

75

COMPUTIST

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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 preceded 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.

Laser 128: Your ROM includes a forced jump to the monitor. Press ctrl return reset.

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 & 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 (◊) characters. 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:
3DOG

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 Starting address, a period and the Ending 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: Reader's Data EXchange. 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, when we print your letter, we will return your disk 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 relevant 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. Check to the right of the authors name to see if the author is writing from a foreign country and include the proper postage.

Help Line

These readers have volunteered their time to help you. Please call only within the given time frames (corrected for your time zone). No collect calls.

Jack Nissel (Disk Protection, 7-10PM EST)
(215) 365-8160

Electronic Bulletin Board System (BBS)

Dave Goforth is the sysop for the Computist BBS. The number is: (206) 581-9292. If you already have a User ID# and password, sign-on using the User ID#. If you are a new user, it may take a day or so to validate your new ID# and password.

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

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Editorial Message

What's new? Well, take a look at the new cost of unClassified ads. In order to encourage you to sell some of that hardware that your not using, we've lowered the cost of unClassified Ads. Only 25¢ per line. So if you've got some stuff that you're not using anymore, now is the time to sell it.

If anyone has a cracking card that they're not using, why not sell it to another reader. A lot of new subscribers don't have anything that they can use to force a jump into the monitor.

Most of the regular readers are aware that Computist went bankrupt back with issue #44. That's when we started the all volunteer idea.

Computist is operating under Chapter 11 reorganization. It's time to present the plan showing how we intend to repay our creditors.

We went to court in October but, as is typical with matters legal, the plan acceptance was delayed until December.

I feel that we have a good plan and that it will be accepted. The only creditor giving us any trouble is the IRS. (Some say that they give everyone trouble.) If it comes down to a p-ssing contest, we are considering asking for donations to pay the IRS and take them off the creditors list. I'd like to know how you feel about that.

In any case, I'll know more by the 5th of December and I'll give a complete update on what goes on.

So hang in there! And find some more subscribers so we can hire a full time editor.

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The PRODUCT MONITOR

RATINGS

- Superb ★★★★★
- Excellent ★★★★
- Very Good ★★★
- Good ★★
- Fair ★
- Poor ☹
- Bad ☹☹
- Defective ☹*

One More Time?!

After four years of minimal 'gs support, Apple's Consummate Enlightened One has issued an inCider encyclical assuring II users of the company's continued commitment. The letter mentioned such worthwhile achievements as an improved operating system and the imminent II Hypercard (but neglected to specify where the company had been committed or how long the treatment is expected to last). Fine; but, why now?

If letters, BB postings, etc. are any indication, many II partisans believe the explanation is to be found in continued 'unstoppable' PC market share advances. Supposedly, The Computer Company MUST play its 'II card' yet one more time or face extermination.

In the best of all possible worlds, Big Green's new Macs would sell like hotcakes; AND a portion of the capital generated would go into a serious II-based assault on the home/school market. (As even PC devotees will admit, the smugly confident PC universe could stand a good scare.) In the Real World, our experience has been that the level of attention to II user concerns is inversely related to Mac success. Small wonder, then, that The C.E.O.'s latest proclamation resembles less an assurance of support than a trial balloon. (Basically: "Just in case things really get bad; what will it take to jump-start your interest in Apple products?") Fair enough; and, it goes without saying, any trial balloon from the First Apple Lord merits a response.

Dear C.E.O.:

First comes THE upgrade; then, we can talk about hypercards, frame grabbers, CD interfaces, Mac links, and other such embellishments. Our needs are modest enough; say an 8 MHz '816 motherboard with 2 megs of main RAM, 256K or so of sound RAM, and capabilities for 640x400 256-color graphics. By way of compensation, you are encouraged to rip out the network of expensive, glitch-prone kluges designed to promote IIe compatibility. (This should help with costs; and, you can always market a IIe plug-in for old-II diehards.) An in-ROM '816 BASIC would be nice; but, for now, an empty socket and a promise will suffice.

Price is very important. Not only must the individual IIgs owner be convinced that the upgrade represents a good buy; he/she must also believe that other IIgs owners will feel the same. So far, my polling indicates a number somewhere around \$300. Naturally, when we bring in our machines to buy the new board, we shall wish to keep our old boards. They're no good to you anyway, and will supply many experimenters with endless hours of fun (to say nothing of generating countless interesting articles for Apple user publications).

A tad costly? No doubt. Still, a few hundred mil to reinvigorate your IIgs base and attract new buyers is a bargain. (Like, it sure beats losing the whole ball of wax!) In return, we'll buy your products, enlist recruits, kick stock prices up ten or twenty points, and save dear old Apple—one more time.

Your pal,
Jeff



Softdisk



\$69.95/yr, \$39.95/6mo, \$19.95/3mo

for 64K Apple II series

Softdisk G-S



\$89.95/yr, \$49.95/6mo, \$29.95/3mo

for 768K IIgs

Like other II users, I appreciate such publications as Nibble, inCider, A2, 8/16, etc.. Being, however, 'the competition', none is likely to be reviewed here. (Quoted, complemented, ..., perhaps; but not reviewed.) Softdisk Publishing's monthlies qualify as an exception, partly because they are "magazines on diskette", and partly because an editor seems to have taken the unusual step of supplying Computist with a pair of subscriptions!

The 'old timer' of the family is Softdisk (for II+/IIe/IIc/Laser), in publication since 1981! It comes on one 3.5" or two 5.25" ProDOS diskettes and supports mouse, KB, and joystick inputs. Softdisk G-S is an entirely separate, much newer enterprise. Currently at issue #11, it arrives on one 3.5" diskette; and a GSOS System Disk is included with the start of a subscription. Whichever 'flavor' you choose, each month you'll receive content-labelled diskettes accompanied by a contents sheet to help with archiving. The publisher also sends a back issues catalog and, more likely than not, will include a "Premium Graphics" diskette or similar goodie to sweeten the deal.

A Softdisk reads much like a "real magazine", even down to pages you can turn with a click on a screen corner (or, you can click a menu item and zip to any feature in a flash). Once past the cover graphic, you find the expected table of contents, readers' letters, commentaries, game and applications hints, news, know-it-all corners, and reviews— all highly legible, with text highlighting, and spiced with graphic inserts. A typical Softdisk issue fills most of available diskette space; but only a relatively small share is allocated to editorial content. (i.e. an issue will seldom offer all of the foregoing features.) Though well written and fun to read, columns are much curtailed vis-a-vis print media counterparts.

Most of each issue's space goes to two or three programs along with such extras as PrintShop graphics, CDA's, game add-ons, and songs. For example, Softdisk #106 boasts a nifty (near Infocom-grade) Text adventure called "Amusement Park", two classy crossword puzzles, a TXT/AWP file chopper utility, 28 PrintShop graphics (with Viewer utility), a numeric version of "Mastermind", and a for-real Checkbook Balancer! SoftDisk G-S#11 offers "Parashooter", an Invader-type arcade, Halloween/Thanksgiving clip art, a new font and stationery templates for Awks GS, Pirates Cove course for Mean 18, a new levels set for Arkanoid II, PrintShop GS graphics plus viewer, and a screen saver initialization file. Not bad; and, better yet, you startup a game, graphics viewer, jukebox, or whatever directly from the magazine's 'pages'. Once finished, you're back, ready for the next 'article'. ('Help' for new readers, 'File Copy', and 'Dump contents to printer' are directly accessible as well.)

Is Softdisk for you? That depends upon what it is you want in return for the publication's rather hefty dues. Product quality is usually very good; and, objectively, the programs, artwork, music, etc. represent a fine value. On the other hand, each month's offerings are 'pot luck'. A diskette filled with games and clip art in which you have zero interest is no "bargain software" value at all. Nor should users expect an exceptional learning-to-program-by-example opportunity; Softdisk does not include source files. (Too bad!!!) Contributors will, however, often list addresses and phone numbers to facilitate purchase of a program's source code, related products, and licenses.

Softdisk and Softdisk G-S are, as advertised, chiefly "magazines" which do deliver a steady stream of tested, ready-to-go software. Sometimes, you will find a 'real gem'; but the guaranteed attractions are regular, hands-on experience with the creative activities of fellow II users, a potential market for your own products, and entertaining columns. No mag is always on-target (well, there may be ONE exception); but, each month Softdisk takes a pair of well-aimed, smooth-running shots. (Combined II + IIgs trial subscription available at \$39.95)

USA GeoGraph

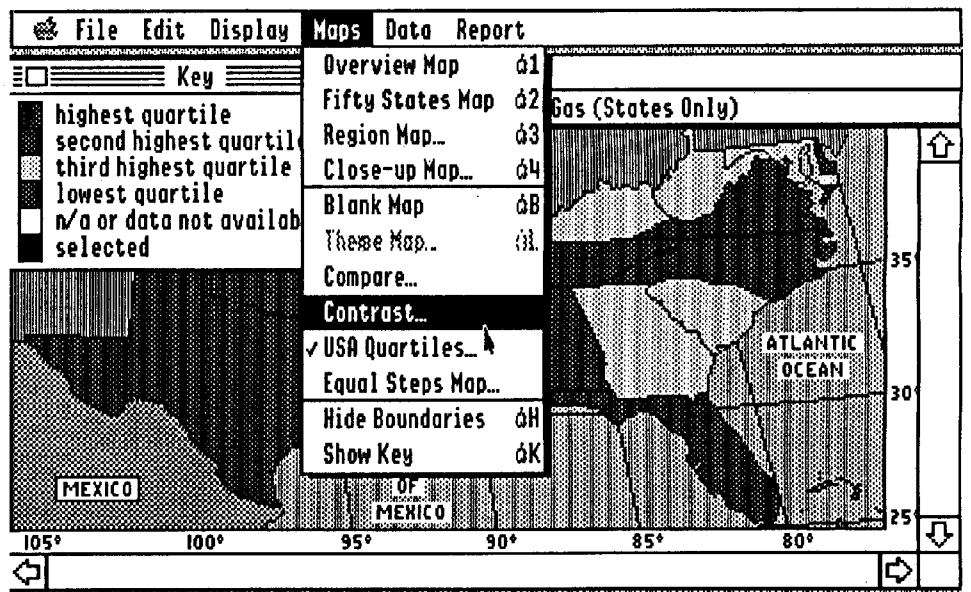
MECC



\$139.00 for 768K Apple IIgs

(Classroom Guide: \$19.00)

For teachers, students, and parents who question whether superior graphics 'really makes any difference' in educational software, this package from MECC should erase any doubts. Even without a 'must do by tomorrow' assignment, USA's crisp maps, color-keyed 'theme' highlighting, and 100-plus information items per state (and six territories) soon had me hooked. 'Finding out stuff' can be fun, even addictive, when it's this easy!



Still, USA is not merely a U.S. mini-atlas on diskette. It's a 'smart' mini-atlas ready to setup and display all sorts of comparisons, generate charts and graphs as well as several different maps, AND help assemble and print reports! Even with user-friendly point-and-click access, learning to use these resources for 'real work' takes practice. To speed things along, USA's attractive manual is thoroughly indexed and devotes half of its 190 pages to step-by-step tutorials. The optional looseleaf Classroom Guide adds stacks of lesson plans and handouts covering package introduction, U.S. geography, research topics, geography games, and more. (The 'Guide' also includes lesson-to-chapter listings for several popular school texts and a teacher in-service presentation outline.)

Supplied on two mini-diskettes with manual, backup diskettes, and Quick Reference cards, USA GeoGraph is as powerful as it is pretty. In school or at home, this could be the beginning of a cure for today's all-too-pervasive 'geography dunce-itis'!

Fast Frames, Updates, Etc.

Pool Cues

For those enmeshed in SSI's "Pool of Radiance" here are a few droplets of information which may prove useful.

I. The Bishop's Volunteer

At some point you will visit Bishop Braccio (near the temple just east of City Hall). He will offer the services of a Level 6 cleric named Dirten who will join your party to help clean out the Temple of Bane. (Needless to say, Dirten is a

valuable addition, particularly since his Lawful Good alignment means that he won't turn tail or backstab your characters in the heat of battle.) Unfortunately, if he is in on the Temple of Bane mission, he will (according to the Clue Book) leave your party once the job is done. I happened to visit the Bishop AFTER clearing Bane's temple of evil doers and gromming the treasures (I had not, however, destroyed the altar); yet old Braccio made the same offer! Since there was a vacant character slot, I accepted and discovered that Dirten is perfectly willing to stick with the party to the end.

II. New Alignments for Old

Evidently, the fighter NPC's (non-player characters) you can hire at the Dueling Hall always come with a Lawful Evil alignment. To make this "Chaotic Good", change byte \$D8 in the character's descriptor block from \$02 to \$06. (\$00 for Lawful Good, etc.. The values follow the same order as the "Alignments" listing on page 5 of the game manual.) If playing on a IIe, you can modify on-diskette character data (see T. Raphel's article in Issue #70).

On a IIgs, the easiest approach is to make changes directly to memory during play. Just install the Visit Monitor CDA (Call -151 and enter #) before booting. (Or, you can boot a diskette which installs DSR's Diversi Hack.) Once the game is running and you are walking around town, do an open apple ctrl+esc and select "Visit Monitor" from the Control Panel. Find the block for your NPC (e.g. "Hero") which should begin somewhere between \$4400 and \$4F00 and enter the new alignment (e.g. \$4AD8:06). This is also a good time to give your NPC a real name (e.g. replace "HERO" \$4A00:48 45 52 4F 00 ... with \$4A00:4D 4F 54 48 4E 4F 53 45 00 ... for "MOTHNOSE", etc.). Ctrl Y returns you to the Control Panel where selecting "Quit" puts you back in the game.

Note: Whenever modifying characters as above, be sure the target character is not currently selected (e.g. being VIEWed, etc.) when you go to the control panel. The program maintains a status buffer for a VIEWed character which, once you return to the game, may overwrite any changes. Hence, the suggestion that you interrupt play while in 'Exploration mode' (movement using I, J, K, M keys).

III. Super Weapon?

Somewhere along the way, perhaps during the mission to clear the Valhingen Graveyard, I

came upon a "+2 Two-handed Sword". (The item went unnoticed until the usual post-mission visit to the Armor Shop, where a "Sell" check produced an offer of 20,000+ gold! THEN I observed that the "+2" did not, as usual, follow the item name.) Tests indicate that it is not a sword or even a weapon. It is a magical artifact which grants a brief enormous increase in the USER's hitpower— perfect for the big showdown with The Boss. (Unfortunately, my experiments wasted the phantom sword's power. You, however, can be on the look-out for the item and put it to better use.)

IV. Endgame

Finally, you are dispatched (on a special mission from a councilman) to help the Forces of Good seize the Stowjanow Gates. After this success, you will be able to enter Valjevo Castle, wend and/or hack your way through a hedge maze, and take on The Boss in his two-story keep at the center. (See pictorial map on page 26 of the "Journal".)

Hints: In the first part of the 'Final Battle', feel free to unload all of your mass-destruction spells on the elite guards. (They aren't much good against The Boss anyway.) If you survive this fight, you'll have a chance to pick over some +3 Rings of Protection, heavy-duty Plate Armor, and at least one +5 Long Sword. Be sure to try the new stuff here (i.e. TAKE and then VIEW/READY items while checking changes in Armor Class and Damage). Immediately after EXITING the TAKE routines, you will, at last, see the Pool of Radiance and face The Boss himself. One or two fighters armed with Fine (silver) Longbows and silver arrows are VERY helpful here. (Note: You will have to be a fast reader to catch all of the

message following victory. ALTERing speed to its slowest setting before the battles may be a good idea.)

Adventure players accustomed to flashy displays, parades, coronations and other such celebrations are bound to find "Pool"'s ending a tad underwhelming. Lest there be any doubt, once Phlan is cleared of The Boss and his major minions, the City Clerk will hand over a pile of gems, some fairly hefty Experience bonuses, and tell you that you have completed The Quest.

double-hires scenes and effective use of wind-dows, **Where in Europe is Carmen Sandiego?** (\$44.95, for 128K Apple II) utilizes virtually the same format as earlier releases: Each caper launches you on a multi-nation chase guided by geography clues. One fairly important change is in the culprit I.D. clues (needed to obtain a warrant before you encounter the thief). These 'slip in' some additional cultural learning via references to a suspect's favorite Books and Movies. A weakness is that the I.D. hints arrive as "Telegrams", "Notes", etc. from the Chief,

Returning to **'Silver Blades'**: if playing the PC version, there is at least one piece of documentation which approaches bug-by-omission status. You may "Join" (combine) spell scrolls into 10-scroll bundles. This can easily put 20-30 major attack spells at the ready disposal of each magic user—a factor which drastically affects game strategy. Yet, the feature is mentioned only as a brief note on the last fold of the IBM "Data Card".

In playing through all four of the TSR-based adventures, I did encounter one potentially game-ruining bug in **Champions of Krynn**. Here the protection scheme uses references to passages in the "Journal", instead of an 'Infotator'-type code wheel. The problem is that, perhaps once in every ten game starts, you will be asked to type in "Word #116 of Journal entry #207", etc.. Well, aside from the ridiculous requirement of counting 116 words, there is no Journal entry #207! With a little experimentation (you get three tries at the right answer), my dad and I came up with two words that seem to work most of the time: KNOW and HELP. (You may need to reboot once or twice to get a protection check which will accept one of these words.) Altogether (i.e. over the life of the game), the bug probably cost me no more than four or five reboots.

BASIC Power

It isn't fair; but, if you are relatively new to personal computing, there's a lot of good, 'old stuff' out there you may never hear about. ("Everybody knows" about thus-and-such and "everybody uses" it; but does anyone tell you?!) Well, if you are still using Applesoft BASIC to write Applesoft BASIC programs, you're in luck! EVERYBODY KNOWS that you should be using **Program Writer** from Beagle Bros. According to the manual: "Program Writer runs on any Apple II+, IIe, IIc, IIc+, or IIgs under both ProDOS and DOS 3.3." Basically, what PW does is let you write your programs under a TEXT editor. Suddenly you can Remember all or any block of lines, cursor among program lines and do effortless inserts and deletes, copy lines to and from a "clipboard", toggle 40/80 column modes, do a screen dump to your printer, and scroll up

Earthquake (Volcano, etc.) attacks will usually win out.

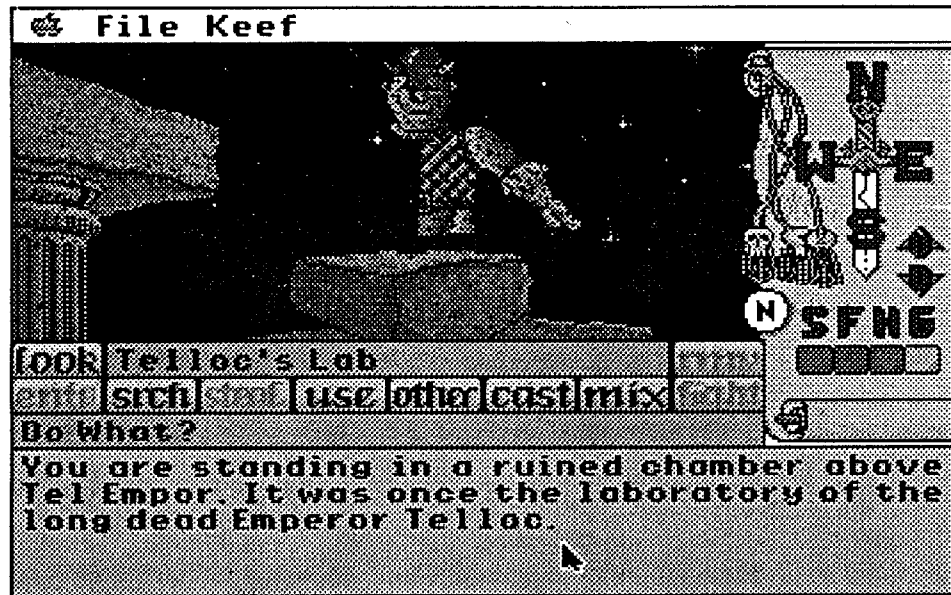
Papal Magnets: An easy victory may be yours if you can kill-off the enemy Shaman and surround the Evil Papal Magnet with water. The key here is your ability to defend the area long enough to build up settlements and push the frontier away from the Magnets (i.e. usually, your own Magnet must be nearby). If you can prevent rebuilding through the water barrier, Evil will be unable to create either Knights or a new Shaman!

Romantic Encounters at the Dome ★★ (R-rating)

The Dome, as everyone knows, is absolutely THE hottest singles spot in town! And, the answer to your first question is "Yes". The action in **Microillusions'** text-only encounters simulation (\$39.95, for 256K PC) can get a tad steamy—also seamy, humorous, 'meaningful', etc., etc.—or even leave you standing in the parking lot wondering how you blew it. From the moment you enter the crowded Dome complex, 'Encounters' aims to deliver realistic situations and outcomes based upon your alter-ego's gender, mood (as "sensed" by the program from your inputs), "fate", and actions. With the exception of merely adequate parsing, there's a lot going for you, including good looks, smarts, and the opportunity to adopt godlike omniscience (i.e. there's a built-in cheat option!). Expect to be pleased, frustrated, disgusted, amused, and surprised. (Gosh, it sounds just like the real thing.)

The Hunt for Red October ♣

Okay, the new Russian super sub is SUPPOSED to be very quiet (at least, on caterpillar drive); and, in deference to the book/movie scenario, 'hot action' should be minimal. Even so, there must have been some "The Game" alternative to this near-silent, strategy-oriented, SLOW submarine simulation from Software Toolworks (\$49.95, for 768K IIgs). Just when you think good on-surface graphics and a thorough reading of the novel (supplied) might make a difference, ZABARROOM! soggy controls and weak instrumentation finish the job. (Blurp, blurp,...)



Keef PC!

After reading my Christmas Issue review of **Keef the Thief**/gs, you, like trillions of other PC users, may have experienced the unusual emotion of feeling "left out". Take heart! Electronic Arts has released **Keef/PC** (640K) in VGA format with AdLib music. For just \$39.95 you too can become a juvenile delinquent, wander the weird Tri-City Area, and quest for Teenage God-Kinghood.

Note: The manual's procedure for creating ready-to-play 5.25" diskettes brought Keef/PC perilously close to The Big Init. Assuming you have the usual 5.25" + hard disk setup and you would rather not spend an hour or so swapping diskettes (a couple hundred times), then forget about the manual. Instead, copy the originals to hard disk and run the installation from there to diskettes in drive A. When done, delete the originals and, if you wish, move the new ready-to-play files to hard disk.

Carmen x 3

I. World ★★★★★

Broderbund's **Where in the World is Carmen Sandiego?**, a smash hit on the old Apple II, looks and sounds better than ever in the IIgs (512K) version. Featuring super-res scenes from 30 world cities and full gs sound, the game enlists you as an Acme Detective Agency sleuth just in time for a series of globe-spanning chases which turn out to be as entertaining as they are instructive. Carmen and her nine gang members are snatching every national treasure in sight! On each assignment, your job is to utilize geography and personality clues to track down and arrest the culprit. Success leads to progressively tougher challenges (e.g. less time, longer chases, etc.) and promotion—even a chance at the Detectives Hall of Fame! A consistent favorite (despite being "educational") among school-age visitors, the package includes the current **World Almanac and Book of Facts** and retails for \$44.95.

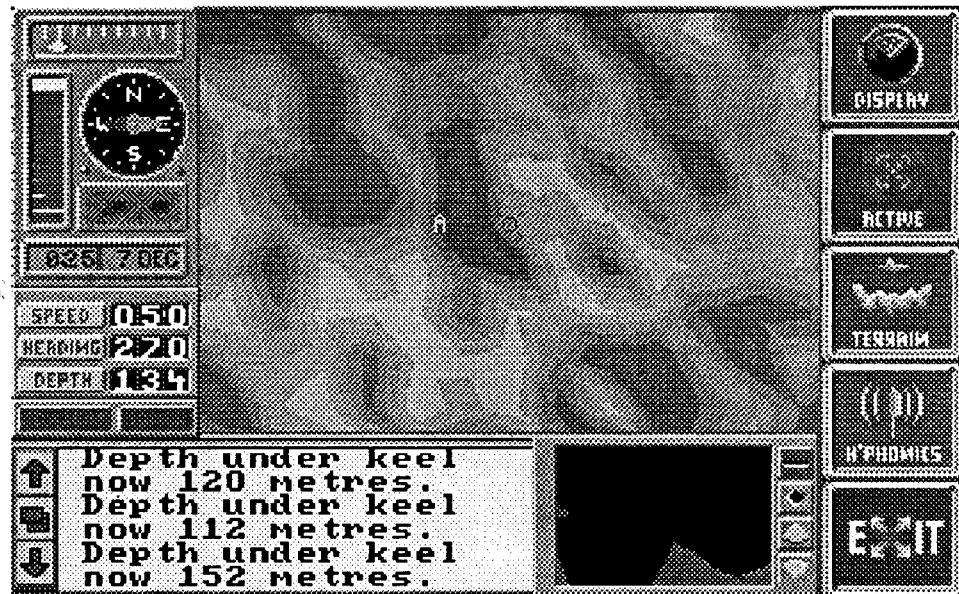
instead of coming from your investigations along with thief destination clues. Though the hunt seems a bit less realistic, the game remains an enjoyable route to learning about European geography.

