. Farview for your reward. While in castles take no chances, run from all encounters except the Iron Wizards at the end of the doors. When you go through doors go to the next wall of doors, then select the next door in the pattern. If your best sorcerer goes down or gets low on hit points, go back to Middlegate and start over. You will still have to pay to learn the better spells in each city at the Mages guild. Remember, if you rest you must fly home, because you will lose your "walk on water" spell.

3. Before leaving Middlegate, enter the temple and pay to be blessed. Exit Middlegate, go North 1, turn East, cross ferry and follow the road to the first South (right), turn and go South 5, East 5, South 1, and eat bark. This raises your spell points to 200 and level to 9. Retrace steps to Middlegate and take portals to Atlantium. Check in at the Inn. Exit town, walk East 6 to Isle of the Ancients, and enter the Good castle (mountain) from the North.

4. Good castle: Enter through first door, follow hallway South and West to door marked "Sorcerers Only" and go in. Select doors in this order: Number 2, 2, 4, 6, 6, 12, go Right 1, through door, follow hallways through two more doors. Select doors A, D, F, I, then go Left 1 through door and fight Iron Wizards. Follow wall Right, around corner to door "Death's Door Way", and enter. Follow wall Left and answer "64"; follow wall Right and answer "32"; return to the middle chamber and receive a message. Retrace steps out, or run at your first encounter, to get back to the stairs. Exit the castle and follow the narrow strip of island through the Neutral Zone to the Evil castle, and go in.

5. Evil castle: As in the good castle, follow the hallway North and East to the door and enter. Select doors 1, 3, 1, 3, 9, 11; go Right and through the door, follow the hallway to door A, C, G, I, then left through the door to the Iron Wizard encounter. Follow the wall right to door marked "Despair" and go in. Go left to question and answer "23", then right to question and answer "46". Return to the middle chamber and receive the message. Retrace your steps out or run from the first encounter. Exit the castle and cast spell Fly 3.2 to Middlegate if necessary, or Fly to meet the Jurors in D,2.

6. Jurors of Mt. Farview: When you arrive in D,2 you are at 4,4. Go East 3 and South 4, and receive the messages. Check to insure you receive your 5,000,000 experience points, and the plus sign after your name.

That's how I did it; hope it makes the game more enjoyable for you.

J. Richard "Demon" Demonowski

? I own an old model Apple IIe with 128K, an Apple DMP printer, and 2 Disk II style drives. I can't seem to be able to boot-code trace or even do a standard copy (for Ultima 2) using the instructions in the Books of Softkeys. Might there be something wrong in my hardware? If so, how do I find it? Please send me some advice.

I have loved my Apple for 6 years and want to continue doing so. I am a rank amateur at machine language, and want to learn more. My subscription to COMPUTIST began with the February 1989 (#64) issue. Please publish something that might help others in my position.

Specific problems that I have are:

Ultima 2 (U2)- Book of Softkeys, Vol. 1, p. 143. VTOC won't write to copied U2 disk, HELLO won't BLOAD, and I get an I/O ERROR.

Ultima 3 - Book of Softkeys, Vol. 3, p. 118, step 8. Boots disk instead of tracing and prompting C0 E8 command.

Zaxxon - Book of Softkeys, Vol. 2, p. 106, step 8. I sector edited, 3 times, and can't get the drive to stop and the program to run after Mockingboard response. Bytes listed in the table don't match what I get on sector editor.

I've used Copy II Plus to backup many a disk, but I want to learn to do this the fun way, too. HELP!

Ron Cadillac

Bitkey for...

Crosscountry USA

Didatech Software

All credit goes to R.D. West. I used his softkey for Didatech's Fay: Word Hunter (p. 10 COMPUTIST #55) and it worked on Crosscountry. This is the procedure:

1. Make a bit copy of Crosscountry USA using Copy II+ or equivalent.

2. Using a sector editor (disk edit), make the following edit and write to your bit copy:

Trk	Sct	Byte(s)	From	To
$00	$04	$89-91	?	A9 D0 8D 6E 85 EA EA EA

T.H.E. DOC.

Softkey for...

Showoff

Broderbund

It seems they have moved the protection one block, but otherwise it's unchanged from that listed in Brian Troha's crack in Issue #56. He found the offending code at block $017C; I found it at $017D.

Blk	Byte(s)	From	To
$017D	$070	08	60

Softkey for...

Monte Carlo

PBI

Use the Cobra Cavern crack by Brian Troha (COMPUTIST #56), it works fine.

Softkey for...

Notes 'N' Files

DataPak

Inspiration comes from the Overlord and Nimrod's crack of GraphicWriter 2.0 in Issue #56. Protection is similar in this DataPak program. I found the offending code at block $374.

Blk	Byte(s)	From	To
$374	$074-5	F0 03	80 50

Tommy Williams

I spent hours just reading through the new issue, then I got out my old issues, and read some more. With a little more knowledge, maybe I can contribute to a future issue.

How can I find out if there are any more readers in the Shreveport-Bossier City, Louisiana area?

Thanks for an informative mag.

Tony Campbell

Senior Prom and Zipchip do not get along too well. The Zipchip's housing made the pin six of the CPU inaccessible. This was fixed by piggy-backing a wirewrap DIP socket between the two. The Senior Prom NMI also gives some funny results; lockups and ignoring the NMI being the most common. I have been forced to disconnect the jumper and go back to my old debounced momentary switched resistor in the bus trick for NMI. That still works just fine, and Zipchip does not seem to care as long as its switch is in the middle position.

W. L. Stallard

? I tried to use some softkeys from your recent issues and the requirement was an "Apple with RAMdisk". Is there something other than using the extended 80 column card with an Apple IIe for setting up a RAMdrive, which in my case is an Applied Engineering Ramworks III? The authors gave the volume a prefix of RAM5. The reason I am asking this question is that the softkeys will not work with what I have. Each time the softkey says to boot another disk, I lose the RAM disk that I have set up.

I have looked in other back issues of COMPUTIST, but cannot find a reference to anything but a RAMdrive on the extended memory card in slot 0. The RAM drive seems to be a powerful addition to the Apple. I would like to see an article written on this subject, addressing current trends, and what is available to make the best use of this feature.

Ray Grim

Playing Tip for...

Pirates!

Microprose

1. When you need more men but are not close to a friendly town, try an sneak into a Hostel Town. While in the town save your game to disk. After saving your game, re-boot the game and go to the tavern where you will be able to recruit men for your ship. You may repeat the save, re-boot sequence as many times as you want but be watchful to the mood of your crew. Sometimes the mood goes from "Pleased" to "Unhappy" and when you leave town, some crewmen desert and take some of your gold (usually their own share).

2. When you have a large cargo, you may want to sell it all and divide the plunder. If you sell as much as you can then go to another town to sell, many of your crew will desert and take gold with them thus decreasing your percentage. I find that it's better if I sell as much as possible, then save the game to disk, re-boot and go to a merchant and sell again. You can save, re-boot as often as you like. Then sell all your ships and be sure your best ship is left to keep (I find a "Barque" as the best to keep because of its maneuverability and crew size). Dividing plunder will lay you up, refitting a new crew, about three months.

3. Save game before fighting those "Evil Guys" who know where your relatives are kept. This way when you defeat them and they give you a map, if you don't know where they are at, you can re-boot, fight, win, and get a new map. This can be done as often as necessary.

4. Save game to disk close to where you rescue your relatives, so when they show you the Inca Map, if you don't recognize the area you can re-boot, and go and rescue again and get a new map.

5. Save the game often, and good luck!

Joey Johnson

Playing Tip for...

Ultima IV

Origin Systems

When going to the shrine of humility, the only way to avoid all of those troublesome daemons is to use the horn. It is found on one of the islands north-northeast of the town Jhelom. When near the shrine, blow the horn, move two or three spaces toward the shrine, blow, and move two or three spaces until you get there. Do this on the way out too.

? Where is the skull in Ultima IV? How do you get and use the stones? What are the fountains in the dungeons for? And what do you do with the skull?

Arturo V. Magidin

Playing Tip for...

Bard's Tale III

Electronic Arts

Since I always enjoy seeing playing tips for games in which I am in a stalemate, I have decided to share some of my own discoveries in Thief of Fate (Bard's Tale III).

I found what appears to be a glitch in the program, which should be fairly useful to all bards out there:

As soon as you kill Brilhasti in Skara Brae, the Old Man will give you a bonus in experience points before sending you to Arboria. Just get out the Review Board, conjure up a monster (instant wolf should do) and go back in. After the introduction speech is over, the Old Man will give you the bonus experience points all over again, and send you to get Valarian's Bow and the Arrows of Life. Go out again and conjure up a new monster (it can be a wolf again, it simply has to be a different one), go back in, and repeat the procedure until you are bored to death. By then, you should have a party powerful enough, both in spell and hit points, to withstand most of the things Bard's Tale will throw at you. You

can do this at any point in the game. However, the Old Man will insist on sending you to Arboria after the speech is over. Ignore him and keep going.

By the way, don't get an Archmage before killing Brilhasti bypassing one class. As soon as you kill him, your magic-users will be able to become Archmages, and will have learned all the spells in the other classes. If you become an Archmage before that bypassing one class, you will not get those spells, and will have to go back to them as usual.

Although I used procedures described in COMPUTIST to edit my character disk and get the items the Old Man wanted when I was in a jam, or simply could not figure out how to get them, I would like some tips in how to succeed properly (that is, without "conjuring up" the items) in Gelidia, Tenebrosia and Tarmitia. And, does anyone out there know what's Sceadu's location? I do know he is in the middle of Nowhere, but he seems to be nowhere to be found.

Here are a few tips in other parts of the adventure, to get a few junior bards out of trouble:

1. The Old Man's info about Skara Brae deity worshipping is as old as he is. Try to find fresh news about the Temple (even if it is by going in).

2. Mind your sword. It could be your best friend inside a dungeon.

3. Visit the fisherman and don't be cheap. He'll have a sale on Gills that the Wizards' Guild just cannot beat.

4. Don't overlook the Water of Life's properties outside Arboria.

5. Reading another person's Diary might be impolite, but it is useful in finding out names.

6. Remember your songs. They are certainly colorful and useful.

7. Get Roses. It pays.

8. Have mercy. Your Geomancer will live to appreciate it.

9. Statues of people just don't seem complete without the person's properties. Use them wisely.

10. Tarjan's friends are certainly pests. A Sorcerer's Preclusion could help you deal with them one at a time.

Keep up the good work!

Bill Jetzer

Deprotecting & Enhancing Applewriter

(Apple Computer Inc)

Requirements:
Applewriter Master
COPYA
1 blank disk side

In Issue #56, there is a softkey for Applewriter, but it only works for the OBJ.APWRT][F file. This softkey works for that file and the OBJ.APWRT][E file. I have also included some enhancements with the softkey. First, the problems with mousetext have been corrected. Second, holding down the "4" key or having the 80/40 switch (on the //c) down will cause Applewriter to run under 40 columns. Here is the procedure:

1. Copy the disk using COPYA.

2. Insert the copy and load the first file:
BLOAD OBJ.APWRT][E,A$1900

3. Get into the monitor:
CALL-151
NOTE: I'm not sure of the circumstances under which this program is run. There may be no need for steps 4 and 5.

4. Get rid of the mousetext in the data line:
2F77:C9 60 B0 02 29 3F 84 C5 20 56 25 A4 C5 60 *(was 84 C5 20 56 25 A4 C5 60 20 EB 46 A9 01 8D)*

5. Get rid of mousetext when cursor is in file:
1B51:4C 85 39 *(was 91 28 60)*
2F85:C9 60 B0 02 29 3F 91 28 60 *(was EC 02 A0 E0 A9 02 20 D9 03)*

6. Don't check for original disk:
1938:8E *(was 7F)*
2F8E:20 EB 46 AD E1 02 4A 4A 4A 4A 09 B0 8D 14 4E 60 *(was AD E1 02 4A 4A 4A 4A 09 B0 8D 14 4E 20 B1 39 85)*

7. Save it back to disk:
UNLOCK OBJ.APWRT][E
BSAVE OBJ.APWRT][E,A$1900,L$2F58
LOCK OBJ.APWRT][E

8. Load the second file:
BLOAD OBJ.APWRT][F,A$1900

9. Get rid of the mousetext in the data line:
30CE:C9 60 B0 02 29 3F 84 C5 20 DE 25 A4 C5 60 *(was 84 C5 20 DE 25 A4 C5 60 20 64 48 A9 01 8D)*

10. Get rid of mousetext when cursor is in file:
1BD9:4C DC 3A *(was 91 28 60)*
30DC:C9 60 B0 02 29 3F 91 28 60 *(was EC 02 A0 E0 A9 02 20 D9 03)*

11. Don't check for the original disk:
193E:E5 *(was D6)*
30E5:20 64 48 AD E1 02 4A 4A 4A 4A 09 B0 8D 8D 4F 60 *(was AD E1 02 4A 4A 4A 4A 09 B0 8D 8D 4F 20 08 3B 85)*

12. Save it back to disk:
UNLOCK OBJ.APWRT][F
BSAVE OBJ.APWRT][F, A$1900, L$30D1
LOCK OBJ.APWRT][F

13. Load the boot program:
BLOAD OBJ.BOOT,A$1C00

14. If "4" key down or 80/40 switch on //c down, run in 40 columns:
1CD7:C2 1E *(was EA 1D)*
1EC2:A0 00 C0 C9 B4 F0 0A AD C0 FB D0 0D 2C 60 C0 10 08 A9 00 8D 3E 1D 8D 10 C0 4C EA 1D *(added)*

15. Save the file:
UNLOCK OBJ.BOOT
BSAVE OBJ.BOOT, A$1C00, L$2DE
LOCK OBJ.BOOT

Eric R. Mayou

Imagewriter II Color Mapper for Ultima IV

I've been a subscriber for a couple of years now and I have decided to write once I had a few things to contribute. I enjoyed the map maker mod for Ultima IV but I just did not like the idea of swapping out the ribbons and paper. So I, with help from my friends, made a one-pass color mapper for the Imagewriter II. Thank you to the original author and Dave Ciotti for all the hard work you put in to make the program.

Using the program is easy. You do not have to use half-height characters but I was able to make a map that was 4 x 3 instead of 4 x 4. Print time was about 7 hours. Maybe someone can find a way to speed it up.

First enter the monitor (CALL-151) and type the binary code. Save it to disk (BSAVE SECTOR.ZAP,A$300,L$21) and then return to BASIC (3D0G) and type the BASIC part of the program and save it.

SECTOR.ZAP

```
0300: A9 03 A0 0A 20 D9 03 60  $6D5D
0308: 00 00 01 60 01 00 00 00  $37AD
0310: 1B 03 00 95 00 00 01 00  $08D4
0318: 00 60 01 00 01 EF D8 00  $C3C5
0320: 00                       $4343
```

ULTIMAPPER

```
10 HIMEM: 38144
20 IF PEEK (768) < > 169 OR PEEK (769) < > 3
   THEN PRINT : PRINT CHR$ (4);
   "BLOAD◊SECTOR.ZAP,A$300"
30 CLEAR :BUF = 38143:RWTS = 768:SEC = 0:
   COLOR= 0: DIM
   LOC(16,256),V(255),V$(27),CO(5,7)
40 DIM CODE$(5): FOR I = 1 TO 5: READ
   CODE$(I): NEXT
50 HOME :D$ = CHR$ (4):P0$ = D$ + "PR#0" :P1$
   = D$ + "PR#1"
60 FOR I = 0 TO 255:V(I) = 63: NEXT : FOR I =
   1 TO 27: READ V,J:V(V) = J: NEXT
70 FOR X = 1 TO 5: FOR Y = 1 TO 7: READ
   CO(X,Y): NEXT : NEXT
80 HOME : INVERSE
90 VTAB 10: PRINT
   "◊ULTIMA◊IV◊MAINLAND◊PRINTER◊"
100 NORMAL : VTAB 20
110 PRINT "INSERT◊BRITANNIA◊&◊PRESS◊RETURN"
120 PRINT "(" ; SPC( 9); "ESC◊TO◊EXIT" ; SPC(
   9); ")◊" ;
130 GET A$: ON (A$ < > CHR$ (13) AND A$ < >
   CHR$ (27)) GOTO 130
140 PRINT A$: IF A$ = CHR$ (27) THEN TEXT :
   HOME : END
150 HOME : VTAB 10: INVERSE
160 NORMAL
170 PRINT P1$
180 REM THIS TURNS ON THE PRINTER
190 PRINT CHR$ (9) "80N"
200 REM SETS TO 17 CPI
210 PRINT CHR$ (27); "Q"
220 REM HALF-HEIGHT CHARACTERS
230 PRINT CHR$ (27); "w"
240 REM 8 LINES PER INCH
250 PRINT CHR$ (27); "B"
260 PRINT "ULTIMA◊IV"
270 POKE 790,1: POKE 791,0
280 FOR LOOP = 0 TO 15
290 FOR S1 = SEC TO (SEC + 3)
300 POKE 782,LOOP: POKE 783,S1: POKE 791,0:
   CALL RWTS: POKE 72,0
310 FOR J = 1 TO 256:LOC(S1,J) = PEEK (BUF +
   J): NEXT
320 NEXT
330 FOR I = 0 TO 15
340 FOR S1 = SEC TO (SEC + 3)
350 FOR J = 1 TO 16
360 Y = (V(LOC(S1,J + (16 * I)))): FOR CO = 1
   TO 5: FOR X = 1 TO 7: IF Y = CO(CO,X) THEN
   PRINT CHR$ (27);CODE$(CO); CHR$ (Y);
370 NEXT : NEXT : PRINT "◊" ;
380 NEXT J
390 NEXT S1: PRINT "◊"
400 NEXT I
410 NEXT LOOP
420 IF SEC < > 12 THEN PRINT CHR$ (12):SEC =
   SEC + 4: GOTO 260
430 END
440 DATA K3,K5,K0,K1,K2
450 DATA
   0,115,1,126,2,94,3,35,4,33,5,45,6,43,7,47,8,42
460 DATA
   9,68,10,99,11,67,12,86,13,91,14,64,15,93
470 DATA
   23,61,24,37,29,77,30,83,55,124,60,36,76,38
480 DATA 68,49,69,50,70,51,71,52
490 DATA 115,126,94,50,63,256,256
500 DATA 35,33,45,43,49,256,256
510 DATA 47,42,124,91,64,93,256
520 DATA 61,37,36,51,38,256,256
530 DATA 68,99,67,86,77,83,52
```

Checksums

```
10-$4F4E    190-$2445    370-$BABC
20-$7716    200-$E313    380-$3EC9
30-$B519    210-$25D8    390-$D988
40-$B9D9    220-$520E    400-$8C84
50-$9332    230-$951F    410-$CEB7
60-$C373    240-$B9BE    420-$E592
70-$CE75    250-$1472    430-$C81F
80-$57A6    260-$60B6    440-$34D9
90-$EA0B    270-$6DBA    450-$28C7
100-$4E67   280-$C2BA    460-$9506
110-$F7AC   290-$ECD2    470-$6F6B
120-$F577   300-$9A8F    480-$E542
130-$E2BD   310-$5658    490-$0AD8
140-$1EE9   320-$085E    500-$8C34
150-$2A8B   330-$3112    510-$F1AB
160-$EACA   340-$D41A    520-$F43A
170-$3C9F   350-$2117    530-$FE37
180-$6119   360-$12DF
```

Softkey for...

Hitchhiker's Guide to the Galaxy

?

I have discovered a few softkeys that also work on other programs. The Sorcerer softkey (COMPUTIST #51) worked great with the Hitchhiker's Guide to the Galaxy.

Softkey for...

Warship

?

The Battle Cruiser softkey (COMPUTIST #51) worked on Warship.

? I have problems with softkeys that call for you to get into the monitor after the first couple of tracks have been read, such as the COMPUTIST #52 Elite softkey and the COMPUTIST #61 softkey for Pirates 128K. I'm using an unenhanced Apple IIe 128K with a ROM card in slot 4. Every time I try, it just doesn't work. With Pirates I would get the ProDOS title screen. Also the COMPUTIST #49 softkey for EDD 4 did not work on my version, or I messed something up when I tried. After I would boot the disk the program would come up and not go into the monitor; it was like the worm just died.

? I have a question for Dave Morgan on his APT for Wings of Fury (COMPUTIST #65). How were you able to read and write to those two tracks? I tried using Copy II+'s sector editor in the different modes and was still unable to do anything. What patches did you use if that's the case?

Vasant Jayasankar

Softkey for...

Might and Magic

Activision

The program uses nibble counting on tracks 5-6, and the routine is fairly easy to defeat:

1. Copy all four disks (A-D) with any fast copier (I used Locksmith 6.0 Fastcopy).

2. Search disk A (the boot disk) for the nibble routine using a sector editor (I used Copy II Plus ver. 8.3). Search for the bytes 4C 7B 03 18 A2 60 BD 8A C0. I found them on track $C, sector $E on my disk.

3. Change the 18 to a 60 (it was byte $9 on sector $E of track $C on my disk).

That's it, the game should be deprotected. All the other disks are okay as is and do not need to be altered.

? Does anyone out there know where I can get my hands on an NMI card (such as Replay, Wildcard or Snapshot)? I'd like one that not only allows me to interrupt and snoop around memory, but also will save all of memory to disk.

? Are there any people out there who use Macs too? I'd appreciate any info on cracking for the Mac, including any good programs available (besides Copy II Mac, which is a barely adequate copy program).

? I wrote a character editor for Wizardry IV using Bob Igo's Editor Creator II (with a few customizing changes). If a lot of people want it, I can send it in to be printed in COMPUTIST.

? Does anyone have any info on Wasteland (either backing it up or deprotecting it)? I've found it an impossible game to even copy, let alone deprotect. Electronic Arts "new" protection scheme is very difficult to circumvent.

Along those same lines, I'd like to submit the game Chuck Yeager's Advanced Flight Trainer for the Most Wanted List.

Vasant Jayasankar
74 Country Drive
Weston, MA 02193

Jon Bernhardt

I noticed in COMPUTISTS #60 and #65 that you have started to put in Appleworks patches. The patches are great but I hope you will stop wasting your time putting them in. There are several fine magazines, clubs, and disks, that are presently beating the Appleworks patches to death, e.g. C.A.C.H.E, TAUG, Big Red Apple, InCider. My present patch disk has 53 patches on it for Appleworks. Let these other guys flog Appleworks. I also feel that anybody who subscribes to COMPUTIST would probably subscribe to one of the above.

I have a suggestion that you might consider. In your magazine you use four pages for COMPUTIST back issues. You might consider printing these four pages every fourth issue. You could also mention that you are doing this every fourth issue and for the three issues in between, put their listings on one page. I feel that most people who are ordering back issues would check every fourth issue; and people who get their first issue would probably want to get two or three issues before they order back issues. You might consider sending new subscribers a list of back issues. This would free up those three pages for other information or possibly reduce the subscription price.

We print what our readers send, so if they send Appleworks patches, well? We tried not printing the back issue listing in one issue. The back issue sales fell dramatically. Since back issue sales pay for a large part of our costs, we paniced and put the listing back in. Personally, I think that the back issue sales fell because first time subscribers

account for a lot of the orders. If a complete listing was sent to all new subscribers, I think your idea would work. And that would free up 3 pages for more info. ..... RDEXed

Kay Jun

First of all, I will begin by writing the same ole' words written by everyone. Your magazine has to be the greatest on the market! (I should know because I receive at least 50% of the computer magazines published each month!). Before COMPUTIST I thought the "bible for software" was the manual for Copy II+. (I was definitely B.C.—Before COMPUTIST).

Secondly, I just received a letter from COMPUTIST to join the COMPUTIST CLUB to help save the magazine. Well, for those of you out there who have dropped subscriptions to COMPUTIST to borrow someone else's COMPUTIST, I hope your disk drives stop working permanently! The tons of backups you were so fortunate to get your hands on (because of COMPUTIST) will soon be coming to a stop if you lose the only publication that has enabled you to stay informed about copy protection.

It seems every time a COMPUTIST magazine is printed there is an article written by someone who is "going to subscribe" but doesn't have the money. Needless to say, they will be the first to complain about the closing of the magazine. This situation brings to mind the old story about working the horse (without feeding him!) until he dies.