III. Time ★★★★★

For 512K PC (\$49.95, in CGA-VGA), **Where in Time is Carmen Sandiego?** moves the popular learning game series and the elusive Carmen into historical realms. (Now you know why the Agency blew a bundle on that shiny new Chronoskimmer.) Naturally, no great monument, relic, or other historical treasure is safe from time-transiting Carmen. Anywhere and any-WHEN (from 400 A.D. through the 1950's) she or one of fifteen new cronies is liable to gate-in, snatch a pyramid (a priceless suit of armor, the world's first mercury mine, etc.) and be off. Fortunately, beginning as a rookie Time Patrolman assigned to track down each thief, you can depend upon a copy of the **New American Desk Encyclopedia** to help interpret historical clues (e.g. "She wanted to help Boris Gudonov spy on the Boyars.") and thief I.D. hints (e.g. favorite Author: "She bought some books by an exiled French writer."). Chronoskimmer destinations appear as Country names plus highlighted Timeline. (To discourage excessive guessing, the same Country will sometimes appear twice with different Time ranges highlighted.) The fattest Carmen package ever spans twelve countries, 1500 years, and packs more than a thousand clues relating to events, people, sites, and inventions. Smooth mouse action, beautiful VGA graphics, and good PC sound effects supplemented with AdLib music round out a challenging, highly entertaining learning experience.

D&D Buglets

By now, regular **Computist** readers are well aware that SSI's D&D stuff is riddled with assorted glitches. You do not, for example, always get a "KEEP" option when selling gems and



Slaying the Bug of Aragon

AND down through the program listing. Open Apple 1-9 lets you hop quickly to distant parts of the listing. Finally, three commands (List Variables, Find text, and Replace text) greatly speed such tasks as changing variable names, eliminating all instances of unwanted CALLs and GOSUBs, etc.. There's more—for instance, you can usually exit the Editor, try out your program, and go back to editing without having to reload PW—but, you get the idea. (\$49.95, supplied with manual on both 5.25" and 3.5" diskettes)

Since SSI's new swords and sorcery war-game **Sword of Aragon** is best played from hard disk, it employs a documentation reference protection scheme. You are referred to a poster (to identify a city picture) and then asked to type in a word from that city's description in the game manual (e.g. the first word under the "Resources" heading). Sometimes, however, the manual and program do not agree! In the few cases where this bug turned up, the solution turned out to be entering the SECOND word. (You get more than one try before things shut down.)

Hints of Aragon

The manual's observation that Mages are the most powerful "commander" characters turns out to be a gross understatement. Putting this in perspective: just three high-Level Mages can, via Teleport and Disintegrate spells, demolish the armies of an enemy city. "Mage" is your strongest choice for the YOU character at the game's start because, being a mage, you can hire more powerful Mages. (As a Ranger, you could hire more powerful Rangers, etc.. Evidently, the formula is YOUR LEVEL x 0.40 = Max LEVEL of same type character you can hire. The multiplier is 0.35 for other types.)

The Godling's Advisor

As a budding young demi-god in Electronic Arts' **Populous**, you are all too aware of the obstacles to bringing the known universe around to the Path of Enlightenment (i.e. under YOUR dominion). Here, therefore, are a few tips.

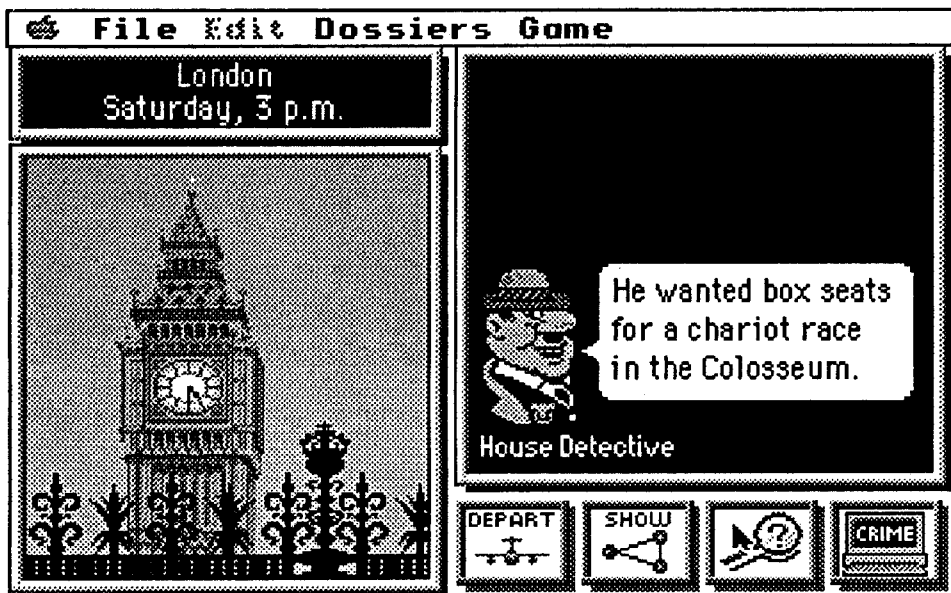
Building: At the start of a campaign, it is frequently a good idea to wreck your own large buildings to more quickly free-up new settlers. (You can rebuild once the settlers are loose.) This tactic is particularly useful on slower-growth Snow & Ice landscapes.

Flood: If your opponent has this power, you can bet that he/she will use it. Amazingly, some enemies will reel off a Flood even when most of the casualties are their own followers! Take the time to build at least two or three tiles above sea level.

Knights: Bad news! If water is "Fatal", the best treatment for an enemy Knight is to unbuild to sea level beneath him. Otherwise, a decent defense consists of going to "Defend before build" mode and wrecking your own buildings when a knight approaches. This turns out more Good defenders and avoids littering your land with burned-out hulks. (Eventually, the knight will run out of hitpoints and you can quickly rebuild.) Against weaker opponents, it is often sufficient to go for an all-out building strategy, especially if the landscape is strung-out and/or broken-up. You will take some damage; but, the combination of steady power growth and your

Thanks to sketchy game documentation, you might easily believe yourself stuck with every character (of random type and Level) who "offers to join your cause" upon an increase in Level. Not so! You must accept the character; BUT, using "Decommission", you can then boot him out to free-up the slot for a hiring of your choice. The manual also fails to note that, while "Hire" offers a character of the type you specify, Level is picked at random! You may go through any number of "Hire? Y/N" cycles in order to 'fish' for the maximum Level obtainable.

Though you can create several kinds of fighting units, three types seem to offer the best 'bang for your buck'. Infantry supplies hard-hitting, tough staying power; Bow units deliver long-



II. Europe ★★

Who knows? Maybe she made off with the prison— anyway, Carmen is loose again. This time she's gathered fifteen new henchmen and decided to celebrate "Europe '92" by specializing. There's this neat tower in Paris, a nice zoo in Germany, etc., etc.. In fact, the national treasures of 34 European countries are up for grabs. Meanwhile, back at Acme, the Chief has slapped the new Rand McNally **Concise Atlas of Europe** on your desk along with an Interpol dispatch. ("Gasp! Nobody could steal THAT!") Boasting colorful

jewelry; "Sell" sometimes switches to "Join"; occasionally, your inputs for Platinum to be Traded are ignored. Contributors have already noted that a few (non-critical) artifacts don't work as advertised; early adventures failed to warn that elves cannot be resurrected; etc.. To these you can add the absence of a map for Level 3 of the Mines in the **'Silver Blades Clue Book** (Level 1 is repeated)— all in all, fairly minor stuff which is 'nice to know about', but does not seriously impact enjoyment. ("Easy for you to say; none of YOUR characters is an elf!" True.)

BSAVE BSW.40A, A\$4E00, L\$2200

23. Insert disk A.
BLOAD GET.AUX
CALL -151
9000G

24. Insert disk B.
BSAVE BSW.40B, A\$5000, L\$200

25. Insert disk A. Modify GET.LC to load the language card.

BLOAD GET.LC

A0D:10
A10:D0
A1B:10
A29:40
A2C:D0
A37:2C
A48:50
A4B:D0
A56:4B
A64:80
A67:D0
A72:67

26. Enter this code and save it.

0800: A9 00 8D FF 0A AD 10 C0 \$07AF
0808: 20 E0 9E 20 95 A0 A0 06 \$24A7
0810: B9 4F 09 99 74 AA 88 D0 \$1CEB
0818: F7 20 5D A3 20 00 0A AD \$C002
0820: 00 C0 8D FF 0A C9 9B D0 \$80CD
0828: 03 4C 3C 09 20 95 A0 A0 \$87FA
0830: 07 B9 55 09 99 74 AA 88 \$4D31
0838: D0 F7 20 5D A3 AD 00 C0 \$8577
0840: 8D FF 0A C9 9B D0 03 4C \$00ED
0848: 3C 09 C9 B4 D0 11 20 95 \$95D4
0850: A0 A0 07 B9 71 09 99 74 \$56A3
0858: AA 88 D0 F7 20 5D A3 20 \$0A8F
0860: 95 A0 A0 07 B9 78 09 99 \$E845
0868: 74 AA 88 D0 F7 20 5D A3 \$3ED1
0870: A9 00 8D EB B7 8D F0 B7 \$045A
0878: 8D F3 B7 A9 01 8D EC B7 \$A3C1
0880: 8D F4 B7 8D ED B7 A9 87 \$3F85
0888: 8D F1 B7 20 E3 03 20 D9 \$F8CB
0890: 03 EE ED B7 CE F1 B7 20 \$851E
0898: E3 03 20 D9 03 EE ED B7 \$0678
08A0: CE F1 B7 20 E3 03 20 D9 \$60F7
08A8: 03 A0 00 B9 00 85 99 00 \$77F3
08B0: 52 C8 D0 F7 EE AD 08 EE \$4113
08B8: B0 08 AD B0 08 C9 54 D0 \$4E0C
08C0: EA A0 48 B9 00 87 99 00 \$61E4
08C8: 54 88 C0 FF D0 F5 20 00 \$9D6B
08D0: 90 20 95 A0 A0 08 B9 5C \$EF59
08D8: 09 99 74 AA 88 D0 F7 20 \$3B9C
08E0: 5D A3 AD FF 0A C9 B4 D0 \$4DAE
08E8: 22 20 95 A0 A0 07 B9 6A \$3D0E
08F0: 09 99 74 AA 88 D0 F7 20 \$C97B
08F8: 5D A3 20 95 A0 A0 06 B9 \$71D9
0900: 64 09 99 74 AA 88 D0 F7 \$B6C7
0908: 20 5D A3 A0 00 B9 00 20 \$D1A2
0910: 99 00 93 C8 D0 F7 EE 0F \$4FFC
0918: 09 EE 12 09 AD 0F 09 C9 \$FB85
0920: 40 D0 EA B9 00 B2 99 00 \$D5F7
0928: BF C8 D0 F7 CE 25 09 CE \$07C3
0930: 28 09 AD 25 09 C9 7D D0 \$BA18
0938: EA 4C 00 43 20 95 A0 A0 \$3D73
0940: 06 B9 7F 09 99 74 AA 88 \$D2B3
0948: D0 F7 20 5D A3 4C 00 20 \$4F17
0950: C2 D3 D7 AE CC C3 C2 D3 \$CD98
0958: D7 AE C1 D5 D8 C2 D3 D7 \$892C
0960: AE CD C1 C9 CE C2 D3 D7 \$6B44
0968: AE B4 B0 C2 D3 D7 AE B4 \$7147
0970: B0 C1 C2 D3 D7 AE B4 B0 \$BB38
0978: C2 D0 D5 D4 AE C1 D5 D8 \$6050
0980: CC CF C1 C4 C5 D2 \$3F9C

BSAVE BSW, A\$800, L\$27F

27. Enter the loader routine and save it.

2000: 20 E0 9E 20 95 A0 A0 0B \$1E9E
2008: B9 A3 20 99 74 AA 88 D0 \$F029
2010: F7 20 5D A3 A0 00 B9 00 \$3E85
2018: 28 99 00 08 C8 D0 F7 EE \$DC07
2020: 18 20 EE 1B 20 AD 1B 20 \$C6CF
2028: C9 20 D0 EA A9 00 8D EB \$5BC2
2030: B7 8D F0 B7 8D F3 B7 A9 \$8D81
2038: 01 8D EC B7 8D F4 B7 A9 \$E163
2040: 0F 8D ED B7 A9 3F 8D F1 \$1EC1
2048: B7 20 E3 03 20 D9 03 CE \$9DA0
2050: F1 B7 A9 01 8D ED B7 20 \$1173
2058: E3 03 20 D9 03 EE ED B7 \$5285
2060: CE F1 B7 AD F1 B7 C9 33 \$8C4A
2068: D0 ED A0 00 B9 00 34 99 \$AAE3
2070: 00 AF C8 D0 F7 EE 6E 20 \$73DE
2078: EE 71 20 AD 71 20 C9 BB \$E163
2080: D0 EA B9 00 40 99 00 90 \$B26D
2088: C8 D0 F7 EE 84 20 EE 87 \$57A0
2090: 20 AD 87 20 C9 AE D0 EA \$319C
2098: B9 00 AD 99 00 BF C8 D0 \$3DC1
20A0: F7 4C 00 62 C2 D3 D7 AE \$37A4
20A8: D5 D4 C9 CC C9 D4 D9 \$0271

BSAVE LOADER, A\$2000, L\$AF

28. Copy TRACK \$00 from the original BSW to the de-protected disk. I used Copy II Plus sector copy but you could use Super IOB and:

- LOAD SUPER IOB
- EXEC FAST.CON
- 1010 TK=1 : LT=2 : ST=15 : LS=15 : CD=WR
: FAST=1

- RUN
- Specify NO for FORMAT option
or DISKEDIT and:

- RUN DISKEDIT
- R for Read
- 011 for Track 01/Sector 1
- E for Edit
- 0003 (Bytes 00-01)
- Hit esc key
- W for Write
- Run original BSW and save defaults to our de-protected disk

Details or Why I did what I did

Step 1: I was unable to determine what code is responsible for saving default values to the program disk (from the UTILITY program and

from the main program for default data, spell checker, and thesaurus drive locations). This code not only writes the information to the program disk, but first verifies that the program disk is in the drive. It does this by verifying two things. First, that BANK STREET is on track \$00, sector \$00, bytes \$F5-FF. Second, that track \$01, sector \$01 contains 00 03 in bytes \$0102. This step modifies DOS to write out the required BANK STREET identifier (and skips track \$01 when writing DOS onto the disk) so it will be available for the BSW defaults. (Note: The BANK STREET identifier cannot just be changed via DISKEDIT because useful data resides in this location which must be relocated.)

The 9E42:34 indicates that the "HELLO" program is to be BRUN. The other changes modify DOS to format 40 tracks per disk. BSW has 18 sectors per track (2 more than DOS 3.3) which provides 68 extra sectors per disk - or the equivalent of 4.25 additional tracks. While I was able to identify, and eliminate some duplicate data, it wasn't enough to convert BSW to a standard DOS format, which requires 3 tracks for DOS and 1 track for a CATALOG, without adding additional tracks. This was not a problem on either my Franklin, or my LASER 128 - but I know it's a problem on some older APPLE II drives. If your drive cannot access 40 tracks, you will have to skip the last 4 changes in this step - and modify my procedure to save the UTILITY program to another disk. The drawback to this, is that you will be required to maintain two sets of defaults - one on the UTILITY disk and one on the program disk - and/or modify the loader routines to request that the program disk be inserted prior to reading the defaults.

Step 4: Create a program (GET.LC) to capture the data in the language card. This is the source code:

```
ORG $800
STA $C008 main memory, zero page and
language card
LDA $C08B select bank 1
LDA $C08B RAM for reading & writing
LDY $#00
F1 LDA $D000,Y read language card based on soft
switches
T1 STA $1000,Y save to main memory
INY
BNE F1
INC F1+$2
INC T1+$2
LDA F1+$2
CMP #$00 have we copied from $D000-
FFFF?
BNE F1 No - continue copy
LDA $C083 select bank 2
LDA $C083 RAM for reading & writing
F2 LDA $D000,Y read language card based on soft
switches
T2 STA $4000,Y save to main memory
INY
BNE F2
INC F2+$2
INC T2+$2
LDA F2+$2
CMP #$E0 have we copied from $D000-
DFFF?
BNE F2 No - continue copy
STA $C009 Aux memory, zero page and
language card
LDA $C08B select bank 1
LDA $C08B RAM for reading & writing
LDY $#00
F3 LDA $D000,Y read language card based on soft
switches
T3 STA $5000,Y save to main memory
INY
BNE F3
INC F3+$2
INC T3+$2
LDA F3+$2
CMP #$00 Have we copied from $D000-
FFFF?
BNE F3 No - continue copy
LDA $C083 select bank 2
LDA $C083 RAM for reading & writing
F4 LDA $D000,Y read language card based on soft
switches
T4 STA $8000,Y save to main memory
INY
BNE F4
INC F4+$2
INC T4+$2
LDA F4+$2
CMP #$E0 have we copied from $D000-
DFFF?
BNE F4 No - continue copy
STA $C008 Aux memory, zero page and
language card
LDA $C082 select ROM for reading
RTS return
END
```

Then create a program (GET.AUX) to capture the data in Aux memory. This is the source code:

```
ORG $9000
STA $C005 select Aux memory for writing
LDY $#00
F1 LDA $9000,Y copy this short
T1 STA $9000,Y program to Aux memory
INY
BNE F1
STA $C003 We are now executing this
program in Aux memory
STA $C009 select Aux zero page, stack, &
language card
STA $C004 select main memory for writing
LDY $#00
F2 LDA $0000,Y read Aux memory
T2 STA $1000,Y save to main memory
INY
BNE F2
```

```
STA $C005 allow writing to Aux memory to
modify pgm
INC F2+$2
INC T2+$2
STA $C004 switch back to writing to main
memory
LDA F2+$2
CMP #$80 have we copied from $0000-
7FFF?
BNE F2 No - continue copy
STA $C002 back to pgm in main memory
STA $C008 back to main memory, page zero,
stack, & language
return
RTS
END
```

Step 5: Alter the normal boot process of BSW by dynamically altering code. First we copy BOOT 0 from ROM (I can't do this - because my BOOT 0 in both the Franklin & LASER 128 are non-relocatable - so I have to use a copy. See Computist #20 for BOOT 0 disassembly.) After BOOT 0 reads track \$00, sector \$00, a jump is normally made to \$0801. I don't want the normal code at \$0801 to execute until I make some modifications, so I change it to a jump to \$9301 (with the 94FA:93). At \$9301, I store a hex 92 into \$088E - which gives me control again, after the rest of track \$00 is read, by changing the jump to \$1300 to a jump to \$9200. At \$9200, I store a hex 91 into \$138B - which gives me control again, after more data is read and \$1000-10FF is EOR'D with E7, by changing the jump to \$1000 to a jump to \$9100. At \$9100, I store a hex 90 into \$102F - which gives me control again, once all of the initialization has completed, by changing the jump to \$2500 to a jump to \$9000. The code at \$2500, is the main routine for loading which program was selected, depending on what key was hit during the BOOT. Where the program normally gets setup to jump to \$4300 to begin execute of BSW, I store:

```
STA $C082
JMP $FF59
```

which ensures the ROM bank is active - then jumps to the monitor. I then save this to disk for future use.

Step 6: Moves BOOT 0 for execution and modifies BSW.BOOT to change the location being altered so a jump to the monitor occurs rather than the normal jump to the UTILITY program at \$6200.

Step 7: Execute our modified boot.

Step 8: Relocate the UTILITY program so we can boot a normal DOS.

Step 9: Boot a normal DOS. Compact the UTILITY program and save it to the deprotected program disk.

Step 10-11: Capture the data in the language card banks and save part of it to the deprotected program disk. This part will be merged with the language card data captured from the BSW program.

Step 12-15: Boot the original BSW disk to capture the 80-column program. If the default has been changed, you may need to type an 8 to force loading of the 80-column version. Relocate the BSW program in main memory to a safe location and boot a normal DOS. Save the BSW main memory to the deprotected program disk.

Step 16-17: Capture data from the language card banks. Merge the UTILITY program language card data. Save the combined data to the deprotected program disk and delete the UTILITY program language card data which is no longer needed.

Step 18-19: Capture auxiliary memory data and save it to the deprotected program disk.

Step 20-21: Boots the original BSW program disk and loads the 40-column version.

Step 22: Boot a normal DOS and save the main memory portions of the 40-column version to the deprotected program disk.

Step 23-24: Capture the auxiliary memory portion of the 40-column version and save it to the deprotected program disk.

Step 25: Modify the program that was used to capture the language card data, into one that will restore it.

Step 26: Create the program that will be executed when the deprotected program disk is booted. Save the program to the deprotected program disk along with the language card loader routine created in step 25. This program determines what program was requested - and loads it. This is the source code:

```
ORG $800
LDA $#00 clear program
STA $AFF type request flag
LDA $C010 clear key
JSR $9EE0 disable DOS hooks
JSR $A095 clear filename
LDY $#06 copy filename - BSW.LC
LDA LC-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP1
JSR $A35D call BLOAD
JSR $A00 load data into language card
banks
LDA $C000 Check for key hit
STA $AFF save key hit
CMP #$9B Esc key hit?
BNE AAA No
JMP UTL Yes - load utility program
AAA JSR $A095 clear filename
```

```
LP2 LDY $#07 copy filename - BSW.AUX
LDA AUX-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP2
JSR $A35D call BLOAD
LDA $C000 check for key hit
STA $AFF save key hit
CMP #$9B Esc key hit?
BNE BBB No
JMP UTL Yes - load utility program
BBB CMP #$B4 4 hit?
BNE CCC No
JSR $A095 Yes - clear filename
LDY $#07 copy filename - BSW.40B
LDA FORTYB-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP3
JSR $A35D call BLOAD
JSR $A095 clear filename
LDY $#07 copy filename - PUT.AUX
LDA PUTAUX-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP4
JSR $A35D call BLOAD
LDA $#00
STA $B7EB set volume # - 0 matches any
volume
STA $B7F0
STA $B7F3 read entire sector
LDA $#01
STA $B7EC set track #
STA $B7F4 indicate read request
STA $B7ED set sector #
LDA $#87
STA $B7F1 set buffer address to $8700
JSR $3E3 set RWTS input parameters
call RWTS
JSR $3D9
INC $B7ED increment sector #
DEC $B7F1 decrement buffer address
JSR $3E3 set RWTS input parameters
call RWTS
JSR $3D9
INC $B7ED increment sector #
DEC $B7F1 decrement buffer address
set RWTS input parameters
call RWTS
LDY $#00
LDA $8500,Y copy pgm
T1 STA $5200,Y defaults
INY
BNE F1
INC F1+$2
INC T1+$2
LDA T1+$2
CMP #$54 2 sectors copied?
BNE F1 No - continue
LDY $#48 Yes - set to copy $48 bytes
from next sector
F2 LDA $8700,Y copy pgm
T2 STA $5400,Y defaults
DEY
CPY $#FF Done?
BNE F2 No - continue
JSR $9000 move code to auxiliary
memory
JSR $A095 clear filename
LDY $#08 copy filename - BSW.MAIN
LDA MAIN-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP5
JSR $A35D call BLOAD
LDA $AFF load possible key value
CMP #$B4 40-column?
BNE DDD No
LDY $A095 clear filename
LDY $#07 copy filename - BSW.40A
LP6 LDA FORTYA-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP6
JSR $A35D call BLOAD
LDY $#00
LDA $2000,Y relocate
T3 STA $9300,Y program code
INY
BNE F3
INC F3+$2
INC T3+$2
LDA F3+$2
CMP #$40 Done?
BNE F3 No - continue
LDA $B200,Y relocate
T4 STA $BF00,Y program
code
INY
BNE F4
INC F4+$2
INC T4+$2
LDA F4+$2
CMP #$7D Done?
BNE F4 No - continue
JMP $4300 jump to main BSW program -
40 or 80-column
UTL JSR $A095 clear filename
LDY $#06 copy filename - loader
LP7 LDA LOADER-1,Y to the
STA $AA74,Y filename buffer
DEY
BNE LP7
JSR $A35D call BLOAD
JMP $2000 jmp to the utility loader
program
LC ASC "BSW.LC"
AUX ASC "BSW.AUX"
MAIN ASC "BSW.MAIN"
FORTY ASC "BSW.40"
FORTYA ASC "BSW.40A"
FORTYB ASC "BSW.40B"
PUTAUX ASC "PUT.AUX"
LOADER ASC "LOADER"
Step 27: Create the LOADER program which is used to load the UTILITY program into memory. This is the source code:
```

```

LP1 LDA UTL-1,Y to the
    STA $AA74,Y filename buffer
    DEY
    BNE LP1
    JSR $A35D call BLOAD
    LDY #00
F1 LDA $2800,Y relocate
T1 STA $800,Y program code
    INY
    BNE F1
    INC F1+$2
    INC T1+$2
    LDA T2+$2
    CMP #20 All done?
    BNE F1 No - continue
    LDA #00
    STA $B7EB set volume # - 0 matches any
        volume

    STA $B7F0
    STA $B7F3 read entire sector
    LDA #01
    STA $B7EC set track #
    STA $B7F4 indicate read request
    LDA #0F
    STA $B7ED set sector #
    LDA #3F
F2 STA $B7F1 set buffer address to $8700
    JSR $3E3 set RWTS input parameters
T2 JSR $3D9 call RWTS
    INC $B7ED next sector
    DEC $B7F1 next buffer
    LDA $B7F1 load buffer address
    CMP #33 Are we done?
    BNE F2 No - continue
    LDY #00
F3 LDA $3400,Y relocate program
T3 STA $AF00,Y
    INY
    BNE F3
    INC F3+$2
    INC T3+$2
    LDA T3+$2
    CMP #5B Are we done?
    BNE F3 No - continue
F4 LDA $4000,Y relocate program
T4 STA $9000,Y
    INY
    BNE F4
    INC F4+$2
    INC T4+$2
    LDA T4+$2
    CMP #5AE Are we done?
    BNE F4 No - continue
F5 LDA $AD00,Y relocate program
T5 STA $BF00,Y
    INY
    BNE F5
    JMP $6200 Jump to start of utility program
UTL ASC "BSW.UTILITY"
    END

```

Step 28: Provides three different methods which can be used to copy the default data from the original program disk to the deprotected program disk.

Problems

I used my deprotected BSW to write this article. Nearly everything appears to be working as it should. The one thing that is NOT working properly, is the function keys - just the ones displayed when you use APPLE-D. They are user defined Open-Apple 1-0 keys and Closed-Apple 1-0 keys. I've never used them - so I guess I didn't pay much attention to where they were stored in memory. All other "special" keys for spell checking, thesaurus, centering, printer control characters, etc. seem to work just fine.

Additional Information

The following is for those readers interested in more detail.

- When the loader is called with a JSR \$2000, the next byte after the JSR instructs the loader what subroutine is to be executed. It does this by taking the low order half of the byte (i.e., if the byte is hex C1 it uses the 1) multiplies this by two with an ASL instruction - then uses this as an offset into a table of subroutine addresses. There are eight subroutines - I know what four do (for the most part).

- 0 = Start drive
- 1 = Stop drive
- 2 = ?
- 3 = Read entire track into consecutive pages starting with specified buffer address
- 4 = Read sectors into specified buffer addresses
- 5 = ?
- 6 = ?
- 7 = ?

The best way to try and explain this is with some examples, so here goes...

```

200020 - JSR $2000
C3 - C=set to next track after read 3=read entire track
03 - Read into main memory
6C - Starting at location $6C00

200020 - JSR $2000
83 - 8=Don't change track 3=Read entire track
83 - Read into RAM Bank 2 (8B is used for Bank 1)
E0 - Starting at location $E000

200020 - JSR $2000
C4 - C=set to next track after read 4=read into
    specified addresses
83 - Read into auxiliary memory
00 - Ignore this sector
00 - Ignore this sector
00 - Ignore this sector
08 - Read sector into $800
09 - Read sector into $900
0A - Read sector into $A00
0B - Read sector into $B00
0C - Read sector into $C00
0D - Read sector into $D00
0E - Read sector into $E00
0F - Read sector into $F00

```

```

10 - Read sector into $1000
11 - Read sector into $1100
12 - Read sector into $1200
13 - Read sector into $1300
14 - Read sector into $1400
15 - Read sector into $1500
16 - Read sector into $1600

```

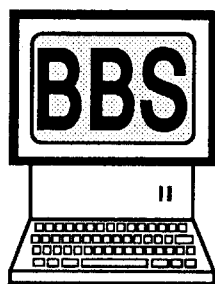
```

200020 - JSR $2000
01 - Stop drive

```

BSW relocates normal DOS routines into the language card, and calls them from there. I'm not sure where all of the important locations are, or how they are accessed - but here is what I know. If you BLOAD BSW.LC - you'll be able to keep track of where I am. Starting at \$1000 - is what was captured from the MAIN RAM - Bank 1.

- \$110C/\$D10C = MYSEEK routine (located at SBESA in DOS 3.3)
- \$1133/\$D133 = SEEK ABS routine (located at SB9A0 in DOS 3.3) Moves arm to desired track
- \$1372/\$D372 = Desired track
- \$135A/\$D35A = Current track
- \$1373/\$D373 = Arm Move Delay Table (located at SBA11 in DOS 3.3)
- \$1385/\$D385 = Arm Move Delay subroutine (located at SBA00 in DOS 3.3)
- \$1398/\$D398 = RDRADR routine (located at SB944 in DOS 3.3)
- \$1431/\$D431 = Sector read (located at SB8DC in DOS 3.3)
- \$1500/\$D500 = Sector write (located at SB82A in DOS 3.3)



NEWS

David L. Goforth (sysop)

Brian A. Troha

Softkey for...

Blockout

Logical Design works/California Dreams

- Requirements:
- 512K Apple//GS
- 3.5" disk copier
- 3.5" disk editor

LDW has released another fine program in it's California Dreams series, this one called Blockout. Blockout is a great 3D version of Tetris (Spectrum Holobyte). Like all other programs from LDW, this one also contains a codewheel type (copy) protection. Before you can play a game, the programs comes up with a block shape and asks what color is under a certain number. Then you must use the mouse to select that color.

After a little brute force following of the program code I was able to come up with a bypass that completely skips the requestor screen and allows Blockout to boot right into the main menu of the game. To remove the CP do the following:

1. Make a copy of the original Blockout game disk.
2. Make the following edit to a copy ONLY:

Blk	Byte	From	To
\$2B8	\$1FB	22 DD 5A 00	AF DD 5A 00
3. Write the edit back to the disk.

Enjoy the newly deprotected Blockout.

User #1082

Softkey for...

Classroom Toolbox (3.5")

Sunburst

I tried making a copy and booting it. After searching the all the drives, the program displayed the message "UNABLE TO EXECUTE TOOL.SYSTEM". While examining the code in the area where the message was found I came upon this code:

```

10ED:C9 FF CMP #5FF
10EF:F0 07 BEQ $10F8
10F1:CE C2 51 DEC $51C2
10F4:D0 F2 BNE $10E8
10F6:F0 2E BEQ $1126
10F8:AD 00 C0 LDA $C000

```

The protection was found in the file TOOL.ST. It was found on block \$F2 (242). I changed the F0 07 BEQ \$10F8 to D0 07 BNE \$10F8. Now it looked like this:

```

10ED:C9 FF CMP #5FF

```

```

10EF:D0 07 BNE $10F8
10F1:CE C2 51 DEC $51C2
10F4:D0 F2 BNE $10E8
10F6:F0 2E BEQ $1126
10F8:AD 00 C0 LDA $C000

```

With this one byte change the copy protection was eliminated.

Jack Moravetz

Softkey for...

Accelerated Reader v2.1

Readup, Inc.

The Accelerated Reader has a program disk and numerous data disks in a series to provide reading enrichment. The disks were copy protected with the usual D5 AA 96 being changed to D5 D5 96.

The author must be a COMPUTIST reader because I found a message on track \$00, sector \$01 that said "You'll have to work at this a bit if you want to see it in Computist." I found another message on track \$01, sector \$08 that said "You know, you don't belong here! What's your excuse for living?" He even left a message in an Applesoft program on the disk that read:

```

1000 HOME
1010 PRINT "Well, you've gotten this far. How far"
1015 PRINT "can you go?"
1020 PRINT
1030 PRINT "Remember..."
1040 PRINT "Wherever you go...there you are."
1050 PRINT
1060 PRINT "But it would be to your advantage to"
1070 PRINT "GO to $C00 first..."
1080 PRINT
1090 PRINT "A helpful hint from...Sergeant Schultz"

```

Well, I'm sorry to disappoint the author, but removing the copy protection from this program didn't take very much work. After booting the program and resetting into the monitor with my Fingerprint+ card, I looked around the memory areas \$B934 and \$B954. Memory location \$B95E had the values \$C9 D5 instead of the standard DOS 3.3 \$C9 AA. On track \$01, sector \$09 I found where this was being changed. Beginning with byte \$28 it showed:

```

A9 D5 LDA #D5
8D 5F B9 STA $B95F

```

I changed the A9 D5 to A9 AA and wrote the sector back to the disk. I tried booting the disk and it booted successfully, but I ran into a problem when I tried to enter a name or teacher password. The disk would grind a bit and give me one of the program's error codes. I assumed that some code somewhere was still changing memory location \$B95F, so I searched for 5F B9 on the disk. I found it on track \$13, sector \$0A. It looked like this:

```

AD EE 03 LDA $03EE
8D 5F B9 STA $B95F

```

It didn't matter what value from \$03EE was being placed into \$B95F because AA belonged there, so I changed the AD EE 03 to EA A9 AA and wrote that sector back to the disk. Now I had a completely functioning copy.

Step-by-step

1. Run COPYA and when the drive stops, press control reset.
RUN COPYA
ctrl reset
CALL -151 enter the monitor
B942:18
B95E:29 00
3D0G return to BASIC
70
RUN
2. Copy the program disk and any data disks that you need.
3. Using a sector editor or disk search utility, scan for A9 D5 8D 5F B9 and change the D5 to AA. I found them on track \$01, sector \$09, bytes \$28-2C. Write the sector back to the disk.
4. Scan for AD EE 03 8D 5F B9 and change them to EA A9 AA 8D 5F B9. I found them on track \$13, sector \$0A, beginning with byte \$60.

User #1158

Softkey for...

Silpheed GS

Sierra

- Requirements:
- Sector Editor

I see that Silpheed is on the most wanted list, and have come across a deprotect for it. I can't take credit for it, but I sure can pass it on! Especially as we need to shorten that most wanted list!

Patch created by Mark de Jong

Fellow Silpheed Addicts, I have written a patch to allow you to enter "GAME PLAY" without having to take the time to look up all those names of the enemy ships which are found in your Silpheed manual, when your computer asks you to do so. Now all you have to do is press "RETURN" when you get to the "Silpheed Flight School" screen. All you have to do is follow these simple instructions, and your all set.

Note: Do not attempt to use this patch on your

original diskette. Only use a copy of the program disk.

1. Start up your sector editor and go to block \$01DB (0475).
2. Scroll to the END of the Block. You should see all the names of the enemy ships.
3. All you have to do is DELETE all the names by changing ALL the HEX values to 00.
4. Save the BLOCK.

Your finished, congratulations! If you want to, you can change:

```

SILPHEED FLIGHT SCHOOL
ENTER THE NAME OF THE ENEMY SHIP
BELOW

```

To whatever you want. You can only use UPPER case. All you have to do is go just above the enemy names which you just deleted. You will see:

```

. .ENTER.THE.NAM
E.OF.THE.ENEMY.
SHIP.BELOW.SI
LPHEED FLIGHT S
CHOOO.....

```

Or something like that! Notice that SILPHEED FLIGHT SCHOOL is at the bottom of the list. Don't worry, its supposed to be that way. Now change it to what ever you want. Remember not to save it to the ORIGINAL copy.

User #573

Can anyone help with these two:

- Barron's SAT v2.0
- Success With Reading by Scholastic.

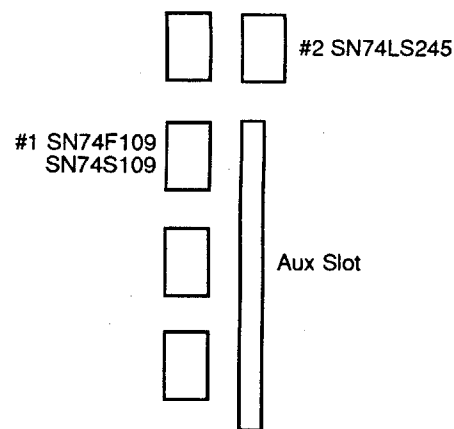
This Barron's SAT is different from the one in Computist 25 on Page 13. It has 12 sides instead of 6. The formatting of the disks seem to be the same and the SIOB controller works but the program won't run. I think they added a nibble count check on track \$0A.

Success with Reading doesn't seem to be like any of the other Scholastic programs and I can't even get a Bit copy. Hope someone can help with these,

Merlin MemLoc Canada

Hardware Timing Problems (Iie)

Ever since installing my Vulcan HD, about every 30th time I booted, my machine would go into Monitor Mode. My machine had never crashed like this before. It didn't happen often enough to be all that much trouble. Anyway I asked AE Tech support what could be done about



it. AE came back with the following suggestion and the two IC's. (I have a Iie, revision E mother board.)

As supplied from Apple, IC chip #1 is probably either a SN74F109 or a SN74S109. Replace it with the SN74AS109. IC chip #2 is a SN74LS245. Replace it with a fresh SN74LS245.

AE says that replacement will help "timing problems". So far no crashes! You might try this if you are having similar hardware problems.

Also there were some defective fans that went out on some of the earlier drives. It seems they under torqued some of the screws. If you have one of these they will send you a replacement. Now if only that #@%& tech support line wouldn't ring busy for weeks at a time.

Dan Reid (User #983) Canada

Advanced Playing Technique for...

Elite

Firebird

Following patches to the game can only be applied once the game is loaded and running, there is a checksum routine built into the program as it loads through the graphics page. Also they can only be applied to a cracked version.

1. Press ctrl reset twice.
2. Apply the following patches as you would like:
 - \$290:00-FF location in present Galaxy
 - \$298:00-FF credits
 - \$299:00-FF credits
 - \$29A:00-FF credits
 - \$29B:00-FF credits
 - \$29C:00-FF fuel (ie: \$FF=25.5 fuel)
 - \$2A5:00-FF cargo room (ie: \$FF=255 tons)
 - \$2A6:00-FF tons of Food
 - \$2A7:00-FF tons of Textiles

3. Combat Rating has to do with bytes \$2D4-2D6 and I'm not sure how they calculate, but changing these has an effect on your rating.

4. \$6E85G will restart the game.

Note: It is best to press ctrl-reset from the screen of key-9. Also, somewhere around the "Rating of Competent", you will get a message from the NAVY asking you to go on a hunt and destroy mission, as I have not been able to complete this mission I don't know if you get any kind of bonus. To quickly give your char a Competent rating, edit \$2D5:FF FF and soon as you land on another planet you get the mission.

User #1082

Softkey for...

Reading Comprehension: Finding the Main Idea

Morning Star Inc.

The protection was found in a file called CHECKDSK.OVR on the two disks that booted. I used BLOCK.WARDEN from ProSEL to follow this file. I found a 20 00 BF and changed it to EA EA EA and further in the file I found a BD 8C C0 with some C9 FF's after it. I changed the BD 8C C0 to 18 60 EA and wrote the block back and it worked.

Bitkey for...

Mathosaurus

Micrograms

This four disk set uses a single load format, so it probably could be captured with a copy card. I used Copy II Plus to format 4 blank disks. I then used the manual sector copy in the bit copy section to copy all the tracks except track \$01. Super IOB with a controller to copy all the tracks except \$01 would also work.

Surak TFF

Softkey for...

Task Force

?

There are two levels of protection on the Task Force disk. The first level of protection is included in the file STARTUP.SYSTEM. The protection in this file is as follows: (With STARTUP.SYSTEM BLOADED at \$2000)

```
2262:20 00 BF JSR BF00 ProDOS MLI
2265:80 80 ReadBlock
2266:B4 0A 0AB4 check for bad,
unformatted, or non-
standard block on
master disk)
```

```
2268:08 PHP save carry flag
2269:18 CLC
226A:FB XCE native mode
226B:2B PLP retrieve carry flag
```

This routine can be disabled by eliminating the ProDOS MLI call and leaving the carry flag clear.

The second protection routine loads at location 02/D3FD and is coded as follows:

```
D3FD:A2 FE 01 LDX #01FE
D400:A0 00 00 LDA #0000
D403:8A TXA
D404:18 CLC
D405:C8 INY
D406:98 TYA
D407:2A ROL
D408:A8 TAY
D409:08 PHP
D40A:DD 00 98 CMP 9800,X
D40D:D0 1E BNE D42D
D40F:28 PLP
D410:CA DEX
D411:CA DEX
D412:10 F1 BPL D405
D414:18 CLC
```

Protection passes
master disk
exit

```
D415:60 RTS
D416:29 FF 00 AND #00FF
D419:09 00 03 ORA #0300
D41C:E0 00 00 CPX #0000
D41F:F0 03 BEQ D424
D421:09 00 80 ORA #8000
D424:20 87 C9 JSR C987
D427:A9 00 04 LDA #0400
D42A:20 87 C9 JSR C987
D42D:28 PLP
D42E:38 SEC Protection fails on copy
D42F:60 RTS exit
```

I don't understand how this routine works (I think it may be a nibble count), but it can be disabled by replacing the SEC instruction at D42E with a CLC instruction.

There is a problem because this second routine can't be found on the disk. Therefore it must be encrypted on the disk and decrypted at run time. The routine is, however, loaded in memory and decrypted prior to the execution of the first protection routine. This second protection routine can therefore be disabled by modifying the first protection routine to install a patch at run time that disables the second routine by replacing the SEC instruction at SD42E with a CLC instruction.

After modification, the first protection routine looks like this:

```
225D:20 AD 0C JSR 0CAD
2260:38 SEC
2261:FB XCE
2262:A9 18 LDA #18 a CLC instruction
```

```
2264:8F 2E D4 02 STA 02D42E patch a CLC over the
SEC
```

```
2268:EA NOP
2269:18 CLC
226A:FB XCE 16 bit registers
226B:18 CLC protection pass flag
```

The modification accomplishes two things. It disables the first protection check and it causes the first routine to install a patch at run time that disables the second routine. The second routine is patched after it has been decrypted and located in memory at address \$02/225D at run time.

Step-by-step

The entire patch for the deprotection is accomplished as follows:

```
BLOAD STARTUP.SYSTEM, A$2000, TSYS
2262:A9 18 8F 2E D4 02 EA
226B:18
BSAVE STARTUP.SYSTEM, A$2000, E$2BAD,
TSYS
```

That's it!

UNK

Advanced Playing Technique for...

Omega

Getting Level "Omega" Clearance

First off, you need to actually have an ID.Disc setup by the game - in other words, you've gotta be playing first. Next, enter "Design" and select Design Cybertank. Select "New" - you want to make a new one. Let's call it "Target"

Select "Chassis", and the worst of everything - don't bother with any of the "Special" gizmos, just with the other junk. If you have extra cash, leave it - you're building the target for you to blow away.

Select "AI" and enter the following:

```
program
turn left 1
move forward 2
turn right 2
move forward 2
branch to program
```

"Authorize" this tank and save everything - select "ECM" so that everything gets saved.

Now boot your file-copy program. You should make a copy of either your Omega 3.5 or your Omega "/system/" disk (the boot disk) - this is what we need to work with.

In any case, select DELETE FILE or whatever, and delete all the files from the "/system/cetanks/" directory (3.5"/o/dir1/cetanks/) - that WAS a list of the tanks that you're to go up against in Clearance Evaluation.

Now select COPY FILE, and copy the "O.TARGET" (the sitting duck tank you just made) from your ID.Disc to the .../cetanks directory. Copy it 7 more times - use "F2" "F3" etc as filenames when your copy program complains 'cause of duplicate filenames.

When you have 8 copies of "O.Target" (most renamed, of course), select RENAME FILES and change them to this list:

```
BUSTER
DINKY
DUCKY
EIDOLON
INTREPID
MIRAGE
OGRE
PANDA
```

Check and double-check your work. If all looks good, boot the game.

What happened, you say? Well, in the ./cetanks subdir are the 8 tanks that the game throws at you for each level of clearance evaluation. PANDA is tough, and OGRE is impossible. So all you did was create a tank that travels in a drunk line and doesn't shoot back.

The Siphon

Advanced Playing Technique for...

Wings Of Fury

?

Requirements:

Apple IIgs
Diversi-Hack

If you're like me, you like to play][e][c games in high speed mode on the GS. Well, Wings of Fury will allow you to access the control panel and change the speed setting, but you will also have to switch back to slow speed before landing your plane for more bombs, repairs, etc. So, I figured, why not make the game so that you don't have to land all the time...just give the game infinite planes and rockets/bombs/torpedoes, and then all you have to do is crash and then take off again with a fresh plane!!!

1. Put Diversi-Hack into Memory.
2. Boot Wings of Fury and choose a level.
3. When you are ready to take-off, go to the control Panel, choose Diversi-Hack and press M

```
01/4F88:00
4FF0:EA EA EA
AAAC:EA EA EA
Q
```

To return to the game, type return a few times.

This little tip/trick will give you infinite planes, etc. You shouldn't have any trouble mastering the game now. Have fun!

George Politis

Playing Tip for...

Deathlord

Search Wakiza ruins for gold. Enter dungeon through secret door in northernmost swamp's east wall (must pass through swamp). Must be level 8 to survive. Don't fight anyone in the towns or palace because the guards will kill you. Buy you can search guest chambers in palace, Diamy's residence in Kawa and south of missile weapons shop in Tokugawa.

James B. Simpson

Playing Tip for...

Deathlord

?

An excellent party: Samurai, Ninja, Shisai, Shizen, Genkai and Mahoutokai. At the start don't enter any locked doors. First-level characters should explore the island of Kodan, but neither of the ruins. There's a dungeon there that's not on the map. In each new place inquire about these: dungeon, island, ruin, pyramid, etc. The other islands are not in the position shown in the map on the package. Don't explore dungeons until your Shizen knows Kaeru. Before transferring Wizardry II characters, use a dagger of change to produce a good Ninja. Use a dummy disk while exploring the dungeons. Pitch camp in corners of mountains. If totally lost, quit and disperse, the reassemble and begin afresh at Kawa.

Richard Rasmussen

Playing Tip for...

Might & Magic

?

A dead character may be resurrected by the fountains at C-1, 9, 14, and 8,14. After drinking from fountain, cast Raise Dead. These raise spell casting to level seven for one day or battle, whichever comes first. For experience points (after Sorcerer is at least level three), go to Wyvern's Peak at C-3, head east from C-3, 5, 2 and you'll defeat wyvern's for 2,500-5,000 experience points a shot, plus 900 gold minimum. Lightning bolts are very effective here. After all the battles, fly to E-1 and trade gold for experience points in Dragadune.

Steve Mead

Playing Tip for...

Might & Magic

?

For the solution to Og's chess problem, watch the Star Trek episode where the Enterprise goes to the galaxy's asylum world. The chess problem is used as a password. The hourglass (in the C64 version) is at E-1.

Yoshihiro Kobayashi

Playing Tip for...

Might & Magic

?

If key card is rejected, enter each of the five projectors once and try again. Access code for Cave of Eriquin is in 2,5 in Cave of Dusk.

Shadow Force

Playing Tip for...

Prince of Persia

?

This game is one of the best IIe/IIc games I have ever played. It combines action & adventure in a cinema-style view. If you have remembered in the ancient days, Mechner created Kareteka, a karate style game with a cinema-style view that revolutionized games that we play today such as "Defender of the Crown" & "Rocket Ranger".

Notes

Before we begin, let me introduce to you some basic techniques that should be used throughout the game:

When jumping, ALWAYS hold down the button. You will never know when you shall slip or fall short of the jump. Also, make yourself as close as possible to an edge before you jump so you can get maximum distance.

When fighting, the most effective way is to use the standard block-and-hit technique. To do this, wait till the opponent strikes, block by pressing up, then immediately press the button and the character strike and get a better chance of hitting the opponent.

Inspect every room for secret passages. There are many in this game and you will not be able to finish it without finding them. To find them, jump up and down to look for any floor passages. Jump up and hit the ceiling to look for any ceiling passages.

Doors don't stay open forever. Once you step on a step-block, the doors will start to close... that is unless something is on the step-block.

Learn to distinguish step-blocks from the floor.

After you complete each level (after Level 2), save the game. When you die, restart by pressing Control-R and then press Control-L to resume your game. This will allow you to save a lot of time considering that you WILL die.

Don't be afraid to explore. In order to win the game, you must explore every detail of the game and not miss anything on any level.

Hints

Note: * means that there is an energy expander on that level.

Level 1

Your first level is very easy. Get the sword, which is to the left from where you start and then go to the exit which just to the right of where you start. Practice your sword techniques on the guard. Remember to watch for unstable floors.

Level 2 *

Straightforward. Watch out for floor spikes. Beware of the blue potion which will DECREASE your life count. There is an energy expander here so don't forget to get it.

Level 3 *

This will be one of the toughest levels. From where you start, go to the right and climb to the top using the center segment. Now, you must do a jump of faith to the right. You will find that there is a floor when you land. You will also discover a step-block which will open the gate far to the left. There is also an energy expander in the area to the right. When you are ready, jump on the step-block and BURN RUBBER to the left! You will have little time before the door starts to close. Do a running jump over the large hole then one final jump near the door and hang on to that ledge. Hopefully, the door will almost be closed so you can pull yourself up. After that, it is very straightforward. When you confront the "LIVE" skeleton, keep hitting until it falls off the ledge. Then climb down after it and keep hitting it until it falls to it's doom.

Level 4 *

Very straightforward. Watch out for loose floors and be sure to get the energy expander. When you confront the mirror, you will have to execute a run-jump through it. You will pass through but your shadow will come out the other side and will create a lot of trouble for you.

Level 5 *

Straightforward. There is an energy expander here but you will soon find out what will happen to it. You will have to experiment with this level before you can finish it.

Level 6

Straightforward. Beware of the master guard (he is fat) for he will slice you up if you are not good enough. At the end, your shadow will create mischief once more...

Level 7 *

You start out falling so press the button to grab onto the ledge. Continue onto the right until you reach the ledge with a large whole with another ledge far to the right. Climb down the ledge, fall, and grab onto the ledge. Continue to the right. If you can't continue, go back and fall down another ledge for it will lead you to the same place. When you drink the blue potion, the room will turn purple and you will turn green. Run off to the left and you will float slowly down... DO NOT go into the exit because their is an energy expander just to the right.

Level 8

Straightforward but very hard. Be quick but be patient for a friend of the princess will help you.

Level 9 *

If you drink the blue potion, your vision will be distorted. To return to normal, find another blue potion and drink it. Be sure to get the energy expander.

Level 10

You will have to knock out many ceiling and floor blocks.

Level 11 *

Very simple. Be sure to get the energy expander.

Level 12

The last level. I will not provide you hints because it would truly take the fun out of the game. You must use skill, agility, strength, courage, and trust to get past the level.

If you're stumped on the shadow. Remember, your shadow cannot harm you in anyway. Al-

though it might seem to, it is really the sword that is harming you. Your shadow is merely a reflection of yourself and hence will try to mimic you. If your completely stumped, the answer is to: (Note: to decipher, read every other letter)

WFADLGGKZIINKTCKOXYDEUZRWSHFVACDROZW

If you have seen Indiana Jones and the Temple of Doom, you will do exactly what Indiana did. You will have to do a jump of faith. Run as fast as you can (hehe) and jump off the ledge. If you believe enough, you will fall to your doom. If you do believe however, you will survive. Trust me, I died a lot because I didn't believe and I'm not lying.

Continue on and you will do battle with your final opponent, Jaffar.

UNK

Playing Tip for...

Defender of the Crown

?