I am a new subscriber (about three months) of COMPUTIST. I have purchased some 40 back issues to a tune of $152. I figured I saved over 20 times that amount in backup copies. If every loyal COMPUTIST user out there will stop and think of the money they have saved on backup copies of their software, COMPUTIST is the cheapest magazine on the market!

I can't make up the monetary difference for all the idiotic cheapskates out there, but I'm sending $20 to the COMPUTIST CLUB instead of $10. WHAT ABOUT IT LOYAL COMPUTIST FANS? (It just might keep the horse alive!)

Berrien

Updating ProDOS 16 Disk to GS/OS

Since I am a recent purchaser of a IIgs, I missed the wide spread use of ProDOS 16 (P16). I didn't have to put up with the slow speed and slot problems. With GS/OS I could use disk caching and whiz along through disk access while using the great graphics, sound, and game programs only the IIgs offers!

But wait, almost every bit of software that you and I own has that other operating system— slowDOS 8 or is it 16? Oh well, what's the difference? We are going to get rid of it anyway.

There are many advantages to updating your commercial programs to the new operating system, the first of which is speed. Written in 16-bit assembly language, GS/OS operates much faster. Disk access time is improved because GS/OS reads and writes multiple blocks; not to mention disk caching. GS/OS remembers where it can find needed tools and drivers. Single drive users who launch programs from System Disk 4.0's finder, find that they must insert the boot disk to get tools, drivers and fonts. The speed is still there but disk swapping is slow and annoying.

I like the security of having updated files on my disks and knowing that my operating system can handle gigabytes of information! The super hi-res boot display leads nicely into the graphic desk top environment. It also hides start program titles for a more professional look.

To update and use disks you need an Apple IIgs, System Disk 4.0, ROM version 01 and 512K RAM. Also, the target disk must have about 170 blocks free. Remember we are going to delete some files in the process. Now, using a copy program or the finder, make edits to backup copies of your unprotected ProDOS 16 disks.

Edit your Disk

1. Delete ProDOS from the main directory of your disk.
2. Delete P16 from the SYSTEM subdirectory of your disk.
3. Create a subdirectory in SYSTEM named FSTS.
4. Copy GS/OS from System Disk 4.0.
5. Copy ProDOS from SYSTEM.DISK to your disk's main directory.
6. Copy START.GS.OS, GS.OS, and ERROR.MSG from SYSTEM to the SYSTEM subdirectory on your disk.
7. Copy PRO.FST from FSTS to FSTS on your disk.

Notes:

Some notes on the files: ProDOS sends the boot over to SYSTEM. START.GS.OS, GS.OS, AND ERROR.MSG make up the actual operating system. PRO.FST is a file system translator which allows GS.OS to read ProDOS formatted disks.

I'm a little bit sketchy about the last step in updating to GS.OS. Although I've gotten everything to work, some contradictory examples confuse me. After GS.OS is loaded it looks for a .SYSTEM, .SYS16, file or one named START (the finder on 4.0 is named START). I thought that it looked in SYSTEM alone but after updating Music Studio 2.0 I noticed that it launched the main program in another directory. I suppose this is something due to Music Studio program itself, because it never works that way on any other of my disks.

Some of my disks were easy because they already had a file named START, which made GS/OS happy. With every other case I found that if I copied the program file from the main directory to SYSTEM and renamed it START, that everything worked fine. It works, but it's messy. Someone out there must know how to make a START file (hint, hint).

If there is space on the disk, copy CACHE.NDA into the desk accessory subdirectory. This will speed things up even more. Remember that if you plan to use a printer, even a 5.25 inch drive, you have to "install" their respective driver to your disk. Use the installer program from 4.0's Tool disk.

That does it. I have converted software such as Paintworks, Deluxe Paint II, Defender of the Crown, Warlock, and Super Star Ice Hockey; in fact, I have yet to find a disk for which converting will not work.

Now, I don't have to wait for P16 to look around my empty 5.25" all the time. GS/OS relieved me of Warlock's long boot time and helped tame Defender of the Crown's endless disk munching.

If anyone can improve on the methods above please write COMPUTIST or me. I figured that after a year, it was about time I contributed. I hope someone has been helped and valuable space not wasted. Now some questions:

? What are the differences in IIgs graphic and sound files? How can you convert them?

? To Dave Morgan, endless lives in WOF! But how do I write the edits to the bloody disk? The altered formats make it impossible.

? If I have CACHE.NDA on my disk, yet the program doesn't use the standard desktop interface (therefore no "apple"), does it still work?

? What can anyone tell me about graphic digitizers for the Apple IIgs? I've heard names like Thunderscan and Computer Eyes, but that's about it.

? Are there other great "underground" magazines we should know about?

Another Note: It was great to see the many letters in last months issue about converting AppleWorks to a DOS 3.3 text file. If we put our heads together we can answer any question. Also, what's this about losing 35 subscribers since last issue? Let's get out there and spread the word, leave a text file or something on any disks you give out or on BBS's.

PS. To all those publishers reading and checking out the superior competition: Let's see a IIgs specific magazine. I'm jealous of all those Amiga magazines with their great pictures on the front and what looks like good info on pushing their machines to the limit.

Leh-Wen Yau

Softkey for...

Where in the World is Carmen Sandiego? (IIgs)

Broderbund

Broderbund just ported the popular educational game, "Where in the World is Carmen Sandiego?" to the IIgs. The IIgs version of course provides much improved graphics and sound with the graphic desktop environment.

For those who own the original 64K Apple II version of the program, you can take advantage of Broderbund's general policy of exchanging products for different computer configurations. You need to send in the original program disk, the manual, backup disk(s) if you purchased any, and the exchange fee of $15.00 plus $3.50 for shipping and handling.

It is not surprising that the program is copy-protected. But again, the protection scheme is the same as on other earlier Broderbund products: Track 20/21 nibble count scheme. Disk 1 (/Carmen.World1) is really just a copy of the System Disk and is copyable. You will probably want to use your own System Disk instead. The protection is on the main file, Carmen.World of Disk 2 (/Carmen.World2).

I used ProSel's Block Warden for the deprotection process. My purpose was not trying to decipher exactly how the protection code was done in detail, but to achieve the deprotection itself.

I found the sequence A2 20 A0 01 on the second block of Carmen.World, which proved to be quite convenient. I located the beginning and the end of this particular nibble counting routine, which told me two things: a) This routine started at offset 0212 from the beginning of the main code segment, and, b) this routine ended with an RTL instruction, indicating that it was JSL'ed from somewhere.

Next I searched for the sequence 22 12 02 (JSL xx0212) and was rewarded with one occurrence only. Again I located the beginning and the end (again an RTL) of this particular routine. It was then a simple matter of planting an RTL at its beginning, effectively bypassing the whole thing.

Here is the step by step procedure:

1. Make a copy of Disk 2 /Carmen.World2.
2. Make the following change on the copy:

Blk	Byte(s)	From	To
$67	$22	0B	6B

3) Write the block back to the disk.

Note that Block $67 is the relative Block 96 (decimal) of the file Carmen.World (in case you use Block Warden).

Furry

Playing Tip for...

Leisure Suit Larry

Sierra On Line

In response to Stephen Caraco's request for a way around the questions appearing before you can play Leisure Suit Larry, just press "option-X," when they appear.

Playing Tip for...

Zany Golf

Electronic Arts

To play the bonus screen on Zany Golf, get to the Energy Hole, the ninth level. You'll notice a mouse with white eyes, in the darkness by the laser cannons. When his eyes turn red, putt the ball into his hole. We hope you like playing Breakout (yes, that was a hint).

Playing Tip for...

Alien Mind

PBI Software

If you press "n" on any level of Alien Mind, you will be transported to the next level. Be careful, however, because you will not know the passwords for the next level.

? Alien Mind: We are having trouble with the third level of Alien Mind because we don't know what they want for "a scale." Any help would be greatly appreciated.

? Warlock: Also we are having problems with Warlock's eleventh level. Is there something we are missing such as killing the wizard? If so how is that accomplished?

Please add Dungeon Master (IIgs) by FTL to the Most Wanted List. We have gotten a working copy that will load and restore games but when it comes to saving, it bombs.

We find only 3699 subscribers appalling. Let's get some business drummed up for the number one "Hardcopy BBS." We have stopped loaning our copies out and thus are forcing others in Omaha to purchase their own copies.

? We would like to correspond with anyone who could buy us Rastan (IIgs). We can't get it here in Nebraska. We will gladly pay retail plus somthing for your trouble. Please write us in care of COMPUTIST (pg 3, #7).

Spike

Softkey for...

Magic Slate II

Sunburst

I credit the deprotection of these disks to ten percent educated guessing, thirty percent luck, and sixty percent to Donald McClelland's excellent explanation on tracing an error routine.

Requirements:
COPYA
Copy II+ (ProDOS version)
(Recommended: COMPUTIST #64-Donald McClelland's Super Sign Maker Softkey)

40 column version:

1. Bit copy using the "Try Header" parameter on Copy II+.
2. Remove your original and put it away.
3. Replace ProDOS on your copy with ProDOS from Copy II+.
4. Use your sector editor to scan for the string $28 38 60 28 18 60.
5. Change the 38 to 18.

20 and 80 column versions:

1. Boot your DOS 3.3 system disk.
2. Tell DOS to ignore checksum and epilog errors and use COPYA to copy the disk.

POKE 47426,24
RUN COPYA

3. Perform the same sector edit as above.

? Why isn't the softkey for the 40 column version the same as for the 20 and 80 column versions? Heck if I know. I'm just a beginner in the Apple world. Somebody help us out!

This worked on the IIGS and the IIE, but I had problems on an older IIc.

Softkey for...

All About America (5.25" disk)

Unicorn Software

Requirements:
DOS 3.3
Copy II+

1. Boot your DOS 3.3 system disk.
2. Tell DOS to ignore checksum and epilog errors and use COPYA to copy all three sides.

POKE 47426,24
RUN COPYA

3. On side 1 and side 3 use a track copier to copy DOS 3.3 from the System Master (replacing theirs) to the copies.
4. On side 3 rename the file "JELLO" to "HELLO".

Softkey for...

The Game Show (1986 version)

Advanced Ideas

Requirements:
DOS 3.3
Copy II+
ProDOS 1.1.1 (patched)

1. Boot your DOS 3.3 system disk.
2. Tell DOS to ignore checksum and epilog errors and use COPYA to copy the disk.

POKE 47426,24
RUN COPYA

3. Use Copy II+ to format a blank disk with ProDOS.
4. Put ProDOS 1.1.1 on it (size of 31 blocks or less required). See COMPUTIST #59 for the 1.1.1 patch.
5. Copy all files except ProDOS from your CopyA'ed disk to the ProDOS copy.
6. Scan for 28 38 60 with your sector editor and change the 38 to 18. (I found this twice on track 2).
7. Write protect and enjoy.
8. Side 2: Use disk copy.

Softkey for...

The Secrets of Science Island

Grolier

Requirements:
Copy II+
(Recommended: COMPUTIST #59 "The Deprotection Game" by Gerald E. Myers)

Jack R. Nissel's (COMPUTIST #63) softkey didn't work on my version. I belatedly found that he had the right idea. The protection was the same, but it was in a slightly different place. Mr. Nissel offered a one byte change in a specific sector and commented that not everyone wants a lengthy explanation of how the contributor of a softkey figured it out. I on the other hand (being a beginner) want an explanation of some sort because it helps on disks like this one where the original softkey doesn't work, and on other disks by the same publisher.

I went step by step through "The Deprotection Game" and came up with this softkey. It turned out to be basically the same as Mr. Nissel's.

1. Disk copy the program.
2. On the copy search for BD 8C C0. I found it on track $1F, sector 0E of course, but not at byte $3B as on Mr. Nissel's copy.
3. Change the BD to 60.

Thanks to Scotch for starting me out. Greetings to Hollywood.

The Freedom Hacker

ProDOS Directory Format

In COMPUTIST #65, the RDEXed requested info on how the ProDOS directory worked. Well, here it is:

Blocks 2-6 (Whole list in Hex)

Byte(s)	Meaning
04	Number of characters in volume name
05-13	Volume name with trailing inverse characters ($00)
25	Number of files in list (counting undeleteable deleted files)
29,2A	(Lo,Hi) Number of Blocks In Volume
2B-51	File Data #1
52-78	File Data #2

Add $27 for next file buffer

File Buffers (example File Buffer #1)

Byte(s)	Meaning
2B	Number of characters in file name
2C-3A	File Name
3B	Encoded file-type
3E,3F	(Lo,Hi) Number of blocks used by file
40-42	(Lo,Mid,Hi) File length (Endfile)
4A,4B	(Lo,Hi) Start address (Binary file)—or—(Lo,Hi) Relative Fields (Text file)

File type encoding

File Type byte (Actual ID)	File type 3 letter (Used by many programs)	Meaning (Kind of file)
00		Typeless file
01	BAD	Bad block markoff
02	PCD	Apple III Pascal
		Apple IIGS Super Hi-Res Storage
03	PTX	Apple III Pascal text
04	TXT	Text file
05	PDA	Apple III Pascal data
06	BIN	Binary file/Machine language
07	FNT	Apple III font file
08	FOT	Graphics Screen file
09	BA3	Apple III Basic program
0A	DA3	Apple III Basic Data file
0B	WPF	Apple III Word Processor File
0C	SOS	Apple III startup file
0F	DIR	Subdirectory
10	RPD	Apple III RPS data file
11	RPI	Apple III RPS index file
12	???	Apple III AppleFile discard file
13	???	Apple III AppleFile model file
14	???	Apple III AppleFile report format file
15	???	Apple III Screen library file
19	ADB	Appleworks Data Base file
1A	AWP	Appleworks Word Processor file
1B	ASP	Appleworks Spreadsheet file
AB	GSB	Apple IIGS ???
AC	TDF	Apple IIGS ???
B0	SRC	Apple IIGS ???
B1	OBJ	Apple IIGS Object code (source file)
B2	LIB	Apple IIGS ???
B3	S16	Apple IIGS ProDOS 16 Startup? (not sure)
B4	RTL	Apple IIGS ???
B5	EXE	Apple IIGS ???
B6	STR	Apple IIGS ???
B7	TSF	Apple IIGS ???
B8	NDA	Apple IIGS New desk accessory (ProDOS 16)
B9	CDA	Apple IIGS Classic desk accessory(All DOS's)
BA	TOL	Apple IIGS ???
BB	DRV	Apple IIGS Disk/Printer driver? (not sure)
BF	DOC	Apple IIGS Documentation? (not sure)
C0	PNT	Apple IIGS ???
C1	PIC	Apple IIGS Picture? (not sure)
C8	FON	Apple IIGS ???
C9	FND	Apple IIGS ???
CA	ICN	Apple IIGS Icon?? (really unsure)
E2	DTS	Apple IIGS ???
EF	PAS	Pascal area
F0	CMD	ProDOS added command file
F9	P16	ProDOS 16 System file? (Unsure)
FA	INT	Integer Basic (never in ProDOS!)
	COM	Compiled file (Beagle compiler)
FB	IVR	Integer Basic variables file
		Beagle compiler variables file
FC	BAS	Applesoft program
FD	VAR	Applesoft variables
FE	REL	Relocatable code (EdAsm)
FF	SYS	ProDOS System file

Perhaps some of you GS owners (Alex Barth) will clue me in on these weird files I found (like FON, DTS, or even GSB).

Disk Mania:

How to Really Use Your 5.25" Drive

Turning it on:

Any reference to C0E9(49385) will turn the drive on. Use location C0E8(49384) to turn it off.

Move your head:

The locations C0E0-C0E7(49280-49383) move the read/write head. Read 4 locations down (example C0E8 C0E7 C0E6 C0E5) to down step the drive one track or 4 locations up(example C0E3 C0E4 C0E5 C0E6) to up step the drive one track.

Note: All locations must be consecutive; e.g., to step up 3 tracks: C0E0 C0E1 C0E2 C0E3 C0E4 C0E5 C0E6 C0E7 C0E0 C0E1 C0E2 C0E3; or up 2, then down 1: C0E0 C0E1 C0E2 C0E3 C0E4 C0E5 C0E6 C0E7 C0E7 C0E6 C0E5 C0E4.

Drive 1 or Drive 2:

Read location C0EA(49386) for drive 1, or C0EB(49387) for drive 2.

To get to track 0 (recalibrate) use:

```
10 DR=PEEK(49385):REM ON
20 FOR Y=0 TO 18:FOR X=7 TO 0 STEP-
   1:DR=PEEK(49376+X):NEXT X:NEXT Y:REM
   LOCATIONS C087 TO C030 18 TIMES
```

Drum your drive:

Did you notice the drive makes a clunking sound several times when you recalibrated? This is caused by being on track 0 and trying to get to track -1 (impossible). The drive moves a little, but springs back to track 0.

Now that you're on track 0 (you did run the recalibration program above, didn't you), drum your drive once:

```
FOR X=7 TO 4 STEP -1:ZZ=PEEK(49376+X):NEXT X
```

The Drum program:

Here is the original Drum Drive program I made (I updated it with several other options later):

(Use the Recalibration program as lines 10 & 20.)

```
21 ONERR GOTO 50:REM ctrl-C ENDS
22 W=4:REM SET UP I/O
30 GET A$:IF A$= CHR$(3) THEN 50:REM ctrl-C
   CAUGHT?
40 FOR Z=4+W TO W STEP -1:X=PEEK(49376
   +Z):NEXT Z:W=NOT W*4 :GOTO 30
50 X=PEEK(49384):REM DRIVE OFF
60 END
```

Run drive one and two at the same time (program):

```
START   LDA  C0E9    ;Drive On
LOOP    LDA  C0EA    ;Drive #1
        NOP
        NOP
        LDA  C0EB    ;Drive #2
        JMP  LOOP
```

And here it is in Applesoft:

```
10 X=PEEK(49385)
20 X=PEEK(49386)
30 REM
40 X=PEEK(49387)
50 GOTO 20
```

Playing Tip for...

Zany Golf

Electronic Arts

In response to Stephen M. Caraco, to play the bonus screen of Zany Golf without getting par or better, I know a tip. (But can't use it myself, since I have a IIe, not a IIgs.) On one of the levels, there is a mouse-hole. Wait for the mouse's eyes to turn red then nail him with a golf ball.

Softkey for...

Silent Service

Microprose

And finally here's my softkey for Silent Service:

1. Copy with a sector copier, ignore errors.
2. Make a sector edit. (Track 3, sectors 0 & 1 are the file II.)

Trk	Sct	Byte(s)	From	To
03	00	$21	B9	F9
		$C9	DD	CD

Here's how it works: A signature check is done on the protected sector. If the check is bad (a copy) then the computer prints "Hardware Failure" and locks up. If the check is good (the original) then the computer prints some Control D's, and DOS commands. What I did was to trick the computer into printing the commands instead of the message, by changing the pointers to the message! Also, for those that like to "signature" their disks, the picture is standard Hi-Res and is named TITLE.SCRN.

Softkey for...

Grizzly Bears

?

And, a softkey for Grizzly Bears:

1. Copy sides 2-5 using COPYA.
2. Ignore epilogs and copy side 1.
3. Dig out a standard ProDOS disk and a sector editor. Read track 0, sector 0 on original side #1 and save to track 0, sector 0 on copy side #1.

For our "signature" people the picture is standard (auxiliary, main) double Hi-Res and is named TTL.

? Are there any "COMPUTIST's" in Camarillo, California that would like to get together? Write me care of Computist.

P.S. I got the notice. I have two things to say:

1. I, too, didn't order your magazine from Nibble until a friend recommended it. Please drop your nibble ads, and use the $800 for something else.
2. Please, PLEASE, don't slow to 8 issues a year. I crave info, and as far as I know, COMPUTIST is the only great info magazine. (Nibble rates at good, InCider is O.K., and A+ is a waste)

Nightshade

Softkey for...

Times of Lore

Origin Systems

I thought that Times of Lore would not be on the Most Wanted List more than a month, at the most. Captain Dan did all the work when he told us how to crack Ultima V. Just use his controller and code, but add a couple of pokes to get past some bad sectors, at least there were some on my original disk.

Controller

```
1000 REM ULTIMA V & TIMES OF LORE
1010 TK = 0:ST = 0:LT = 35:CD = WR
1020 POKE 47503,14: POKE 47426,24
1030 UB = 0:T1 = TK: GOSUB 490
1040 IF UB = 1 THEN 1060
1050 IF TK = > 3 THEN CALL 6400:UB = 1
1060 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST <
   DOS THEN 1060
1070 IF BF THEN 1090
1080 ST = 0:TK = TK + 1: IF TK < LT THEN 1040
1090 UB = 0: GOSUB 490:TK = T1:ST = 0: CALL
   6417
1100 IF UB = 1 THEN 1120
1120 GOSUB 430: GOSUB 100:ST = ST + 1: IF ST <
   DOS THEN 1120
1130 ST = 0:TK = TK + 1: IF BF = 0 AND TK < LT
   THEN 1100
1140 IF TK < LT THEN 1030
1150 HOME : PRINT "COPY◊DONE" : END
10010 PRINT : PRINT : PRINT CHR$ (4);
   "BLOAD◊ULTIMA◊5.SC,A$1900"
```

Checksums

1000-$356B	1060-$1320	1130-$7561
1010-$3266	1070-$DFDA	1140-$54D9
1020-$9B0F	1080-$5F46	1150-$2CFE
1030-$CD10	1090-$3375	10010-$6F09
1040-$70F1	1100-$C7D6	
1050-$1C24	1120-$E5D4	

The machine language code is the same. So, if you have it already saved, just reuse it. Otherwise, enter the following:

ULTIMA.5.SC

```
CALL -151
1900: A2 00 BD B8 BF 18 69 11  $E96C
1908: 9D B8 BF E8 E0 10 D0 F2  $784F
1910: 60 A2 00 BD B8 BF 38 E9  $353D
1918: 11 9D B8 BF E8 E0 10 D0  $B7FB
1920: F2 60  $E0D7
BSAVE ULTIMA 5.SC, A$1900,L$022
```

THF

Embedded Serial Numbers

? This open letter to COMPUTIST readers involves copy protection methods which do not allow the owner of commercially developed software any way of accessing one's name/serial number. An example is the latest version of Essential Data Duplicator (EDD 4.9/4.8), where your serial number pops right up on the screen in view of everyone.

Anyway, I would like to be able to do something similar, should the need arise. Specifically, has anyone else out there has had similar challenges with accessing the serial number on EDD 4.9/4.8? It would be neat to be able to rewrite it with anything you desire, and discover a way of doing that to one's own programs, even if only to be able to say, "I did it!" Mere compiling of an Applesoft program, and even copy-protecting it, isn't going to cut it, since a searching sector editor will find it very quickly, again of course depending on the degree of sophistication of the copy protection scheme(s) used.

Top Gun

Softkey for...

Space Quest II

Sierra On-Line

Computist has been terrific reading for the eighteen months that I've been a subscriber. I wish to make my contribution, meager as it might be. My copy of Space Quest II by Sierra for the Apple IIgs appears to have the protection in a different location than where Mr. Troha described. Only the first disk had the protection code. Try this:

Blk	Byte(s)	From	To
2CF	94	22	AF
269	166	22	AF

If this does not work, try searching for the hex strings $3C 03 01 22 75 16 0D and 02 F0 04 22 3A 1A 13. Change the 22's to AF's, only on a copy, of course.

Hard Drive Installation: The Last Ninja

I had a bit of trouble getting the deprotection for the IIgs version of The Last Ninja by Activision to allow the program to work from my hard drive. If you wish to install the program on your hard drive, you need to search for the string "/THE.LAST.NINJA". This prefix is contained in the file NINJA.SYS16. Place all the game files in a directory with a prefix that has fourteen characters

after the leading slash. Change the prefix in the file NINJA.SYS16 to your new prefix.

My files are in a directory with the prefix "/HARD.GAMES.NIN". There seems to be a check for the prefix of the original disk as well as the check for the bad block read. Not having the assembly language background to locate the code, I'll leave it to you experts.

In closing, the best articles in the newsletter are those that list the code and explain how the protection works. I encourage those of you with the ability to do this to submit your articles with as much code and as many comments as possible. We rookies really appreciate it. AND, everybody, join the new COMPUTIST Club!