Pick a lord good at jousting, since sword fighting is easy. Conquer at least two territories before buying more men. Then forget the enemy territories, go straight for his castle as soon as you get a catapult. Seek Robin's help first. Attack Norman castles first. Always control territories bordering your castle.

K.E.Nathan

Playing Tip for...

Wizardry IV

Sir Tech

To obtain a powerful sword, you need bloodstone (9E, 19N, 10D), Lander's Turquoise (18E, 0N, 9D), and Amber Dragon (19E, 14N, 8D). Go to 8E, 13N, 7D and use candle from Fourth Guardian to reveal secret door, then to 9E, 19N. Equip all three stones, then use their special powers and put each one on altar for choice of three swords. Blue sword (West Wind) gives chance of critical hit. Green sword (East Wind) does massive damage. Amber sword (Dragon's Claw) does severe damage and restores hit points (my favorite, since it enables you to choose an extra group of monsters for fighting abilities instead of Priests).

Cyril Chong

Playing Tip for...

Wizardry IV

Sir Tech

To enter the closed off room in Ziggurat, defeat L-5 prisoner on level 5 and get the winged boots. Wear boots and invoke their power, and you can go through priest hole and get carrot. Go to the special room, face the wall and invoke carrot's power so you can jump over the wall and enter the chamber. Victory there yields an item needed in solving another puzzle.

Brad Kinman

Playing Tip for...

Wizardry IV

Sir Tech

To open the Gates of Hell you need the candle (Level 10), chiles (after defeating the Beast at 9,8 or 10,9) and a book.

Bob Cherochak

Does anyone know how to make Test Drive II the Duel and/or Monte Carlo run under GS/OS 5.0.2? Is there a way to fix Battle Chess GS to be launchable from GS/OS 5.0.2? Right now I have to Warm boot into ProDOS 8 and then launch Chess.System.

XXXXXXX

Reader Review for...

Rastan

Taito

Rastan GS gets my highest rating for a variety of reasons, not the least of which is it's superb graphics and sound. The game plays very quickly and is quite entertaining. In a period of relative sloth among Apple developers (particularly for the GS), it is a rare joy to see such a good game. Taito has come through again.

The Game is Hard drive installable, though it does poll to make sure the original Side 2 is present in the drive. It polls on every level. However, even before Rastan was available, several "kracks" were available. The best of these was posted on America Online and merely circumvents the check. The worst of these was done by someone named "Joe Hack" and includes a couple of "pirate" screens and a whining message about how unfair it was that he had so much less time to "crack" it than anyone else. Since the deprotection seems to be quite simple (a bypass of the disk poll) this all seems rather unnecessary.

There are four levels, each consisting of three separate areas. I would love to see a sequel to this game with 10 or so levels. Each has a stunning

backdrop, new monsters intermixed with the old, and slightly different types of challenges. The graphics are the best I have seen on a GS game, and the game speed is quite fast.

The game allows you three lives with a new one granted every 75,000 points. You are also allowed to continue your game up to six times for a total of 18 lives. The only drawback I can find is that it is possible to accumulate as many points as the heart desires on the first level. After I reached over 2,000,000 points on level one, I decided to go for LOW points in solving the game.

The game can be made much more challenging by NOT continuing a game. This makes achieving the final goal a near impossibility without actually standing around to get lives.

In short, Rastan is everything a computer game should be, entertaining, thoughtful (not too thoughtful), full of action and more action. The implementation is superb (did I say that already?) and it is well worth the retail price of about \$35.00. I would suggest buying this game and encouraging Taito to produce more games like Rastan that utilize the full capabilities of the GS.

The Rumor Mill

1. CirTech is rumored to be coming out with a Mac compatible card for the Apple //gs for under \$1000. Announcement of the new product is expected in December. The card will not require Mac ROMs to be installed. It will use the 65C816 in the IIgs as a co-processor and will run at speeds equivalent to the top of the line Mac II's, however it will be compatible only with the Mac+ and SE (not the 68020 or 68030 machines). "I don't know if it's Art or not, but I like it."

2. Pirate BBS's have already seen PipeDreamer and Space Ace (both for the Apple //gs). Space Ace is supposed to be nine (800K) disk sides, but not Hard Drive installable. Hopefully there will be a patch in a future Computist.

3. Rastan hit the boards a week before any of the local outlets even knew the games was available. Maybe this will help convince software companies that copy protection is not only unnecessary but unproductive. I would suggest that people who like Rastan but don't like the protection write Taito and let them know.

4. Plans for Barbarian GS have been dropped, but Rescue Raiders GS is still being worked on. Rescue Raiders was one of my favorite //e games, so I would love to see a GS version of it.

5. I put a call in to Origin Systems. The sales rep said they have had lukewarm response from dealers about plans to order a //gs version of Ultima VI, so have decided not to pursue it. I would suggest calling Origin at (800 999-4939) and complaining, as well as calling your local software outlet or mail order house and telling them to ask Origin to release Ultima VI for the //gs. However, there was some mention made of Ultima VII being in the final stages of production. We might see it as early as fall '91. There are no plans to make any of the Ultima games for the Macintosh (besides the one that have been).

6. I also put a call in to Broderbund about making a //gs version of Prince of Persia. The Tech I talked to said "No plans to support the GS, but letters, lots of letters, might help." Note he wasn't just talking about Prince of Persia, but about GS support AT ALL! I also called the Customer Service number (800) 521-6263 and asked about a GS version. I spent quite awhile on hold, but was eventually told, "There are no plans to support the GS." However, I was told I could get a 3.5" disk version of the game for \$5 (free if I had a proof of purchase dated in the last 90 days).

Vincent Andrews WA

Advanced Playing Technique for...

Dungeon Master

FTL

Have you had the problem of losing a character and you're nowhere near an Alter, can't throw a rock far enough because your characters aren't strong enough, or just plain tired of sleeping all the time to restore all characters health and mana points. Well, now you can change all of that anytime you want while you play.

Dungeon Master CDA v1.1

This version now scans for the 4-main characters instead of going straight to them. I found that people with hard drives, having RAM set, or anything else that required space in memory had problems with the earlier version (v1.0). Well, this version corrects that.

Once you have the settings to your liking, you can now use it any time to restore lost health, stamina, and mana points by just pressing (N) to save. No more readjusting the values to the way you like it.

This version allows you to change only the stats of the four characters you've chosen at the beginning of play. You can change Health, Stamina, Mana, Strength, Dexterity, Wisdom, Vitality, Anti-Magic, Anti-Fire, and restore characters back to full health — even when they are dead.

My next version will include a few items to equip your characters with.

Instructions

The first thing you need to do is make a workable backup copy of the original disk. Use a disk copier that can ignore bad blocks. Now copy the disk onto a formatted 3.5 diskette. You can use Photonix, Copy II Plus v8.0 or later, or Prosel disk copier. Now you need to bitcopy track 0, both sides, no synchronizing, and no nibble counting. I used Copy II plus. Now you need a disk editor such as Zap from Prosel or sector editor from Copy II Plus. Edit the following blocks:

To restore the control panel

Blk	Byte	From	To
1F8	86	12	13

Or search for F4 12 00 D4 F4 D4 F2 A2 03 11 and change the 12 to 13.

To make playable

Blk	Byte	From	To
104	118	78 C2 30	18 60 F2

Or search for 78 C2 30 8D C2 14 and change 78 C2 30 to 18 60 F2.

Blk	Byte	From	To
104	10C	00	20
	114	38	18

Or search for E0 00 00 F0 04 18 AB 2B 6B 38 and change the first 00 to 20 and the 38 to 18.

Finally, on the backup copy create a directory in the System folder named DESK.ACCS and copy the file DMASTER.CDA to that newly created directory. Should look like this when cataloged: /DUNGEON.MASTER/SYSTEM/DESK.ACCS/DMASTER.CDA/

I hold the copyright to this program. You can upload this program and its accompanied source code files to any BBS. The source code is there for people to look at and to get a few ideas on how to create and assemble binary programs. I ask you not to edit this program in any way except to help make it run better. If you do, then leave the title as is. I have spent weeks gathering the information to create this little program. I would greatly appreciate it if everyone can spread this program and its accompanied source code files to every BBS around.

If you have the chance, write to me telling me what you think of the program. I like to know how many people out there in the world is actually using my program.

DGM.CMD.S

* Linker.gs command file for Linking Dungeon Master

* Batch asm part:

ASM DMG.ASM ;Only one module

* Linker part:

VER \$1 ;Link to OMF version 1
KND \$20 ;No spec mem
; (Use KND \$1000 for ver=2)
TYP \$B9 ;Make CDA type file
LINK DMG.L ;Only one link file
SAVEDMASTER.CDA
END ;Optional
LST OFF
EXP OFF
TR OFF

DMG.ASM.S

* DUNGEON MASTER
* CHEAT v1.1
* A classic desk accessory
* Vince C. Andrews 10 Aug 90
* Merlin-16+ Assembler

	DATE	REL
N	EQU 0	
Y	EQU 1	
n	EQU 0	
y	EQU 1	
SAVOBJ	KBD	"Save object code? (Y/N)"
DO SAVOBJ	DSK	DMG.L
FIN		
XC		;65C02 mode
XC		;65816 mode

* Zero page loc saved and used as well as other locations:

PNT	= \$E0	;Also E1,2,3
CH	= \$000024	;Horizontal Cursor Position
CV	= \$000025	;Vertical Cursor Position
TABV	= \$E0FC22	;Set Vertical Cursor Position
KYBD	= \$E0C000	;Get key
STROBE	= \$E0C010	;Clear Keyboard Strobe
NAMEA	= \$0205C8	;Bank address to begin
NAMEB	= \$0208E7	; searching for characters
NAMEC	= \$020C06	
NAMED	= \$020F25	

USE DMG.MACROS

* Required stuff of all CDA's:
* The string is what goes on the
* Control panel listing.

```
BEGIN STR 'Dungeon Master Cheat'
ADRL START ;Entry point address
ADRL EXIT ;Exit "routine" address
; (just an RTL).
MX %00 ;Enters in full 16-bit mode
; so better tell asm that.
```

* Entry point when selected from Control panel:

```
START PHB ;Save current data bank
PHK ;Get our bank
PLB ;and set data bank to it
PEI PNT ;Save the 4 zp locs we use.
PEI PNT+2 ;and zero the bank byte for
STZ PNT+2 ;long addressing
```

BRA HELLO

* This is the QUIT ROUTINE

```
QUIT CLC
REP %00110000;16-bit mode
PLB ;Restore data bank to original
PLA
STA PNT+2
PLA
STA PNT
EXIT RTL
```

* Continue with the program

```
HELLO SEP %00110000;8-bit mode
JSR NAME ;Scan & Print names. If invalid
; characters were found then
; the next name will be printed.
JHELLO PRINT 8D" Choose the character # to view/
; edit or any other key to quit."8d
```

```
GETKEY
CMP #1"
BEQ JH1
CMP #2"
BEQ JH1
CMP #3"
BEQ JH1
CMP #4"
BEQ JH1
BRL QUIT
```

```
JH1 STA CHAR
JSR COPYGP ;Copy game into editor area
BRL EDITOR
```

* This is the PRINT TITLE SCREEN

```
TITLE PRINT 8C8D
LINE
PRINT 8D" DUNGEON
; MASTER Cheat v1.1"8D
PRINT " by Vincent C. Andrews
; 10 Aug 90"8D
LINE
PRINT 8D
RTS
```

* The Name Routine Display

```
NAME JSR TITLE
LDX #0 ;initialize X-reg.
STZ XXX ;Zero xxx & xxx+1
STZ XXX+1
```

```
JAGAIN REP %00110000;16-bit mode
LDX XXX
INX
BNE JLUP1 ;Branch if not zero
BRL FAILED
```

```
JLUP1 STX XXX ;Stay X-reg. at XXX
LDAL NAMEA,X
SEP %00110000;8-bit mode & no Hi-byte
CMP #54C
BEQ JCHECK2 ;Branch if match
BRA JAGAIN ;Go and check for next byte
```

```
JCHECK2 REP %00110000;16-bit mode
LDX XXX
INX ;increase XXX
BNE JLUP2 ;Branch if not zero
BRL FAILED
```

```
JLUP2 STX XXX ;Stay X-reg. at XXX
LDAL NAMEA,X
SEP %00110000;8-bit mode & no Hi-byte
CMP #521
BEQ JGOOD ;Branch if match
BRA JAGAIN ;Go and check for next byte
```

```
JGOOD REP %00110000;16-bit mode
LDX XXX ;Load XXX
INX ;increase X-reg.
INX ;increase X-reg.
STX FOUND ;Put X-reg in FOUND
SEP %00110000;8-bit mode
```

```
PRINT 8D" 1)"
>>> PRINTY,NAMEA
PRINT 8D" 2)"
>>> PRINTY,NAMEB
PRINT 8D" 3)"
>>> PRINTY,NAMEC
PRINT 8D" 4)"
>>> PRINTY,NAMED
PRINT 8D
LINE
RTS
```

```
FAILED SEP %00110000;8-bit mode
PRINT 8C8D8D" This editor could not find
; what it was looking for."
PRINT 8d" Are you sure the Dungeon
; Master game is loaded in memory?"
```

GETKEY
BRL QUIT

* This routine will print the name of the character

```
CHNAME LDY CHAR
CPY #1"
BEQ JCHNAME1
CPY #2"
BEQ JCHNAME2
CPY #3"
BEQ JCHNAME3
```

```
>>> PRINTY,NAMED
RTS
```

```
JCHNAME1 >>> PRINTY,NAMEA
RTS
```

```
JCHNAME2 >>> PRINTY,NAMEB
RTS
```

```
JCHNAME3 >>> PRINTY,NAMEC
RTS
```

* This is the PRINT MENU SECTION

```

MENU JSR TITLE
      PRINT 8D"
      JSR CHNAME
      PRINT 8d8d" A) Health: J)
        Fighter:"
      PRINT 8d" B) Stamina: K)
        Ninja:"
      PRINT 8d" C) Mana: L) Priest:"
      PRINT 8d" M) Wizard:"
      PRINT 8d" D) Strength:"
      PRINT 8d" E) Dexterity: N)
        Save"
      PRINT 8d" F) Wisdom:"
      PRINT 8d" G) Vitality: O) Next
        Character"
      PRINT 8d" H) Anti-Magic:"
      PRINT 8d" I) Anti-Fire:"8d
      LINE
      RTS
    
```

* This is your EDITOR PROGRAM

```

EDITOR JSR MENU ;Print the MENU

EDITOR2 CLC
         HVTAB #21,#9 ;Health
         PRINT " "
         HVTAB #21,#9
         LDX AA ;load low
         LDA AA+1 ;load hi
         PRDEC ;Print Decimal of two byte
           location

         HVTAB #21,#10 ;Stamina
         PRINT " "
         HVTAB #21,#10 ;Stamina

         REP %00110000;16-bit mode
         LDX #0
         LDA #0
         STZ STAMCNT
         STZ STAMCNT2
]LUPA CLC
      LDA STAMCNT2
      ADC #10
      STA STAMCNT2
      LDX STAMCNT
      INX
      STX STAMCNT
      CPX #999
      BEQ ]QUITA
      LDA STAMCNT2
      CMP AA+2
      BEQ ]QUITA
      BRA ]LUPA

]QUITA LDA STAMCNT
      CLC
      PRDEC16 ;PRINT STAMINA
      SEP %00110000;8-bit mode

      HVTAB #21,#11 ;Mana
      PRINT " "
      HVTAB #21,#11 ;Mana
      LDA AA+4
      LDA AA+5
      PRDEC ;Print Decimal of two byte
        location

      HVTAB #21,#13 ;Str
      PRINT " "
      HVTAB #21,#13 ;Str
      LDX AA+6
      LDA #0
      PRDEC ;Print Decimal of one byte
        location

      HVTAB #21,#14 ;Dex
      PRINT " "
      HVTAB #21,#14 ;Dex
      LDX AA+8
      LDA #0
      PRDEC ;Print Decimal of one byte
        location

      HVTAB #21,#15 ;Wis
      PRINT " "
      HVTAB #21,#15 ;Wis
      LDX AA+10
      LDA #0
      PRDEC ;Print Decimal of one byte
        location

      HVTAB #21,#16 ;Vit
      PRINT " "
      HVTAB #21,#16 ;Vit
      LDX AA+12
      LDA #0
      PRDEC ;Print Decimal of one byte
        location

      HVTAB #21,#17 ;Anti-magic
      PRINT " "
      HVTAB #21,#17 ;Anti-magic
      LDX AA+14
      LDA #0
      PRDEC ;Print Decimal of one byte
        location

      HVTAB #21,#18 ;Anti-fire
      PRINT " "
      HVTAB #21,#18 ;Anti-fire
      LDX AA+16
      LDA #0
      PRDEC ;Print Decimal of one byte
        location

      HVTAB #45,#9 ;Fighter
      PRINT " "
      HVTAB #45,#9 ;Fighter
      LDY #0
      JSR PRINTCL ;Check for level

      HVTAB #45,#10 ;Ninja
      PRINT " "
      HVTAB #45,#10 ;Ninja
      LDY #4
      JSR PRINTCL ;Check for level
    
```

```

HVTAB #45,#11 ;Priest
PRINT " "
HVTAB #45,#11 ;Priest
LDY #8
JSR PRINTCL ;Check for level

HVTAB #45,#12 ;Wizard
PRINT " "
HVTAB #45,#12 ;Wizard
LDY #12
JSR PRINTCL ;Check for level

HVTAB #1;#21
PRINT " Choose a number to change or
ESC to quit.

]LUP GETKEY ;Get keypress
      CMP #A"
      BEQ :JMPA
      CMP #B"
      BEQ :JMPB
      CMP #C"
      BEQ :JMPC
      CMP #D"
      BEQ :JMPC
      CMP #E"
      BEQ :JMPC
      CMP #F"
      BEQ :JMPC
      CMP #G"
      BEQ :JMPC
      CMP #H"
      BEQ :JMPC
      CMP #I"
      BEQ :JMPC
      CMP #J"
      BEQ :JMPC
      CMP #K"
      BEQ :JMPC
      CMP #L"
      BEQ :JMPC
      CMP #M"
      BEQ :JMPC
      CMP #N"
      BEQ :JMPC
      CMP #O"
      BEQ :JMPC
      CMP #9F&" ;ESC
      BEQ :JMPC
      BRA ]LUP

]JMPA BRA HEALTH
]JMPB BRA STAMINA
]JMPC BRA MANA
]JMPC BRA STR
]JMPC BRA DEX
]JMPC BRA WIS
]JMPC BRA VIT
]JMPC BRA AMAGIC
]JMPC BRA AFIRE
]JMPC BRA FIGHTER
]JMPC BRA NINJA
]JMPC BRA PRIEST
]JMPC BRA WIZARD
]JMPC BRA SAVEIT
]JMPC BRA HELLO
]JMPC BRA QUIT

* Changing information

HEALTH JSR CHANGE
        PRINT "Health:"
        LDY #0
        BRL CH2B

STAMINA JSR CHANGE
        PRINT "Stamina:"
        LDY #2
        BRL CHSP

MANA JSR CHANGE
        PRINT "Mana:"
        LDY #4
        BRL CH2B

STR JSR CHANGE
        PRINT "Strength:"
        LDY #6
        BRL CH1B

DEX JSR CHANGE
        PRINT "Dexterity:"
        LDY #8
        BRL CH1B

WIS JSR CHANGE
        PRINT "Wisdom:"
        LDY #10
        BRL CH1B

VIT JSR CHANGE
        PRINT "Vitality:"
        LDY #12
        BRL CH1B

AMAGIC JSR CHANGE
        PRINT "Anti-magic:"
        LDY #14
        BRL CH1B

AFIRE JSR CHANGE
        PRINT "Anti-fire:"
        LDY #16
        BRL CH1B

FIGHTER JSR CHANGE
        PRINT "Fighter:"
        LDY #0 ;We are doing Fighter
        BRL CHCL

NINJA JSR CHANGE
        PRINT "Ninja:"
        LDY #4 ;We are doing Ninja
        BRL CHCL

PRIEST JSR CHANGE
        PRINT "Priest:"
        LDY #8 ;We are doing Priest
        BRL CHCL
    
```

```

WIZARD JSR CHANGE
        PRINT "Wizard:"
        LDY #12 ;We are doing Wizard
        BRL CHCL

SAVEIT JSR COPYPG ;THIS WAS JSR TO
        SOMETHING THAT DIDNT
        BRL HELLO ;RETURN WITH AN RTS

* Miscellaneous routines

* PRDEC & PRDEC16 are 2-byte decimal output routines.
* PRDEC enters with short A,X and prints A hi, X low.
* PRDEC16 enters with long A and prints A.

DEC16 TAX ;Entry to print 16-bit A
      XBA
      PHY
      PHP
      SEP %00110000
      STA NH ;Entry to print 8-bit A,X
      STX NL
      LDA #0 ;Left justify if CC
      BCC :OV
      LDA # ;Right justify if CS
      STA JUST
      LDY #8
      STX NFL
      :LOAD0 LDY #0-1
            REP %00100000;Long M
            LDA NL ;Index length no matter
            SEC ;Needed 1st time

      :DIV INY
            STA NL
            SBC :NUMTBL,X
            BCS :DIV
            SEP %00110000
            TYA
            DEX
            BMI :DIG
            CMP #0"
            BEQ :MODE
            STA NFL
            :MODE BIT NFL
            BMI :DIG
            LDA JUST
            BPL :NX
            :DIG JSR COUT
            :NX DEX
            BPL :LOAD0
            PLP
            PLY
            RTS

      :NUMTBL DA 1,10,100,1000,10000

      NL DFB 0
      NH DFB 0
      NFL DFB 0
      JUST DFB 0

* The SENDMSG Macro

SENDMSG PHP
]LUP REP %00100001
      LDA 2,S ;Get return address
      INC
      STA 2,S ;Point to next byte
      SEP %00110000
      LDY #0
      LDA (2,S),Y ;Get next byte
      BEQ :BACK ;Exit if 0
      JSR COUT ;Process it (OUTPUT)
      BRA ]LUP ;Loop always

:BACK PLP
      RTS ;Return to caller

* The COUT routine

COUT PHA
      PHY
      PHX
      PHP
      REP %00110000
      PHA
      WriteChr
      PLP
      PLX
      PLY
      PLA
      RTS

* The Printy compare subroutine

PRINTCMP SEP %00110000;8-bit mode
        CMP #2C
        BEQ ]SKP2 ;Branch if match
        CMP #2E
        BEQ ]SKP2 ;Branch if match
        CMP #3A
        BEQ ]SKP2 ;Branch if match
        CMP #3B
        BEQ ]SKP2 ;Branch if match
        CMP #30
        BEQ ]SKP2 ;Branch if match
        CLC ;Clear Carry to continue
        RTS ;with the rest of the checks
        SEC ;Set carry to goto print
        RTS ;routine

]SKP2

* The Printy1-3 subroutines for Printy Macro

PRINTY1 STZ YYY
        STZ XXX
        STZ XXX+1
        REP %00110000;16-bit mode
        CLC
        LDA FOUND ;
        DEC ;Subtract 1
        TAX ;Transfer Accum to X
        STX XXX ;Put back in XXX
        SEP %00110000;8-bit mode
        ; Discard Hi-byte
        RTS

PRINTY2 JSR PRINTCMP ;Carry is set if there was
        ; any special characters
    
```

```

BCS ]SKP ;Branch if set
CMP #41
BCC ]DONE1 ;Branch if less than
CMP #5B
BCS ]DONE1 ;Branch if greater than

]SKP CLC
      JSR COUT
      ]DONE1 RTS

* The GET KEY

KEY REP $30
    LDAL KYBD
    BPL KEY
    STAL STROBE
    SEP $30
    RTS

* Routine used for changing men & Level

CMP2 CMP #9F&"U" ;RIGHT ARROW
      BEQ :ADD
      CMP #9F&"K" ;UP ARROW
      BEQ :ADD
      CMP #9F&"H" ;LEFT ARROW
      BEQ :MINUS
      CMP #9F&"J" ;DOWN ARROW
      BEQ :MINUS
      CMP #9F&"M" ;RETURN
      BEQ :CONT
      CMP #9F&"I" ;ESC
      BEQ :QUIT
      LDA #0 ;RESULT = 0 : WRONG KEY
      RTS

      :ADD LDA #1 ;RESULT = 1 : CORRECT
          STA STATUS
          CLC
          RTS

      :MINUS LDA #1 ;RESULT = 1 : CORRECT
            STA STATUS
            SEC
            RTS

      :CONT LDA #2 ;RESULT = 2 : GOTO
            EDITOR
            STA STATUS
            CLC
            RTS

      :QUIT LDA #3 ;RESULT = 3 : GOTO QUIT
            STA STATUS
            CLC
            RTS

* The routine that changes class

ADJCL CLC
      ADJUST ;Adjust counter
      BCS SUBCL ;Subtract one
      CLC
      LDA STATUS
      CMP #2
      BEQ ]RETCL ;Keep score/continue
      CMP #3
      BEQ ]RETCL ;Exit completely
      LDX LEVNUM
      CPX #45
      BEQ ]CLSKIP
      INX
      INX
      INX
      STX LEVNUM

]CLSKIP LDY YYY
        LDX LEVNUM

        LDA NEO2,X
        STA BB,Y

        LDA NEO2+1,X
        STA BB+1,Y

        LDA NEO2+2,X
        STA BB+2,Y

]RETCL RTS ;Go back for mor adjustment

SUBCL CLC ;Clear carry
      LDA LEVNUM ;Get byte
      CMP #0 ;On the safe side....
      BEQ ]SUBCL2 ;if 0 then skip
      LDA LEVNUM
      DEC
      DEC
      STA LEVNUM
      ]SUBCL2 BRA ]CLSKIP

* The routine that changes Stamina

ADJSP ADJUST ;Adjust counter
      BCS SUBSP ;Subtract one
      CLC
      LDA STATUS
      CMP #2
      BEQ ]RETSP ;Keep score/continue
      CMP #3
      BEQ ]RETSP ;Exit completely
      REP %00110000;16-bit mode
      CLC
      LDA STAMCNT ;Adjust Stamina counter
      ADC #10
      CMP #999
      BCC ]SKSP3 ;if less than....
      LDA #999
      STA STAMCNT
      CLC
      LDY YYY
      LDA AA,Y ;Get byte
      ADC #100 ;Increase
      CMP #9990
      BCC ]DONESP ;IF LESS
      LDA #9990
      ]DONESP STA AA,Y ;
            SEP %00110000;8-bit mode
            ]RETSP RTS ;Go back for more adjustment

SUBSP REP %00110000;16-bit mode
    
```



```

SEC           LDY #8 ;Location to store value
LDA STAMCNT  LDY #10 ;Location to store value
SBC #10      LDY #12 ;Location to store value
CLC          LDY #14 ;Location to store value
CMP #30      LDY #16 ;Location to store value
BCS ]SUBSP2 ;If greater than....
LDA #30      LDY #18 ;Location to store value
]SUBSP2 STA STAMCNT
SEC          LDY #22 ;Location to store value
LDY YYY      LDY #26 ;Location to store value
LDA AA,Y    ;Get byte
SBC #100     LDY #30 ;Location to store value
CMP #300     LDY #34 ;Location to store value
BCS ]SUBSP   LDY #38 ;Location to store value
LDA #300     LDY #42 ;Location to store value
]SUBSP  BRA ]DONESP
SEP %00110000;8-bit mode
* The routine that changes 1-byte location
ADJ1B CLC
ADJUST ;Adjust counter
BCS SUB1B ;Subtract one
CLC
LDA STATUS
CMP #2
BEQ ]RET1B ;Keep score/continue
CMP #3
BEQ ]RET1B ;Exit completely
CLC
LDY YYY
LDA AA,Y ;Get byte
ADC #5 ;Increase by 5
CMP #150 ;150
BEQ ]DONE1B ;IF =
BCC ]DONE1B ;IF LESS
LDA #150
]DONE1B LDY YYY
STA AA,Y ;Echo the byte so that things
; will work when in 16-bit
; mode.
]RET1B RTS ;Go back for mor adjustment
SUB1B CLC ;Clear carry
LDY YYY
LDA AA,Y ;Get byte
CMP #6
BCC ]SUB1B1;Branch if less than
SEC
SBC #5 ;decrease by five
CMP #5
BCS ]SUB1B
]SUB1B1 LDA #5
]SUB1B CLC
BRA ]DONE1B
* The routine that changes 2-byte location
ADJ2B ADJUST ;Adjust counter
BCS SUB2B ;Subtract one
CLC
LDA STATUS
CMP #2
BEQ ]RET2B ;Keep score/continue
CMP #3
BEQ ]RET2B ;Exit completely
REP %00110000;16-bit mode
CLC
LDY YYY
LDA AA,Y ;Get byte
ADC #10 ; Add 10
CMP #999
BEQ ]DONE2B ;IF =
BCC ]DONE2B ;IF LESS
LDA #999
LDY YYY
STA AA,Y
SEP %00110000;8-bit mode
]RET2B RTS ;Go back for more adjustment
SUB2B CLC ;Clear carry
REP %00110000;16-bit mode
LDY YYY
LDA AA,Y ;Get byte
CMP #10
BCC ]SUB2B2
SEC
SBC #10 ; Subtract 10
CMP #10
BCS ]SUB2B2
]SUB2B2 LDA #10
]SUB2B CLC
BRA ]DONE2B
SEP %00110000;8-bit mode
* Prep for Load & Transfer Routines
PREP STA AAA ;Save Accum.
REP %00110000;16-bit mode
STZ XXX ;Zero XXX
STX XXX ;Save XXX temporary
CLC
LDA FOUND ;Found + xxx = location
ADC XXX
STA XXX ;Update xxx with correct loc.
SEP %00110000;8-bit mode
RTS
* Copy game bytes to play area
COPYGP LDX #36 ;Health-a
LDY #0 ;Location to store value
LDA #2
JSR LOAD ;Get bytes & store bytes
LDX #3A ;Stamina-b
LDY #2 ;Location to store value
LDA #2
JSR LOAD ;Get bytes & store bytes
LDX #3E ;Mana-c
LDY #4 ;Location to store value
LDA #2
JSR LOAD ;Get bytes & store bytes
LDY #6 ;Location to store value
LDX #49 ;Strength-d
LDA #2
JSR LOAD ;Get bytes & store bytes

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```

LDY #8 ;Location to store value
LDX #34C ;Dexterity-e
LDA #2
JSR LOAD ;Get bytes & store bytes
LDY #10 ;Location to store value
LDX #4F ;Wisdom-f
LDA #2
JSR LOAD ;Get bytes & store bytes
LDY #12 ;Location to store value
LDX #52 ;Vitality-g
LDA #2
JSR LOAD ;Get bytes & store bytes
LDY #14 ;Location to store value
LDX #55 ;Anti-magic-h
LDA #2
JSR LOAD ;Get bytes & store bytes
LDY #16 ;Location to store value
LDX #58 ;Anti-fire-i
LDA #2
JSR LOAD ;Get bytes & store bytes
LDY #18 ;Location to store value
LDX #5D ;Fighter-j
LDA #4
JSR LOAD ;Get bytes & store bytes
LDY #22 ;Location to store value
LDX #63 ;Ninja-k
LDA #4
JSR LOAD ;Get bytes & store bytes
LDY #26 ;Location to store value
LDX #69 ;Priest-l
LDA #4
JSR LOAD ;Get bytes & store bytes
LDY #30 ;Location to store value
LDX #6F ;Wizard-m
LDA #4
JSR LOAD ;Get bytes & store bytes
]LUP LDX #6 ;Start at position 6
LDA AA,X ;Load permanent score
STA AA+1,X ;Stay at adjustment score
INX ;Push pointer ahead by 2
INX
CPX #18 ;Are we done yet?
BEQ ]CON ;Branch if equal
BRA ]LUP ;Do the next set of bytes
]CON RTS
* The byte transfer routine...
* A=# of bytes,X=get location,Y=Destination location
LOAD JSR PREP
LDA CHAR
CMP #'1'
BEQ ]BA
CMP #'2'
BEQ ]BB
CMP #'3'
BEQ ]BC
]BD LDA AAA ;Restore Accum. and check for
CMP #2 ;how many bytes to transfer
BEQ ]B2D
]B4D REP %00110000;16-bit mode
LDX XXX
LDAL NAMEC,X ;Get 2-Bytes
STA AA,Y ;Sta 2-Bytes
LDAL NAMEB+2,X ;Get 3rd byte
STA AA+2,Y ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]B2D REP %00110000;16-bit mode
LDX XXX
LDAL NAMEC,X ;Get Accum,X...2-Bytes
STA AA,Y ;Sta Accum,Y...2-Bytes
SEP %00110000;8-bit mode
RTS
]BC BRA ]BCC
]BA LDA AAA ;Restore Accum. and check for
CMP #2 ;how many bytes to transfer
BEQ ]B2A
]B4A REP %00110000;16-bit mode
LDX XXX
LDAL NAMEA,X ;Get 2-Bytes
STA AA,Y ;Sta 2-Bytes
LDAL NAMEA+2,X ;Get 3rd byte
STA AA+2,Y ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]B2A REP %00110000;16-bit mode
LDX XXX
LDAL NAMEA,X ;Get Accum,X...2-Bytes
STA AA,Y ;Sta Accum,Y...2-Bytes
SEP %00110000;8-bit mode
RTS
]BB LDA AAA ;Restore Accum. and check for
CMP #2 ;how many bytes to transfer
BEQ ]B2B
]B4B REP %00110000;16-bit mode
LDX XXX
LDAL NAMEB,X ;Get 2-Bytes
STA AA,Y ;Sta 2-Bytes
LDAL NAMEB+2,X ;Get 3rd byte
STA AA+2,Y ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]B2B REP %00110000;16-bit mode
LDX XXX
LDAL NAMEB,X ;Get Accum,X...2-Bytes
STA AA,Y ;Sta Accum,Y...2-Bytes
SEP %00110000;8-bit mode
RTS
]S2D REP %00110000;16-bit mode
LDX XXX

```

```

LDA AAA ;Restore Accum. and check for
CMP #2 ;how many bytes to transfer
BEQ ]B2C
]B4C REP %00110000;16-bit mode
LDX XXX
LDAL NAMEC,X ;Get 2-Bytes
STA AA,Y ;Sta 2-Bytes
LDAL NAMEC+2,X ;Get 3rd byte
STA AA+2,Y ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]B2C REP %00110000;16-bit mode
LDX XXX
LDAL NAMEC,X ;Get Accum,X...2-Bytes
STA AA,Y ;Sta Accum,Y...2-Bytes
SEP %00110000;8-bit mode
RTS
* Copy play area back to game
COPYPG LDX #34 ;Health-a
LDY #0 ;Location to store value
LDA #3
JSR SAVE ;Get bytes & store bytes
LDX #38 ;Stamina-b
LDY #2 ;Location to store value
LDA #3
JSR SAVE ;Get bytes & store bytes
LDX #3C ;Mana-c
LDY #4 ;Location to store value
LDA #3
JSR SAVE ;Get bytes & store bytes
LDX #49 ;Strength-d
LDY #6 ;Location to store value
LDA #2
JSR SAVE ;Get bytes & store bytes
LDX #4C ;Dexterity-e
LDY #8 ;Location to store value
LDA #2
JSR SAVE ;Get bytes & store bytes
LDX #4F ;Wisdom-f
LDY #10 ;Location to store value
LDA #2
JSR SAVE ;Get bytes & store bytes
LDX #52 ;Vitality-g
LDY #12 ;Location to store value
LDA #2
JSR SAVE ;Get bytes & store bytes
LDX #55 ;Anti-magic-h
LDY #14 ;Location to store value
LDA #2
JSR SAVE ;Get bytes & store bytes
LDX #58 ;Anti-fire-i
LDY #16 ;Location to store value
LDA #2
JSR SAVE ;Get bytes & store bytes
LDX #5D ;Fighter-j
LDY #18 ;Location to store value
LDA #4
JSR SAVE ;Get bytes & store bytes
LDX #63 ;Ninja-k
LDY #22 ;Location to store value
LDA #4
JSR SAVE ;Get bytes & store bytes
LDX #69 ;Priest-l
LDY #26 ;Location to store value
LDA #4
JSR SAVE ;Get bytes & store bytes
LDX #6F ;Wizard-m
LDY #30 ;Location to store value
LDA #4
JSR SAVE ;Get bytes & store bytes
]S2A REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEA,X ;Stay 2-Bytes
LDAL NAMEA+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S2B REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEB,X ;Stay 2-Bytes
LDAL NAMEB+2,X ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]S3B REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S3C REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S3D REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC,X ;Stay Accum,X...2-Bytes
LDAL NAMEC+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S4D REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get 2-Bytes
LDAL NAMEB,X ;Stay 2-Bytes
LDAL NAMEB+2,X ;Stay 2-Bytes
SEP %00110000;8-bit mode
RTS
]S3D REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEB,X ;Stay Accum,X...2-Bytes
LDAL NAMEB+2,X ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]S2D REP %00110000;16-bit mode
LDX XXX

```

```

LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC,X ;Stay Accum,X...2-Bytes
SEP %00110000;8-bit mode
RTS
]SB BRA ]SB1
]SA LDA AAA ;Restore Accum. and check for
CMP #2 ;how many bytes to transfer
BEQ ]S2A
CMP #3
BEQ ]S3A
]S4A REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get 2-Bytes
LDAL NAMEA,X ;Stay 2-Bytes
LDA AA+2,Y ;Get 3rd byte
LDAL NAMEA+2,X ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]SC BRA ]SCC
]S3A REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEA,X ;Stay Accum,X...2-Bytes
LDAL NAMEA+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S2A REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEA,X ;Stay Accum,X...2-Bytes
LDAL NAMEA+2,X ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]SB1 LDA AAA ;Restore Accum. and check for
CMP #2 ;how many bytes to transfer
BEQ ]S2B
CMP #3
BEQ ]S3B
]S4B REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get 2-Bytes
LDAL NAMEB,X ;Stay 2-Bytes
LDA AA+2,Y ;Get 3rd byte
LDAL NAMEB+2,X ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]S3B REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEB,X ;Stay Accum,X...2-Bytes
LDAL NAMEB+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S2B REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEB,X ;Stay Accum,X...2-Bytes
LDAL NAMEB+2,X ;Stay 3rd byte
SEP %00110000;8-bit mode
RTS
]S3C REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC,X ;Stay Accum,X...2-Bytes
LDAL NAMEC+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S3C REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC,X ;Stay Accum,X...2-Bytes
LDAL NAMEC+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
]S2C REP %00110000;16-bit mode
LDX XXX
LDA AA,Y ;Get Accum,Y...2-Bytes
LDAL NAMEC,X ;Stay Accum,X...2-Bytes
LDAL NAMEC+2,X ;Stay Accum,X...2-
Bytes
SEP %00110000;8-bit mode
RTS
* Change & Adjust bytes
CHANGE HVTAB #1:#21
PRINT "
"
HVTAB #5:#21
PRINT "Use the arrow keys to raise or
lower..."
RTS
CH1B STY YYY
CH1B2 JSR ]CH1B
CLC
LDA STATUS
CMP #2
BEQ ]ED1B
CMP #3 ;ESC was pressed if hex 03
found in Accum.
BEQ ]QUIT1B ;Exit completely if equals
BRA CH1B2
]QUIT1B BRL QUIT
]ED1B BRL EDITOR2
]CH1B HVTAB #52:#21
LDY YYY ;Load Low byte into X
LDA #20 ;Load Hi byte into Accum.

```

```

SEC      ;Right justify
PRDEC    ;Print decimal to screen
CLC
BRL ADJ1B ;Go and adjust decimal value

CH2B     STY YYY
CH2B2    JSR JCH2B
CLC
LDA STATUS
CMP #2
BEQ JED2B
CMP #3    ;ESC was pressed if hex 03
          found in Accum.
BEQ JQUIT2B ;Exit completely if equals
BRA CH2B2

JQUIT2B  BRL QUIT
JED2B    BRL EDITOR2

JCH2B    HVTAB #52,#21
REP %00110000;16-bit mode
LDY YYY
LDA AA,Y
SEC      ;right justify
PRDEC16 ;Print decimal to screen
CLC
SEP %00110000;8-bit mode
BRL ADJ2B ;Go and adjust decimal value

CHCL     STY YYY
CHCL2    JSR JCHCL
CLC
LDA STATUS
CMP #2
BEQ JEDCL
CMP #3    ;ESC was pressed if hex 03
          found in Accum.
BEQ JQUITCL ;Exit completely if equals
BRA CHCL2

JQUITCL  BRL QUIT
JEDCL    BRL EDITOR2

JCHCL    HVTAB #54,#21
CLC
JSR PRINTCL ;Print Level Type of class
BRL ADJCL  ;Go and adjust level of class

CHSP     STY YYY
CHSP2    JSR JCHSP
CLC
LDA STATUS
CMP #2
BEQ JEDSP
CMP #3
BEQ JSKSP
BRA CHSP2

JSKSP    BRL QUIT
JEDSP    BRL EDITOR2

JCHSP    HVTAB #52,#21
REP %00110000;16-bit mode
LDA STAMCNT
SEC
PRDEC16 ;PRINT STAMINA
SEP %00110000;8-bit mode
BRL ADJSP

* Prints out the level of class, Y*4 = Class

PRINTCL  LDX #0
          STX LEVNUM
          STY YYY
JLUP     JSR CK1NEO
          CPX #45
          BEQ JFINISH
          INX
          INX
          INX
          STX LEVNUM
          BRA JLUP
JFINISH  RTS

CK1NEO   CLC
          LDY YYY
          LDX LEVNUM
          LDA BB+2,Y
          CMP NEO+2,X
          BCC JLESSNEO ;Less than....
          BEQ JCK2NEO ;Equal to....
          BCS JMORENEO ;Greater than....

JCK2NEO  CLC
          LDA BB+1,Y
          CMP NEO+1,X
          BCC JLESSNEO
          BEQ JCK3NEO
          BCS JMORENEO

JCK3NEO  CLC
          LDA BB,Y
          CMP NEO,X
          BCC JLESSNEO
          BEQ JEQUAL
          BCS JMORENEO

JLESSNEO CLC
          LDY #0
          LDA LEVNUM
          ASL ;Multiply by 2
          ASL ;Multiply by 2
          TAX ;Transfer Accum to X
JLUP     LDA TYPE,X ;Get byte of name
          CMP #0
          BEQ JDONENE0 ;if 0 then ....
          JSR COUT ;Print byte
          INX ;increase X
          INY
          CPY #12
          BEQ JDONENE0
          BRA JLUP ;Branch if less than....

JDONENE0 LDY YYY
          LDX #45
          RTS

JEQUAL   CLC
          LDA LEVNUM ;To be on the safe side
          CMP #45

```

```

BEQ JLESSNEO
INC
INC
INC
STA LEVNUM
BRA JLESSNEO

JMORENEO CLC
          LDX LEVNUM
          CPX #45
          BEQ JLESSNEO
          RTS

NEO2     adr #0 ;
          adr #500 ;Neophyte 0 3
          adr #1000 ;Novice 3 6
          adr #2000 ;Apprentice 6 9
          adr #4000 ;Journeyman 9 12
          adr #8000 ;Craftsman 12 15
          adr #16000 ;Artisan 15 18
          adr #32000 ;Adept 18 21
          adr #64000 ;Expert 21 24
          adr #128000 ;Lo Master 24 27
          adr #256000 ;Um Master 27 30
          adr #512000 ;On Master 30 33
          adr #1024000 ;EE Master 33 36
          adr #2048000 ;Pal Master 36 39
          adr #4096000 ;Mon Master 39 42
          adr #8192000 ;Arch Master 42 45
          adr #FFFFFF ;Maximum 45

TYPE     ASC "-----"00 0 0
          ASC "Neophyte "00 12 3
          ASC "Novice "00 24 6
          ASC "Apprentice "00 36 9
          ASC "Journeyman "00 48 12
          ASC "Craftsman "00 60 15
          ASC "Artisan "00 72 18
          ASC "Adept "00 84 21
          ASC "Expert "00 96 24
          ASC "LO Master "00 108 27
          ASC "UM Master "00 120 30
          ASC "ON Master "00 132 33
          ASC "EE Master "00 144 36
          ASC "PAL Master "00 156 39
          ASC "MON Master "00 168 42
          ASC "ARCH Master"00 180 45

AAA      DA 0
XXX      DA 0
YYY      DA 0

LEVNUM   DA 0
RAM       DA 0
CHAR      DA 0
FOUND     DA 0
STATUS    DA 0
STAMCNT   DA 0
STAMCNT2  DA 0

* The Storage area to edit the character stats

AA       DA 0 ;Health 0
          DA 0 ;Stamina 2
          DA 0 ;Mana 4
          DA 0 ;Str 6
          DA 0 ;Dex 8
          DA 0 ;Wis 10
          DA 0 ;Vit 12
          DA 0 ;Anti-magic 14
          DA 0 ;Anti-fire 16
BB       DS 4 ;Fighter 0
          DS 4 ;Ninja 4
          DS 4 ;Priest 8
          DS 4 ;Wizard 12

DGM.MACRO.S

Macros used by DM4

* The GET KEY MACRO
GETKEY   MAC
          JSR KEY
          <<<

ADJUST   MAC
          GETKEY
          JSR CMP2
          BEQ JLUP ;IF RESULT = 0, BRANCH
          <<<

* The Draw LINE Macro
LINE     MAC
          LDY #80
          LDA # " ;Routine used to print
          JSR COUT ; a straight line across
          DEY ; the screen.
          BNE JLUP
          <<<

* The HVtab
HVTAB    MAC
          SEP %00110000;8-bit mode
          LDA #2 ;Vertical
          STAL CV
          LDA #J*$9F ;Line feed
          JSR COUT
          LDA #1 ;Horizontal
          STAL CH
          <<<

* The PRINT Macro
PRINT     MAC
          JSR SENDMSG
          ASC J1
          BRK
          <<<

PRINTY   MAC
          JSR PRINTY1

JLUP     REP %00110000;16-bit mode
          INC XXX ;increase XXX Loc.
          LDX XXX
          LDAL J1,X ;Load Location - 1

```

```

SEP %00110000;8-bit mode
BEQ JDONE ;Branch if zero (0)
JSR PRINTY2 ;Go and print it
INC YYY
LDY YYY
CPY #57 ;Allow only 7 letters in the
          name
BCC JLUP ;Branch if less than
JDONE <<<

* The COUT Macro
Tool     MAC
          LDX #11
          JSL $E10000
          <<<

WriteChr MAC
          Tool $180C
          <<<

* The Print Decimal Macros
PRDEC16  MAC
          JSR DEC16
          <<<

PRDEC    MAC
          JSR DEC
          <<<

Softkey for...
Dungeon Master
FTL

Requirements:
Apple IIGS
Copy II Plus v. 9.0

My thanks to Jim Ross. I love Dungeon Master
but have been frustrated by the complex and
novel arrangement of codes. I would like to add
to what he has provided by supplying some
additional information.

First I have discovered two versions of Dun-
geon Master. They are 2.0 and 2.1. I also found
that the byte locations provided by Jim were not
the same for my disk even though I believe that
he was working with v 2.0.

This is the sector edit that I have found for
version 2.0.
Blk  Byte  From  To
104  110  18  38
104  114  38  18

This is the Sector edit for version 2.1
Blk  Byte  From  To
0E6  110  18  38
0E6  114  38  18

If you are interested in loading Dungeon
Master onto the Copy II Plus parameter file
follow these directions.
Load Copy II Plus (I use 9.0)
Select COPY (return)
Select BIT COPY 3.5 (return)
Arrow down to CREATE NEW PARAMETERS
(return)
When the new screen appears type in the
following:
Name: Dungeon Master V 2.0
By: FTL

SECTOR COPY
TO
SECTOR EDIT, BLOCK 104, 110:38,
114:18

Do the same thing for the second version.
Name: Dungeon Master V 2.1
By: FTL

SECTOR COPY
TO
SECTOR EDIT, BLOCK 0E6, 110:38,
114:18

If you don't find the proper codes on blocks
104 or 0E6 try scanning for 18 AB 2B 6B 38. If
you find these you should be able to fill in the rest.

Joseph P. Karwoski PA

Softkey for...
Victory Road
Heavy Barrel
Data East

These games are only barely interesting. I
was not impressed with them at all, they are no
"Wings of Fury".

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. Search the disk for 4C 00 C6 and replace them
with EA EA EA. (I found this on track 0, sector
0E, byte 4A.)
4. You are done, and can "enjoy" the games.

For those of you interested, I will take you
through the process that I used to find this edit -
even though it is very simple.

When I first got the games, I tried to CATA-
LOG the disk using Copy II+. All I got was a lot
of problems, and then an error message (on
Victory Road, for Heavy Barrel I got a catalog).
This told me that they had changed the disk
format. My next step was to tell DOS to ignore

```

the checksum and epilogues (I did this with the POKE 47426,24). This will not "hurt" even if the disk can be CATALOGed. Then I copied the disk. When it was done, I tried to boot the disk. What happened next gave me a clue as to what to look for. The disk keep rebooting - a clue! Knowing the you can turn the disk on and reboot by typing C600G, meaning go to memory location C600 and execute. I decided to try looking for a JMP to that memory location. I used the search command in Copy II+'s sector editor to search for 4C 00 C6, and was rewarded with success. I looked at the code and what I found suggested that the program continued as normal after that code. What was going on was that the program was checking for certain "items", and if it did not find what it was looking for it would go to this command. If it found what it wanted (an original) it would jump over this code. I decided to try the easy way out - THEY often don't make it this easy. I replaced the 4C 00 C6 with NOP's (EA EA EA), and then tried the games. They both worked without any problems.

Answers to reader questions

I saw a number of questions in issue #73 that I might be able to help with, so here goes.

To Ron Stankiewicz: Copy of Alien Mind. In issue number 64 page 9, I gave a method to copy Alien Mind (bit copy using Copy II+). It takes a lot of time, and you may have to copy it a number of times, but it worked for me.

To Ricky Lee Wallace: Reading the mouse from BASIC. If you are interested in using the mouse from within a BASIC program, you should get the July 1990 issue of NIBBLE. On page 32 you will find an excellent article (and program) on how to use the mouse.

To Rob Fiduccia: Changing background, text, and border color on the IIGs. You can use POKES to change just about everything in the control panel. To change the screen, background, and text colors; memory location 49186 and 49204 are the pokes you need. The easiest way to show you this is to give you a little Demo program. By-the-way, I had this printed in the Feb. 1989 issue of NIBBLE. Before you start typing this, I must say: BE CAREFUL!! These locations can also change other items in the control panel. Use the program the way I give it to you. Feel free to use this as you see fit.

```

10 REM BG=BACKGROUND COLOR
20 REM TE=TEXT COLOR
30 REM BD=BORDER COLOR
40 TEXT : HOME :A = PEEK (49186);B = PEEK
(49204)
50 VTAB (12): PRINT "WATCHHOMECHANGE
OMYCOLORS"
60 FOR BE = 0 TO 15
70 FOR TE = 0 TO 15
80 FOR BD = 0 TO 15
90 S = TE * 16 + BG
100 POKE 49186,S: REM SETS BACKGROUND
COLOR AND TEXT COLOR
110 K = PEEK (49204)
120 K = INT (K / 16)
130 S = K * 16 + BD
140 POKE 49204,S: REM SET BORDER COLOR
150 FOR I = 1 TO 1000: NEXT I: REM THIS IS A
PAUSE
160 NEXT BD
170 NEXT TE
180 NEXT BG
190 POKE 49186,A: POKE 49204,B: REM THIS
RESETS THE COLORS
200 END

```

Checksums

10-\$BADD	80-\$FFDB	150-\$0B46
20-\$9B13	90-\$232B	160-\$0192
30-\$4D3B	100-\$08A4	170-\$1DE7
40-\$F415	110-\$BOCB	180-\$8F37
50-\$8A15	120-\$2C10	190-\$0DB8
60-\$8CDD	130-\$7411	200-\$90FD
70-\$FBF8	140-\$C020	

I hope this will give you the information that you wanted, good programming!