Jerry P. Mulder

Modem Questions

? This request is to all COMPUTIST readers, and involves compatibility between different types/brands of modems, whether internal/external, as well as communications programs to use with these modems. I consider myself a complete novice when it comes to knowledge about modems, and my request to you is as follows, describe your experience and expertise in this very interesting aspect of microcomputing:

1. Type of modem you have, advantages/disadvantages? (the good, the bad and the ugly)

a) Internal?

b) External?

c) Type of capabilities? (auto-dialing, on-hook dialing w/ speaker, tone/pulse, etc.)

d) Baud rate capability?

e) Ease of overall use with different communications programs? (if applicable)

2. Type of communications program you have?

a) Stand-alone? (whether copy-protected or not)

b) Integral part of another program? (word processor, etc.)

c) Ease of use with different types of modems? (if applicable)

3. Possible sources for "tried and true", good-value modems at reasonable cost.

4. Any other information which may be of help, such as specific combinations of modems and communications programs which are known to work together well.

Write to me at:
5601 - 219th Place Southwest
Mountlake Terrace, Washington 98043

Bill Jetzer

16 Byte Hex Dump for all II's

Requirements:
ProDOS or DOS 3.3

I recently had an opportunity to use a IIgs and I really liked the hex dump with the ASCII. I set out to make a similar routine for all us underprivileged people who don't have a IIgs. The result is HEX.DUMP, which provides a 16 byte hex dump complete with ASCII values. It is useful for viewing code under 80 columns and dumping to printers.

To key in HEX.DUMP, either enter the source code and assemble it or enter the hex dump at the end of the article. I used Merlin Pro to assemble it.

To use HEX.DUMP, simply BRUN it at any address (it is fully relocatable). When you want to view a range of memory, just make sure you are working in 80 columns and get into the monitor. The syntax is as follows:

start.finish ctrl-Y

For instance, to view all the Applesoft commands, type **D0D0.D25E ctrlY**. Here is a portion of what you should see:

```
D0D0- 45 4E C4 46 4F D2 4E 45 58 D4 44 41 54 C1 49 4E    ENDFORNEXTDATAIN
D0E0- 50 55 D4 44 45 CC 44 49 CD 52 45 41 C4 47 D2 54    PUTDELDIMREADGRT
D0F0- 45 58 D4 50 52 A3 49 4E A3 43 41 4C 4C 50 4C 4F    EXTPR#IN#CALLPLO
```

If you don't have 80 columns, you can still dump a range to your printer. The syntax then changes to this (remember to change the "1" to your printer slot):

1 ctrl-P start.finish ctrl-Y 0 ctrl-P

While viewing the hex dump, pressing the space bar will allow you to step through one line at a time. Pressing ESC stops the listing. Also, if you specify any address in the $C000 to $C0FF range, it will be disregarded. If the program were to access these locations, strange things would happen, i.e., the computer would hang, the drive would turn on, etc.

To Ronald E. Riggs: You can change the file type of your HELLO program without having to INIT a disk by using a sector editor. Read in track $00, sector $0D and go to position $42. If you are using ProntoDOS or HackerDOS, read in sector $0B instead. Then make the change as indicated by the RDEXed (COMPUTIST #65).

To Dave Morgan: I used my brother's IIe to crack Catalyst, and there is no E1 bank in a //e. There has to be a different way to change the markers.

? 3.5" Utilities: How about a nibble editor for all 3.5" drives, including Unidisk? Also, if someone knows how to change prologues, epilogues, etc, how about a PRODOS.IOB.3.5? If someone is adventurous enough to undertake the project, here are a few suggestions:

1. Use PRODOS.IOB.5.25 as a guide.

2. Bring back the "Format Disk" option. 3.5" drives have this function built in.

3. Use extra memory. The majority of 3.5" drive owners have only one drive. Without using extra memory, one would have to swap disks 28 times.

ASCII 16

```
02E3: 20 58 FF BA CA  $EEA1
02E8: BD 00 01 18 69 59 8D F9  $6683
02F0: 03 E8 BD 00 01 69 00 8D  $EB5A
02F8: FA 03 A9 4C 8D F8 03 60  $AC60
0300: A5 3C 29 0F D0 62 A5 3C  $779F
0308: 18 E5 FA 49 0F 85 3C 18  $E23C
0310: 65 3C 65 3C 69 05 AA 20  $8473
0318: 4A F9 A5 FA 85 3C A5 FB  $DB9E
0320: 85 3D B1 3C 09 80 C9 FF  $CB83
0328: F0 04 C9 A0 B0 02 A9 AE  $7D27
0330: 20 ED FD 20 BA FC B0 C7  $C667
0338: A5 3C 29 0F D0 E4 AD 00  $8D71
0340: C0 2C 10 C0 C9 9B F0 B7  $4B52
0348: C9 A0 D0 05 AD 00 C0 10  $B0FC
0350: FB A5 3D C9 C0 D0 06 E6  $C4D5
0358: 3D A9 00 85 3C 20 92 FD  $EC8C
0360: A5 3C 85 FA A5 3D 85 FB  $B0E2
0368: A9 A0 20 ED FD B1 3C 20  $E046
0370: DA FD 20 BA FC 90 89 B0  $868A
0378: 8D  $0B40
```

ASCII 16 SOURCE

```
1         *
2         * 16 BYTE HEX DUMP W/ASCII
3         * by Bill Jetzer
4         *
5         * Merlin Pro Assembler
6         *
7         * Equates
8         *
9         A1L     =       $3C     ;Position pointers
10        A1H     =       $3D
11        PTRL    =       $FA     ;Program position
pointers
12        PTRH    =       $FB
13        STACK   =       $100    ;Beginning of the stack
14        USRADR  =       $3F8    ;CTRL-Y vector
15        KBD     =       $C000   ;Minus if key pressed
16        KBDSTRB =       $C010   ;Clear KBD
17        PRBL2   =       $F94A   ;Print # spaces in X-reg
18        NXTA1   =       $FCBA   ;Increment A1 pointers
19        PRA1    =       $FD92   ;Print Y & X regs as
address
20        PRBYTE  =       $FDDA   ;Pring A-reg as byte
21        COUT    =       $FDED   ;Print A-reg as ASCII
character
22        RETURN  =       $FF58   ;RTS instruction
23
24                ORG     $300
25
26        *
27        * Set up CTRL-Y vector by
28        * using the stack to determine
29        * where the program was BRUN
30        *
31        INIT    JSR     RETURN  ;Put start address on
stack
32                TSX             ;Find start address
33                DEX
34                LDA     STACK,X
35                CLC
36                ADC     #<XAM-INIT-2    ;Add proper
offset
37                STA     USRADR+1        ;and set up
CTRL-Y vector
38                INX
39                LDA     STACK,X
40                ADC     #0      ;Add 1 if carry set
41                STA     USRADR+2
42                LDA     #$4C    ;Add jump instruction
43                STA     USRADR
44        EXIT    RTS
45
46        *
47        * Mimic Apple's monitor with
48        * ASCII and 16 byte enhancements
49        *
50        MOD16CHK        LDA     A1L     ;Get lo byte
pointer
51                AND     #$0F    ;Check if at end of line
52                BNE     DATAOUT;If not, keep printing
53
54        ASCOUT  LDA     A1L     ;Calculate number of
spaces
55                CLC             ;Trick to subtract 1 extra
56                SBC     PTRL    ; to get proper offset
57                EOR     #$0F    ;Subtract result from $0F
by EOR
58                STA     A1L     ;Save result
59                CLC
60                ADC     A1L     ;Multiply by three by
adding
61                ADC     A1L     ; result to itself twice
62                ADC     #5      ;Add 5 extra spaces
63                TAX             ;Put into X-reg
64                JSR     PRBL2   ; and print the spaces
65                LDA     PTRL    ;Put old pointers into A1
66                STA     A1L
67                LDA     PTRH
68                STA     A1H
69        :1      LDA     (A1L),Y ;Get an ASCII value
70                ORA     #%10000000      ;Set hi bit
71                CMP     #$FF    ;These don't print, so
72                BEQ     :2      ; print a period instead
73                CMP     #$A0    ;Check if CTRL char
74                BGE     :3
75        :2      LDA     #"."    ;Print CTRLs as periods
76        :3      JSR     COUT
77                JSR     NXTA1   ;Increment pointers
78                BCS     EXIT    ;Exit if at end of range
79                LDA     A1L     ;Check if done with line
80                AND     #$0F
81                BNE     :1
82
83        XAM     LDA     KBD     ;Check keyboard
84                BIT     KBDSTRB         ;Clear KBD
85                CMP     #"["&$9F ;ESC = abort
86                BEQ     EXIT
87                CMP     #" "    ;Space = step
88                BNE     :2
89        :1      LDA     KBD     ;Wait for key
90                BPL     :1
91        :2      LDA     A1H
92                CMP     #$C0    ;Don't print $C000-$C0FF
93                BNE     :3      ; because strange things happen
94                INC     A1H
95                LDA     #0
96                STA     A1L
97        :3      JSR     PRA1    ;Print address and "-"
98                LDA     A1L     ;Save current address
99                STA     PTRL
100               LDA     A1H
101               STA     PTRH
102
103       DATAOUT LDA     #" "    ;Print a space
104               JSR     COUT
105               LDA     (A1L),Y ;Get data byte
106               JSR     PRBYTE  ; and print it
107               JSR     NXTA1   ;Increment pointers
108               BCC     MOD16CHK        ;Loop back if not end of
range
109               BCS     ASCOUT ;If done, finish printing ASCII
```

Edward J. Hoerner III

? If I wish to copy protected programs and work on deprotection schemes at my leisure, which is the best copy program to use: COPYA, Copy II Plus "copy disk", or Locksmith 6.0 "fast copy"?

COPYA is often required by deprotection procedures because it can be easily modified. Usually the author will explain exactly how to go about the modification. Copy II Plus and Locksmith 6.0 both include "fast copy" programs that are superior to COPYA in speed and error detection. These fast-copy programs are not as easily modified as COPYA, though, and just which of these three one chooses is mostly a matter of personal preference. The bottom line is, "If it works, use it. If it doesn't work, try again with a different program." ..... RDEXed

I am disappointed with Super IOB. It is frustrating to attempt to deprotect a progam only to find out I must obtain a prior issue of Computist to complete the routine. I suggest an automatic deprotection disk with complete deprotection technology on disk similar to Copy II Plus or Locksmith 6.0. This could become a best seller if handled properly. I would imagine Central Point is doing OK.

I am just a beginner having purchased my IIgs last summer. I am learning very slowly. I would be interested in your beginner's notebook even if I am not a new subscriber.

Another suggestion: Please list version or release numbers of titles for deprotection schemes you print. I have tried to deprotect my copy of a title you list only to find the procedure does not work.

I joined your club. I was under the impression that members would receive a certificate of membership. I have not.

I hope as I become more proficient in protection scheme cracking, I can contribute to your magazine. In the meantime, keep up the good work.

Our authors are encouraged to mention version and release numbers. We all are sometimes faced with problems though, if a publisher fails to identify new updates or seemingly spends more money on new copy-protection schemes than on creating programs useful to its customers. We are working on getting the certificates printed on a Laserwriter but we held off waiting for a volunteer Sysop for the BBS so that we could send that info also. One thousand letters is $250 just for postage. It seemed like a good idea at the time. ..... RDEXed

Jere T. Murray

If any readers have experienced difficulties with a IIgs needing to be warmed up before it will boot properly, I would like them to write to me. Mine displays an unintelligible screen and halts when first turned on. If it is left that way for a few minutes, turned off and then on again, it boots properly.

The problem began when the new ROM and VGC chips were installed and warming the VGC chip with a finger for a few minutes solves the problem. Apple won't admit they know anything about this, but I'm sure several others have brought it to their attention. I'd like to know how many of us are in this fix and try and get the problem recognized and resolved.

Jere T. Murray
P.O. Box 2857
Homer, AK 99603-2857

Cristian Preda

? F-15 Strike Eagle: I need help backing up a very stubborn game! F-15 Strike Eagle by Microprose, Version 1.1, 1985.

Using Copy II Plus v. 5.5, Auto Bit Copy option, I made a new disk that will boot, but later will crash with the "Hardware Failure" message. Using Copy II Plus v. 8.3, I made a disk that will not boot.

The same things happened when I used the Super IOB Collection; all the copies crashed with a "Hardware Failure."

I am also having problems backing up Chuck Yeager's Advanced Flight Trainer by Electronic Arts, and Strike Fleet by Electronic Arts/Lucasfilm Games.

Daniel K. Klosinski

? In COMPUTIST #65, IBM RDEX, mention is made of several disk zap programs for IBM: SecMod, Disk Explorer, and Media Magician. In COMPUTIST #61, page 44, a program called "Cracker" is mentioned.

I have been trying to locate these programs to purchase, to no avail. Can anyone tell me where I can obtain these four programs? Help!

Ken Ball

Help! I have been a six month user of your great magazine. I have learned a lot, but I am stuck. Even though I have half a dozen COMPUTIST magazines, a Super IOB collection of three volumes, and the COMPUTIST Starter Kit Disk, any time it comes to finding a Track, Sector and Byte there is nothing I can do. I also have copy programs like Copy II Plus versions 7.2 and 5.0, and other common ones. Now, how can you access a Track, Sector and Byte and change them like the magazine says to do? Am I missing something obvious (probably)? Please help, my investment in your services deserves it. Thank you.

How about it readers, would someone like to write a letter explaining tracks and sectors and what you are doing when you use a sector or block editor? ...RDEXed

Bob Hirschfeld

Considering all the benefits I've received from COMPUTIST since I began subscribing back in the old CORE and HARDCORE days, I am happy to send you $10 to join the club.

I still haven't managed to break any nibble counts or complicated stuff, but COMPUTIST has certainly taught me the ins and outs of sector and block edits.

? Tetris: You recently printed a way to deprotect Tetris (the 5 1/4 inch version). Although I have a IIgs, and love the game, I'd like to have a backed up version of the IIe version as well.

Your contributor said the 3 1/2 inch version contained a file that was actually the IIe version under a different name. However, my version of TetrisGS does not have that file, or anything remotely close.

Could you restore Tetris for the IIe to the "Most Wanted List", with instructions for de-protecting, rather than taking it from the 3 1/2 inch disk?

Derek

? I am a new subscriber to your magazine. I was wondering if someone at COMPUTIST might be able to help me find a certain user's group called "Black Bag". At the time being, I have no idea of where they might be found; all of their numbers have been disconnected (modem). Any help that you might be able to give me would be greatly appreciated.

Hanshans

? Science Toolkit Softkey by Bill Jetzer in COMPUTIST #61, page 25: All four copy disks boot.

Master Module and Module 1 (Speed and Motion) are OK.

However, Modules 2 and 3 (Earthquake Lab and Body Lab) then ask: "Insert your Sc. T. Master disk with the write protect tab removed."

Doing this with the copy Master, or even risking the original, does not help; the program ends at this point.

What to do next?

Doug Coughler

? APT's for Bard's Tale II and Ultima IV: I have been trying to edit my Bard's Tale II characters without any luck. I've only been able to find the bank in Track $01, Sector $01. I've had similar problems with Ultima IV.

I was wondering if someone could send me a copy of APT's on the two programs or the location of the characters on the disk.

Kim Griffith

ThunderScan Problems

I recently had a problem with ThunderScan that I think you should inform your readers of.

After installing ThunderScan on my IIgs, I found that some things just didn't work quite right. Some programs would "misread" the keyboard and I could not bring up the control panel by any method. Instead, the diagnostics routine would run. Disconnecting ThunderScan solved that. I could find no reference to any such problem in the manual, so I wrote to ThunderWare to let them know of the problem and ask for a cure, if they knew of one.

I received a reply stating that ThunderScan must be disconnected when running any program that uses the Open-Apple key, it must be disconnected to reboot the GS, and I should be able to access the control panel. I wrote back to ThunderScan to tell them what I'm about to tell you, but have not received a reply.

For some of us, this bug is impractical or even impossible, and we wouldn't have bought ThunderScan had we known about it. I feel at the very least, a notice should be included in the manual. If that can't be done, a notice should be packed with every unit. Better yet, I think this should be stated in their advertisements so some of us don't spend $200 on something we can't use. However, ThunderWare doesn't seem to be too concerned, so in your readers' interest, I think you should inform them of the bug.

Other than that, ThunderScan does work very well, better than I had expected. I would recommend it with the above caveat.

P. R. Bell

? I tried the simple scheme in Super IOB instructions on a DOS 3.3 initialized disk. (INIT HELLO). It copied the disk OK but was unbootable. Added a Hello to the copy. Still Unbootable. Fails to monitor with the screen, "9E04 A=74 X=38 Y=1B P=35 S=FB". Replacing the DOS with Master Create made it bootable. Is this what was expected?

Many Super IOB controllers do not copy the first three tracks (where DOS 3.3 resides) since they expect to write to an already initialized disk with normal DOS on those tracks. If you wish to copy the entire disk, be sure the start track in your controller is 0, not 3. .....RDEXed

George Sabeh

? Concerning Edward Teach's Double DOS article in COMPUTIST #61, pages 12-14 — is there an error in his modification to Super IOB? His new line 10085 appears to be missing some numbers:

His listing was:

```
10085 HOME:DOS=16:HX$="00 01 02 03 04 05 06 07
   08 09 10 11 12 13 14 15 16 17 18 19 1A 1B 1C
   1D 1E 1F 20 21 22"
```

Should there be "0A 0B 0C 0D 0E 0F" in that line between the 09 and 10?

Yes, and thank you for spotting this bug! It was a typographical error on our part, and encourages all of us volunteer editors when we realize that even our boss isn't perfect.

The correct line should read,

```
10085 HOME:DOS=16:HX$="00 01 02 03 04 05 06 07
   08 09 0A 0B 0C 0D 0E 0F 10 11 12 13 14 15 16
   17 18 19 1A 1B 1C 1D 1E 1F 20 21 22".
```

.....RDEXed

M. M. McFadden

Regarding Mr. Rapheld's problems with Transfer in COMPUTIST #65:

I'm not really clear on what the problem is. He states that the program "goes through its operations without accessing a 'NAME$' in the catalog and finishes with 'DONE'." What operations does it perform successfully, and where does it fail?

Since there seems to be some confusion about DOS 3.3 vs. ProDOS, I would like to remind everyone that these programs MUST be run under ProDOS. Also, make sure that the RDOS version parameter (the variable "v") is set correctly.

Good luck.

Dennis Whitcomb

Advanced Playing Technique for...

Thexder (v. 2.7)

Sierra On Line

My copy of Thexder, v. 2.7, had a different byte sequence for unlimited energy than that reported in COMPUTIST #60. Changing F0 to 80 still works.

The byte sequence I found was,

8179: 2E F8 38 AD C7 CB F0.

Skip Wright

I have been a subscriber to your magazine for a few years now, and I enjoy it thoroughly! Please keep up the good work. I am writing for two reasons:

First, would you please put Chuck Yeager's Advanced Flight Trainer back on the Most Wanted List. I found that this went off the list when the softkey was published for the IBM RDEX. I looked over my back issues, and have been unable to find an Apple softkey. Thanks.

Secondly, I would like to point out that if an Apple IIgs owner presses the space bar upon booting OS/GS, he will find a possibly more useful display than the thermometer that usually occurs.

Again, keep up the great work!

David Caddell

In response to Stephen M. Caraco's question in COMPUTIST #65 about how to access the secret level on Zany Golf:

1. Play through all nine holes any way you can.
2. At the energy hole there is a mouse hole, at the far right of the screen, with blinking white eyes. Watch these eyes; when they turn red shoot into the mouse hole, and voila, you are in the mystery hole.

P.S. There is a crack for Alien Mind on Applelink.

Paul Merritt

I most certainly will enclose a check for $10.00 to support the continuation of a resource I have used since its beginning. It has become even more invaluable since I have added David Hopkins' Super Index, which I highly recommend. I think the addition of a bulletin board is S-U-P-E-R!

My request for the Most Wanted List is Music Printer by Micro Music, Inc. I am able to copy the program with COPYA, but the backup hangs at a certain point. My guess is that the protection is "POKEd" in the HELLO file. Any help would be appreciated.

Users of Beagle Brothers Superfonts may be interested to know that they have use of three file types for fonts- FNT, FON, and $F7. Sources of fonts are as diverse as programs such as Multiscribe, Publish It!, 816 Paint, the Apple IIgs System Disk, and some games. Look for a pathname like /PROGRAM.NAME/SYSTEM/FONTS.

Pete Testart

Pete Testart reviews software and magazines for PenApple, the San Mateo County Apple Users Group. He kindly sent us a copy of his comments concerning COMPUTIST:.....RDEXed

"This Newsletter Club is dedicated to breaking copy protection on disks owned by members. They publish fixes sent in by readers on how to deprotect programs. They also publish the most honest reviews of software and hardware in the business. If they say it's good, it is, and if they report problems, this is a report from someone who bought the program. The group, largely volunteer, is asking for more subscribers because their sole advertising at this time is word of mouth and apparently satisfied subscribers like me are not talking enough. They also have a name problem. Their name sounds similar to a very bad Commodore magazine. Fee $24/year = 8 issues."

Joseph P. Karwoski

Softkey for...

Peterson's SAT Success for Micros

Peterson

Requirements:

Enough disks to copy the 4 originals (programs are on both sides of the originals).

COPYA from DOS 3.3 master.

1. Boot your DOS 3.3 system disk.

```
RUN COPYA
ctrl-C                          at the copy prompt
70                              to delete line 70.
CALL-151                        Get into the monitor
B988:18 60
B954:29 00
3D0G                            return to BASIC
RUN
```

You are done and can now copy the program with any sector copier. Don't forget to copy all eight sides.

If you are interested, I found this by using the nibble editor in Copy II+. I found that they change the prolog on the disk. Track $0 was the normal D5 AA 96, but Track $1 was D4 AA 96. The prologs on the odd tracks were D4 AA 96, so I decided to ignore them. The "B954:29 00" will ignore the D5 in the prolog and the "B988:18 60" will ignore both in the epilog (both the prolog and Epilog are in the address field).

I hope this has helped, I know it did for us. Our students can now use the program without danger of destroying the originals.

Good explanations are always helpful! .....RDEXed

Bill Todd

Softkey for...

Kid Niki
Commando

DataEast

Recently I purchased Kid Niki and then a friend of mine gave me Ikari Warriors and Commando. I wanted to make copies of all the games, but I only had a softkey for Ikari Warriors from COMPUTIST #52, page 13. I sent away for the back issues to copy the other games, but by the time the back issues got here, I had already deprotected the games myself.

On DataEast games, the protection on the disk is held by, or related to the byte "D0" in some way. Search for a sector with a lot of "D0"s on it. If you replace the "D0" with "EA" and the byte after it with "EA" you can deprotect the software. Usually the bytes that you need to change are on Track $00. So, now here is how to deprotect two DataEast games by using this method. (Note: When you use this method, don't change all the "D0" bytes to "EA", usually changing 3-5 bytes does it. If the disk will not boot correctly after you tried to deprotect it, try changing some different "D0..." bytes. I had to try several combinations before I changed the combination of "D0..." bytes that would deprotect the game.)

Kid Niki

1. Copy Kid Niki with any copy program that ignores errors.

2. Load the sector editor and change these bytes on your copy:

Trk	Sct	Byte(s)	From	To
$00	0E	3C-3D	?	EA EA
		4A-4B	?	EA EA
		53-54	?	EA EA
		5C-5D	?	EA EA
		7A-7B	?	EA EA

Commando

1. Copy Commando with a copy program that ignores errors.

2. Load the sector editor and change these bytes:

Trk	Sct	Byte(s)	From	To
$00	06	4B-4C	D0 F4	EA EA
		54-55	D0 36	EA EA
		5D-5E	D0 2D	EA EA
		70-71	D0 F4	EA EA
		7B-7C	D0 0F	EA EA

Advanced Playing Technique for...