Monitor Search command

If you want to find the bytes 00 67 B1 in the current bank, try this command from Visit Monitor: 00 67 B1<0000.FFFFF

The search command is the P. By-the-way, to get Visit Monitor on the control panel, you must do the following.

```

At the BASIC prompt:
CALL -151
#
ctrl reset

Now when you press ctrl openapple esc, you
will see "Visit Monitor" on the control panel.

```

Softkey for... **Batman**
Data East

Requirements:
Deprotected Heavy Barrel

I thought Batman would be very easy. All I had to do was the same thing all over again. I was wrong. Everything went fine until I tried to search for 4C 00 C6. I could not find it on the disk! They must be trying something new on this one. By this time I was getting tired and I was in no mood to have a program give me a problem!

I looked through the disk, searching for something that looked familiar. What I found was code that looked like a ProLok method of protection. See my article on deprotecting Where in North Dakota is Carmen Sandiego by Broderbund (#73, pg7) for a more detailed explanation of this protection. I found this code on track 00, sector 01, byte 76.

Note: Using the sector editor, the BOMB is said to be 0E52, and if you get into the program it writes this address as D352.

I thought that this would not be very hard, just refer to my notes on this and make the correct edits. I was wrong again. After I made the edits, the program still would not work - the screen got "funny" and the drive keep on running. OK, I missed something. Not too unexpected, I didn't look at the code that much - I was tired. As I was sitting at my computer thinking of the time it might take to trace all the "interesting" things that they might be doing, a thought came to me. I have a deprotected copy of Heavy Barrels, and Batman uses QuickDOS as does Heavy Barrels. What would happen if I were to copy Heavy Barrels, delete all the files, and then copy the files from Batman onto this disk. The answer I gave myself was "I don't know, but what do you have to lose". Then entire process took about 5 min. and when I was done, I have a deprotected copy of Batman. I know this was cheating, but that is why I call this a Semi-Softkey for Batman.

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. Take out a deprotected copy of Heavy Barrels and copy it onto a blank disk. I used Copy II+.
4. Delete all the files from the disk you just copied of Heavy Barrels.
5. Copy all the files from your "non-bootable" copy of Batman to this new disk.

Note: I just got the game Dark Castle by Three-Sixty and it does not appear to be protected in any way.

I am very pleased that some companies are beginning to trust us, and I think they deserve a round of praise. I hope more companies get this idea. Also, I don't want anyone to think that I group Dark Castle in the same class as Heavy Barrel, etc. I don't, it is a much better game - the sound is excellent and the graphics are very good. It is a game that is worth the money.

Zorro FL

Softkey for...
Curse of the Azure Bonds
Strategic Simulations, Inc.

Requirements:
Copy II Plus
Eight (8) blank disk sides
COMPUTIST #52 (optional)

Curse of the Azure Bonds by Strategic Simulations Inc. is another in a series of computer adaptations to the Advanced Dungeons & Dragons saga. If you like the paper and pencil versions of AD & D, you'll enjoy this new computerized series even more, since the computer rolls the dice and keeps track of everything for you.

Curse of the Azure Bonds (CAB) is the sequel to Pool of Radiance, and from what I've heard about the graphics in Pool of Radiance, you'll not have to endure a great lack of detail. Featuring nicely detailed landscapes and finely drawn, partially animated figures, CAB exceeds many other fantasy-role playing games such as Ultima V and Might & Magic both in detail and in sheer size. You begin the game as a group of six adventurers, either new or transferred from Pool of Radiance, who have awakened in a room at the inn of the town of Tilverton after being ambushed awhile back by unknown assailants. The last thing you remember was agreeing to search for the lost princess Naccacia in southern Daleland (the mythical setting of this fantasy) back in Pool of Radiance. You discover that all your equipment has vanished, and that you have been cursed by five azure tattoos, or bonds, impregnated within each party member's sword arm. These bonds, placed by a group of five conspirators, control your destiny, and when they glow, you are compelled to do their bidding. Obviously, your quest is to search Daleland for the people (or whatever) responsible for this curse. And with eight disk sides of Daleland, you'll be in for an extensive adventure.

As to the protection, the disks are in normal format, and copy easily with any whole-disk copier. Obviously, if the disks are already copyable, why take the time to write a softkey? Well, if you examine the disks more closely (i.e. trying to CATALOG them, or load up files), you'll notice you can't do either, because CAB, like many other programs by SSI, is equipped with a customized version of DOS 3.3, called RDOS (for information on RDOS, see COMPUTIST #52). But, more on eradicating RDOS later. Another reason to delve further into this program is the fact that before you are allowed to play the game, the program uses a code wheel as a secondary form of copy-protection. By asking you to match up two sets of runic symbols on a cardboard wheel, and typing in the first letter of

a word formed through the proper alignment of the runes (which are chosen at random), CAB effectively ties you down with this cumbersome, needless necessity. And if you fail to align the runes despite the three chances given you, the program will hang and you'll have to reboot. Fortunately, though, after about half an hour's work one afternoon, I discovered how to defeat this annoyance.

First, I recorded exactly the letters of the message which prompted you to find the wheel and align the runes. I then booted Copy II Plus, and used the scan option within the sector editor to discover where on the boot disk the message resides. After several seconds, the search ended on track \$03, sector \$0E. If you're familiar with machine language, you know that often a text message is preceded by a jump to a subroutine that prints it on the screen. Then, following the message is a BRK, or \$00, which tells the printing subroutine that either the message has ended or that the line is full. Here is an example.

```
0300:20 00 60 JSR $6000 go to message printing
subroutine
0303:48 PHA message starts here;
from here to
0304:45 4C EOR $4C $0308, looks like
gibberish, but
0306:4C 4F 21 JMP $214F actually spells out
'HELLO!'
0309:00 BRK end of message
```

To find out if this is the case with CAB, I first examined track \$03, sector \$0E for a string of fairly unique bytes. I chose 4C 10 6E, the JMP to the message printing subroutine, which precedes the message itself. Then, I booted the disk, and allowed the program to run until it asked for the proper letter, where I then pressed Control-Reset to enter BASIC (fortunately, CAB does not cause a reboot when you press ctrl reset, as some other programs do). Right then and there, I entered the monitor and scanned for the three bytes I chose earlier within memory, like this:

```
CALL-151 enter monitor
4C106E<800.9000S scan for 4C 10 6E within $800-
9000
```

The search ended at \$1750, and at that location was the command to JMP to \$6E10. So now I knew where the message was, but I still was unsure about how to circumvent it. Beginning with the nearest memory page, I listed memory on my printer from \$1700-\$1800 to see if I could find an answer.

```
1700:20 39 18 JSR $1839
1703:20 31 18 JSR $1831
1706:20 37 8A JSR $8A37
1709:A9 02 LDA #02
170B:8D 6A 1A STA $1A6A
170E:20 51 18 JSR $1851
1711:F0 20 BEQ $1733
1713:A9 5D LDA #5D
1715:A2 1A LDX #1A
1717:20 7C 84 JSR $847C
171A:CE 6A 1A DEC $1A6A
171D:10 EF BPL $170E
171F:20 0A 89 JSR $890A
1722:20 10 6F JSR $8F10
1725:20 42 89 JSR $8942
1728:EE 37 68 INC $6837
172B:A2 09 LDX #09
172D:20 37 17 JSR $1737
1730:4C 30 17 JMP $1730
1733:20 45 18 JSR $1845
1736:60 RTS
```

By now, I began to make some tests to see what was executed where. Just out of an arbitrary guess, I executed \$1700 by typing 1700G from the monitor. Lo and behold, the message along with the runes appeared on hi-res page 1! Now that I knew the general chunk of code where the query functioned, I slowly and surely executed every JSR and JMP instruction one at a time (with hi-res page 1 displayed each time) to see what effect each operation would have on the display. JSR \$1839? Nothing. JSR \$1831? Nothing. JSR \$8A37? Still nothing (nothing I could SEE, that is; routines such as these may not do anything to the hi-res display, but it could leave the right value in the right place). JSR \$1851? YES!! If you execute this routine, you'll find that the runes and message are displayed on the screen, awaiting the proper keypress.

Let's take a closer look at this particular section of code. We have the JSR to \$1851, then a BEQ to \$1733. Okay, at \$1733, there is a JSR to \$1845. So after the program receives a keypress from the JSR to \$1851, if the zero flag is up (if the result from whatever operation was performed = 0), then it branches to \$1733 and subsequently JSR's to \$1845. Let's see what happens if the result is NOT zero. Alright, LDA #5D, LDX #1A...JSR \$6F10 (I found that this clears the hi-res page of text - maybe preparing to print something new?)...JSR \$1737, JSR \$1730. I executed the JSR to \$1737 in \$172D, and it revealed the message you will see if you fail to align the runes: "STUDY YOUR DOCUMENTATION AND REBOOT". Now I executed \$1730, and I discovered that this little routine locks you out of the program; it just branches to itself endlessly, leaving the message on the screen and leaving you to the task of rebooting.

Since the JSR \$1851 is the heart of the code wheel protection, I decided to bypass the code in between by replacing the 20 51 18 (JSR \$1851) with 4C 33 17 (JMP \$1733) so that instead of asking for the letters and waiting for a correct response, it would simply branch to \$1845 as if the result of the JSR to \$1851 was zero. So I

edited the appropriate bytes on track \$03, sector \$0E, and when I booted my copy, no more rune check.

Up until this point, I had been playing CAB for several days, and just recently have I noticed a devious attempt at reinventing the code wheel protection at other places within the game. For example, when I once wished to go from city A to city B, I had to cross a great chasm using a tiny footbridge. Guarding the bridge was an old man, who said I had to answer his questions before I could cross. Okay, this shouldn't be any problem, right? First he asks me of my quest, so I say UNCURSE BONDS. He then asks what my favorite fruit is, so I say APPLE. Then he says WHAT DOES THIS MEAN, and right up on the screen once again appeared the old rune question. Apparently, the file containing the rune code is spread over more than just the boot side of CAB, so just as a precaution, I searched each disk side for 20 51 18 (JSR \$1851). Fortunately, this protection code exists only on the boot side and side 1 of DISK A, so I changed each accordingly to 4C 33 17 (JMP \$1733). Finally, I was rid of the accursed runes, and I could now get on with getting rid of the accursed azure bonds!

Step-by-step

1. Using your favorite disk copier, copy all 8 sides of the original CAB disks.
2. Sector edit (using Copy II Plus, Inspector, etc.), the BOOT disk:

```
Trk Sct Byte From To
$03 $0E $0E-10 20 51 18 4C 33 17
```

3. Sector edit side 1 of DISK A:

```
Trk Sct Byte From To
$02 $00 $0E-10 20 51 18 4C 33 17
```

Regain control of your destiny, and toss the code wheel. Maybe it's recyclable?

Because CAB is such an extensive game, it would be nice to be able to put it on a hard disk or maybe a 3.5" microdisk. Since it uses the RDOS operating system, you can read M.M. McFadden's article in COMPUTIST #52 on how to convert this DOS to normal ProDOS so you can move the program to a bigger storage device. Unfortunately, however, the program called TRANSFER which M.M. McFadden provided is flawed, and will not function! I must reiterate Thomas Raphael's complaint in COMPUTIST #65, as he also has experienced this problem. Like he says, the program runs and prints 'INSERT RDOS DISK AND HIT RETURN', but immediately after you press return, the program goes through its operations and prints 'DONE', without transferring the program to normal ProDOS. I wish M.M. McFadden would look closely at this problem and find a solution. To help, I have what may be a lead to this case. Notice that to execute normally, CAB executes the JSR to \$1845, which TURNS ON THE DISK DRIVE and executes the program normally. Well, when booting, this routine does just that, but occasionally when I broke into the program, and tried to execute JSR \$1845, nothing happened, I was just returned to the monitor. I think somewhere the RWTS unhooked, and it may be that in TRANSFER the proper RWTS hooks are not set, and the program ends without doing anything. Hopefully, M.M. McFadden will solve this problem before my original disks go bad.

To Ashish Morzaria: I read with interest your article in COMPUTIST #68 about defeating the code wheel in Pool of Radiance. To really get rid of the entire routine, I suggest using this method to eradicate the message and everything else. Just follow the general steps and you should be free of the runes forever.

Softkey for...

Omega

Origin Systems, Inc.

Requirements:
Apple IIe, IIc, IIgs
Super IOB v1.5
Two (2) blank, formatted, double-sided diskettes

Some readers of COMPUTIST (including myself) have been clamoring for details about a program that is being softkeyed, mostly out of curiosity, but primarily to make a decision whether or not to buy the program (after all, game players are the best playtesters). Well, the following will be a sort of softkey plus review, the softkey explained in depth for beginners and pros alike, and the review for anyone who's looking for a really excellent program, like Omega.

As is common with many programs by software companies, including Origin, the player is transported to a completely unique realm (i.e. Britannia in the Ultima series, the futuristic post-nuclear world in Autoduel). Such is the case with one of their newest releases, Omega. As a cybernetics engineer in the 24th century, you are provided employment by the Organization of Strategic Intelligence (OSI, also as in Origin Systems, Inc.), and are given the task of designing a number of self-contained, artificially intelligent robot cybertanks using the facilities at the OSI assembly plant. Much like Autoduel, another Origin product, you are given several options concerning the assembly of your tank, which are limited by your current security clearance level, and consequently your bankroll; however, as you progress through all ten clearance levels

(by testing your tank versus ones manufactured by the bigwigs at OSI, including a tank called OGRE [hint,hint]), you eventually are allotted an unlimited budget, with which you can purchase the most powerful tank with all the trimmings (i.e. a Bentley class tank with ion drive, nuclear weapons, long-range scanners, defensive shields, etc...).

Designing the most powerful tank you can with your 1000 credits at the lowest clearance level can indeed be a challenge, but don't assume that there are only one or two options for weaponry and other items. There are perhaps hundreds of different combinations you can conjure up, dependent only upon your budget, and ample information on every option is given in the extensive 240 page manual that comes with the package. There is, of course, one problem with similar simulation programs. As soon as you can get enough money to buy THE most powerful car, plane, spacecraft, or whatever, the game's pretty much over, since after that you can just blow all of your enemies sky-high.

Ah, but the CYBERTANK has one special ability - it is artificially intelligent - and GUESS where it gets its smarts! What sets this game apart from any I've seen is the fact that you can actually PROGRAM your tanks with all the info you want to sufficiently pass clearance levels!!! Using commands like MOVE FORWARD 1, DO DESTROY, and many, many others, you can create your tank's intelligence, and teach it what to do in response to some sort of stimuli. When telling your tank what to do when it encounters an obstacle, for example, you can either say MOVE LEFT 1 to avoid the barrier, or FIRE WEAPON AT OBSTRUCTION to blow it to smithereens! All of the tank's knowledge can either be programmed manually or derived from what are called 'library capsules', which are like subroutines to a computer program, and then after the tank is programmed and the chassis is complete, you may submit your design for authorization by OSI, and then your tank's programming is automatically checked for bugs, as well!

Obviously, it is difficult to summarize such an in-depth program in a paragraph or so, but the diversity in tank design combined with a variety of different programming options limited only by your imagination opens doors to an amazingly unique gaming experience. On a scale of 1 to 10, I give it a 10 for realism, 10+ for variety, and 10 for the superb documentation.

On to the in-depth softkey

To begin, I got out Disk Muncher 8.0 and attempted to make a working copy of each disk. All disks copied fine, with the exception of the boot side. I got read errors on all the odd tracks, which meant the format had been altered from normal DOS. Then, using the NIBBLE EDITOR option of Copy II Plus, I examined tracks \$03 and \$04 of the disk for any format changes. As I suspected, the address prologs for the odd tracks read D4 AA 96 rather than the normal D5 AA 96, and the address epilogs read AF Ax, where x is a randomized number from \$0-F, which changes from sector to sector. Then, as I was deciding whether to go through the hassle of altering COPYA to ignore the first address prolog and the address epilogs, I remembered a softkey way back in COMPUTIST #57 by Aaron Schoeffler for Rings of Zilfin and Roadwar 2000 by SSI. Since the protection schemes on both Omega and Rings of Zilfin/Roadwar 2000 were nearly identical, I decided to use his Super IOB controller to deprotect Omega. It worked nicely, and now all the disks are easily copyable.

It pays to keep track of older softkeys. They save you from having to reinvent the wheel! RDEXed

Step-by-step

1. Boot your disk with Super IOB on it and enter BASIC.
2. Type in the controller.

Controller

```
1000 REM OMEGA
1010 TK = 0:ST = 0:LT = 35:CD = WR
1020 T1 = TK:GOSUB 490:POKE 47405,24:
POKE 47406,96:POKE 47497,24:POKE
47498,96
1030 POKE 47445,213:IF TK / 2 < > INT (TK / 2)
THEN POKE 47445,212
1040 GOSUB 430:GOSUB 100:ST = ST + 1:IF ST
< DOS THEN 1040
1050 IF BF THEN 1080
1060 ST = 0:TK = TK + 1:JK = 212:IF TK / 2 = INT
(TK / 2) THEN JK = 213
1070 POKE 47445,JK:IF TK < LT THEN 1030
1080 GOSUB 490:TK = T1:ST = 0:GOSUB 230
1090 RESTORE
1100 POKE 47405,208:POKE 47406,19:POKE
47497,208:POKE 47498,183
1110 GOSUB 430:GOSUB 100:ST = ST + 1:IF ST
< DOS THEN 1110
1120 ST = 0:TK = TK + 1:IF BF = 0 AND TK < LT
THEN 1110
1130 IF TK < LT THEN 1020
1140 NORMAL : TEXT : HOME : PRINT "DONE"
WITH%COPY : END
```

Checksums

```
1000-$356B 1050-$E19B 1100-$A4E3
1010-$3266 1060-$B8A7 1110-$9AE2
```


1020-\$2F76 1070-\$6D24 1120-\$4176
1030-\$659E 1080-\$8BBC 1130-\$6BB7
1040-\$7598 1090-\$B829 1140-\$20B5

3. Execute CAPTURE from the COMPUTIST Starter Kit disk, and write the controller to disk with the name OMEGA.

**EXEC CAPTURE
RUN**

4. Clear memory, load up Super IOB, and install the controller.

**NEW
LOAD SUPER IOB
EXEC CON.OMEGA**

5. RUN Super IOB, follow the prompts, and let the computer take over.

That's it!

Note on AmDOS

In my article on how to put Autoduel on a 3.5" disk (#72, pg15), I used MicroSPARC's UniDOS 3.5, which is a homolog of DOS 3.3 that can access 3.5" microdisks. Recently, though, I've found a cheaper alternative to shelling out \$29.95 for this program. While flipping through a catalog I received from the Florida PC Library (a distributor of public domain and shareware programs), I discovered a program nearly identical to UniDOS called AmDOS (Amateur DOS), which can format microdisks in the DOS 3.3 format, and retain complete compatibility with it. For a mere \$3.00 plus shipping, the modification I have submitted can be performed without hassles or worries. I've recently obtained access to my uncle's IIGs with 1 meg of memory, two 5.25" drives (with write protect override switches, of course), two 3.5" drives, etc., and believe me, having Autoduel on one disk makes for a really neat game.

To get AmDOS, I'd advise first requesting one of FPCL's free catalogs because they have quite a hefty shipping charge (\$5.00), regardless of how many disks you order. It would be advisable to get more than one disk, if you order directly from them. However, seeing that AmDOS is in the PUBLIC domain, send me a disk, a disk mailer, and about \$0.45 to cover first-class postage through the RDEX-editor, and I'll see to it that you get this program at no charge. Below is the address of FPCL.

FPCL
PO Box 1070
Leesburg, FL 34749

Here are some antique A.P.T.'s I recently obtained. If you have these programs, they must be in a single-load format; in other words, deprotected and in a single file (as I demonstrated in COMPUTIST #58).

Advanced Playing Technique for...

SYZYGY

?

Give yourself unlimited lives.

BLOOD SYZYGY

CALL-151
297A:EA EA EA was CE D5 68
BSAVE SYZYGY, A\$0800, L\$7800

Advanced Playing Technique for...

Tubeway

Datamost

For unlimited lives.

BLOOD TUBEWAY

CALL-151
2083:EA EA was C6 A3
BSAVE TUBEWAY, A\$0900, L\$87F0

Advanced Playing Technique for...

Ms. Pacman

?

Give yourself 12 lives (it has to be a LITTLE challenging).

BLOOD MS.PACMAN

CALL-151
285D: A9 0C was A9 03
BSAVE MS.PACMAN, A\$17FD, L\$48F8

Icons instead of text?

To the RDEXed: In COMPUTIST #68, you asked for some ideas on how to use some graphics in the magazine. As to the "Softkey for..." and the other lines preceding softkeys, APT's, and the like, I say leave it as it lies. It distinctly shows one in the magazine where the softkeys, APT's, and other sections are. Maybe underneath them you could print a title screen/screen dump, and have next to it the name of the product being cracked/APT'd/half-keyed, the company, the company's address, and price, like you did in past issues of Hardcore Computist.

As for the lock & key, skeleton key, etc., why not use a personification? For example, invent some little smurf-like gremlin with a name like 'Hacker Jack', 'Disk Buster', or something like that, and for each softkey, maybe show him holding a flag of victory while standing over the fortress of a program's now crippled copy protection, and for APT's, maybe have him use floppy disks with little spy cameras which take pictures of the fort's defenses, and for half-keys, have him stand outside cursing his mouth off at the stubborn program? It might take somebody on the order of Rembrandt to draw artwork to fit something like this, but I think it might be worth a try if enough people put their heads together.

COMPUTIST #75

Concerning the question about what to call softkeys to programs with code wheels, passwords, etc., why not call them Code-keys? They are, after all, keys to a code which prevents users from using the program.

Also, what happened to the floppy disk with two 'bytes' on each side which were endmarks to articles in the old days?

Notes on E.D.D. IV serial number

To "THF": In COMPUTIST #69, you asked about how to circumvent the displaying of your serial number in E.D.D. IV. I've got version 4.1 of E.D.D. IV Plus, and I'm not certain if any major changes were made up till versions 4.8/4.9 came out, but I'll describe how I eliminated the serial number in my version. First, I formatted a blank DOS 3.3 disk, and transferred my deprotected file E.D.D. IV PLUS (softkey in COMPUTIST #49, pp16-18) onto the blank disk with a file copier, to isolate E.D.D.'s data from any other files. Then, using the scan text option on the Copy II Plus sector editor, I scanned for the word 'SERIAL', and soon I came upon that word with the serial number following soon after. Using the sector editor again, I replaced the serial number with all 0's, and wrote the sector back to disk. That was it. Now, if you can't find the serial number on more recent versions of E.D.D., I'd suggest you try Phil Goetz's EOR DISKSCAN (COMPUTIST #57), which allows you to scan for data that has been encrypted on disk via the EOR (Exclusive-OR) command. If the serial number is in fact untraceable with a normal sector editor, then I'm certain it has been encrypted.

Apple IIGs Virus Discovered

Perhaps only the first of its kind?

On October 3, my uncle (who owns an Apple IIGs, and also resides in sunny Florida) called me up and told me details on a virus he had found sneaking around in his computer. He was running on a disk from nibble Magazine when suddenly he was encountered with messages like 'CHECK STARTUP DEVICE' or 'UNABLE TO LOAD PRODOS', along with a title screen which gave credit to the compu-genetic 'engineer'. It called itself Lode Runner, the 'Premiere Virus' by Super Hacker Shyrkan, of the Master Cracking Service. The title itself was in English, but the rest of the message which followed was entirely in French. The hacker had also mentioned, within the block of French text, that the virus was non-destructive; but of course, as with all viruses, it was more than inconvenient. For any wary computists out there, this gremlin was found specifically on the ProDOS side of the August 1990 nibble diskette. It is possible to circumvent, but not eliminate, the virus, according to my uncle, by pressing Control-Reset immediately after the screen appears.

If anyone has any information regarding this or other viruses, please share your info with COMPUTIST.

David Goforth WA

Softkey for...

Distant Views

Scott, Foresman Reading Courseware

Distant Views is a series of 4 disks (both sides) that teach reading skills. Although the software comes with one complete backup, we all know how long that will last in a child's hands (as long as the original did, if we're lucky). Thanks to Wayne Zurow & Computist #67, I was able to back these up in about 15 minutes for a local grade school teacher.

Trk	Sct	Byte	From	To
\$00	\$0C	\$36-37	BD 8C	18 60
\$01	\$04	\$63	FF	DE
\$01	\$04	\$E1	FF	AA

The article in #67 said to scan the disk for BD 8C 01 10 FB 88. I found the start of this string on Track \$00, Sector \$0C, Byte \$36, \$44, and \$69. My first attempt (by changing ALL BD 8C's produced an unbootable disk.) ONLY the first location should be changed. Then to change the epilogs by searching for C9 FF. These were found only in one location (above). The article then mentioned searching for B0 01 and changing it to EA 18. I found this on track \$00, Sector \$0D, Byte \$83 and on Track \$02, Sector \$02, Byte \$B8. I had originally changed these (at the same time I'd changed all the BD 8C locations) but removed them. These are supposed to be tied in with the reset however, when I booted the disk all worked well. It appears that this protection is on a lot of Scott Foresman software - just the location varies slightly.