Commando

DataEast

This A.P.T. makes your man on Commando get unlimited lives and grenades. There is something about the bytes "E9 01" on DataEast games that holds a number, like the number of men, grenades, bullets, etc. I found this out from the Ikari Warriors A.P.T. that William Moolenaar wrote along with his Softkey for Ikari Warriors in COMPUTIST #52. You must find the same number of "E9 01" bytes as limited things on the game and all the bytes must be on the same track. For example, on Commando you have a limited supply of grenades and lives, (that means there are two things in limited supply on the game) so you need to find two "E9 01" bytes on the same track and sector. Then change the bytes to "EA EA", like this:

Trk	Sct	Byte(s)	From	To
$1C	09	52-53	E9 01	EA EA
		78-79	E9 01	EA EA

Softkey for...

Police Quest

Sierra

Requirements:
4 blank disks
A copy program that ignores errors
A sector editor

In order to "crack" my copy of Police Quest, I did the same thing that I did for Kid Niki and Commando, I looked in my back issues of COMPUTIST to find a softkey for some other Sierra games and then adapted their method to my game. After looking through many softkeys for Sierra brand games, I came across Captain Dan's softkey for King's Quest III in COMPUTIST #61, page 36, and I found some similarities. I searched for the bytes "20 00 FF", like Captain Dan did in his softkey. I had almost searched half the disk and still not found the bytes. Then, I found them. On Track $0D, Sector $04, I saw the bytes "20 00 FF". I immediately changed the bytes to "EA EA EA" like the softkey for King's Quest III said to. When I was done, it booted and worked perfectly. So here's the sector edit you make: (Remember— first you copy Police Quest with your copy program, then make this edit on the copy only!)

Trk	Sct	Byte(s)	From	To
$0D	04	A5-A7	20 00 FF	EA EA EA

That's all folks! Now you have a deprotected copy of Police Quest.

On all the games that I have deprotected in this article, I did exactly the same thing. I looked in back issues for softkeys to other games that were made by the same company as my game was. I have found that most software companies use the same, or similar protection on all their games. Even if you are like me and know absolutely nothing about copy protection, you can deprotect many games this way. So far, I've had very good luck using this method. Any time that you can not copy a game, try searching for the same bytes that deprotected another game by the same company. In many cases it will work.

? L. A. Crackdown: Now I've got a question. Does anyone know how to "crack" L. A. Crackdown? I'm on the verge of cracking it, but I just can't do it. I guess it might help if I learned Machine Language, I still know almost nothing about it. I'm almost positive that all or most of the protection on L. A. Crackdown is on track $00, sector $05. I just haven't been able to find exactly what bytes to change. Does anyone out there know what bytes to change? If you know how to crack it, or think you know how to crack it, please write to COMPUTIST.

? How do you send stuff as text files on disk? Please say how you want the readers to send the files on disk. I always use AppleWorks, do I just send the AppleWorks data disk? I know you want them as text files, but how do I make them into text files? Please tell us all in the next issue.

AppleWorks data disks are fine, but text files are a time-saver for us. Here's how to make AppleWorks save its word-processor files as text files: After you have finished the article and saved it, select the Print option. (Not a logical choice, but that's how it goes with some software.) The Print option gives you a choice of printers, and also the choice of "printing" your file to disk as a text file. (If the data disk is too full, or AppleWorks is having a bad day, you may get a message that says, "Unable to convert this file". This probably won't happen. But if it does, send us your article anyway as an AppleWorks file— Vee haff vays of making disks talk to us. .....RDEXed

Alan Krause

Softkey for...

Arkanoid IIe

Taito

Well, I have been reading COMPUTIST for a couple of issues now, and I am quite happy with it, to say the least. So, when I figured out how to deprotect Arkanoid, I thought I'd share it with those of you who were as frustrated as I was before I copied it.

For those of you who do not have Arkanoid, it is a souped-up version of that old classic, video pong. It is a fairly good game, and I'm sure it would be better if I had a color monitor. I finished the game in about 2 weeks. It is one of those rare arcade games which actually have an ending.

Anyways, on to the more important stuff. The first thing I did was to check the few COMPUTIST issues I had at the time, and found that it was on the infamous Most Wanted List. Well, I figured I was on my own.

So I broke out COPYA, the old standby, and tried copying it with that. No errors at all, that's odd? I then booted up my copy, and crash! It dumped to the text screen (screen 2, I believe). This gave me the clue I was looking for. I then scanned the disk for the bytes that turned the text screen on. These bytes are: LDA $C051, which is AD 51 C0 on the disk.

I found these bytes on Track $20, Sector $0, with the following code:

```
0000  LDA  $C036
0003  AND  #$7F
0005  STA  $C036
0008  LDA  #$00
000A  STA  $40F7
000D  JSR  $4090
0010  LDA  $40F8  some sort of flag for protection.
0013  BNE  $0018  check and see if it's the original or not.
0015  JMP  $0200  it's OK...continue with program.
0018  LDA  $C051  copy! crash to text screen.
001C  LDA  $40F7
```

Seeing the protection scheme used here, only two changes need be made. Modify the following bytes:

Trk	Sct	Byte(s)	From	To
$20	$00	$13-14	D0 03	EA EA

This simply NOP's out the branch statement, so that no matter what the program finds in $40F8, it will still jump to the beginning of the program. Hope this helpes some of you out!

Eamon Adventuring

There is a newsletter for those of you who like Eamon Adventures. Tom Zuchowski is the editor and driving force behind "The Eamon Adventurer's Guild". The newsletter is printed on 8 1/2" x 11" bond, double sided. It is non-profit (it's his hobby) and Tom's avowed purpose is to maintain a single point collection and clearing house for Eamon Adventures. He also intends to remove/fix all known bugs in these adventures. We feel his purpose is a grand concept worthy of our meager support and we have offered to reprint one of his issues in our newsletter to help publicise his endeavors. The following is the content of the September issue. .....RDEXed

The Eamon Adventurer's Guild

Thomas Zuchowski, Editor
7625 Hawkhaven Dr.
Clemmons, NC 27012
(919) 766-7490

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We are always looking for new material! If you would like to publish your own letter or article in this newsletter, feel free to send one in. If you would like to add your own Eamon adventure to the list, send it on a disk to the above address. It will be assigned an Adventure number, and tested for bugs and other problems before release. An informal critique and disk with bug corrections will be returned.

Editorial

by Tom Zuchowski

As you can see, this is a special large issue of the EAG newsletter. We completed a validation program last month for the entire Eamon library, and found several errors. The result is a 4-page 'Bugs 'n Fixes' section this time around; it didn't seem right to cut any regular features, so we decided to bite the bullet and spend an extra 55 cents per issue. There are a number of 'real' bug fixes in among the disk corrections, too. We are making a special update offer for members on certain Eamon adventures. See the 'Bugs 'n Fixes' section for details.

CONTEST: So far, we have received 3 contest entries. Several people have also written to say that they are working on an entry. One person has already called to say that he would need a 2-week extension. How he can know this far in advance that he will need an extra two weeks is anybody's guess.

On another subject, it seems like everyone in Eamondom has done a custom version of the Master Disk at one time or another. Pat Hurst has nearly completed a Macintosh Hypercard version; he can use some play-testers, if you are interested. We must have 6 or 8 different Main Halls around here that various people have submitted. It's not clear to me why this is such a popular program to modify, since many if not most Eamonauts never use it except to launch an adventure. The FRESH SAM program on the Utility disk has proven very popular, as it allows the player to bypass the Master Disk altogether!

If time permits, we are going to do a special feature on modified Main Halls, and are considering listing them in a special list. If you have any comments on this, we would be very glad to see them.

EXPIRATION DATE: The usual reminder: be sure to check the expiration date next to your name on the address. If it is 'JUN 89' and highlighted in yellow, this is your last issue.

BACK ISSUES: *Note:* The Mar'84 issue is NOW AVAILABLE.

Apple-based back issues of the formerly Apple-based NEUC's 'Adventurer's Log' are available from us:

Mar'84, May'84, Aug'84, Oct'84, Jan'85, Mar'85, May'85, Aug'85, Oct'85, Jun'86, Jan'87, Oct'87

EAG back issues: Jun'88, Sep'88, Dec'88, Mar'89, Jun'89

All issues are $2.00 each.

ADVENTURE UPDATES:

You may obtain updated versions of your Eamon adventures from the EAG. Send in a copy of the adventure to be updated and $1.00 per copy to cover our cost, and an updated copy will be returned to you. You MUST include a copy of EACH adventure for which you wish an update.

We want to improve Eamon all we can; this includes getting authors to use the latest and best version. Therefore, the version 7.0 Dungeon Designer Diskette and the 7.0 Multi-Disk Supplement may be obtained from us for $1.00 each (US & Canada; foreign $2.00 each).

New Adventures

179 The Wizard's Tower by Robert Parker
180 Gamma 1 by Robert Parker
181 The Eamon Sewer System by Robert Parker
182 Farmer Brown's Woods by Robert Parker
183 The Boy and the Bard by Sam Ruby

In 'The Wizard's Tower', your quest is to seek out the evil wizard and destroy him. There are several nice effects in a basic loot-and-kill scenario. This is a good Beginner-level Eamon for young Eamonauts. Arguably Robert's best Eamon to date.

In 'Gamma 1' you are sent into a parallel universe (21st-century Earth) to explore a radioactive wasteland. There is no quest in this Beginner-level Eamon, but it has an interesting 'radiation' feature.

In 'The Eamon Sewer System', you have 'volunteered' to clean out the sewers under the Main Hall. A bare-bones 'hack&slash' scenario against mundane monsters.

In 'Farmer Brown's Woods', you must escape from the walled farm. No-puzzle 'hack&slash' against mundane, repetitious enemies.

'The Boy and the Bard' is another top-notch Sam Ruby offering. It is reviewed in this issue.

Terminological Inexactitudes

Who is this Robert Parker fellow; the man who claims to have 30 ideas cooking in his head for new Eamons? Is he a young genius? Rich playboy? Two-headed monster?

One theory suggests that he is a death-row inmate, racing against time to make his mark in Eamon.

Another hints that he is actually a reclusive alien, whiling the hours away writing Eamons while serving time on this primitive backwater planet.

But the most plausible theory proposes that he is not one person, but is in reality an insidious KGB plot to undermine Eamon gaming by burying the poor Eamon librarian under more new Eamons than anyone could possibly keep up with. A subtle plan, to be sure, but ingenious; once Eamon goes, can the rest of the free world be far behind?

Dungeon Designs

Using Effects for Eamon Games with Version 7.0

by Robert Parker

Being somewhat new to the use of Effects in an Eamon game, I have sat down and written out a mini-manual for beginning Eamon designers. The use of Effects is not explained in great detail in the designer manual, and I sorely needed to understand them. After a letter of help from Tom Zuchowski, and the study of the Eamon games 'Eamon v7.0 Demo Adventure' and 'Assault on Dolni Keep', I understand them a bit better now. I wrote down the uses as I came across them, and a wide variety of uses did I find.

Effects can be used for several things. They can print on the screen the message on a note found in a bottle. They can print something when a sword is picked up. They can be used to 'scare' the player. Etc...

Below follow just a few examples of the uses of Effects. Different people use Effects for different uses. Don't let this be a guideline of how to use them, but rather use it to give you ideas of what to do with them.

For those who don't know (i.e. beginners), Effects are stored in EAMON.DESC, record numbers 401 through 600.

Basically, to print out an Effect, one would have a line like this in the MAIN PGM:

```
R = 401: GOSUB 45
```

Where R is the record number of the Effect to be printed. In this example, we are printing Effect #1. Since Effects are stored at 401-600, we must add 400 to the Effect number to get the record number. GOSUB 45 calls the subroutine that reads in and prints EAMON.DESC records.

But the question here is, where would one have an Effect in the program? One such place would be in lines 3070-3390 (MOVE). An example of a use in this area would be like this:

```
3070 IF R2 = - 300 THEN R = 425: GOSUB 45:
  GOTO 100
```

R2 is the room to be moved to. When the player tries to move to a room connection with a negative number, he is not actually moved. This allows extra programming to be added for special stuff. In this example, we are using a room connection of (- 300) to trigger the printing of Effect #25, or record #425. Such an Effect might be something like: THE CAR RACES PAST YOU, ALMOST HITTING YOU. THE DRIVER LEANS OUT THE WINDOW AND SHOUTS SOMETHING ABOUT BEACHES. Another example is: WALKING INTO THE CRUSHER, YOU BARELY JUMP OUT BEFORE IT FLATTENS EVERYTHING INSIDE OF IT!

Another interesting use of Effects would be this: you are climbing a mountain. Every now and then, this happens: SUDDENLY, A LARGE BOULDER COMES CRASHING DOWN, NOT 5 FEET FROM WHERE YOU STOOD A MOMENT AGO! This could be generated this way:

```
510 IF RO < 24 OR RO > 36 THEN 100
520 IF RND(1) > .7 THEN R = 401: GOSUB 45
```

RO is the current room number. In this example, the mountains are rooms 24 through 36, and the Effect is #1. 100 is the beginning line number of the YOU SEE code that prints what you see in the room.

Line 520 sets up a random number, which will be greater than 0 but less than 1. In this example, if it is .7 or less, the effect will not be printed. What this does is to set the odds to be 70% that it will not happen and 30% that it will. You can set this number to anything between .01 and .99.

Putting this code in the 500-900 programming area will cause it to print out after any monster attacks take place and before the 'YOU SEE' printout. Another good place to put it is in the 201-209 area, where it will print just before the YOUR COMMAND? prompt. If there isn't enough room in the 201-209 area, you can GOSUB to some free line numbers somewhere else.

Another Effect could be added to our 'mountain effects' like this. Imagine that we have 6 effects that are Effects #1-6:

```
530 R = INT(RND(1) * 6) + 1: IF R < 6 THEN R =
  R + 400: GOSUB 45
```

In this way it produces a random effect. Effect #1 might be the 'huge boulder' line printed previously. Effect #2 might be: YOUR HAND SLIPS! YOU BEGIN TO FALL, BUT CATCH YOURSELF AT THE LAST MOMENT! Effect #3 might be: TINY ROCKS BEGIN TO PELT YOU FROM ABOVE. IT APPEARS

THAT SOMEONE OR SOMETHING IS THROWING THEM DOWN ON YOU.

Another kind of Effect would involve picking up a weapon or artifact:

```
4145 IF A = 8 THEN IF NOT QQ THEN R = 405:
   GOSUB 45: QQ = 1
4235 IF A = 8 THEN IF NOT QQ THEN R = 405:
   GOSUB 45: QQ = 1
```

In this example, the Effect is #5 and it is printed when Artifact #8 is picked up, but only if QQ = 0. If QQ = 1, then the artifact has been picked up before and the Effect is not printed. You could use another variable name besides QQ that is not already being used. Line 4145 covers a regular GET command, and Line 4235 covers the command GET ALL. If you have a LOT of something like this to handle, you could do it like this:

```
31440 DIM QQ%(NA)
4145 IF A = 8 THEN IF NOT QQ%(8) THEN R = 405:
   GOSUB 45: QQ%(8) = 1
4235 IF A = 8 THEN IF NOT QQ%(8) THEN R = 405:
   GOSUV 45: QQ%(8) = 1
```

This code does the same as above, but instead of a single variable QQ, you use an array QQ%() that has a location for every artifact. This makes keeping track of them easier for you while programming the adventure. You can use any array name, as long as it is not already being used. Consult the Designer's Manual to see which array names are already in use.

Here's another example, using the array technique:

```
4146 IF A = 9 THEN IF NOT QQ%(9) THEN R = 478:
   GOSUB 45: DF = 0: D2 = 3: GOSUB 7636: QQ%(9)
   = 1
4236 IF A = 9 THEN IF NOT QQ%(9) THEN R = 478:
   GOSUB 45: DF = 0: D2 = 3: GOSUB 7636: QQ%(9)
   = 1
```

In this example, when artifact #9 is picked up for the first time, then Effect #78 is printed, then the player takes 3 points of damage.

For use of Effects when reading a note or label, etc., refer to lines 23000-23210 in the MAIN PGM. The use of Effects here is already added to the MAIN PGM. You use DUNGEON EDIT 7.0 to make the note a 'Readable' artifact type, and put the number of the Effect in the field that is titled '1ST EFFECT'. If it is a long message, you can use sequential effect numbers and then put the total number of Effects to be printed in the '# OF EFFECTS' field. If there is just one effect to be printed, '# OF EFFECTS' must be 1.

I am now through describing some basic uses of Effects. Any further ideas should be used by you. If you have any interesting uses for them, please drop me a line with your idea. I'd love to hear some others. Thanks to Tom Zuchowski for writing to me explaining how to use Effects. Robert Parker, 4025 Sunset Pl., South Bend, IN 46619.

Eamon Forum

Dear EAG:

It has been my pleasure to design EAMON adventures these past four years, and I have been overjoyed to see several of my adventures reviewed by Bob Davis, Pat Hurst, and Tom Zuchowski in the newsletter. The praise has been very kind and the criticism, fair and constructive.

However, on the occasion of the appearance of a review, by Nathan Segerlind, of 'Elemental Apocalypse' in the June 1989 issue, I feel compelled to respond to reveiwer's comments and correct some misinformation presented within the article.

The writer suggests that you would do best to pick a swordsman of some sort from the 10 characters there are to choose from. First of all, all 10 characters are capable of completing the adventure (the burden is on the player, not on his choice of character), and while important characteristics hardiness, agility, heal spell, weapon skills, and weapons) vary amongst them, in the balance of the game no particular characteristic takes on a greater significance than the others.

Learning to use different classes of weapons is an integral aspect of the game. Whatever character you choose, certain portions of the game will be easier because of his starting stats and others will be more difficult, so choose a character because you like him/her and not because you think he'll beat the system.

I will take my lumps for the drop of blood and a few other tricks that could have been done better or left out. It's not a normal drop of blood — how many stone arches have you seen that bleed — but it could have been clued better to make the blood seem anything but innocuous. However, in general I feel unfairly criticized for designing "numerous traps". Since, as the writer concedes, they "can be found and most of the time disarmed" or avoided, they are terminally dangerous only to "careless" players, what's the problem?

'Elemental Apocalypse' is the most ambitious EAMON ever attempted both in size (approximately 400 rooms, 240 monsters, 135 artifacts) and story (the plot, which is original, could fill a thick book). That it is too long for the reviewer suggests that he wants something short and simple, akin to preferring 'The Hobbit' to 'The Lord of the Rings' trilogy. The story is developed within the adventure, with an all-important plot twist occurring halfway (that's two disks!) into the adventure. Subplots are woven within the segments and between them. The story would not be the same without any of the four parts of the adventure.

As to the AD&D flavor, I would remind the reviewer that EAMON was intended as a computerized D&D game. I consciously designed the resemblance in a purposeful move away from the world of Tolkein, to create a realm where anything could be encountered and the possibilities for entertaining the player with monsters and magic items would be limited only by by plot. While copy-cat descriptions might occur within, say, a Goblin camp or a Frost Giant stronghold, you will not find a wider variety of monsters and artifacts in any other adventure. The constant change of settings (an indoor forest, an arid wasteland, a marshy river valley, a forest, foothills, mountains, a mysterious valley, a castle, an arduous climb up a snow-covered mountain, and four elemental planes, to be brief!) makes the adventure anything but bland.

Finally, the references to game mechanics are essential. A significant challenge of the game is the selection of the most effective armour and weapons, and I would rather tell the player that the "silver sword" he finds in a chest in part 2 is more powerful than the "anti-magic bow" than let him try to fight with the bow and get slaughtered. There are so many different weapons and types of armour that without telling the character what is what, the game would be impossible. It is hard enough as it is, even with most weapons, armour, and healents well-described. Perhaps the reviewer would prefer that potions of extra-healing not be described as such, but during a fight against three fierce Fire Giants (for example), most players would like to know the difference between a healing potion (which heals 2-8 pts of damage) and an extra-healing one (which heals 2-16). Knowing which one to drink could be the difference between life and death. Furthermore, was the reviewer also disappointed that poisons and cursed items could be detected as such? I mean, if you really want to be "real", the only way to find out what something does would be to try it...

Sam Ruby
San Francisco, CA

(See the Adventure Reviews, this issue)

Adventure Reviews

#100 Sorceror's Spire - by John Nelson

Reviewed by Nathan Segerlind

MAIN PGM version: 6
Extra Commands: PRESS, WEAR, THINK
Deleted Commands: LIGHT
Special Features: THINK cmd gives small hints; best magic in all of Eamon
Playing Time: 3+ hours
Reviewer Rating: 6.5 Average Rating: 7.9/4

Description: While sleeping behind the stables, you heard that a traveller crawled into town, all but dead, and barely made it to the doctor's house. You went to see the man. He was severely burned by magical blasts. The man didn't wake, but would mumble about the Sorceror's Spire.

The Sorceror's Spire is a school for wizards and the leader in mystical research. The dean, Xandar, was getting old, and was said to be working on an immortality spell in order to head off a power struggle after he dies. Whoever controlled the school would be the leading influence in magic for years to come. Being short on sense and long on guts you venture to the Sorceror's Spire to find out what is going on.

Comment: This is a very complex and difficult adventure. The plot is confusing, and the puzzles are not easy to identify or to solve. A saving point is that its use of magic is the best I've ever seen in Eamon. Your allies and enemies cast spells in combat, much more than the simple 'blast'. There's an impressive array of spells that the player can cast, for combat, as part of puzzles, and for other things.

The adventure was all very coherent and everything fit together very nicely. The puzzles all make sense, save for the main quest (reviving Xandar), which is difficult to even recognize, much less solve. I would have given it an (8) rating except for the extremer vagueness of this puzzle. You may or may not like this adventure, depending on whether you are able to recognize certain key elements of the plot.

#149 Elemental Apocalypse - by Sam Ruby

Reviewed by Tom Zuchowski

This adventure was reviewed by Nathan Segerlind in the June '89 EAG. As some of you know, Nathan has very strong opinions about what is right and wrong in Eamon, and he doesn't pull any punches. Sam wrote a strong protest concerning the low rating that Nathan gave this adventure (the letter is printed in its entirety in the 'Eamon Forum' column of this issue). Sam makes several good points; in the future I will monitor reviews more closely and will give the author the chance to respond before publication if the review seems excessively harsh.

The adventure itself is actually a series of 4 full Eamon adventures that are linked together. Each adventure must be completed in order to pass through a 'portal' that transports you to the next disk. There is no way to exit back to the Main Hall once the adventure is undertaken without completing all 4 disks.

I found the armor and AD&D stuff (that Nathan disliked) to be a plus in that it helped make this Eamon a unique adventure, unlike any that have come before or since. It did seem to me that the special weapons favored swordsmen, or at least heavy-duty fighters; I chose a magician as my character and had a LOT of trouble surviving.

I went back through my old notes and correspondence from mid-1987 to see just exactly what Pat Hurst and I thought about 'Elemental Apocalypse'. Here is a condensation (the second number of each rating is for difficulty):

Disk 1: Tom-(8:9) Pat-(8:10) (loaded with death traps)
Disk 2: Tom-(6:6) Pat-(7:9) (1st half tedious & boring, 2nd half excellent)
Disk 3: Tom-(8:7) Pat-(9:7) (best disk of the 4)
Disk 4: Tom-(8:9) Pat-(7:9) (sudden death everywhere)
Overall: (8:9)

My notes say: "It is an excellent effort. There was a definite thrill to completing each segment and going on to the next, causing an escalation of interest with each one. There is a big investment in time and effort by the player here, and you get well wrapped up in the story/plot as you proceed along." Further notes refer to the extreme danger of various traps and monsters, making the adventure extremely difficult to survive.

#169 The Black Phoenix - by Roger Pender

Reviewed by Tom Zuchowski

MAIN PGM version: 6
Extra Commands: RETREAT, SALUTE, SURRENDER, COMPUTER, MISSILE, COMMO
Deleted Commands: FLEE, BLAST, HEAL, POWER, SPEED
Special Features: 10-direction adventure; character's personal weapons not used
Playing Time: 2-3 hours
Reviewer Rating: 7 Average Rating: 7.8/3

Description: After a struggle of nearly 300 years, Sol system has been devastated, but the fight continues between the two empires. It is now 5688, and the Star League and Procyon Confederation are locked in mortal combat on the planet Apollonia in the Epsilon Indi star system.