Bitkey for...

Prince of Persia

Broderbund

I used Copy II+ v9.2 (any 9.x version should work & possibly 8.x). Select Manual Bit Copy, Track \$00-\$22, Don't Keep length, and No Sync (all standard defaults). Copy both sides this way. I've only played it partway through the 2nd level so there is no guarantee that Broderbund didn't plant something further down the line because this did seem too easy. Altered address headers is

part of the protection scheme (but I find it hard to believe that's all they did). This will at least yield a playable game so if you do find where/if it crashes please let me know.

The Wasteland Warrior FL

Playing Tips for...

Wasteland

Electronic Arts

•After you put him back together, Max will 'reveal' to you the locations of Sleeper Base and Base Cochise.

•All of Max's parts can be found within the sewers under Las Vegas

•ALWAYS have at least one length of rope BEFORE deciding to use the chopper to fly to Base Cochise; otherwise, you'll discover that after losing around nine-tenths of your hit points to Wire-Guided Anti-Personnel Missiles, Titanium Crawlers, Vanadium Vultures, X-ray Projectors, and Gauss-Needle Projectors, you won't be able to enter the base! First, you need to blow a hole in the upper level, then DESCEND using the rope, so if you don't have one, you're stuck at the top FOREVER!

•In COMPUTIST #60, John E. Wanner gave an excellent APT for Wasteland. It seems, though, that he overlooked a very useful piece of info. When you enter the Temple of Blood in Needles, and decide to 'play' their game, say '30' when you reach the robot, and then you'll discover you're transported down into a location with an island surrounded by a large moat. Swim across to the island, go around the island and pick off all the snipers, and collect their gear for later sale. Then, blow the entrance to the main building, jump over the pressure plate, and waste EVERY SINGLE patrol that comes after you. I've gotten more than 19 LAW rockets, 30 Howitzer shells, and dozens of clips of 7.62 mm ammo all at once. These will come in very handy for the assault on the Citadel. By the way, if you need (or want) more goodies from here, just make a fresh copy from your original of side 2, and re-raid the arsenal!

•To David Stewart: re. how to operate the cloning machines (COMPUTIST #72). Here are the steps to follow:

1. Assuming you have access to Sleeper Base, acquire cloning tech skills in the level 1 library.

2. Go to level 2 in the room with the Chemical Synthesizer.

3. Run a diagnostic check.

4. Have the character with cloning tech (U)se cloning skills to correct the chemical imbalance.

5. Go to the far east room and take an empty glass jug.

6. Go back to the Synthesizer room.

7. Choose the Install Manual Outflow Device option, and after the message, (U)se the jug on the nozzle.

8. Choose Create Clone Fluid, and the jug will be filled with, what else, clone fluid.

9. Take the jug and go to the chamber with the clone pods.

10. Disband the member you want to clone with the jug of clone fluid, and have him/her enter a chamber.

11. Wait for 2 days or so, and you should have an exact duplicate of your character at that time. This is an OK way to replicate members of your party as a precaution in case they get wasted, but make sure you have a slot to fill in your roster if you intend to have a clone tag along.

Jerry L Kynsi WA

Softkey for...

Where in Time is Carmen Sandiego

Broderbund

Requirements:

Apple IIGs

3.5" disk copier (Copy II Plus, etc)

One 3.5" drive

One 5.25" drive

The deprotect can be done either before you put the program on a 3.5" disk or after. The protection scheme is in the "MH" file. It is on side C of the 5.25" disk.

On the 5.25" disk, the sector to fix is on track \$20, sector \$01. Change byte \$00 from \$AD to \$60 and write it back to disk. That is all. I have played the game for quite awhile and haven't found any problem. In case there are different versions, the bytes to search for are AD 30 BF. Change the AD to 60.

Installing Carmen.Time on a 3.5" disk

To put the program on a 3 1/2 disk, use the 'HARD DRIVE INSTALLATION' feature on the disk. Format a blank 3 1/2 disk with any name but, "CARMEN.TIME". Then, boot up SIDE A of the 5 1/4 and when the first graphic of Broderbund crowns starts to sparkle, press esc. You will be prompted to select the destination volume. Use the name you gave the blank disk and press return. The number of files to be copied will be displayed. You will be prompted to insert side B,

C and D as the files are copied onto the disk. A message will appear when the installation is complete.

Then, search the disk for bytes AD 30 BF and change the AD to 60. Write the block back to disk. On my disk, the block to change was \$29D, byte \$00. Rename the Volume "CARMEN.TIME".

Good luck finding Carmen.

Bob Igo PA

There were errors in the APT for Elite in Computist #70. For the 25.5 light year fuel capacity, change \$6F0E from \$46 to \$FF. I'm not sure what the LDA #SFF is supposed to do; on my version, it was LDY anyway. Also, the code for multi-galactic jumps must be started at \$6BAF, NOT \$6BAE. If the technique in issue #70 worked for you, then you must have a different version than I do.

Advanced Playing Technique for...

Thexder //e

?

Starting energy.

Trk	Sct	Byte	From	To
\$08	\$09	\$B8	64	FF
\$0D	\$05	\$C2	64	FF

Maximum energy.

Trk	Sct	Byte	From	To
\$08	\$09	\$C0	64	FF
\$0D	\$05	\$CA	64	FF

Advanced Playing Technique for...

Berzap

?

Number of lives.

Trk	Sct	Byte	From	To
\$06	\$00	\$6E	03	FF
\$04	\$0C	\$98-9A	CE 44 03	EA EA EA

Does anyone know how to edit the Data East double hires games like Bad Dudes, Heavy Barrel, Victory Road, etc? They've left me rather clueless and annoyed.

If you've got a color composite monitor like I do and are tired of playing double hires games in a greyish-white monochrome, try this:

Before booting the game, type the following:

CALL-151

C050

C057

C054

C05E

C00D:00

C05F

C05E

C05F

C05E

(place pre-written magnetic software media (okay, the disk) in the drive and type:)

C600G

That turns on double hires (C05E) and then turns it off (C05F) and on twice which changes the mode from monochrome to mixed mode to full color mode. C600G boots the disk in the drive. Why do these games not run in color normally on color composite monitors? I don't know. If you have an RGB, the monochromicity should give you no trouble. There is one good thing about the above problem; you are now free to make yourself a monochrome version of Dazzle Draw. Just search on a sector editor for any reference to SC05F and NOP it with EA's. This way, you can draw detailed monochrome pictures with no trouble, a nice option to be used in conjunction with Thunderscan or Computer Eyes or the like. Be sure to switch the COLOR option OFF or you'll just get fat monochrome when drawing with the paintbrush instead of smooth lines. If you can't figure it out, contact me through the magazine and I'll help you out.

Ⓢ Does anyone have any questions about my editing software which was on the library disk of issue #70? Any love letters or hate mail about it?

Well, unless I run out of games to edit, I'll be writing again soon.

Matthew Bancroft MA

Softkey for...

FAY:That Math Woman

Didatch

I made a copy of Fay with Locksmith Quick copy. Then I booted my copy and it did not work, it just jumped to DOS. So I decided to look for a jump to BASIC either 4C 00 E0 or 4C 03 E0 but I had no luck. When I started investigating further I discovered that the file FMWS was junk. This lead me to believe that it was encoded because I could not find the Menu words anywhere on the disk. So, I decided to decode the file. I started looking through the Hello file and I came across a jump to BCE1 when I put a 4C 59 FF in its place and jumped to the beginning of the startup file it loaded the program and the decoder.

I now examined the code at BCE1 and I found a routine that EORed the value at 6000 and seemed to decode a big portion of memory. Then, there was a jump to BA89, and at BA89 there was a jump to the code it had just decoded. I replaced the jump to the code it had with a 4C 59 FF.

Then, I jumped to BCE1 and I waited a little while and then the monitor prompt was back.

When I examined the code a 6000 it was totally different so I had a pretty good idea that this was the FMWS file that had looked like junk. So, I saved it back as FMWS.

Then I started looking through the decoded code and I found it turned on the drive and looked for some things. So in conclusion I NOPED the bytes at 671B from a jump to the routine to reset the change vector and clear memory and then jump to dos (4C D3 66) to EA EA EA. Now if I jumped to BA89 the program would have Fay move across the screen but when in the middle she would get stuck and build a duplicate of herself and have the duplicate hop across the screen. Then, when I got to the actual game Fay was bricks. So, I had half accomplished cracking it.

Then I loaded my decoded file and more closely examined it. This lead me to change my EA's and the two bytes in front of it to a load the accumulator with a 98 and a JSR to 8828. Now I had to tell the HELLO not to decode the FMWS file any more. To do this I changed 846 to a jump to BA89.

Step-by-step

1. Make a copy with a copier that ignores errors. I used locksmith quick copy.
2. Boot a normal DOS disk then insert the FAY copy.
BLOAD COPYRIGHT 1986
CALL-151
846:4C 59 FF
802G
3. Let the title screen appear and right after it appears the text screen will appear and the monitor prompt will appear. If this does not happen repeat steps 1 & 2.

BA92:4C 59 FF
BCE1G
671B:A9 98 20 28 88 change the code
A851G Now reconnect DOS
BSAVE FMWS, A\$6000, L\$3580

4. Boot a slave disk then insert the FAY copy.
BLOAD COPYRIGHT 1986
CALL-151
846:4C 05 67
BSAVE COPYRIGHT 1986, A\$802, L\$16C
- Now you are finished.

Softkey for...

FAY: That Word Hunter

Didatech

It is basically the same principle to deprotect the Word Hunter as it is to deprotect the rest of the series. Here is what I recommend you do:

1. Make a copy of the Fay disk ignoring errors.
2. Boot a 48K slave, insert the Fay disk.
BLOAD COPYRIGHT 1983
CALL-151
885:4C F2 6B
BSAVE COPYRIGHT 1983, A\$802, L\$1D1
885:4C 59 FF
802G

3. Let the title screen appear and then the monitor prompt (*).
BA92:4C 59 FF
BCE1G
8567:A9 FE 8D 2A 85 EA EA EA EA EA disable protection check
9DBFG Reconnect DOS
BSAVE FWH, A\$6002, L\$39DF
- Now You are Finished

Softkey for...

FAY: Word Rally

Didatech

I thought I had cracked this one but when I played it, it would reconnect DOS and jump to BASIC. Finally after searching memory for the code that jumped to BASIC, I found another check which would jump to BASIC. After changing some code around it and the actual jump, it seemed to function great. But if it doesn't please get in touch with me and let me know.

Step-by-step

1. Make a copy with a copier that ignores bad sectors. When you copy the Didatech software that I have mentioned in my article you should only have one unreadable sector on the whole disk.
2. Boot the original and when the prompt appears press control reset
BLOAD FWR
CALL-151
BA92:4C 59 FF
BCE1G call the decoder
86F1:A9 FE 8D B4 86 EA EA EA EA EA disable prot
7A93:8D F5 86 EA EA EA EA EA disable prot
UNLOCK FWR
BSAVE FWR, A24576, L13817

3. Now tell the hello not to use the decoder.
BLOAD DV
CALL-151
934:4C 93 78
UNLOCK DV
BSAVE DV, A\$802, L\$15C
LOCK DV
LOCK FWR
- Now you are finished!

Notes on Cross Country USA (Didatech)

I have found that if you leave a fully function-

ing deprotected copy of Cross Country USA out, it will get stolen. I figure the main reason that most people would like to deprotect 'USA is to decode the files. I have devised a method so that you can change the words throughout the game without deprotecting it.

1. Make a working backup of the original disk as described in issue #52, pg 17 by Jim Bancroft.
2. Now boot a 48K slave and insert the original Crosscountry USA disk.
UNLOCK COPYRIGHT 1985
UNLOCK P2
BLOAD COPYRIGHT 1985
3. Use the decoder to decode the P2 file and then save it back to the copy.

927:4C 59 FF
BLOAD P2
BA89:4C 59 FF patch decoder
BCE1G setup decoder
90FG decode P2
90D:EA N 90E<90D.925M dump decoder
A851G reconnect DOS

4. Insert the copy disk and save the files.

BSAVE COPYRIGHT 1985, A\$802, L\$36F
BSAVE P2, A\$4000, L\$562F
LOCK P2
LOCK COPYRIGHT 1985

This will leave you with a copy on which you can change the words throughout the game.

Cracking the SSPROT\$1 protection

I have produced an SSPROT decoder that will decode the widely used Applesoft protection system in the SSPROT\$1 file. I call it SSPROT protection because there are two files on this disk called SSPROT and you BRUN SSPROT\$1 to get the program started. This protection has been used at least for 8 years and is a pain in the rear.

SSPROT HELLO DECODER

1. To use their decoder (slightly modified) enter the following code:

CALL-151
300:A9 01 8D CF 03 A2 68 18
308:90 00 A9 08 85 68 A9 01
310:85 67 AD FF 07 85 B0 AC
318:FE 07 A9 00 85 AF 85 FF
320:A5 FF 51 AF 4D CF 03 91
328:AF 45 FF 85 FF EE CF 03
330:88 C0 FF D0 EB C6 B0 A5
338:B0 C9 07 D0 E3 AD FE 07
340:85 69 85 6B 85 6D 85 AF
348:AD FF 07 85 6A 85 6C 85
350:6E 85 B0 6C F2 03

BSAVE SSPROT.DECODE, A\$300, L\$5C
3D0G

2. Make a copy of the original disk by ignoring epilogs and all of track 3.

Note: In some SSPROT disks the VTOC on track 11 sector 0 does not point to track 11, sector 0F with its catalog link. If that is so, cataloging from NORMAL DOS gives an I/O error. Sector edit their VTOC to point to track 11, sector 0F.

3. Using the copy disk, load the encoded Apple-soft HELLO file and decode it.

BLOAD SSPROT\$A protected file
BRUN SSPROT.DECODE decoder

4. List your file to see if you've captured the Applesoft and if so reconnect DOS and save.
CALL 1002
SAVE HELLO

Now if you have another disk to do, follow the same procedure. You don't have to bother BRUNning the decoder since it is already in memory. You only need to type CALL 768, after BLOADing the next SSPROT\$A file, to activate it.

Softkey for...

French Hangman 1 & 2

?

This program was a very interesting one to crack. When I had converted it to normal DOS and run the file called MENU it would tell me:

COPYRIGHT 1983 BY GEORGE EARL
1302 S. GEN. MCMULLEN, SAN ANTONIO, TEXAS
ALL RIGHTS RESERVED — AS A COMPETENT PROGRAMMER, YOU SHOULD TRY TO RESPECT OTHER PROGRAMMERS RIGHTS

This was cute. Then I noticed an unusually long Applesoft file. I got into Integer BASIC and tried to run it but was unsuccessful because my DOS and Integer BASIC were at the wrong place. Since this program ran on 48K, Integer BASIC could not be in the upper 64K. This meant I would have to make a 32K slave. Finally after reading the article in issue #27, pg 29, I found out how to do it. Here is what I finally did:

Step-by-step

1. Convert French Hangman 1 & 2 to normal DOS 3.3 buy ignoring the epilogs on the DOS 3.2 disk. I recommend changing your DOS 3.2 RWTS to ignore epilogs and then using DEMUFFIN PLUS.
2. Copy tracks S00-02 from the DOS 3.3 System Master. Tell DOS that it is running at the 32K location by sector editing track S00, sector S0A, byte S04 from BF to 7F.
3. Copy the Integer BASIC file and LOADER.OBJO from your DOS 3.3 system master.

4. Write the hello file as follows and save it back as HELLO. Note: change line number 30 according to the FRENCH HANGMAN number.

French Hangman HELLO

```
10 TEXT : HOME
20 VTAB 13: HTAB 10: PRINT 'THE FRENCH
   HANGMAN'
30 VTAB 19: HTAB 15: PRINT 'LOADING(1)'
40 D$ = CHR$(4): REM CTRL-D
50 PRINT D$ 'BLOAD LOADER.OBJO'
60 CALL 4096: REM FAST LOAD INTEGER BASIC
70 PRINT D$ 'RUN APPLESOFT'
80 END
```

Checksums

10-\$FB33	40-\$1100	70-\$1946
20-\$C924	50-\$B271	80-\$5639
30-\$F8EA	60-\$54B7	

There is also a way that is kind of dirty in THE PREMIER ISSUE OF MICROZINE to make it run on the IIE enhanced. I removed a jump to subroutine at 805. This JSR was at SC5E in the file HCRG. But in doing this, the screen turns to garbage in the "poster option". It appears that this jump is needed in this poster file. But, I am not really interested enough to care about fixing the bug.

Groucho

PA

Wow, have I got a lot to talk about this time! I hope you'll all bear with me.

First of all, I finally got my ROM modifications accomplished. Thanks to Don Lancaster's "Absolute Reset" package and the great article by Wes Felty in Computist #34.

I have a "platinum" Apple IIe, which I purchased not very long ago. In this machine, all of the Monitor ROM is located in a single ROM chip located on the motherboard, and identified by the label "CF ROM". This chip incorporates the old CD and EF ROMs, which I believe contained the C0, C8, D0, D8, E0, E8, F0, and F8 ROMs. To force the IIe to reset into the monitor, this chip must be replaced with a 27128 EPROM. An EPROM is a chip which acts like a ROM, but unlike a ROM, can be erased (via ultraviolet light) and programmed (with an EPROM programmer). Thus, by reading our original ROM, and creating a new EPROM with a modified version of the code stored in that ROM, we can change how the Apple handles Reset, Control-Apple-Reset, etc.

The first step in the modification (for me) was to purchase Don Lancaster's Absolute Reset package for \$19.50 from Synergetics (Box 809-746 1st Street, Thatcher, AZ, 85552). This package included a disk with some programs and text files on it, and a couple of pages of printed documentation. In my opinion, the quality of the printed documentation was fair to poor, and the documentation on disk was largely accurate, but because my machine was relatively new, not 100% on target. This package mentioned that I could have an EPROM programmed by a company called E-Tech. I followed the directions in the package and wrote to E-Tech to learn that they were out of business. So I did the next best thing.

I purchased a "PROMgrammer" from Southern California Research Group (P.O. Box 593, Moorpark, CA 93020). The price was on the high side, about \$150. Hopefully you will have access to a PROMgrammer (or similar device) via a friend. If not, drop me a line. I'd be glad to program an EPROM for you. I'm hoping to recoup the cost of my PROMgrammer by helping out other readers with the same problem. Write to my address at the end of this article for more information.

After purchasing the PROMgrammer, I ordered some back issues of Computist, which detailed additional modifications I might want to make to the original ROMs. Since my machine is relatively new, many of these mods were already incorporated in the design. However, one very useful note was given in Wes Felty's article. It seems that when Don Lancaster's patch is installed, the next time you hit reset (after resetting into the monitor) you will find yourself rebooting the disk. The mods Wes suggests obliterate the Tape Load function, but since I have never used the cassette for anything, I decided the loss was acceptable.

So, after incorrectly programming my first EPROMs, I ordered an EPROM eraser (also not cheap, mine was \$40). The first thing I did was mistakenly destroy the chips by putting them in upside down (it pays to read the directions! honest!). So I ordered more chips. They are about \$4.25 each from JDR Microdevices.

Then, I ran the program on Don Lancaster's disk which makes a copy of the CD and EF ROMs to disk. The reason you need a special program to read the ROMs relates to the Apple's hardware design - some of the addresses in the ROM double as peripheral card communication points reading the addresses in this range can do things like turn on your disk drives. The "SNATCHMON" program creates 4 files on the disk. One file contains the code from SC000 to SCFFF, one with the code from SD000 to SDFFF, one with the code from SE000 to SEFFF, and another with the code from SF000 to SFFFF. Lancaster's patch resides in the SC000-SCFFF

portion, and replaces the code that re-boots the system when you press "Open-Apple-Control-Reset". With the patch installed, you press the "Open-Apple-Control-Reset" key combination, and release all but the "Open-Apple" key. Continue holding that, and the system pops into the monitor. Release it before it pops into the monitor and it will reboot, as before the modification.

On the whole, it is a really neat modification. Lancaster and Felty even made sure of one other point. If I press "Option-Control-Reset" (i.e., "Closed-Apple-Control-Reset") to do the "diagnostic" check, it comes back "System OK". In other words, even the Apple doesn't know the patch is there. And I have yet to see the program that can defeat it.

I am considering other ROM mods. If anyone knows of a neat one, please pass it along. I am also looking for a used Senior PROM, CIA files, or Bag of Tricks.

Playing Tip for...

Wasteland

?

Now, onward to another topic. Electronic Arts' incredibly complex "Wasteland".

Here are a few tips to help you solve some puzzles:

Early in the Game: If you need cash quickly, develop a psychotic, detached attitude. Create a new player you want to keep, and three you don't, at the Ranger Station. Make the three you don't want trade their guns to the one you want to keep. When that player's inventory is full of guns, create a second player you intend to keep and two you don't. Do the same thing again. Trade the guns of the unwanted players to the player you want to keep until he has no more room. Create a third, etc. Eventually you'll have three loaded down players and one empty one. Walk to the nearest village and sell all the guns and buy better weapons (like M19 Rifles, etc.) and armor. Now you're actually ready for some battle. I've found that, in general, the most successful characters are those with the broadest range of skills.

Later on: As you acquire newer and better weapons, make sure you use those promotion points (you did Radio, didn't you?) to acquire the skills to fire them at your local library! Using Assault Rifles without the skill will limit your ability to hit - severely! Missiles and Rockets require AT Weapon skill, Uzis require SMG skill, M19s require Rifle skills, etc.

Nomad's Camp: Tell the bodyguard at the leftmost tent "CATERPILLAR". He'll think you solved another puzzle somewhere in the game. Watch out for the middle tent.

Agricultural Station: This is a good problem solving exercise for "green" players. Go into the Ag Station and kill Harry the Bunny Master for them. They'll offer you a trip into the root cellar. Make sure you use your perception skill on everything. Many goodies are tucked away there.

Romcards: Don't throw them away. They're rare and you might see a use for them someday. SERVO MOTORS are the same kind of deal.

Darwin Base: Opens with SecPass 7. You get this from the Sleeper Base. You get to see the sleeper base when you make use of the ROM-CARDS and SERVO MOTORS. Where? That's your problem.

Conveyor Belt: Control unit doesn't respond well to a heavy hand.

APT: If you manage to "kick some butt" and acquire some really neat loot, some neat loot like Power Armor or a NATO Assault Rifle, that there isn't enough to go around, DON'T PICK IT UP! Instead, save the game. Make a copy of the disk that was in the drive at the time you found the neat goodies. Reboot and collect the goodies. Save the game again. Reboot and collect the same goodies again. You can do this as many times as needed. Thus, a single assault rifle could belong to everyone in your party.

Sleeper Base: The party splitting feature and the power controller will let you get past some storms brewing elsewhere on the base's level 3. An android will do even better! To fix helicopter, you need a ROMCARD. To fix the power regulator, you'll need a power converter, which the base commander knows about it. Don't drop secpasses. Turning power off and on can prove useful, and certain indestructible shields are no big thing.

Broken Toasters: Fix them with the right skill and the workbench in the Citadel. You'll get some additional "junk" items that way.

Clone Technology: This skill actually has a purpose in the game. Need a new player? Clone him. In one of the bases is a cloning machine. Use the chemicals and your skill hidden in the hotel to adjust the fluid levels. Catch the fluid in a jug and go back to the clone machine. Put the fluid and a disband player in the machine and eventually a clone will come out. I haven't done anything with one yet, but I assume he will be an NPC with all the skills/qualities of the original character. Drop me a line and let me know what you find out about cloning.

The Guardian Citadel: You need to be well-armed for this one. My expert younger brother recommends at least an Armor Class of 10, Assault Rifles, Explosives, and Rockets. There is a chink in the Citadel's armor. Walk close to the "barbed wire" walls to find a spot not as tough as the rest. Blow it to bits. Then you're taking the

back way in and surprising the heck out of the Brothers and Sisters. And don't forget, you can "nickel and dime" your way into the Citadel. That is, drop a Brother or two, go out and build up strength, drop a few more, go out, etc. Eventually the base is yours and no one had to die for you to get it. You could even go and stock up on goodies at the weapons shops.

The Jailer's proton axe is great for opening doors here - but nowhere else. Certain important passwords are hidden throughout.

Tables: Things written on them can often tell you secrets and answers to questions you never dreamed possible. To see what I mean, visit the men's room at the bar. Talk to the guy there. Ask him about Ugly, and every other thing he mentions, as well as every person. What you learn could surprise you, especially what he knows about other patrons of the bar.

Finster: Kind of a Benedict Arnold. Don't let his face out of your sight. There are times when it (the face) comes in handy. You'll need the Cyborg Tech skill at that time. (And you'll wish you had a Vorpall sword...)

Safe: To open a certain safe tucked away near the barn, you'll need to bump off Huey, Dewey, and Louie. They've got some jewelry that holds the "key" to opening the safe.

Highpool: They have a pump problem that can be fixed with some merchandise from the Nomad's general store. While you can perform a rescue in the cave the little boy tells you about, you'll alienate him in the process.

Cochise Base: You'll want to be VERY, VERY, heavily armed to bust in here. Meson cannons and Ion Beamers are recommended - nothing less than a laser rifle should even be carried in (not even a laser carbine). Your power armor will barely work. Ask the computer terminal about FINSTER and about the MISSION. LAW rocket gets you past the first gate, and SECPASS gets you past the second. To get to the lower levels of the base, go up the escalator and go left or right and will come to a wall - part of which is hollow and can be opened. You'll need rockets to open doors - little else will work. RUN, and get an ADMIN robot when you get the chance. Smash up the security monitors and robot controls, unless someone reports a better idea in Computist. Various keys come into play on the third level. You'll want to bring a plasma coupler with you too. Make sure you have some Rad Suits. Never play with Security Monitor Intervals unless you like firefights.