The special forces team of the 101st (the Black Phoenix) has been reactivated, and you have been called up under your old commission. After six months of intensive training, you find yourself orbiting Apollonia in the troop carrier Sulu Sea, receiving final instructions before you drop to the urface. As you step into the drop capsule the technician gives you a thumbs up sign. You are on your way to hell with the Black Phoenix.

Comment: The introduction is much longer and more detailed than the above description, outlining galactic history and describing your reinstatement in the Black Phoenix. Roger's galactography is rather hazy (he admits that he was more interested in how it sounded than an accurate map), but it is a treat to read the historical section if you are a science-fiction fan.

This adventure has many of Roger's science-fiction trademarks: personal computer, menu-driven options for special commands, and so on. The adventure does not have a single quest but has 6 missions that must be performed that begin with a simple reconnoiter of an enemy position, progress through various rescue and covert activities, and end with a very rough 'hold until relieved' firefight.

You command a team of on-the-bounce fighters. You keep track of your mission requirements and progress through your computer, though you actually receive each from your commander. You periodically receive fresh equipment and replacements. The COMMO command is great fun; you can call in an air strike or artillery support, or a med-evac if required. Each option brings up its own special screen, and the responses are well timed for realism.

There are some minor puzzles to be solved with each mission, but the main thust of this Eamon is space opera, and it is well done. There are 40-odd special effects, and they cover a lot of special events. Highly recommended to fans of military science fiction.

#183 The Boy and the Bard - by Sam Ruby

Reviewed by Tom Zuchowski

MAIN PGM version: 6 (heavily modified)
Extra Commands: SWITCH, USE, WAIT, PLAY, ENTER, RESUME
Deleted Commands: TAKE, BLAST, HELP, POWER, SPEED, WAVE
Special Features: musical instruments; can READY artifacts in either or both hands; 2-game SAVE; can RESUME a saved game at any time; uses a special character; reuseable containers
Playing Time: 2-5 hours
Reviewer Rating: 8.5

Description: You were orphaned at an early age, and were taken under the wing of the village Bard, who taught you wonderful stories and gave you musical instruments, and taught you how to play spells on them. The Bard was a powerful musical magician who often aided the King's men. He braved many dangers but was finally killed by the evil Kroger. Enraged, you set out to avenge his death, though you were but a small boy. Kroger's men captured you, took your instruments, and laughed as they sent you away.

Six years have passed, and one day you overhear two of Kroger's men talking in a tavern. One of them mentions where each of your magical instruments was cached. Older now, but still desiring revenge, you resolve to recover your instruments and kill Kroger.

Comment: Sam Just keeps cranking out Eamons with amazing detail and overall high quality. The feature of readying artifacts in either hand is novel and makes this Eamon special. For example, you need to READY a torch in order to light it, but you will want to carry it readied in your left hand in order to keep your sword ready in your right. Sam adds realism to the player's inventory by severly limiting the number of items that can be carried loosely but adding a backpack, pocket, and scabbard to store things in. The musical instrument spells are another new feature in Eamon, and are well executed. Besides the new commands, many of the old ones were extensively reworked to accommodate new features; the commands are well explained in the introduction, and the command descriptions can be dumped to a printer if desired.

As usual, Sam's puzzles are tight, tough, and often fatal. To compensate for this, two simultaneous SAVEs are allowed, and either can be RESUMEd at any time during play, or after a fatal move. There are approximately a half-dozen major puzzles, and they are good ones, new to Eamon, and made up of lesser puzzles.

The player's character is not used but is returned unharmed to the Main Hall. Instead, Sam supplies a 'boy' character to be used that has exactly the qualities and abilities that are described in the introduction. There is a fair amount of dangerous combat, but it involves semi-random denizens of the forest; the puzzles can NOT be bulldozed past using brute strength, but must be solved.

Puzzle fanciers will love this one. Fans of Sam's work will be well entertained by the detailed story and special stuff. Fans of the 'Hack&Slash' genre and those who enjoy using a super-character to smash all opposition will be disappointed. I give it a (9) for difficulty, because of puzzle difficulty and the good chance that wrong choices will be fatal.

Bugs 'n Fixes

When the EAG was originally set up, we were using a public-domain disk-copy program to distribute Eamon adventures to the Public-Domain sellers. A couple of bad copies surfaced, and it was thought at the time that the disk copier had made bad copies because of tangled Eamon files. This copy program had been used for years by me without problems, so it was not suspected.

Recently some more bad copies have surfaced. It prompted me to look over my 'work library' (I have two libraries; one is used for copying, testing, playing, and modifiying; the other is never used or played or even modified but is for emergency backup.) These new discoveries have prompted me to thoroughly test the entire library, using the CHECK FILES pgm and Quality Software's 'Bag of Tricks' FIXCAT utility. All programs were visually

examined for completeness.

I discovered widespread VTOC errors (the VTOC keeps track of which sectors on the disk are free and which have been used). This is the source of the bad disk problem. What happens is that the FRESH MEAT file is written to already occupied disk space. If it is a program, the program will crash, and examination will reveal that much of it is missing. If it is a text file, the adventure will crash with an OUT OF DATA error.

As far as I know, this problem only affects EAG versions. If your disk is not an EAG version, it may well be OK. A program is underway to replace all of the known problem Eamons with our public-domain affiliates, and will soon be done, perhaps by the time you read this.

If you wish to correct the VTOC errors in your own EAG copies, here are the adventures that we found VTOC errors on:

2, 3, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 23, 24, 25, 31, 32, 35, 37, 38, 40, 41, 42, 43, 44, 46, 47, 48, 50, 52, 54, 55, 56, 57, 58, 60, 62, 63, 64, 65, 66, 67, 69, 70, 71, 72, 73, 75, 76, 79, 80, 81, 84, 95, 96, 98, 99, 100, 111, 112, 113, 116, 117 (40-col.), 123

To insure the safety of your own Eamons, do NOT modify these disks in *ANY WAY* unless you have first made a fresh copy using FID or another file transfer program like Copy II Plus. DO NOT make a "whole disk" copy, or you will copy the VTOC errors, too. The copy must be made file-by-file. Once this has been done, the new disk will have a good disk map.

Note that Eamon #123 has no DOS on the disk.

We apologize for any problems that you may have encountered because of this mix-up. To help make up for it, we are making a ONE-TIME offer to our membership: we will send members FREE updates of the following Eamon Adventures, or any other adventures that can be shown to have OUT OF DATA errors or truncated programs:

7, 24, 45, 60, 72, 81, 109, 138, 142

These conditions must be met in order to get the free updates:

1) They must be EAG versions.

2) The 'Last Update' must be older than the fix dates listed in the following bug reports.

3) You must send a copy of each Eamon to be updated. They need not be originals, and you can double-side to save postage. We WILL double-side your updates.

Dungeon Designer Diskette 7.0 MAIN PGM
Date Fixed: 5/23/89; 8/17/89; 8/26/89

Problem: NEXT WITHOUT FOR error if the last member of a group monster flees the room.

Fix: In Line 333, change **RETURN** to **GOTO 500**
In Line 336, change **GOTO 490** to **GOTO 500**

Problem: healing potion counter doesn't decrement when used to heal monsters by giving them the potion.

Fix: Add this statement to line 9300:

```
A%(A,6) = A%(A,6) - 1
```

Problem: 'GET S$' subroutine doesn't exit correctly.

Fix:

```
4905 IF NOT LT THEN POP: GOTO 100
```

Problem: Armor Expertise doesn't work right.

Fix:

```
7600 IF NOT OF THEN UP = (100 * RND (1) > WM +
   WA%(W2)): IF RND (1) * 100 < WA%(W2) THEN IF
   ABS (EA) > 10 * RND (1) AND AE < AC * AC
   THEN AE = AE + 2: EA = AE - AC * AC
31120 EA = 0: IF AE < AC * AC THEN EA = AE -
   AC * AC
```

Some changes were made to the Designer's Manual:

1) All instances of 'DUNGEON EDIT' & 'DUNGEON LIST' were appended with '7.0' to reduce confusion over which program should be used. Also, this paragraph was added directly beneath the title 'USE OF THE DUNGEON DESIGN DISKETTE' on page 1:

IMPORTANT NOTE: There are 2 edit & list programs on this disk. Do NOT use the programs DUNGEON EDIT or DUNGEON LIST on a version 7 Eamon. It will mess up the data files! Use ONLY the ones marked 7.0 for version 7 databases! See the Utilities Manual for more information.

2) The phrase, '(Closed = 1; Open = 0)' was added to the descriptions of the Container, Drinkable, & Readable type artifacts.

In the Utilities Manual, the section on DUNGEON EDIT & DUNGEON LIST had this sentence added: 'DO NOT USE THESE PROGRAMS ON A VERSION 7 EAMON!'

DDD 7.0 Multi-Disk Supplement
Date Fixed: 6/6/89

Problem: The single-drive option doesn't work. Fixes were necessary to two programs:

DUNGEON EDIT 2-DISK program

```
7 REM DD4 6/6/89
20 VD = DK: IF DR = 1 THEN VD = 1
21 IF DR = 2 OR DK = CD THEN PRINT
   D$"VERIFY"DK$(DK)",D"VD: RETURN
22 IF DR = 1 AND DK < > CD THEN PRINT:PRINT
   D$"CLOSE": PRINT CHR$(7);"INSERT ";DK$(DK);"
   IN DRIVE":PRINT "THEN HIT ANY KEY TO
   CONTINUE":GET A$:PRINT: CD = DK
23 PRINT D$"VERIFY"DK$(DK)",D"VD
24 IF DK = 1 THEN PRINT D$;"OPEN
   EAMON.MONSTERS,L";LM;",D1": PRINT D$;"OPEN
   EAMON.ARTIFACTS,L"LA
25 IF DK = 2 THEN PRINT D$;"OPEN
   EAMON.DESC,L242,D"DR: PRINT D$;"OPEN
   EAMON.ROOMS,L"LR
26 RETURN
50 PRINT D$;"OPEN EAMON.NAME,D1": PRINT
   D$;"READ EAMON.NAME": INPUT DU$: INPUT ND$:
   INPUT DV$: PRINT D$;"CLOSE"
90 IF DR = 2 THEN DK = 1: VD = 1: GOSUB 23: DK
   = 2: VD = 2: GOSUB 24
```

(Delete Line 140)

```
36020 PRINT: PRINT "PUT 'BOOT' DISK IN DRIVE
   1": IF DR = 2 THEN PRINT: PRINT "PUT
   ADVENTURE DISK IN DRIVE 2"
36030 PRINT: PRINT "HIT ANY KEY TO CONTINUE:":
   POKE -16368,0: GET A$: PRINT A$
```

INPUT DATA 2-DISK (1-DRIVE) program

```
7 REM ID4 6/6/89
20 IF DR = CD THEN PRINT D$;"VERIFY "DR$(DR):
   RETURN
21 PRINT D$;"CLOSE": PRINT "INSERT ";DR$(DR);
   " IN DRIVE": PRINT "THEN HIT ANY KEY TO
   CONTINUE": GET A$: PRINT
22 PRINT D$;"VERIFY "DR$(DR)
23 PRINT D$;"OPEN EAMON.DESC,L242": IF DR = 1
   THEN PRINT D$;"OPEN EAMON.MONSTERS,L";LM:
   PRINT D$;"OPEN EAMON.ARTIFACTS,L";LA
24 IF DR = 2 THEN PRINT D$;"OPEN
   EAMON.ROOMS,L";LR
25 CD = DR: RETURN
65 PRINT D$;"OPEN EAMON.FILES":PRINT D$;"READ
   EAMON.FILES": INPUT
   X,N%(2),X,N%(4),LR,LM,LA: PRINT D$;"CLOSE"
   (Delete lines 70 and 140)
7013 PRINT D$;"CLOSE EAMON.DESC": PRINT
   D$;"CLOSE EAMON.MONSTERS": PRINT D$;"CLOSE
   EAMON.ARTIFACTS"
7016 DR = 2: GOSUB 20: PRINT D$;"CLOSE
   EAMON.DESC": PRINT D$;"CLOSE EAMON.ROOMS"
```

#1 Master Disk & Beginner's Cave
Date Fixed: 8/18/89

Problem: Parameters show 9 Effects, but there are only 6. CHECK FILES crashes, but the adventure will play OK.

Fix: Run this program (do not add it to the disk):

```
10 D$ = CHR$(4)
20 PRINT D$"OPEN EAMON.DESC"
30 PRINT D$"WRITE EAMON.DESC"
40 PRINT "26": PRINT "23": PRINT "6": PRINT
   "10"
50 PRINT D$"CLOSE"
```

#7 - The Devil's Tomb
Date Fixed: 7/6/89

Problem:Records 124 & 125 trashed in EAMON.DESC. Your copy may or may not have this problem. You can verify it using the CHECK FILES Utility program. If CHECK FILES runs OK, you do not need this fix. However, as the problem was caused by a VTOC error, it would be a good idea to build a new copy, using FID, as outlined below.

Fix:

Record #124:

```
YOU SEE A VERY SMALL SPEAR MADE OF SOLID
GOLD.
```

Record #125:

```
YOU SEE A MONKEY WRENCH WHICH CAN BE
USED FOR MECHANICAL WORK OR CAN BE USED
AS A CLUB.
```

(Before performing this fix, you MUST make a new copy of the adventure. A new disk must be initialized with the program EAMON ADVENTURE #7, and all of the files transferred to it using the FID utility after the records have been restored. DO NOT use a whole-disk copier!)

Run this program to rewrite record #124. Note that this code is NOT to be added to the adventure, but is only for the purpose of restoring a text file record, and is not to be added to the disk:

```
10 D$ = CHR$(4)
20 A$ = CHR$(34) + "YOU SEE A VERY SMALL SPEAR
   MADE OF SOLIDGOLD."
30 PRINT D$;"OPEN EAMON.DESC,L256"
   40 PRINT D$;"WRITE EAMON.DESC,R124"
   50 PRINT A$
   60 PRINT D$;"CLOSE"
```

Repeat the procedure for record #125.

#16 - The Caves of Mondamen
Date Fixed: 7/18/89

Problem: Vaprak keeps reappearing, even after he evil wizard has been killed and Vaprak has been banished.

Fix: In Line 16620, change **RV = 8** to **RV = 0**
In Line 25510, change **RV = 7** to **RV = 7 OR NOT RV AND NOT VP**

#24 - Black Mountain
Date Fixed: 7/20/89

Problem: Records #30-33 trashed in EAMON.DESC. See #7 above for discussion and fix of problem.

Fix:

Record #30:

```
YOU ARE IN A SOUTHERN CHAMBER. THE ONLY
EXIT YOU CAN MAKE OUT IS TO THE NORTH.
```

Record #31:

```
YOU ARE AT A NORTH/SOUTH BY WEST 'T'
INTERSECTION. THERE ARE TORCHES BOLTED
TO THE WALLS HERE, SO YOU CAN SEE BETTER
THEN BEFORE.
```

Record #32:

```
YOU ARE IN A NORTH/SOUTH TUNNEL. THERE
IS A CHAMBER TO THE EAST, AND ANOTHER TO
THE NORTH.
```

Record #33:

```
YOU ARE IN A LARGE NORTHERN CHAMBER. THE
ONLY EXIT IS TO THE SOUTH.
```

#35 - The Lair of Mutants
Date Fixed: 7/4/89

Problem: UNDEFINED STATEMENT ERROR IN 2015
Fix: In Line 2015, change **2500** to **2510**

#36 - The Citadel of Blood
Date Fixed: 7/6/89

Problem: Track/Sector list errors. This could possibly cause whole-disk copy errors. If you copy passes CHECK FILES, it should be OK.

Fix: Ran 'Bag of Tricks's FIXCAT program. If you do not have it, then initialize a new disk using the program EAMON ADVENTURE #36. Use FID to transfer the files. Do not use a whole-disk copier!

#45 - Swordquest
Date Fixed: 7/6/89

Problem: Records #132 & 133 trashed in EAMON.DESC. See #7 above for discussion and fix of problem.

Fix:

Record #132:

```
YOU SEE EXCALIBUR. IT MAKES ALL OTHER
WEAPONS SEEM INSIGNIFICANT BY COMPARISON.
YOU WOULD ALMOST GIVE YOUR SOUL TO
POSSESS IT.
```

Record#133:`YOU SEE A BEAUTIFUL SILVER GOBLET.`

#58 - The Land of Death
Date Fixed: 7/20/89

Problem: Not converted to version 4 format. Runs OK, but cannot be verified with CHECK FILES, or edited or listed using standard programs.

Fix: Converted sequential files EAMON.ARTIFACTS & EAMON.MONSTERS to random files, L128. Converted EAMON.ROOM NAMES from L32 to L64.

#60 - The Sewers of Chicago
Date Fixed: 7/20/89

Problem: 'Bag of Tricks' indicates a Track/Sector List error.

Fix: Was repaired using 'Bag of Tricks'. If you don't have this utility, copy disk to a fresh disk using FID. Run CHECK FILES to verify.

#72 - House on Eamon Ridge
Date Fixed: 7/22/89

Problem: Record #316 of EAMON.DESC trashed. See #7 above for discussion and fix of problem.

Fix:

Record #316:

```
THROWING OFF SOME ROCK, ARISES A
SKELETON, LARGE ENOUGH TO BE OGRE
SIZE !
```

#81 - The Rescue Mission
Date Fixed: 7/25/89

Problem: Record 324 & 325 of EAMON.DESC trashed. See #7 above for discussion and fix of problem.

Fix: Record #324:

```
YOU SEE A GOONISH FIGHTER-TYPE, WITH A
PATCH ON HIS CHEST MARKED '03'
```

Record #325:

```
YOU SEE A GOONISH FIGHTER-TYPE, WITH A
PATCH ON HIS CHEST MARKED '04'
```

#85 - The Time Portal
Date Fixed: 7/25/89

Problem: Was not converted to version 4 format. Runs OK, but cannot be verified with CHECK FILES, or edited or listed using standard programs.

Fix: Convert EAMON.ARTIFACTS from sequential to random files, L128. Convert EAMON.ROOM NAMES from L32 to L64.

#94 - Blood Feud
Date Fixed: 7/27/89

Problem: Number of Effects is incorrect. Runs OK, but will crash CHECK FILES pgm. Examination revealed that there are NO effects.

Fix: Run this program (do not add it to disk):

```
10 D$ = CHR$(4)
20 PRINT D$"OPEN EAMON.DESC"
30 PRINT D$"WRITE EAMON.DESC"
40 PRINT "99": PRINT "70": PRINT "1": PRINT
   "38"
50 PRINT D$"CLOSE"
```

#108 - The Mines of Moria
Date Fixed: 6/29/89

Problem: Too easy to inadvertently initialize the adventure disk instead of the Save disk.

Fix:

```
18045 POKE - 16368,0: PRINT: PRINT "INSERT A
   BLANK DISKETTE AND PRESS 'C' TO INITIALIZE
   SAVE DISK OR ANY OTHER KEYTO ABORT SAVE:";:
   GET A$: PRINT A$: IF A$ < > "C" THEN 100
18047 PRINT DK$;"INIT MAIN PGM"
```

#109 - The Forest of Fear
Date Fixed: 7/29/89

Problem: CHECK FILES crashes on EAMON.ROOMS files 57-59. These rooms are NOT USED, and this does not harm play of the adventure.

Before performing this fix run CHECK FILES on your disk. If it passes OK, DO NOT perform this fix!

Fix: Run this program (do not add it to disk):

```
10 D$ = CHR$(4): X = 0
20 PRINT D$"OPEN EAMON.ROOMS,L64"
30 FOR R = 57 TO 59
40 PRINT D$"WRITE EAMON.ROOMS,R"R
```

```
50 FOR A = 1 TO 7: PRINT X: NEXT: NEXT
60 PRINT D$"CLOSE"
```

#138 - Starfire
Date Fixed: 7/30/89

Problem: CHECK FILES crashes on EAMON.DESC file for room #2. This room is not used and does not affect play of the adventure.

Before performing this fix, run CHECK FILES on your disk. If it passes OK, DO NOT perform this fix!

Fix: Run this program (do not add it to disk):

```
10 D$ = CHR$(4)
20 PRINT D$"OPEN EAMON.DESC,L256"
30 PRINT D$"WRITE EAMON.DESC,R2"
40 PRINT "ROOM 2"
50 PRINT D$"CLOSE"
```

#142 - The Beermeister's Brewery
Date Fixed: 7/18/89

Problem: EAMON.DESC crashes on rooms 16 & 75. These rooms are not used, and do not affect play of the adventure.

Before performing this fix, run CHECK FILES on your disk. If it passes OK, DO NOT perform this fix!

Fix: Run this program (do not add it to the disk):

```
10 D$ = CHR$(4)
20 PRINT D$"OPEN EAMON.DESC,L256"
30 PRINT D$"WRITE EAMON.DESC,R16"
40 PRINT "ROOM #16": PRINT D$
50 PRINT D$"WRITE EAMON.DESC,R75"
60 PRINT "ROOM #75"
70 PRINT D$"CLOSE"
```

#143 - The Alternate Zone
Date Fixed: NOT FIXED

Problem: MAIN PGM was rewritten to use record 0 of the data files. This throws the counting off by 1, and CHECK FILES crashes. This does NOT affect the play of the adventure.

Fix: NOT FIXED. Listed here for informational purposes only. CHECK FILES can be run on this adventure only with great difficulty, because the order of Rooms, Artifacts, Effects, & Monsters has been changed.

#149 - Elemental Apocalypse
Date Fixed: 5/26/89
Problem: You can't complete the mace
Fix: (Fix is to the MAIN PGM on 149d, the 4th disk)
In lines 21030 and 21060, change `DISSEMBLED` to `DISASSEMBLED`.

#155 - Tomb of the Vampire
Date Fixed: 8/1/89

Problem: Parameters show 12 Effects, but there is only 1. CHECK FILES crashes, but the adventure will play OK.

Fix: Run this program (do not add it to the disk):

```
10 D$ = CHR$(4)
20 PRINT D$"OPEN EAMON.DESC"
30 PRINT D$"WRITE EAMON.DESC"
40 PRINT "52": PRINT "45": PRINT "1": PRINT
   "26"
50 PRINT D$"CLOSE"
```

#161 - Operation Endgame
Date Fixed: 5/26/89

Problem: Hand grenades don't work right.
Fix: In line 11475, change **NBTL** to **M% (NBTL, 1)**

#162 - Eamon 7.0 Demo Adventure
Date Fixed: 5/23/89

Problem: NEXT WITHOUT FOR error if the last member of a group monster flees the room.
Fix: In Line 333, change **RETURN** to **GOTO 500**
In Line 336, change **GOTO 490** to **GOTO 500**

#167 - Expedition to the Darkwoods
Date Fixed: 6/13/89

Problem: Can't summon wizard.
Fix: In Line 204, change **AD%(42,4) = RO** to **AD%(42,4) = -2**

Problem: POWER can teleport you to a nonexistent room.
Fix: In Line 13110, change **26** to **26 + 1**

Problem: POWER fireblast doesn't work right
Fix: In Line 13420, delete the following instructions: **A2 = M + NZ - NM: AD%(A2,4) = RO**
13430 NEXT: IH = 0: R3 = RO: GOSUB 3600: GOTO300

Problem: POWER jumps out of a subroutine
Fix: In Line 13045 change **GOSUB** to **GOTO**

Problem: POWER resurrect routine is invalid.
Fix: In Line 13050, change **55** to **80**.
Delete line 13060.

#169 - The Black Phoenix
Date Fixed: 6/13/89

Problem: There is a chance that some townsmen will attack you. If you kill them, you are court-martialed.
Fix: Change friendliness of monsters #10-12 to 100%

176 - The Pyramid of Cheops
Date Fixed: 7/4/89

Problem: Missing quote mark
Fix: In Line 3080, change **YOUESCAPE!"** to **"YOU ESCAPE!"**

#177 - Shippe of Fooles
#178 - The Alien Intruder
Date Fixed: 7/4/89

Problem: Title & adventure wrong in EAMON ADVENTURE pgm
Fix: Put correct title & number in line 0 of this pgm.

#171 - The Pyramid of Cheops
#173 - The House that Jack Built
#174 - Escape from Granite Hall
#175 - Anatomy of the Body
#176 - Dirtie Trix's Mad Maze
#177 - Shippe of Fooles
#178 - The Alien Intruder
Date Fixed: 7/4/89

Problem: FLEE routine crashes.
Fix: In Line 8020, change **D$** to **DR$**
In Line 8520, change **10** to **6**

Eamon Adventure Listing

Eamon Adventurer's Guild
7625 Hawkhaven Dr.
Clemmons, NC 27012

Column: 1. Adventure Number
2. Adventure Title
3. Difficulty (1-easiest; 10-hardest)
4. Last Revision Date
5. Speed-up Mods installed
6. Reviewed in newsletter

(1)	(2)	(3)	(4)	(5)	(6)
1.	Main Hall & Beginners Cave	3	08/18/89		
2.	The Lair of the Minotaur	5	12/15/84		
3.	The Cave of the Mind	4	12/15/84		
4.	The Zyphur Riverventure	5			
5.	Castle of Doom	4	12/15/84		
6.	The Death Star	6	12/14/85		
7.	The Devil's Tomb	9	07/06/89		Aug84
8.	The Abductor's Quarters	7	06/21/85		Aug84
9.	Assault on the Clonemaster	6	06/21/85		Aug84
10.	The Magic Kingdom	2	06/21/85		
11.	The Tomb of Molinar	7	10/16/88		
12.	The Quest for Trezore	8	07/03/85		Aug84
13.	Caves of Treasure Island	6	10/30/84		
14.	Furioso	9			Aug84
15.	Heroes Castle	6	05/28/86		
16.	The Caves of Mondamen	8	07/18/89	Y	Aug84
17.	Merlin's Castle	5	08/27/84		
18.	Hogarth Castle	5			
19.	Death Trap	9	12/04/84		Aug84
20.	The Black Death	6			
21.	The Quest for Marron	8	05/04/89	Y	Aug84
22.	The Senator's Chambers	5	04/24/86		
23.	The Temple of Ngurct	7			
24.	Black Mountain	8	07/20/89		
25.	Nuclear Nightmare	7	09/30/84		Aug84
26.	Assault on the Mole Man	7	09/30/84		
27.	Revenge of the Mole Man	7	07/04 85		
28.	The Tower of London	6			
29.	The Lost Island of Apple	9			Aug84
30.	The Underground City	7	05/04/89		
31.	The Gauntlet	6			
32.	House of Ill Repute	-	06/19/85		
33.	The Orb of Polaris	7	11/28/85		Aug84
34.	Death's Gateway	6	03/03/88	Y	
35.	The Lair of Mutants	7	07/04/89		
36.	The Citadel of Blood	7	07/06/89		
37.	Quest for the Holy Grail	6	12/06/87	Y	Aug84
38.	City in the Clouds	8			
39.	Museum of Unnatural History	7	11/15/85		
40.	Daemon's Playground	5	04/29/84		
41.	Caverns of Lanst	5	06/03/85		
42.	Alternate Beginners Cave	3	02/28/85		
43.	Priests of Xim!	6	06/04/85		
44.	Escape from the Orc Lair	3	06/04/85		
45.	SwordQuest	8	07/06/89	Y	May85
46.	Lifequest	9	05/15/85		
47.	FutureQuest	7	03/19/88	Y	Mar84
48.	Picnic in Paradise	7	08/16/85		
49.	The Castle Kophinos	7	04/04/86		
50.	Behind the Sealed Door	3			
51.	The Caves of Eamon Bluff	6			May85
52.	The Devil's Dungeon	3	04/07/84		May85
53.	Feast of Carroll	4	12/14/85		
54.	Crystal Mountain	7	07/04/85		
55.	The Master's Dungeon	4	07/14/84		Jan85
56.	The Lost Adventure	7			
57.	The Manxome Foe	4			
58.	The Land of Death	6	07/20/89		
59.	Jungles of Vietnam	1	10/12/88	Y	Mar85
60.	The Sewers of Chicago	2	07/20/89	Y	Mar89
61.	The Harpy Cloud	6	05/27/86		
62.	The Caverns of Doom	-	05/17/85		
63.	Valkenburg Castle	-	07/31/85		
64.	Modern Problems	-	07/22/85		Mar89
65.	The School of Death	-	04/04/86		Mar89
66.	Dungeons of Xenon	4	07/04/85		
67.	Chaosium Caves	-	07/04/85		
68.	The Smith's Stronghold	5	01/29/89	Y	
69.	The Black Castle of NaGog	5	04/07/89	Y	Jun89
70.	The Tomb of Y'Golonac	9	06/07/87		Sep88
71.	Operation Crab Key	1	08/26/84		Oct84
72.	House on Eamon Ridge	10	07/22/89	Y	
73.	The Deep Canyon	4	10/07/84		Oct84
74.	DharmaQuest	8	10/16/88	Y	Jan85
75.	Temple of the Guild	5			Oct84
76.	The Search for Yourself	6	11/28/85		Oct84
77.	Temple of the Trolls	9	12/31/85	Y	Jan85
78.	The Prince's Tavern	7	09/14/85	Y	Jan85
79.	The Castle of Count Fuey	7	11/03/84		
80.	The Search for the Key	4	11/03/84		
81.	The Rescue Mission	8	07/25/89		
82.	Escape from Mansi Island	5	12/09/86		
83.	The Twin Castles	4	12/07/86		
84.	Castle of Riveneta	-	05/27/86		
85.	The Time Portal	-	07/25/89		
86.	Castle Mantru	3	06/05/87		
87.	Caves of Hollow Mountain	-	09/20/85		Mar89
88.	The Shopping Mall	1	10/12/88		
89.	Super Fortress of Lin Wang	9	11/12/86		
90.	The Doomsday Clock	9	12/10/84		
91.	FutureQuest II	7	12/04/87	Y	Aug85
92.	The Fugitive	5	11/03/88	Y	
93.	Flying Circus	-	07/05/85		
94.	Blood Feud	6	07/27/89	Y	
95.	The Maze of Quasequeton	1			
96.	The Chamber of the Dragons	1	07/15/84		
97.	The House of Secrets	-			
98.	Slave Pits of Kzorland	-			
99.	In the Clutches of Torrik	8	11/08/88	Y	Dec88
100.	Sorceror's Spire	9	06/03/87	Y	
101.	Ground Zero	2			
102.	The Eamon Railroad	2	06/20/85		
103.	Top Secret	-	06/20/85		Mar89
104.	The Lost World	-			
105.	The Strange Resort	-			
106.	Camp Eamon	6	07/01/85		
107.	The Last Dragon	7	06/02/87	Y	
108.	The Mines of Moria	8	06/29/89	Y	Oct85
109.	The Forest of Fear	6	07/29/89	Y	Jun86
110.	Fire Island	5	12/08/87	Y	
111.	A Vacation in Europe	4	06/16/88	Y	Oct85
112.	Hills of History	5	06/16/88	Y	
113.	The Life-Orb of Mevtrelek	8	06/16/88	Y	Jun86
114.	Thror's Ring	9	03/30/87	Y	Jun86
115.	The Ring of Doom	-	06/16/88	Y	
116.	The Iron Prison	10	06/16/88		
117.	Dungeon of Doom	7	08/26/86	Y	
118.	Pittfall	6	05/04/89	Y	Jun89
119.	Grunewalde	8	06/16/88	Y	Mar89
120.	Orb of My Life	9	12/07/86	Y	Jun86
121.	Wrenhold's Secret Vigil	8	04/19/88	Y	Jun86
122.	The Valley of Death	5	06/16/88	Y	
123.	Wizard of the Spheres	4	06/16/88	Y	
124.	Assault on Dolni Keep	6	04/13/88	Y	Oct87
125.	The Mattimoe Palace	4		Y	
126.	The Pyramid of Anharos	8	06/16/88	Y	
127.	The Hunt for the Ring	9	06/16/88	Y	
128.	Quest of Erebor	7	06/16/88		
129.	Return to Moria	9	06/16/88	Y	Oct87
130.	Haradwaith	7	06/16/88	Y	Oct87
131.	Nucleus of the Ruby	6	08/07/88	Y	
132.	Rhadshur Warrior	9	10/16/88	Y	
133.	The Final Frontier	3	06/16/88	Y	
134.	Pyramid of the Ancients	3	06/16/88	Y	
135.	The Tomb of Evron	2	05/13/87		
136.	The Mountain Fortress	2	06/16/88	Y	
137.	The Ruins of Ivory Castle	4	06/16/88	Y	Jun88
138.	Starfire	4	07/30/89	Y	
139.	Peg's Place	7	06/16/88	Y	Jun88
140.	Beginner's Forest	5	07/18/88		
141.	The Infested Fortress	4	09/22/88	Y	Oct87
142.	The Beermeister's Brewery	6	07/18/88	Y	Jun88
143.	The Alternate Zone	6	02/02/87		
144.	Gartin Manor	4	10/18/88	Y	
145.	Buccaneer!	9	03/30/87	Y	Oct87
146.	The House of Horrors	5	06/16/88	Y	
147.	The Dark Brotherhood	9	03/30/87	Y	Jun88
148.	Journey to Jotunheim	7	07/31/88	Y	
149.	Elemental Apocalypse	9	05/26/89	Y	Sep89
150.	Walled City of Darkness	10	08/08/88	Y	Sep88
151.	Eamon S.A.R.-1 (Deneb Raid)	5	08/01/88	Y	Sep88
152.	The Computer Club of Fear	6	08/08/88	Y	
153.	Lost!	4	04/06/88	Y	
154.	A Trip to Fort Scott	4	07/08/88	Y	
155.	Tomb of the Vampire	5	08/01/89	Y	
156.	The Lake	3	07/04/88	Y	
157.	Pathetic Hideout of Mr. R.	5	10/11/88	Y	
158.	The Lair of Mr. Ed	7	11/06/88	Y	Sep88
159.	The Bridge of Catzad-Dum	6	11/01/88	Y	Dec88
160.	Monty Python & Holy Grail	6	08/29/88	Y	
161.	Operation Endgame	10	05/26/89	Y	Dec88
162.	Eamon 7.0 Demo Adventure	-	05/23/89	Y	
163.	The Sands of Mars	4	10/12/88	Y	
164.	A Real Cliffhanger	4	11/08/88	Y	Dec88
165.	Animal Farm	8	08/03/87	Y	
166.	Storm Breaker	8	03/28/89	Y	Jun89
167.	Expedition to the Darkwoods	-	06/13/89	Y	
168.	The High School of Horrors	-	03/09/89	Y	
169.	The Black Phoenix	-	06/13/89	Y	
170.	Ragnarok Revisited	-	06/24/89	Y	
171.	The Pyramid of Cheops	4	07/04/89	Y	
172.	The Mountain of the Master	3	05/16/89	Y	
173.	The House that Jack Built	3	07/04/89	Y	
174.	Escape from Granite Hall	4	07/04/89	Y	
175.	Anatomy of the Body	2	07/04/89	Y	
176.	Dirtie Trix's Mad Maze	2	07/04/89	Y	
177.	Shippe of Fooles	3	07/04/89	Y	
178.	The Alien Intruder	2	07/04/89	Y	
179.	The Wizard's Tower	4	07/04/89	Y	
180.	Gamma 1	3	07/05/89	Y	
181.	The Eamon Sewer System	2	07/05/89	Y	
182.	Farmer Brown's Woods	1	07/05/89	Y	
183.	The Boy and the Bard	9	08/26/89	Y	

Dungeon Designer Diskette Ver.7.0 08/26/89
DDD 7.0 Multi-Disk Supplement 06/06/89
Dungeon Designer Diskette Ver.6.2 05/23/89
Eamon Utilities Diskette
Graphics Main Hall

End Notes

by Tom Zuchowski

The subject this time around is reliability. The 'Bugs & Fixes' section this issue runs about 5 pages, and describes a number of problems that we found in the 'official' EAG library.

The best check on your own Eamons is simply to play them. If you can successfully play a given adventure, then it is probably a good copy. You can verify the Eamon data files by using the Utility program CHECK FILES, which will verify that all of the descriptions and data can be read without encountering an OUT OF DATA error. The best check for the programs themselves is (besides running them) to simply LOAD and LIST the highest-numbered lines. If the end of the program looks right and doesn't have any garbage or abruptly truncated lines, then it is probably OK.

Further checks can be made with commercial programs. The disk verifier on 'Copy II Plus' is very good at catching errors. Catalogs and disk free space maps can be validated with the FIXCAT program on 'Bag of Tricks'.

Because of its very structure and its use by beginner-level programmers, Eamon is quite vunerable to picking up subtle errors. Be careful, and keep backups of anything important.

CHECK FILES will not verify some Eamon adventures because they have non-standard file structures. If CHECK FILES encounters an error, it could be for one of these reasons:

1) non-standard file lengths. You can check these by listing the MAIN PGM's INIT section to see if it opens the various data files as random files and to the correct standard lengths (ROOMS:64; ROOM NAMES:64; ARTIFACTS:128; MONSTERS:128; DESC:256)

2) non-standard file format. The older, obsolete Eamon versions used some sequential files. A couple adventures have rearranged EAMON.DESC file structure from the standard arrangement (ROOMS:records 1-100; ARTIFACTS:101-200; EFFECTS:201-300; MONSTERS:301:400).

Some Eamons defy verification because of heavy modification, such as #143, 161, & 166.

3) incorrect parameters NR, NA, NE, NM. These 4 variables are stored in record 0 of EAMON.DESC, and define the number of rooms, artifacts, effects, and monsters, respectively. It is possible to mis-use DUNGEON EDIT in such a way that these numbers become larger than the actual number of records. Since CHECK FILES uses these numbers, it will crash with OUT OF DATA errors when it attempts to verify the nonexistent records.

Nathan Segerlind received a copy of Sam Ruby's letter that is printed in this issue. He wrote a letter responding to Sam's and requested that it be run after Sam's. Well, Nathan, as always, pulled no punches and took no prisoners, and it seemed that it would be much like throwing gasoline on a fire to print his letter. Let it suffice to say that Nathan stands by his earlier views, and blamed the 'swordsman' character-selection suggestion on me (a true charge). However, it seems appropriate to print Nathan's final comments:

"Final Note: it was my review, I call 'em how I see 'em, the adventure played like a 6, so I gave it a 6. If you don' like that, all you stupid, whiny, wimpy, gay, bleeding heart Commie-loving pinko yuppie Nazis can go back to Iran."

Keep 'em coming, Nathan. Things wouldn't be nearly as interesting around here without you.

Have you ever wondered what it would be like to be able to actually participate in a D&D-type adventure; to actually become a master swordsman or a magic user? 'Dream Park', a science-fiction book by Larry Niven and Steven Barnes, describes a future-technology park where people can do exactly that. The story revolves around a group of gamers who have set out to solve a quest that is set in an interesting South Seas mythos that is unlike anything you have ever heard of. I found it to be an excellent story and I could hardly put the book down until the end. Highly recommended.

Hardware Corner

Bobby

Welcome back to the Hardware Corner. We're going to be seeing a lot of each other in upcoming issues. I've got a lot of neat projects lined up and some of them just may interest you. Because this column is as new to me as it probably is to many of you, I'm going to start out slow and easy. And I need your help, especially now, at the beginning. I'm going to try to explain how each circuit works and I'm aiming at those people who don't have any hardware experience. If I miss my mark, you have to let me know. Do it right away, as these articles have a certain lead time and I want to correct my writing style before the next installment is printed.

Activity Monitor

Our first project is an easy one. It's what I call a "gimmick". That's a device that does something "neat" or "nifty" but usually doesn't serve a critical need. It's a display device that monitors the address bus activity and shows you what addresses are being accessed. Cost was a big part of the design objective so I didn't use hexadecimal character displays. What I've done is divide the Apple's total address range into 16 segments. Each segment has it's own light emmitting diode (LED) that is "ON" whenever an address in it's segment is referenced.

The microprocessor (6502) used in the Apple can address 64K of memory. A "K" is computer talk for 1024 individual locations so 64K is 65,536 (decimal) locations. But K's are easier to use in this application so let's stick with them. Dividing 16 into 64K gives us 4K segments. The segments (in hexadecimal numbers) come out this way:

Hex	Address range
0	0000-0FFF
1	1000-1FFF
2	2000-2FFF
3	3000-2FFF
4	4000-4FFF
5	5000-5FFF
6	6000-6FFF
7	7000-7FFF
8	8000-8FFF
9	9000-9FFF
A	A000-AFFF
B	B000-BFFF
C	C000-CFFF
D	D000-DFFF
E	E000-EFFF
F	F000-FFFF

Hexadecimal Numbers

Let's talk about numbers. Hexadecimal (hex) numbers are base16. There are sixteen digits (0 thru 9 & A thru F) in base16. The number system that you are probably used to using is base10. There are 10 digits (0 thru 9) in base10. Computers talk in binary which is base2 and uses two characters (0 and 1). It's a little hard for us carbon based creatures to think in binary so we compromised and came up with hex. We refer to four digit groups of binary numbers using hex numbers. It works rather well and looks like this:

decimal	hex	binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111

When we talk about binary numbers we usually refer to them as bits. So a four bit binary number is a one character hex number. Since the 6502 uses 8 bit binary numbers, you will usually see two character hex numbers being used. (ie. a reference to track $11 is 00010001 in binary.)

Watching the bus

The 6502 has a sixteen bit address bus so you will see the address written as four hex digits. (ie. $0000, $C800, $FE07, etc.) This works out real well for us since our display has sixteen 'lights' (LEDs). The most significant hex digit (4 bits) is used by our card to tell which LED (light) to turn on.

The 6502 "runs" at 1Mhz. This means that the processor is changing the address one million times each second. Obviously, the LEDs are going to be flashing ON and OFF kind of fast and this works out well too. The intensity of each LED is directly related to the amount of time that the processor spends in each segment. So, the activity of the 6502 is indicated by which LEDs are ON as well as by how bright each LED is. If the 6502 references an address only a few times, that segment's LED will not be ON long enough for your eyes (slow analog device) to "see" it.

Other functions

Up to this point, this card is the same as the circuit that was talked about in COMPUTIST #48, but our card has a few more bells and whistles.

1. The lower portion of memory has some very important parts. I assigned five additional LEDs to Segment 0. They are; Page Zero ($00), the 6502 Stack ($01), the Input Buffer ($02), Page Three ($03) and the Text Page ($04-07).

2. I wanted to be able to control the 6502 speed in order to slow down graphic programs, so I could watch them draw. I tried some of the standard slow circuits but they were uniformly unsatisfactory. The speed adjustment wasn't linear. Turning the speed control a small amount caused the speed to go from stopped to full. 90% of the control seemed to have no effect. So I came up with my own proportional speed control. I think you'll like it. The adjustment range is smooth and linear from stopped to full speed.

3. One other whistle. Slowing the 6502 can be very dangerous under certain conditions. Specifically, slowing the 6502 when it is writing to the disk drive will destroy your disk. I could have just put a warning at the beginning of the article but I get forgetful myself, so I decided there had to be a hardware solution. What I did was trap out references to the I/O locations ($C080-C0FF) and turn OFF the slow circuit automatically for a certain period of time. So, if you're watching your favorite arcade game draw characters on the screen and the program suddenly decides to write to the disk, no problem. The 6502 will switch to full speed and slow back down after the write is thru.

Picking the amount of delay before slowing down is important. I came up with 1000 micro seconds as a safe figure but I would be very interested in the opinions of the other hardware hackers on what they would consider to be a safe delay.

How it works

The Display

Let's take a closer look at the actual circuit. The card is in two parts. The first part plugs into a slot and the second (connected by a 16 pin jumper) is outside of the Apple. Look at the circuit diagram. The Integrated Circuits (IC) are labeled U1 thru U16, the resistors are R1-R10, the capacitor are C1-C3, etc. I will be referring to these labels in my "how it works" description.

The addresses from the Apple's slot (A8-A15) are buffered by the 374 (U12) latch. This IC takes the data on it's input lines (A-H) and tranfers it to it's output lines (QA-QH) whenever the signal on it's clock (CLK) input goes positive. The buffered signal (QA-QH) is sent (via the 16 pin jumper) to the display part of the card where it is decoded and used to light the proper LEDs.

The 138 IC is a 1 of 8 decoder. A 3 bit binary number on the select inputs (A, B & C) causes one of the 8 outputs (0-7) to go low. The outputs are normally high (OFF). The outputs are connected to individual LEDs. When an output goes low, it allows current to flow thru the LED and the LED glows (turns ON). I use three 138 decoders (U13-U15). Two of them (U14, U15) are used to decode the sixteen segments and light the appropriate LED. The third 138 (U13) is used to further decode segment 0.

The 138 IC has three enable inputs (G1-G3). These inputs must have the correct levels (high or low) or the 138 is not enabled (all outputs are OFF regardless of the select inputs). G1 must have a high level and G2-G3 must be low. Look at the decimal/hex/binary list. Notice that for hex numbers 0 thru 7, the most significant binary bit (the leftmost bit is the high bit) is zero (0) and for hex numbers 8 thru F, the high bit is one (1). The lower 3 bits repeat for hex 0-7 and 8-F.

The lower 3 bits (QE-QG) go to the select inputs of U14 and U15. The high bit is used to select which IC is enabled since we have 16 LEDs and only want one to be on at any given moment. So we connect the high bit (QH) to G1 (high enable) on U15. This enables the IC whenever QH is high and disables it (turns all outputs OFF) if QH is low. U15 decodes the hex segments 8 thru F. Notice that the high bit is ON (1) for those 8 hex numbers. G2 and G3 are not used on U15 so we ground them to force them to be ON all the time. QH is connected to G2 and G3 on U14. This means that U14 is enabled whenever QH is low (0). Notice that QH is low for hex numbers 0-7. G1 is unused on U14 so we connect it to the plus line to make it high all the time. R10 is used to limit the current that flows thru the LED that is ON.

U13 and U16 are used to further decode segment zero. The segment 0 output from U14 is used as an enable (G2) so the U13 outputs can only turn ON if the segment 0 line is low. QA thru QC are used as the select inputs to U13. QD is used as an enable (G1). Since it is connected to G1, QD must be low for U13's outputs to turn ON. So the outputs of U13 decode addresses $00xx thru $07xx from the Apple. Outputs 0-3 have individual LEDs. Outputs 4-7 go to U16, a four input AND gate. The output of U16 will go low if any of it's four inputs are low. The text page extends from $0400 thru $07FF. Any reference into this range will cause one of the four highest outputs of U13 to go low which will cause the output of U16 to go low which will light the "Text Page" LED. R9 limits the current flowing thru the ON LED.

Let's go back and look at U12 again. I said that U12 will change it's outputs to the levels on it's inputs if the clock (CLK) input goes high. (Otherwise the outputs will remain the same.) This change occurs only on the rising edge. U12 ignores everything else. Let's take a closer look at the clock signal.

The clock signal for U12 comes from the output of U2. U2 is a two input NOR gate. The output of U2 will go high only if both of it's inputs are low. One of the inputs to U2 is P1 from the Apple slot. P1 is a 1Mhz clock signal. It is always low during the second half of a 6502 processor machine cycle. The other input to U2 comes from the output of U16, another NOR gate. The inputs to U16 come from S1 and a normally open jumper. If the jumper is open (not connected) then R7 will put a high level to the input of U16 and the output will always be low and the position of S1 is ignored. That means that the output of U2 will go high whenever P1 goes low and U12 will be clocked every Apple machine cycle. Then any and all address references will be sent to the decoders on the display board.

The jumper connects to a line on the slot connector that is labeled "User1/Sync". On a II and a II+ this line is "User1". On a IIe this line is "Sync". You would only connect the jumper if you used the card on a IIe. The Sync line is special. It is normally low and only goes high when the 6502 is fetching an Opcode. This means that it will only go high when it is reading program code. If the sync line is connected and S1 is closed then the clock signal to U12 will only occur when the 6502 is reading program code and the LEDs will only glow for the segments where the program code resides.

S1 is the program/reference switch. In the reference position it allows all addresses to go to the decoders. In the program position it only allows program references to go to the decoders. It is used to determine where a program resides and to clock the single-step mode. More on that later.

Are we ready?

The ready line (RDY) on the Apple slot is used whenever a slow peripheral is accessed. If the RDY line is pulled low, the 6502 will wait in the current cycle until it goes high again. This line can be used to slow, single-step or stop the 6502 processor. The RDY line is common to all of the slots. U1 is an open collector buffer that connects to the RDY line. Open collector means that U1 can only pull the RDY line low, it can't drive it high. That means U1 will not interfere with a card in another slot that uses the RDY line.

The input to U1 comes from U3. U3 is a 'D' flip flop. This IC has a normal and an inverse output. The Q output with the circle near it is always the opposite polarity of the regular Q output. The level on the D input is transfered to the Q output when the C input goes high. The S input will force the Q output high regardless of the C input and the R input will force the Q output low regardless of the C input. If either the R or the S input is unused, it is tied to the +5V supply and is not shown in the circuit diagram.

The D input to U3 comes from the RUN/STOP switch S4. If this switch is open then the D input is always high and RDY is always high. If the S4 is closed (ON) then S3 selects between single-step and slow mode.

Single-Step

In single-step mode, U5 and U4 form a syncronized single pulse generator. The output of U4 is normally low. This low goes thru S3 and S4 to U3 where it is clocked by the output of U2 and goes thru U1 to pull the RDY line low. Pulling the RDY line low stops the Apple. When S2 (step pushbutton) is pushed, the trigger (Trg) input to U5 is pulled low. This causes the output to go high for a period determined by the charge time of C1 thru R2. The positive edge of the output of U5 causes the output of U4 to go high. This high follows the same path as before and allows the RDY line to go high which allows the 6502 to continue. While the normal Q output of U3 is high, the other output of U3 is low. This output is connected to the R input of U4. The low on the R input forces the Q output of U4 low again and (following the same path as before) this low stops the 6502 again. So the 6502 will execute one clock cycle each time the Step pushbutton is pressed.

If the Program/Reference switch (S1) is in the program position, then the output of U2 will only change during an Opcode read cycle. This means that a complete machine cycle will be executed by the 6502 whenever the Step pushbutton is pressed. 6502 machine cycles vary from 2-6 clock cycles depending on the Opcode that was read.

Slowwww

If S3 is in the slow position then the D input to U3 comes from the output of U11. U11 is a free-running oscillator. The frequency is determined by the charge/discharge time of C3. R6 is a variable resistor. C3 charges thru the top part of R6 and discharges thru the bottom part of R6. The amount of high or low time is determined by the position of R6. While the output of U11 is high, the 6502 runs at normal speed. While the output of U11 is low, the 6502 is stopped. The apparent speed of the Apple is the proportion of ON-time to OFF-time controlled by the position of R6.

Speed control override

I mentioned earlier that running at reduced speed while writing to a disk would destroy the data on the disk. The last part of our circuit is the automatic speed override. U7 is an 8 bit comparator. The output is low if the P and Q inputs are the same. U10 is triggered (Trg) by the low from U7 and it's output goes high for a period determined by R4 and C2. The high output of U10 goes to U6 which causes the output of U6 to go low. The low from U6 goes to the S input of U3 which forces the Q output high and (thru U1) makes RDY high so that the 6502 can run at full speed.

U9 is an open collector buffer like U1. It's purpose is to discharge C2 whenever the output of U7 goes low. This means that if another I/O reference occurs before the output of U10 goes low then the high period of U10 is extended for an additional full period. This means that successive references to the I/O area that we are trapping for will keep the 6502 running at full speed. Only if no I/O references occur for 1000 microseconds will the output of U10 return low and the RDY line be allowed to go low.

U8 is used to combine A12 and A13. This is necessary because U7 compares two 8 bit binary numbers and there are 9 bits that we need to monitor.

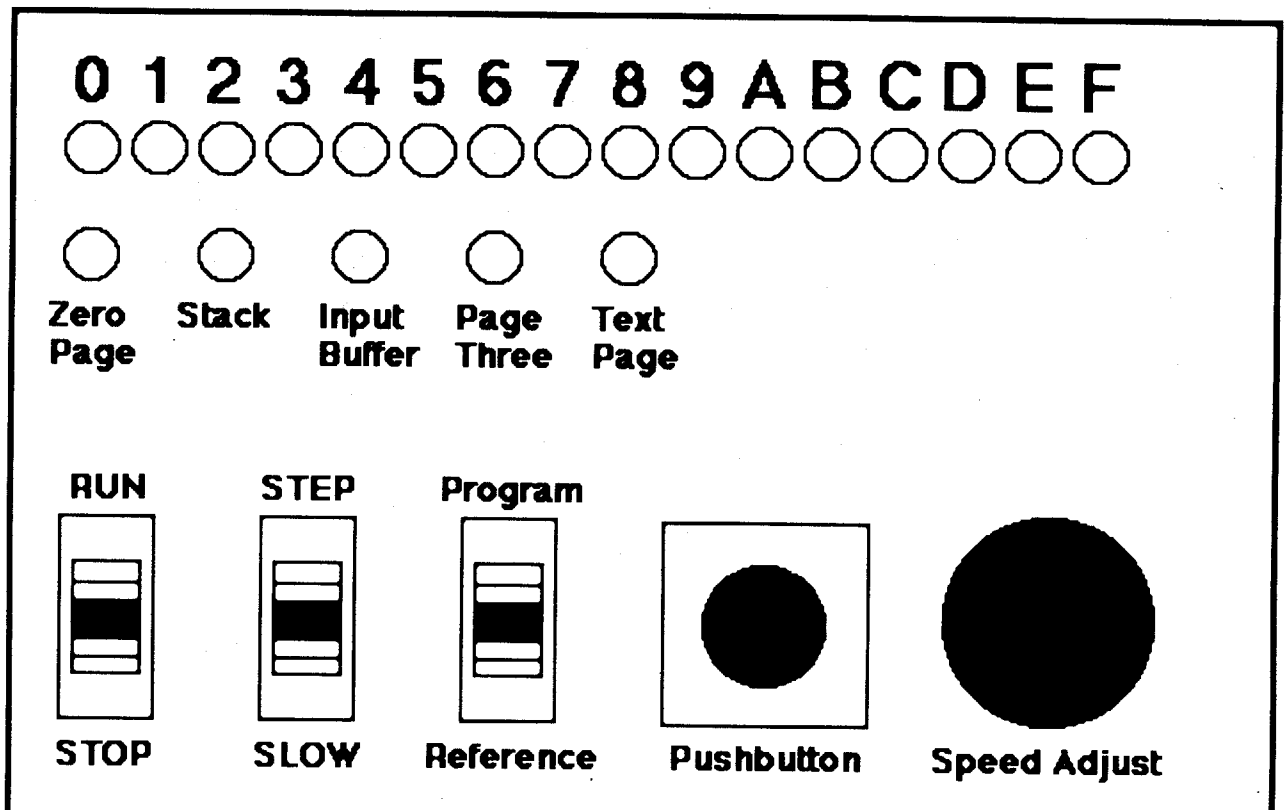
The G input to U7 is the enable input. This input must be low in order for the output to go low. The G input is connected to P1. The addresses from the 6502 are unstable (changing) during the first moments of each cycle. Since P1 is high during the first half of each cycle, the output of U7 is disabled during this unstable period and thus protected from false triggering.

The plus sign next to some of the components indicates connection to the +5V supply.

Assembling the circuit

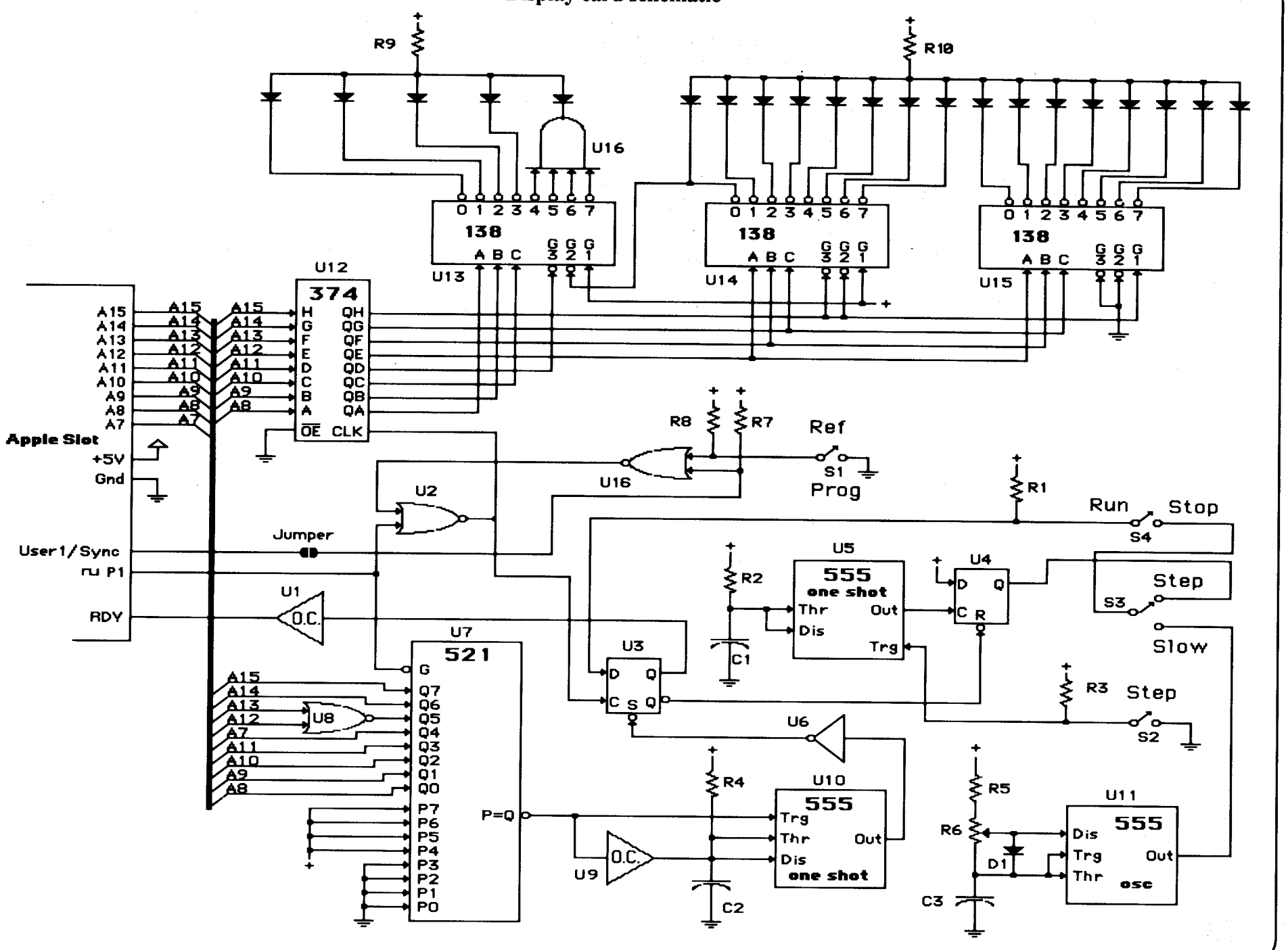
I'll show you how to build the circuit in the next issue. Until then, if anyone has any ideas for any hardware projects, let me know. You call it and I'll try to design and build it!

Display Board LED Layout



Last Minute News: We only have telephone quotes for the two board set, so far, but it looks like it's going to cost about $15. That's for the bare boards. The cost of the components, if ordered from Jameco Electronics, is $17.28 (UPS shipping included). If you want, we can order the parts for you. Send $32.28 for the complete kit (both boards with parts, unassembled). Washington residents must add 7.8% for tax. Those of you who are interested in building the Activity Monitor should place your order now, so we know how many circuit boards to order. You'll receive a complete list of components with your order acknowledgement so you may obtain the parts yourself. We're checking into the cost of getting the boards already assembled. Let Computist know if you are interested in a completely assembled board set.

Display card schematic



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Mr. Pixel's Programming Paint Kit	Mindscape/Thunder Mountain
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Observatory (The)	Mindscape/Lightspeed Software
Odin	Odessta
Operation Wolf	Taito
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Pig Pen	Datamost
Platoon	Data East
Project: Space Station	Avantage
Pulsar II	Sirius
Pure Stat Basketball	?
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Spare Change	Broderbund
Spectre	Datamost
Speedy Spides	Readers Digest
Star Cruiser	Sirius
Star Maze	Sir Tech
StickyBear Math: Add & Subtract	Optimum Resources
Stickybear GS Versions 3.5	Xerox
Strike Fleet	Electronic Arts
Succession	Piccadilly
Superstar Ice Hockey	Mindscape
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Talking Text Writer GS	Scholastic
Tangled Tales	Origin Systems
Test Drive	Accolade
Tetris (IIe)	Spectrum Holobyte
The Three Stooges (IIgs)	Cinemaware
Thunder Chopper	?
Ticket to Washington D.C.	Blue Lion Software
Tomahawk	Electronic Arts
Tomahawk (IIgs)	Datasoft
Triad	AI/Thunder Mountain
Trinity	Infocom
Ultima Trilogy	Origin Systems
Volcanoes v1.8	Earthware Comp. Services
War in the Middle Earth	Melbourne
Wasteland	Electronic Arts
Wayout	Sirius
Wings of Fury	Broderbund
Wizardry:Return of Werda	Sir-Tech.
Word Attack Plus (IIgs)	Davidson
Works (the)	First Star Software
Zenith	Softsmith
ZorkQuest	Infocom

IBM Most Wanted

Graphitti	George Best Phillips Academy
Gunship	Microprose
Heros of the Lance	SSI

Editor •An indepth guide to Ultima IV •Computing for 1-3 year olds •The Product Monitor Softkeys •A.I. •BoulderDash •BoulderDash Construction Set •DeathSword •Design Your Own Home: Architecture •Design Your Own Home: Interior •Design Your Own Home: Landscape •Facemaker •Gauntlet •Kings Quest II •Mastery Arithmetic •Microzine #26 •Muppet Slate v1.0 •PFS: Graph •Polywriter 1.2 •Rad Warrior •Rings of Zilfin •Seaspeller •Smart Eyes •Spell It! •Wings of Fury APTs •Castle Wolfenstein •Marble Madness IIgs •Might & Magic •Ultima IV •Ultima V Playing Tips •Coveted Mirror •Deathlord •Might & Magic •Oo-Topos •Ultima IV Notes •A better way to print Starter Kit DOC's •Curing Fatal System Error #0911 •Realtime Situation Control using CDAs •Chuck Yeager's Advanced Flight Trainer **IBM** Notes •Help Wanted!

57 Features •Electronic Art's Protection Language •How to find hidden code with EOR DiskScan •Here's another look at •Lower Case & Infocom Games •Monsters of Might & Magic •A Character Editor for Rings of Zilfin •A Single Data Disk for all your Print Shop Graphics •The Product Monitor Softkeys •American Challenge •Arctic Fox •Bard's Tale II •BoulderDash Construction Set •California Games •Championship Wrestling •Chief of Detectives/Drawing Conclusions •Deep Space •Dome Simplified Bookkeeping System •Dr. Ruth's Computer Game of Good Sex •Earth Orbit Stations •Factory •Galaxy Search/Predicting Outcomes •Game Maker •Hacker II •Hardball IIgs •Ikari Warriors •Labyrinth •Marble Madness •Master Diagnostics IIe •Math Blaster •Mickey's Space Adventure •Micro-Computer Learning Games •Microzine #14 •Microzine #24 •Milliken Math Series •Mind Prober •M-ss-ng L-nks •Morning Star Spelling •Mountain Climbing/Cause and Effect •Movie Monster Game •Pond •Race Track/Reading for Detail •Reading Comprehension Main Idea & Details •Rings of Zilfin •Roadwar 2000 •School Days/Inference •Ski Crazed •Softswitch •Sub Mission •Time Capsule/Reading Skills •Tuesday Morning Quarterback •Typewriter •Where in Europe is Carmen Sandiego •Wortgefecht •Xevious APTs •Deep Space •H.E.R.O. •Moebius •Rings of Zilfin •Roadwar 2000 Playing Tips •Arcticfox •Castle Wolfenstein •Conan •Donkey Kong •Ultima IV **IBM** Softkeys •Symphony v1.00 •TK!

56 Features •Apple IIgs Secret Weapon •5 second fastboot into Locksmith 6.0 Fastcopy •The Product Monitor •Taking the grind out of Championship Wrestling •Making some improvements to The Nibbler Softkeys •2400 AD •40' Graphics Studio •Accolade Comics •Aesop's Fables •American People •Animal Hotel •Applewriter IIe •Arcade Album #1 •Arctic Antics •Ballblazer •Bard's Tale II: The Destiny Knight •Bard's Tale IIgs •Cat'n Mouse •Championship Wrestling •Charlie Brown's 1,2,3's •Cobra Cavern •Color Me •Create With Garfield •David Winfield's Batter Up! •Destroyer •Disk Optimizer II •Dragonworld •Electronic Arts Software •En Vacances •En Ville •Fantavision gs •Fight Night •Forbidden Castle •G.I. Joe •Garfield Double Dares •General Manager •Goonies •GraphicWriter 2.0 •Gutenberg, Sr. •Hacker II •Hardball •Hardball gs •Infiltrator •James Bond 007: A View to a Kill •Keyboard Kadet •Kids on Keys •Lazer Maze •Le Demenagement •Le Francais par Ordinateur: •Leisure Suit Larry in the Land of the Lounge Lizards •Les Sports •Lion's Workshop •Microzine #21 •Microzine #22 •Milliken Word Processor •Millionair II •Multiscribe v2.0 •Multiscribe v3.0 •Multiscribe IIgs v3.01c •Paris En Metro •Pitfall II •Racter •Railroad Works •Rambo: First Blood Part II •Realm of Impossibility •Same or Different •Sea Dragon •Sea Strike •Shanghai •ShowOff •Shutterbug •Silent Service IIgs •Snoopy to the Rescue •Snoopy's Reading Machine •Snoopy's Skywriter Scrambler •Space Quest I •Space Station •Spy Hunter •Spy's Adventures in Europe •Spy's Adventures in North America •Stephen King: The Mist •Story Maker •Street Sports Basketball •Sub Battle Simulator •Super Sunday Football •Talking Text Writer •Type! •Un Repas Francais •Voodoo Island •Where in Europe is Carmen Sandiego •Winnie the Pooh •Winter Games •Winter Games gs •Wordzzzearch •World Games gs APTs •2400 AD •Kung-Fu Master •Lady Tut •Ultima V Playing Tips •2400 AD •Deathlord •Space Quest •Ultima IV •Ultima V •Wrath of Denethenor **IBM** Softkeys •Execu-Vision •MS Word •PC-Draw •Zork I & II Notes •Not too happy with Copy II Plus v8.1 •Data disks cause Appleworks crash

55 Features •A Utility to Save the Lower 8 Pages of Memory •Bard's Tale Effects Locator •How to Capture Phantasie Screen Maps •Alternate Reality Character Editor •Updating the ProDOS Block Editor •Loading Flashcalc onto your RAMcard •A Copy-protection Scheme for ProDOS •The Product Monitor •Autoduel Car Editor Softkeys •Alphabet Sequencing •Animal Alphabets and Other Things •Arctic Antics •The Boars' Store •The Boars Tell Time •Career Focus •Castle Wolfenstein •Charlie Brown's 123's •Charlie Brown's ABC's •City Country Opposites •Coveted Mirror •Create With Garfield •Crypt of Medea •Customized Alphabet Drill •Customized Flash Spelling •Dig Dug •Digital Paintbrush System •Estimation •Fay: Word Hunter •Fix It •Focusing on Language Arts •Fundamental Capitalization •Fundamental Punctuation Practice •Fundamental Spelling Words in Context •The Hobbit •Homonyms in Context •Individualized Study Master •Inside Outside Shapes •Inside Outside Opposites •Leisure Suit Larry in the Land of the Lounge Lizards •Master Diagnostics II & II+ •Mastertype v2.1 •Mathematics Series •Mr. and Mrs. Potato Head •Paper Models - The Christmas Kit •Peanuts Math Matcher •Peanuts Maze Marathon •Peanuts Picture Puzzlers •Perry Mason: The Case of the Mandarin Murder •Railroad Works •Random House Library •Management Programs •Rocky's Boots v.4 •Sensible Speller •Snoopy's Reading Machine •Snoopy's Skywriter Scrambler •Snoopy to the Rescue •Snoopy Writer •Spelling Demons •Stock Market Simulation •Story Builder •Story Starter •Studio II •Test Maker •Think Quick v1.0 •Tournament Bridge •Tutorial Comprehension •Typing is a Ball, Charlie Brown •Under Fire •Word Blaster •Word Count •Word Mount •Your Personal Net Worth APTs •Under Fire **IBM** Feature: •Flight Simulator RGB Modifications

54 Features •Picture Loader •How To Make DEMUFFIN PLUS •Convert Print Shop graphics into Print Master graphics •lower case letters For Your Apple II Plus •The Product Monitor •Apple IIc Paddle Fix •Softkey for Daisy Professional "Most-Protected" Award •DOS EOR Maker Softkeys A2-PB1 Pinball •Animate •Bank Street Music Writer •Boulderdash Construction Kit •California Games •Countdown to Shutdown •Coveted Mirror •Create with Garfield •Daisy Professional •Destroyer •Donkey Kong •Expedition Amazon •General Chemistry Disk #8 •Graphics Studio •Green Globs & Graphic Equations •Kalamazoo Teacher's Record Book 2.0 •Kids on Keys •Marble Madness •Math Blaster •Maxwell Manor •Peanut's Maze Marathon •Petro-Calc •Police Artist •Practical Grammar •Rendezvous •Ring Quest •Roadwar Europa •Roadwar 2000 •Rocky Horror Show •Sesame Street Electric Coloring Book Series •Sesame Street Letters for You •Sesame Street Numbers •Seven Cities of Gold •Snoopy's Reading Machine •Spy's Adventures In Europe •Spy's Demise •Super Sunday Football •Talisman •Tellstar II •Top Draw v1.01A •The American Challenge •The Dam Busters •The Science Professor •Tubeway •Vocabulary Adventure I •Winter Games •Wizards' Crown •Zero-Gravity Pinball APTs •Expedition Amazon •Might and Magic Playing Tips •Beauracracy •King's Quest II •Lurking Horror •Maniac Mansion •Stationfall **IBM** Feature •Introduction to **IBM** Disk Format, Access, and Copy-protection •Putting Sargon III on harddisk **IBM** Softkeys •Prokey 3.0 •R:base 400 •Time Manager

53 Features •Modify Super IOB to read/write every other track •APT for Rings Of Zilfin: Turn yourself into a lean, mean fighting Machine •More Softkeys for M.E.C.C. software (1987) •How To Use The Electronic Art's RWTS •APT for Realms Of Darkness: Realm's Wrecker! •Putting Super Boulder Dash onto a hard disk Softkeys •2400 A.D. •Age Of Adventure •Apple's Core II •Arcade Boot Camp •Arctic Fox •Aztec •Ballblazer •Bard's Tale IIgs •Blue Powder Gray Smoke •California Games •Championship Wrestling •Colonial Conquest •Comprehension Skills I,II •Conquering Whole Numbers •Coordinate Math •Countdown To Shutdown •Dataquest: The World Community •Destroyer •Dream House •Dream Zone •Earth Orbit Station •Equation Math •Forecast: Your At-Home Weather Station •Fraction Concepts Inc •Fraction Munchers •Fraction Practice Unlimited •GBA Championship Basketball •Genesis •GFL Football •Ghost Rider •Goonies •Grade Manager v2.3 •Great American Cross-country Road Race •Hardball IIgs •Ikari Warrior •Jenny's Journeys •Kid Niki Radical Ninja •Kung-Fu Master •Learning To Tell Time •Leisure Suit Larry •Let's Learn About Money •Let's Learn about the Library •Letters For You •Lords Of Conquest •Magic Spells •Math Blaster •Money Works •Maps & Globes: Latitude & Longitude •Marble Madness •Microzine 18,19,20,21,22,23 •Mist •Morning Star Math •Movie Monster Game •Multiplication Puzzles •Multiscribe v3.0c •Murder On The Mississippi •Music Made Easy •Mystery Sentences •Number Munchers •Numbers Count •Odell Lake •Operation Frog •Opposites Attract •Oregon Trail v1.4 •Phonics Prime Time: Blends & Digraphs •Phonics Prime Time: Vowels I, II •Puzzles & Posters •Quotient Quest •Reader Rabbit •Reading Style Inventory •Realm Of Impossibility •Sesame Street "Crayon" series •Shanghai •Sons Of Liberty •Space Quest v2.2 •Story Book: Pixelworks •Story Tree •Subtraction Puzzles •Super Huey •Super Wordfind •Tass Times In Tonetown •Those Amazing Reading Machines III, IV •Timothy Leary's Mind Mirror •To Preserve, Protect and Defend •Tower Of Myraglen •Troll's "MicroCoarseware" series •Webster: The Word Game •Word Munchers •Words At Work: Compound It •Words At Work: Suffix Sense •World Games •World's Greatest Baseball Game •World Karate Championship •Writer Rabbit •Zoyon Patrol APTs •Buck Rogers •Ikari Warrior •Kung-Fu Master •Leisure Suit Larry IIgs •Marble Madness •Realm Of Darkness •Rings Of Zilfin •Space Quest IIgs •Super Boulder Dash Playing Tips •2400 A.D. •Donkey Kong •Infiltrator •Space Quest IIgs •Spy Hunter •Swashbuckler •Thexder •Ultima II • **IBM** Softkeys: •EasyWriter 1.0, II •Zork III

52 Features •The Product Monitor •Unprotecting The Unprotectable: MacIntosh Softkeys! •A.P.T. Cornucopia •APT:Alternate Reality-Dungeon: Create A Super-human •Softkey for SSI's RDOS disks: 1.ProDOS RDOS, 2.RDOS Transfer Utility •Making Cracked II Plus Disks Work On The IIc Softkeys •Apple Gradebook v2.6 •Award Maker Plus •Black Cauldron •Black Magic •California Games •Car Builder •Color Print Shop •Computer Ambush •Concepts In Science •Disney's Comic Strip Maker •Elite •Empire I, II •European Nations & Locations •Fooblitsky •Grid Designer •H.E.R.O. •Ikari Warriors •Infiltrator II •Le Francais par Ordinateur •Little Computer People's House on a Disk •(Mac)Main Street Filer •Master Diagnostics IIe •(Mac)MegaFiler •(Mac)MegaMerge •Microzine 23 •Might & Magic •(Mac)Millionaire •Mindplay software •Music Construction Set •Nibbler •Operation Market Garden •Phantasie •(Mac)Planetfall •PrintMaster Plus •Print Shop •Questron •Regatta •Ring Quest •Ringside Seat •Rings Of Zilfin •Shanghai •Silent Service •Snooper Troops •Spy's Adventure in N. America •Super Print •Tass Times In Tonetown •Think Quick •(Mac)Transylvania •Ultima I re-release •Where in the USA is Carmen Sandiego •World Games •(Mac)Zork I APTs Alternate Reality: The Dungeon •Arctic Fox •Bard's Tale II •Beyond Zork •Black Magic •Cavern Creatures •Drol •Goonies •Ikari Warriors •Zorro Playing Tips •Beyond Castle Wolfenstein •Championship Lode Runner •Conan •King's Queen II •Lode Runner •Lurking Horror •Station Fall •Ultima IV •Zork **IBM** Softkeys: •Lotus 1-2-3 •Flight Simulator •PFS Report **IBM** APTs •Bard's Tale

51 Features •The Crypt-arithmetic Helper •Using EDD IV to Modify Tracks And Sectors •Bard's Tale APT: Dungeon Mapper Revisited •RAMfactor mod for Laser 128 •Ultima IV APT edit-tables •The Product Monitor •Get Better Sound by using the cassette jacks •Making A Fast Boot Disk •Might & Magic APT edit-tables Softkeys •2400 AD •Aliens •Alphabet Zoo •Amnesia •Bag Of Tricks •Bard's Tale I •Bard's Tale II •Battle Cruiser •Beach-head II •Below The Root •Black Magic •Body Awareness •Bridge 4.0 •Carriers At War •Catalyst 3.0 •Centipede •Championship Boxing •Championship Wrestling •Chessmaster 2000 •Combining The Elements •Commando •Creative Contraptions •Einstein Compiler •Fat City •Fight Night •Flight Simulator v2.0 •Fun with Direction •GBA 2-0n-2 Championship Basketball •GraphicWriter v1.1RA •Growing Up Small •House-on-a-disk •Intrigue •Jet •Jungle Hunt •Kindercomp •Knowing Numbers •Kung-fu Master •Law Of The West •Learning Well series •Letters And Words •Little Computer People •Make Your Own Murder Party •Manic Mansion •Master Diagnostics •Movie Maker •Music Construction Set •Pinball Construction Set •Pitstop •Print Shop Graphics Library Holiday •Print Shop IIgs •Rendezvous •Shapes And Patterns •Silent Service •Sorcerer •Spy vs Spy I & II •Stargate •Stellar 7 •Stickybear ABCs •Stickybear Drawing •Stickybear Numbers •Stickybear Printer •Stickybear Printer Library I & II •Stickybear Townbuilder •Super Boulderdash •Temple Of Apshai Trilogy •Tomahawk •Thexder •Walt Disney's Card And Party Shop •Walt Disney's Cartoon Maker •Wings Of Fury •Word Maze •World's Greatest Baseball Game •Zork III APTs Bard's Tale •Lode Runner •Might & Magic •Ultima IV •W. Disney's Card And Party Shop •Wizardry III •Wizardry IV Playing Tips •Autoduel •King's Quest •Manic Mansion •Summer Games •Tass Times In Tonetown •Thexder •Where In the World is Carmen Sandiego?

50 Features •Super Boulderdash APT-writer •Softkeys to Activision/MECC/ and PFS ProDOS/ software •Double F-8 ROM space w/o motherboard surgery •Ace-Apple bimodal Switch •Using Sider hard drives 3 1/2 inch, 800K drives, & 5 1/4 inch drives in DOS 3.3 Softkeys •Aliens •Alter Ego •Alternate Reality •Amazing Reading Machines •Amazon •American Challenge •Arcade Album #1 •Arithmetic Critters •Award Maker •Baseball Database •Bard's Tale II: Destiny Knight •BC's Quest for Tires •Bop & Wrestle •Champ. Boxing •Champ. Wrestling •Clock Works •Commando •Computer Prep for SAT •Conflict In Vietnam •Counting Critters •Crisis Mountain •Dataquest 50 States •Deluxe Paint II •Dino Eggs •Disney Card & Party Shop •Disney Comic Strip Maker •Draw Plus •Eidolon •Electric Crayon ABCs •Expedition Amazon •Facemaker •First Letter Fun •Fish Scales •Fun From A—Z •Game Maker •GBA Champ. Basketball •GFL Champ. Football •Graphicwriter 1.0R/1.1R •Great Road Race •Hacker II •Hardball •Infiltrator II •Instant Music •James Bond 007: A View To A Kill •Jenny's Journeys •Kung Fu Master •Little People •List Handler •Manic Mansion •Mastery Arithmetic Games •Market Place •Master of Lamp •Math Rabbit •Microzine #17 •Might and Magic •Mission In Solar System •Moebius •Music Construction Set •Music Studio •Number Munchers •Paint With Words •Paintworks Plus •Path Tactics •pfs:File •pfs:Graph •pfs:Plan •pfs:Report •pfs:Write •Phonics Prime Time •Portal •Principal's Assistant •Print Shop ProDOS 8 v1.4 •Print Shop Holiday Edition •Quickflash! •Reader Rabbit •Realm of Impossibility •Robot Odyssey I v.2.0 •Rocky Horror Show •Rocky's Boots v4.0 •Saracen •Shanghai •Silent Service •Skylab •Sound Tracks •Speedy Math •Spindizzy •Street Sports Baseball •Sub-Mission •Super Boulderdash •Tass Times in Tonetown •Thexder •Top Fuel Eliminator •Word Handler •Word Munchers •Words at Work •World Karate Champ. •Writer's Choice: Elite •Zardax v5.2.1

49 Features •Eliminate some ProDOS erroneous error messages •Date/time without a clock card •Sector surgery: recover lost files •Generating Applesoft programs "on-the-fly" •Product Monitor reviews •How to convert List Handler files into standard text files •How to make GRAPHIC.GRABBERv3 run on the IIgs •Laser 128 "absolute" Reset Playing Tips •Bard's Tale II •Conan •Donkey Kong •Hacker I •Hard Hat Mack •Orbitron •Print Shop Companion •Spellbreaker •Spy Hunter •Ultima 4 APTs Infiltrator •Lode Runner •Montezuma's Revenge •Swordthrust series Softkeys •Addition Logician •Animate •Arcade Boot Camp •Arctic Fox •Bard's Tale II •Cat'n Mouse •Counting Critters •Dam Busters •Destroyer •Draw Plus v1.0 •Dr. Ruth's Comp. Game Of Good Sex •Echo 1.0 •E.D.D. 4 •Gamemaker •Hard Ball •Infiltrator •List Handler •Locksmith 6.0 Fastcopy •Magic Slate •Math Critters •Millionaire •Mind Mirror •One On One •Paintworks Plus v1.0 •Paintworks Plus v1.1 •PHM Pegasus •Portal •Quotient Quest •Reader Rabbit •Saunder's Chemistry CAI •Science Toolkit •Shanghai •Strip Poker •Super Bunny •Super Sunday •Swordthrust series •Term Paper Writer •Thief •Top Fuel Eliminator •Typing! •Up-n-Down •Willy Byte •Writer's Choice Elite v1.0 •Writing A Character Sketch •Writing A Narative

48 Features •Dungeon Editor & Encounter Editor for Ultima III Softkeys •816 Paint GS •Amnesia •Apple Business Graphics •Arctic Fox •Award Maker Plus •Bard's Tale II •Betterworking Word Processor •Beyond Castle Wolfenstein •Black Magic •Bookends Extended •Bop & Wrestle •Chess 7.0 •Chessmaster 2000 •Deluxe Paint GS •Destroyer •Hacker II •Hacker II GS •Hardball •Infiltrator •Instant Music GS •J-Bird •Mabel's Mansion •Marble Madness •Mean 18 GS Golf •Megabots •Might & Magic •Miner 2049er II •Mouse Word •Music Construction Set GS •Music Studio GS •New Oregon Trail •Paintworks Plus 1.0 GS •Paintworks Plus 1.0 GS •Paul Whitehead Teaches Chess •PHM Pegasus •Poetry Express •Print Shop color version •Rambo: First Blood part II •Rocky Horror Show •Sargon III* •Shadowkeep •Shanghai GS •Spindizzy •TelePorter •Temple Of Apshai trilogy •Top Draw GS •Transylvania •Ultima I •World's Greatest Baseball Game APTs •Shadowkeep

47 Features •Infocom-text Reader Enhancement •Color Ultimapper mod to Ultimapper IV •Towne Mapper for Ultima IV •Dungeon Mapper for Bard's Tale •Hardware Corner Interrupting Your Apple •Softkey for Charlie Brown's 1,2,3s Softkeys •Guitar Wizard •Gemstone Warrior •Notable Phantom •Micro Wine Companion •Stickybear Printer •Note Card Maker •Starcross •Wishbringer •Dinosaur Dig •Dam Busters •Pirate Adventure •Infiltrator •MECC software •Banner Catch •Turtle Tracks •PFS File •Microzine #12, #13, #14 •Marble Madness •Writer Rabbit •Arcticfox •Age Of Adventure •Might And Magic •Space Station •Alternate Reality •Mindshadow •Gemstone Warrior •Strip Poker •Lucifer's Realm •Manuscript Manager •Bank Street Writer III •Kids On Keys •The Missing Ring •Graphic Solution •Empire I, II •Champ. Golf

46 Softkeys •Advanced Microsystems Technology programs •Word Attack •Star Blazer •Science Toolkit •The Color Enhanced Print Shop •Video Vegas •The Handlers •K.C. Deals On Wheels •Law Of The West •Break The Bank Blackjack •Foundation Course In Spanish •OGRE •Puzzles And Posters Features •The Shift Key/Lower Case Option For II+ •Amazing Computer Facts •Shape Magic utility Review: Multiscribe

45 Softkeys •Mouse Calc •Sands of Egypt •Number Farm •Agent U.S.A. •Wavy Navy •Kindercomp •Flight Simulator Update •Raid over Moscow •Crime Stopper •Key Perfect 5. •The Final Conflict •Miss Mouse •Snoggle Features •Write Protecting the Microsoft RAM Card •Keys to Success on the Franklin Ace •Modified F8 ROMs on the Apple /// Core •Owner's Review of Copy Master II

44 Softkeys •Arcade Boot Camp •Goonies •Zorro •Coveted Mirror •Crimson Crown •Compubridge •Fleet System 3 •Microwave •Escape •Catalyst 3.0 •Number Farm •Alphabet Circus •Joe Theisman's Pro Football •Black Cauldron •Intern. Gran Prix Features •Making DOSless Utilities •Pixit Printer Drivers Review Z-RAM Memory Expansion Board •Reading the Joystick

43 Softkeys •Graphics Expander •Information Master •Certificate Maker •Elite •Catalyst 2.0 and 3.0 •Murder On The Mississippi •Temple Of Apshai Trilogy •Troll Associates programs •Spell It •Regatta •Cdex Training programs •Think Fast Features •How to Write-Protect your Slot Zero •Capturing Locksmith 6.0 Fast Copy •Revisiting DOS to ProDOS and Back Core •Computer Eyes / 2: a Review APTs •Sword of Kadash & Rescue Raiders •Ultimaker IV

42 Softkeys •Light Simulator •Beach-Head •Monty Plays Scrabble •Racter •Winnie the Pooh •Infocom Stuff, Kabul Spy, Prisoner II •Wizardry 1 & 2 •Lucifer's Realm •The PFS Series •Dollars and Sense •Strip Poker •Coveted Mirror •Wizard's Crown •The Swordthrust Series •Axis Assassin •Manuscript Manager •The Crown of Arthain •Address Book •Decimals 3.0 •Dragonfire •Features •Auto Duel Editor •Wizard's Crown Editor •Questron Mapper Core •The Games of 1986 in Review Adventure Tips •Ultima IV

41 Softkeys •The Periodic Table •Gemstone Warrior •Inferno •Frogger •Story Maker •Adventure Writer •Mummy's Curse •Zaxxon •The Quest •Pitfall II •H.E.R.O. Features •A Two-Drive Patch for Winter Games •Customizing the Speed of a Duodisk •Roll the Presses Part Two: Printshop Printer Drivers •The Games of 1986

40 Softkeys •Adventure Writer •E-Z Learner •Mychess II •Raster Blaster •Cranston Manor •Ghostbusters •Designer's Pencil •The American Challenge •Encyclopedia Britannica Programs •Crime Wave Features •Taking the Wiz out of Wizardry •Adding a Printer Card Driver to Newsroom Core Games of 1986

39 Softkeys •MIDI/8+ •Homeword v2.1 •Borrowed Time •Amazon •Speed Reader][•Discovery! •M-ss-ng L-nks series •Donald Ducks's Playground •Mastering the SAT •Copy][Plus 4.4C •Master of the Lamps •One on One •Bridge Baron •A.E. •Great American Cross-Country Road Race •Computer Preparation for the SAT •Castle Wolfenstein •Luscher Profile •Skyfox •Silent Service •Echo Plus •Swashbuckler •Randamn Features •Electronic Disk Drive Swapper •Abusing the Epilogues •Print Shop Companion's Driver Game Core •Keyboard Repair •Fixing the Applesoft Sample Disk

38 Softkeys •Cyclod •Alternate Realty •Boulder Dash I & II •Hard Hat Mack (Revisited) •The Other Side •F-15 Strike Eagle •Championship Lode Runner •Gato V 1.3 •I, Damiano •Wilderness •Golf's Best Features •The Enhanced/ Unenhanced IIe •Looking into Flight Simulator's DOS Core •Appavarex •Installing a RAM disk into DOS 3.3

37 Softkeys •Under Fire •Pegasus][•Take 1 (revisited) •Flight Simulator II v1.05 (part 2) •Magic Slate •Alter Ego •Rendezvous •Quicken •Story Tree •Assembly Language Tutor •Avalon Hill games •Dark Crystal Features •Playing Karateka on a IIc •Track Finder •Sylk to Dif Core •Breaking In: tips for beginners •Copy][Plus 6.0: a review •The DOS Alterer

36 Softkeys •Flight Simulator II v 1.05 •AutoDuel •Critical Reading •Troll's Tale •Robot War •General Manager •Plasmania •Telarium Software •Kidwriter v1.0 •Color Me Features •ScreenWriter meets Flashcard •The Bus Monitor •Mousepaint for non-Apples Core •The Bard's Dressing Room APT •Championship Lode Runner

35 Softkeys •Olympic Decathlon •Hi-res Cribbage •Revisiting F-15 Strike Eagle •Masquerade •The Hobbit •Pooyan •The Perfect Score •Alice in Wonderland •The Money Manager •Good Thinking •Rescue Raiders Feature Putting a New F8 on Your Language Card Core •Exploring ProDOS by installng a CPS Clock Driver

34 Softkeys •Crisis Mountain •Terripin Logo •Apple Logo II •Fishies 1.0 •SpellWorks •Gumball •Rescue at Rigel •Crazey Mazey •Conan •Perry Mason: The Case of the Mandarin Murder •Koronis Rift Feature •More ROM Running Core •Infocom Revealed

33 Softkeys •Word Juggler •Tink! Tonk! •Sundog v2.0 •G.I. Joe & Lucas Film's Eidolon •Summer Games II •Thief •Instant Pascal •World's Greatest Football Game •Graphic Adventure #1 •Sensible Grammar & Extended Bookends •Chipwits •Hardball •King's Quest II •The World's Greatest Baseball Game Feature •How to be the Sound Master Core •The Mapping of Ultima IV

32 Softkeys •Revisiting Music Construction Set •Cubit •Baudville Software •Hartley Software •Bridge •Early Games for Young Children •Tawala's Last Redoubt •Print Shop Companion •Kracking Vol II •Moebius •Mouse Budget, Mouse Word & Mouse Desk •Adventure Construction Set Feature •Using Data Disks With Microzines Core •Super IOB v1.5 a Reprint

31 Softkeys •Trivia Fever •The Original Boston Computer Diet •Lifesaver •Synergistic Software •Blazing Paddles •Zardax •Time Zone •Tycoon •Earthly Delights •Jingle Disk •Crystal Caverns •Karate Champ Feature •A Little Help With The Bard's Tale Core •Black Box •Unrestricted Ampersand

30 Softkeys •Millionaire •SSI's RDOS •Fantavision •Spy vs. Spy •Dragonworld •King's Quest •Mastering the SAT •Easy as ABC •Space Shuttle •The Factory •Visidex 1.1E •Sherlock Holmes •The Bards Tale •Feature •Increasing Your Disk Capacity •Core •Ultimaker IV, an Ultima IV Character Editor

29 Softkeys •Threshold •Checkers v2.1 •Microtype •Gen. & Organic Chemistry Series •Uptown Trivia •Murder by the Dozen •Windham's Classics •Batter Up •Evelyn Wood's Dynamic Reader •Jenny of the Prairie •Learn About Sounds in Reading •Winter Games •Feature •Customizing the Monitor by Adding 65C02 Disassembly •Core •The Animator

28 Softkeys •Ultima IV •Robot Odyssey •Rendezvous •Word Attack & Classmate •Three from Mindscape •Alphabetic Keyboarding •Hacker •Disk Director •Lode Runner •MIDI/4 •Algebra Series •Time is Money •Pitstop II •Apventure to Atlantis •Feature •Capturing the Hidden Archon Editor •Core •Fingerprint Plus: A Review •Beneath Beyond Castle Wolfenstein (part 2)

27 Softkeys •Microzines 1-5 •Microzines 7-9 •Microzines (alternate method) •Phi Beta Filer •Sword of Kadash •Another Miner 2049er •Learning With Fuzzywomp •Bookends •Apple Logo II •Murder on the Zinderneuf •Features •Daleks: Exploring Artificial Intelligence •Making 32K or 16K Slave Disks •Core •The Games of 1985: part II

26 Softkeys •Cannonball Blitz •Instant Recall •Gessler Spanish Software •More Stickybears •Financial Cookbook •Super Zaxxon •Wizardry •Preschool Fun •Holy Grail •Inca •128K Zaxxon •Feature •ProEdit •Core •Games of 1985 part I

25 Softkeys •DB Master 4.2 •Business Writer •Barron's Computer SAT •Take 1 •Bank Street Speller •Where In The World Is Carmen Sandiego •Bank Street Writer 128K •Word Challenge •Spy's Demise •Mind Prober •BC's Quest For Tires •Early Games •Homeword Speller •Feature •Adding IF THEN ELSE To Applesoft •Core •DOS To ProDOS And Back

24 Softkeys •Electronic Arts software •Grolier software •Xyphus •F-15 Strike Eagle •Injured Engine •Mr. Robot And His Robot Factory •Applecillin II •Alphabet Zoo •Fathoms 40 •Story Maker •Early Games Matchmaker •Robots Of Dawn •Feature •Essential Data Duplicator copy parms •Core •DOS-Direct Sector Access

22 Softkeys •Miner 2049er •Lode Runner •A2-PB1 Pinball •The Heist •Old Ironsides •Grandma's House •In Search of the Most Amazing Thing •Morloc's Tower •Marauder •Sargon III •Features •Customized Drive Speed Control •Super IOB version 1.5 •Core •The Macro System

20 Softkeys •Sargon III •Wizardry: Proving Grounds of the Mad Overlord and Knight of Diamonds •The Report Card V1.1 •Kidwriter •Feature •Apple][Boot ROM Disassembly •Core •The Graphic Grabber v3.0 •Copy II+ 5.0: A Review •The Know-Drive: A Hardware Evaluation •An Improved BASIC/Binary Combo

19 Softkeys •Rendezvous With Rama •Peachtree's Back To Basics Accounting System •HSD Statistics Series •Arithmetickle •Arithmekicks and Early Games for Children •Features •Double Your ROM Space •Towards a Better F8 ROM •The Nibbler: A Utility Program to Examine Raw Nibbles From Disk •Core •The Games of 1984: In Review-part II

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Issue	Mag	Disk	Both	Issue	Mag	Disk	Both	Issue	Mag	Disk	Both
68	❑	❑	❑	43	❑	❑	❑	18	○	❑	○
67	❑	❑	❑	42	❑	❑	❑	17	○	❑	○
66	●	❑	●	41	❑	❑	❑	16☆	❑	❑	❑
65	❑	❑	❑	40	❑	❑	❑	15	○	❑	○
64	❑	❑	❑	39	❑	❑	❑	14	○	❑	○
63	❑	❑	❑	38	❑	❑	❑	13	○	❑	○
62	❑	❑	❑	37	❑	❑	❑	12	○	❑	○
61	❑	❑	❑	36	❑	❑	❑	11	○	❑	○
60	❑	❑	❑	35	❑	❑	❑	10	○	❑	○
59	❑	❑	❑	34	❑	❑	❑	9	○	❑	○
58	❑	❑	❑	33	❑	❑	❑	8	○	▯	○
57	❑	❑	❑	32	❑	❑	❑	7	○	▯	○
56	❑	❑	❑	31	❑	❑	❑	Core 3	❑	❑	❑
55	❑	❑	❑	30	❑	❑	❑	6	○	❑	○
54	❑	❑	❑	29	❑	❑	❑	5	○	●	●
53	❑	❑	❑	28☆	❑	❑	❑	4	○	▯	○
52	❑	❑	❑	27	❑	❑	❑	3	○	▯	○
51	❑	❑	❑	26	❑	❑	❑	Core 2	❑	▯	❑
50	❑	❑	❑	25	❑	❑	❑	2	○	▯	○
49	❑	❑	❑	24	❑	❑	❑	1	❑	▯	❑
48	❑	❑	❑	23	○	❑	○	Core 1	❑	▯	❑
47	❑	❑	❑	22	❑	❑	❑				
46	❑	❑	❑	21	○	❑	○				
45	❑	❑	❑	20	❑	❑	❑				
44	❑	❑	❑	19☆	❑	❑	❑				

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