Max: Needs some servo motors, a fusion cell, romcards, an android head, and a power converter. Max awaits under the Mushroom Church. Don't touch the reactor unless you enjoy the heat.

That's all I have for Wasteland. If you have anything else, or would like some more specific directions on how to get around any of the puzzles above, drop me a line. I'd be glad to walk you through them - by mail, or phone if necessary.

While what I read says that changing track 0F, sector 04, bytes 2D and 2E from F0 E3 to EA EA will give you Napalm instead of bullets, and it appears to be correct, it will also cause the game to crash unpredictably. Let me know anything you discover on this one.

Well, I think that about covers it. For more information on Wasteland, Neuromancer, or ROM mods, drop me a line. (Or watch for my next article in Computist.) My address is:

P.O. Box 200-X
Sewickley, PA 15143-0600

I answer any and all letters sent to me, even if I can't answer all the questions in them. Feel free to write!

Jim Ross NH

Softkey for...

Dungeon Master

FTL

Requirements:

Apple IIgs
Copy II+ v9.0
Blank 3.5" Disk

I submitted a previous article on a bitkey for Dungeon Master. I had played several hours into the game and saved several times before I submitted the article. Subsequently, further in the game I went down a set of stairs, the disk drive came on and my copy crashed within a few more minutes of playing time. I then started looking for this additional check. The check is well hidden. If you go down the stairs and the disk drive read is made it will not do it again if you go back up and then down the stairs. It seemed to take about 20 minutes of playing before this stair check would re-arm itself. I'm not sure if this re-arming is based on time or number of moves in the game.

After many hours of searching, I did find this subroutine and the branch statement right after it. NOPping out this branch statement killed the stair disk check and I have played another 20 hours in the game with no further problems with the game. It turns out the stair check calls the same SMARTPORT routine to read block \$17 that I discussed in my previous article. Armed with this info and some guesswork, I managed to make a softkeyed disk.

The disk first reads in block \$17 using GS/OS DREAD and checks for a \$27(I/O ERROR) returned in the accumulator. The interesting thing about DREAD is that it will read the data and put it in memory even if there is an I/O ERROR. Later block \$17 is read again using the SMARTPORT call of JSR C50D. The stair check in the game would read block \$17 again using a SMARTPORT call and the verify that the data was different (because of extra zero bits on data in block \$17). If it wasn't, it changed some key memory locations causing the game to lock up or crash. (This code is in bank \$01.)

```
0FE8:22 71 29 01 JSL 012971 Has enough time or
                          moves passed to arm?
                          YES-clear carry, NO-set
                          carry
```

```
0FEE:82 8A 00 BRL 107B(+008A) bypass stair chk
0FF1:AE 29 2F LDX 2F29 start of stair chk
```

To make a softkeyed disk three things are necessary; 1) when the GS/OS DREAD is made push \$27 in the accumulator so the program thinks block \$17 is a bad block. 2) disable the stair check by NOPping out the branch statement which causes a jump to the SMARTPORT read routine 3) reverse the clear carry with the set carry in the disk save routine so you can save games.

Step-by-step

- Format a blank 3.5 disk using Copy II+ v9.0. Enter "Y" when it asks use high speed interleave and name the volume anything (I used "X").
- Using copy disk (not copy disk with format) copy the original to your copy (ignore read error on block \$17). Copy II+ will correct the checksum and write a good block \$17.
- Using Copy II+ sector editor make the following sector edits: (I have included enough bytes before and after the edits so you should be able to find them it not in the same location)

Blk	Byte	From	To
\$DC	\$83	00	27

The hex string to search for is: 68 8F 34 08 00 22 A8 00 E1 00 00 00 00 00 B0 03 A9 00 00 8F 02 00 02 AF 51 08 00 48 8B AF 50. Change the A9 00 00 to A9 27 00.

Blk	Byte	From	To
SFE	\$6F-70	90 03	EA EA

The hex string to search for is: 38 ED 50 02 48 8A ED 52 02 AA 68 22 71 21 00 90 03 82 8A 00 AE 50 00 AD 4E 00 18 69 01 00 48 8A. Change 90 03 to EA EA.

Blk	Byte	From	To
\$104	\$110	18	38
	\$114	38	18

The hex string to search for is: 25 29 1B 1B F0 01 E8 88 88 10 E9 E0 00 00 F0 04 18 AB 2B 6B 38 AB 2B 6B 78 C2 30 8D C2 14 E2 20. Change 18 AB 2B 6B 38 to 38 AB 2B 6B 18. This swaps 18 (CLC) with 38 (SEC).

Your copy should now work. However, if you made saves with the bitcopy in my previous article, your save disk is polluted and you must start the game over. Sorry about that!

Note: I have tried this copy technique several times and have always made a working backup. I have not yet solved Dungeon Master so I'm not sure there are not more disk checks, but so far, since I killed the stair check, my softkeyed disk has played flawlessly.

Softkey for...

Where in Time is Carmen Sandiego?

Broderbund

Requirements:

Apple IIgs
Copy II+
Original 3.5 disk
Blank 3.5 disk

Think this disk is not copy protected? Think again! After you finally solve one of their very tough cases, you are asked to insert the original 3.5" disk before it will update your detective record. Sneaky! Anyway, the check is a JSR 9600 followed by a BCC (branch on carry clear). A copy returns a carry set from this subroutine while the original returns a carry clear. I NOPped out the subroutine and changed the BCC to BRA and it worked.

```
00719C:20 00 96 JSR 9600
00719F:90 25 BCC 71C6(+25)
```

Step-by-step

- Copy the disk normally (I used COPY II+ copy disk with format).
- Sector edit as follows:

Blk	Byte	From	To
\$32B	\$19C	20 00 96	EA EA EA
\$32B	\$19F	90	80

Softkey for...

Gnarly Golf

Fanfare

Requirements:

Apple IIgs
Copy II+
Original 3.5 disks
2 blank 3.5 disks

The original program disk has a bad block on the last block \$63F. Inspection using Copy II+ Nibble Editor revealed data on this block with the data prologue changed from D5 AA AD to AD AA D5. Using Sector Edit search, I found on block \$15D where the data prologue is changed in ProDOS (just before a READ BLOCK of \$63F).

Incidentally, block \$63F contains the graphic data for the Mouse cross that appears to change ball color at the slot machine and is used for Mouse aiming in the game.

Step-by-step

- Copy both the program and course disks normally (ignore read error on program disk).
- Manual Bit Copy track \$4F using COPY II+ with parameter \$0B changed to \$02.
 - Select Manual Bit Copy.
 - Select beginning track \$4F.
 - Select ending track \$4F.
 - Select synchronize tracks? N.
 - Select keep track length? N.
 - Press "/" key.
 - What parameter? Enter \$0B.
 - What value? Enter \$02.
 - Press RETURN to begin copy.

- When side 1 is read, press "Q" and side 1 will write.
- When side 2 is read, press "C" for CHANGE NIBBLES.

- Change the data prologue on block \$63F from AD AA D5 to D5 AA AD.
- Press "Q" and side 2 will write.

- Use the COPY II+ SECTOR EDITOR to make the following changes to the program disk only:

Blk	Byte	From	To
\$15D	\$93	9F 00 00 E1	EA EA EA EA
\$15D	\$9D	9F 02 00 E1	EA EA EA EA

The program disk is now copyable normally. The course disk always was. Enjoy!

Steve Kalynuik Canada

I am not sure if a softkey has been submitted for "Oil Barons" by Epyx 1983 as I have not found it in back issues, therefore here is my softkey:

Softkey for...

Oil Barons

Epyx

- Format 2 diskettes using Copy II Plus (I used v8.3).
- Boot your altered disk from Computist #63, pg 17.
- Run a program like Blackstar or FID.
- Copy all programs on side 1 to diskette 1.

5. Copy all programs on side 2 to diskette 2.

6. Boot Copy II Plus and copy standard DOS to side 1.

7. Change boot program on side 1 to "Oil Barons by Tom Glass".

That's it! Now you have a completely deprotected version. It works perfectly as I have completed several versions in the game and at various lengths. As a bonus you can even list and change the program as you like.

To Paul R. Wilson (from Computist #69) for finishing Aztec: When you have a trash pile to search and it lies directly near or under a stairwell, do not search it, as you will be trapped. There might be lit dynamite in the pile, which would destroy the stairs. Also, if unavoidable, and there is lit dynamite on the screen, leave screen as it will follow you to the next screen in the same spot and hopefully not near a stairwell. Remember: Do not stand on the same level as lit dynamite, climb or descend stairs on same screen so not to be affected by the blast.

As to how to light dynamite, you should push 'G' to crawl and when you notice your arm is stretched out push 'P'. Oh yes, remember you must have sticks of dynamite to place it. The best score to date for me is 612512 on level 3.

This works on my disk which is cracked as I keep my originals hidden from sight.

Add the following to the most wanted list: Legacy of the Ancients by Electronic Arts, as my original disk, which is write protected, permanently crashed and forces a constant reboot now.

Seven Cities of Gold by Electronic Arts, as there seem to be so many different versions of the game on the market.

Your new tabloid format is great for typing in programs, please keep using this format as you also seem to get more for your money.

☺ Please I need copies of:

1. Newer version of ProDOS user's disk than ProDOS 1.0 based utilities Apple Computer 1983 for Apple IIe.

2. Newer version of Disk Muncher as my copy is version 1.1.

3. COPYA from the DOS System Master.

4. "Wizards Workbench II" or "Wizi-Scout" or "Wizi-Doc" by Magicsoft, as Magicsoft no longer exists. These are Wizardry scenario aides and creators.

5. A copy of the program "HRCG" which is an 'R' file that is 12 sectors long from the DOS Tool Kit disk by Apple Computer.

☺ Does anyone have a master index of past issues showing not just title and where to find it but also an index that would include by company, as a lot of companies use repeated schemes of copy protection.

☺ Does anyone out there have a program to print "Seven Cities of Gold" maps to the printer, the original and ones you make yourself.

My address is:

Steve Kalynuik
936 Southdale Road East
London, Ontario
Canada
N6E 1B2

JAng OH

To those of you who are in the dark about some of the more technical articles in Computist (or any other computer magazine, for that matter): learn. There are two magazines (besides Computist) that will help you:

Warning: the first magazine is for intermediate to advanced users. If you just got your Apple out of the box and you don't know a bit from a byte, then this magazine is not for you and you need a little more experience. There are lots of books a beginner can get his hands on, just ask someone for help. But, if you're like me and want to learn by digging into your Apple, both of these magazines are great.

Another Warning: I'm not saying that a beginner is automatically too stupid to understand things — on the contrary: I think the best way to learn is to dive right in on your own. I just don't want people burning crosses on my lawn because I told them to subscribe to a \$30 magazine that they didn't understand or need. However, if you're a beginner and you think you might like either of them, go for it!

The first magazine is called "8/16". As the name implies, 8/16 is designed for both 8 bit II's or 16 bit IIGS's. It is programming-intensive and covers areas like Applesoft Basic, ZBasic, Orca, APW and Merlin 8/16 machine language. There are columns like "OrcaStrations", "The Merlin Maniac", and "BASICally Applesoft". Before I got a IIGS, I thought I was Mr. 6502 with my IIe. Then, upon the recent arrival of my IIGS several months ago, I experienced total shock. I felt like I was four years behind everybody else — a new processor, desktop programming, GS/OS. I thought I'd never be able to catch up. 8/16 changed that. In just three issues I have learned oodles about IIGS animation from an ongoing tutorial on the subject. Other recent articles include IIGS desktop programming, cursor control, and joystick hardware modifications. Don't think it's just for the IIGS; there's a lot of II stuff in there also.

Playing Tip for...

Neuromancer

?

Bank Gemeinschaft: open an account
Avoid Straylight Villa at Freeside.
Don't volunteer for experiments, costs \$ in the long run.

Might as well give Armitage your BAMA ID.
Crazy Edo wants one of the hotel's "wares".
Shin's got your (puny) comlink.

Go all out for the best Cyberdeck there is...you need it!

Cyber Deckware can go bad, always have a BACKUP!!

I still haven't solved this one, either. Let me know if you're working on it too. We can compare notes.

Advanced Playing Technique for...

Rescue Raiders

Sir Tech

For those of you who hate having only three lives, you might like to increase the number of lives available to you. Pull out my friend Bob Igo's Editor Creator II and create an APT program which does the following sector edit for you:

Trk	Scr	Byte	From	To
0C	0A	D6	04	FF

The "to" value should be the number of lives you want to have. Normally you'll have four, but you can have as many as you want. Unfortunately, there can be no "unlimited" lives, since when you change the "right" code you find that you only have ONE life... not too cool.

For those of you who have missed the other edits, I'll re-print them here.

Unlimited Bullets:

Trk	Scr	Byte	From	To
\$0F	\$04	\$26-28	DE F6 60	EA EA EA

Unlimited Bombs:

Trk	Scr	Byte	From	To
\$0F	\$04	\$9C-9E	DE F4 60	EA EA EA

Unlimited Missiles:

Trk	Scr	Byte	From	To
\$0F	\$06	\$37-39	DE 02 61	EA EA EA

I give my full support to 8/16 (the people who publish it are really nice) and I hope you do, too:

8/16
c/o Ariel Publishing, Inc.
P.O. Box 398
Paternos, WA 98846
(\$29.95 per year, also available on disk)

The second magazine is A2-Central, a polished magazine in the Beagle Bros style designed with something for everyone: beginner, intermediate, or advanced. The subtitle on every issue of A2-Central is "A journal and exchange of Apple II discoveries" — something every user of an Apple should be exposed to. If you don't already subscribe, I highly recommend it:

A2-Central
P.O. Box 11250
Overland Park, Kansas 66207
(\$28 per year, also available on disk)

Tom Weishaar, A2's publisher, has this motto: "The more you learn, the more you understand. And the more you understand, the more you understand." These words are good advice. A2-Central is also a great source of books and peripherals.

I'd like to digress on two points for a moment. One, if you DO subscribe to A2-Central, check out the latest issue on page 6.40b-c about Broderbund's copy protection policy. It states that Broderbund is "currently re-evaluating our policies regarding copy protection... times are changing and so are our customers... we have recently updated [programs] to be hard disk compatible." The letter also says that the protection of Broderbund's new entertainment and education software will not be "on-disk" and will require the customer to "provide some information that can only be obtained from the program's reference material or documentation."

This means we have won.

Can you imagine an Apple II software market producing great games and application software with no copy protection? I can. And it seems as if dreams are becoming realities. Software companies are finally realizing (I'm sure that SOMEBODY at Broderbund subscribes to Computist) that copy protection is stupid, stupid, stupid. Any protection code on disk can be changed! There's one more step in the process, though. Once we deprotectionists (pronounced "HACKERS") are able to demonstrate that we can circumvent "manual-check" protection, too, software companies will realize that ALL protection is dumb.

The second point concerns Apple II manuals in general. The normal price of all of the IIGS manuals combined would be over \$150. This state of affairs is ridiculous. When I opened the box of my IIGS, I saw some manuals that just about made me throw up. Lores graphics demos? Come on! The so called "Technical Introduction to the IIGS" should have been in its place. It used to be in the olden days that you got the technical stuff right in the box with your computer. Please, Apple, give those dinky manuals to someone else and stop making it difficult for me to learn how to program my machine!

I realize, however, there IS a place for introductory manuals. I WANT beginners to learn and share the fun of computers. I won't shun you or tell you to go home. We're all willing to help each other; that's what this magazine stands for. I'm certainly not going to pretend that I'm God and know everything like some IBM people I know.

But back to our story....

Computist, A2-Central, and 8/16 will teach you more about your computer than you ever imagined. I find each one to be a great asset. Another good source of info is, appropriately enough, back issues of Softalk. For those of you who are new to Appledom, Softalk was one of the first major Apple magazines back in the early eighties. It's hard to find back issues because the publishers went bankrupt. If you happen to have your old Softalk issues, I have found an awesome Appleworks database with an entry for every article ever published for only \$8.00 from:

Kula Software
2118 Kula Street
Honolulu, Hawaii 96817
(808) 595-8131

The database comes on a double-sided 5.25" disk in ADB format. Kula also has databases for most other computer magazines like A+, Call-A.P.P.L.E., Nibble, Softside, A2-Central, and many more that I hadn't even heard of. Also listed in their catalog are tons of public domain programs and books. Great stuff!

Now I'm going to shift gears and make a bold statement: I have decided not to give away any more software (notice I didn't say "krak" or "backup").

I know all of you hard-core krakers out there are probable rolling your eyes and sighing right now. Don't get me wrong: there is absolutely nothing wrong with hacking or kraking. Exploring someone else's program is your right and your duty. There is also nothing wrong in removing copy protection from a disk in order to accomplish this (or for merely backing-up your program). But there is the final, crucial step in this process that is messing-up the system: giving it away.

The existence of a computer is dependent upon many things, the most important of which is software. I like the idea of supporting compa-

nies like Taito and Broderbund who develop great games for the IIGS (even though they DO use protection). Software prices are lower now than they have ever been before (don't laugh!). In the beginning, most software was around \$39.95, \$49.95, etc. Now, if you look down the columns of software advertiser's ads, you see things like \$24, \$24, and \$32.

It used to be that software companies would say, "O.K., guys. You really shouldn't copy our software." And they would continue producing games in the hope that it would stop. Now the attitude is, "All right, fine. We'll stop making II software and convert everything for the IBM."

One such company is Sierra. I personally think that Sierra puts out some great stuff. It's ironic that they are abandoning their Apple line of products (see April 1990 Nibble, page 2a). Sierra actually got me started with computers. I can still remember the day I came home from grade school in 1982 and my father was hooking our new Apple II+ to our television. The first thing I ever saw on a computer screen was ten crudely drawn dead people from Ken and Roberta William's "Mystery House". I've been twisted and demented enough to like computers ever since.

So let's ban together and stop this! If you REALLY think about it, the people who will ultimately determine the future of the Apple II are ourselves. We, the 6000 people who care, will have to decide whether we support software or we want to kill our computers. If we support software companies, software will continue. If we blatantly distribute stuff like mad, the demise of the Apple II will become a self-fulfilling prophecy.

I would personally like to see 6000 letters dumped on Ken William's desk. Write a letter right now to Ken Williams at:

Sierra On-Line
P.O. Box 485
Coarsegold, CA 93614

and tell him how you feel about the Apple II (I think the Nibble article got the address wrong). Money talks. I think he'll listen to \$24 * 6000.

One thing I DO encourage is the support of shareware. A great source of some shareware games for the IIGS is:

Pangea Software
709 West 21st #203
Austin, TX 78705
(512) 474-6616 (answering machine)

The same people at Pangea made Xenocide by Micro Revelations. Pangea has several items, but the two IIGS games I personally have are Orbizone and Senseless Violence (see May 1990 in Cider/A+, page 32c). Both have excellent sound and graphics. Orbizone is a well done version of Asteroids, and Senseless Violence is a hilarious spoof of Frogger. Be warned, however, that Senseless Violence is not for people who are easily offended or for members of the Moral Majority. Both are only \$5 each, but you have to send them your own blank 3.5" disk and return postage because they are a small-time operation and don't have a software or tax "license". I know I make them sound like a "Miracle Elixer/Snake Oil" operation that folds up in a tent and rides on the wind, but they really are honest. I even sent them cash and they came through! What better way to support software than by supporting shareware!

☺ Don Lancaster, where are you? Please write in!

Now if you'll excuse me, I have to give my valedictory address at my high school graduation. It's a possibility that I got suspended for a senior prank, but I'll have to go and see. I'm not going to sign this article with some stupid pseudonym like "Oxy Moron" or "O. Nan Ism". Just sign me — JAng

Augie Genz WI

Softkey for...

Where in Europe is Carmen Sandiego
Where in USA is Carmen Sandiego

Broderbund

Requirements:

Super IOB 1.5
FAST.CON
Some disks

This Softkey is crude because it is my first one. It may have some things that are not required, but it worked for me. This is Broderbund's ProDOS version of USA & Europe. I stupidly said to a teacher that I would do it, not knowing what I got myself into. This was over a year ago when I first subscribed to Computist. But with 4 issues left I finally got it. So hang in there and keep trying. When I would boot a bit copy it would hang, so I tried to catalog hoping to copy the file off on to a disk that would not hang on track \$00. For where in the USA, the protection is only on side A. Sides B & C are normal. The same is true for Europe. Side A is protected and side B is normal.

Step-by-step

1. Put SuperIOB into memory.
LOAD SUPERIOB
EXEC FAST.CON
POKE 47498,0

POKE 47503,14
POKE 47406,0
POKE 47411,106
POKE 47426,24
RUN

2. Copy side A.
 3. Format a 5.25" disk with ProDOS.
 4. Copy ProDOS from your System Disk to the formatted disk.
 5. Copy all the files except ProDOS from the copy just made to the disk with the ProDOS disk.
 6. Copy sides B & C (there is no side C for Europe) with any disk copier.
- Have fun!

Michael Paterno CT

Softkey for...

Spelling Press
MECC

1. Use COPYA to copy the disk.

RUN COPYA
POKE 47397,24
POKE 47398,96
70

2. Sector edit the copy.

Trk	Sct	Byte	From	To
11	08	C2	90 03 4C XX XX	6018 EA EA EA EA
15	03	97	97	DE
15	0B	97	97	DE

4. Format a blank disk in ProDOS and copy ProDOS from another disk.

5. Copy the file Mecc.System to the formatted disk. Copy all the rest of the files except "ProDOS and Z" to the new disk, and Voila you have it.

Softkey for...

Mercury
MECC

A nice word processor from MECC with graphic importing capability.

1. Copy Mercury with Copy II or some other copy program that doesn't care about the protection.

2. Make the following edits:

Blk	Byte	From	To
00B4	180	18 60 38 60	18 60 18 60

3. Run the new disk to make it write back to the disk. That's it.

I thank the gentleman in Computist #67 for the help in cracking Spelling.Press. Although it was not exactly the same, he gave enough information for me to complete the job.

CPR Agent Canada

Well, here it is — my first letter and my first contribution to Computist. Before I start explaining my softkeys, I would like to extend a very sincere word of appreciation to the grand old masters of this magazine/tabloid (Edward Teach, Brian Troha, Bill Jetzer, Bob Igo, Jack Nissel, Gerald Myers, and all the others who gave so liberally of their time and talents for the benefit of those of us who so often "just didn't get it!"). Eighteen months ago I booted my first computer. Now, thanks to this publication and those who took the time to contribute, I am beginning to understand something about programming and the operation of computers in general. I'm extremely appreciative and am determined to "pass it on" by doing my part to help others. (Two of my colleagues have sent in orders for a subscription after I showed them the goldmine of information.)

Please continue to send in softkeys with thorough explanations. Those who don't need or want details can always skip over them. However, those long explanations are responsible for my being able to contribute now. Believe me when I say that they are important to those of us who have a desire to really understand what is going on.

Please keep this publication alive. It so outranks the competition that there is no competition!

And finally, thank you Charles Haight and Karen Fitzpatrick for the COMPUTIST. It has literally breathed life into my ability to use this incredible machine.

Softkey for...

Math Masters: Addition & Subtraction
DLM

Requirements:

Fast copier (I used COPY DISK on COPY II PLUS)
Sector editor

The disk is ProDOS and catalogs easily using Copy II-Plus. I noticed that the system file that normally follows immediately after the ProDOS file was the last file in the catalog. Suspicion #1! I went straight to a fast copy of the disk which copied without so much as a read error. Suspicion #2! I booted the copy. The ProDOS screen came up and then I was dropped handily into the monitor. I was now almost certain that the trouble was in the system file. I checked the start of the

file by using "View Files" on the Copy II Plus main menu. I jotted down the A9 00 8D F4 03 A2 that began the file and then searched the disk for it. The file started at Track \$20 Sector \$00.

I began a quick disassembly and noticed that about half way through the sector there was a substantial break in the program. Suspicion #3! I went back to the beginning of the sector and began perusing with a little more care. This time it looked and smelled like a signature check. I jotted down all the JSR's and JMP's as a matter of habit and thought I would try my luck with these first.

The first JSR (20 00 21) that INOPed changed nothing. So I restored it to its proper place and went to the first JMP (which was two bytes later after a BCC - 90 03). This turned out to be the jackpot! Replacing the 6C F2 03 with EA EA EA completely disabled the check and the program carried on as though the check never existed - which is exactly the way it ought to be.

I checked the Teacher Disk (Disk 2 in the package) and found it to be unprotected and entirely copyable. Now, go ahead and make that back-up and turn those school kids loose on another very excellent program from DLM!

Step-by-step

1. Fast copy the disk.
2. Sector edit.

Trk	Sct	Byte	From	To
\$20	\$00	2C-2E	6C F2 03	EA EA EA

Or search for 20 00 21 90 03 6C F2 03 20 00 BF.

Softkey for...

Cross Country Canada
Didatech

Requirements:

Fast copier (I used COPY DISK on COPY II PLUS)
Sector editor

It seemed to be a fairly normal DOS disk — it catalogued, displayed the Applesoft BASIC prompt "]" when booting, etc. So I tried fast copying the disk. There was an error on Track \$02. I then checked Track \$02 with a sector editor and found only two sectors in use, sectors \$00 and \$07. Sector \$07 looked out of place — it looked like part of the DOS routine. Sure enough there was an exact duplicate at track \$01, sector \$07! I took a chance and blanked out the "extra" on track \$02. I then booted the disk. No deal! It died to BASIC in the middle of the first graphic — THE MIDDLE OF THE FIRST GRAPHIC!!!

I went back to the catalogue. There seemed to be three potentially troublesome files — a file called "NEWS", another called "DEMO" and a third called "COPYRIGHT 1986". My reasoning now was that I would simply delete these files one at a time, boot the disk, and check to see if we lost a file with a graphic in it somewhere. I started with "NEWS" because it was the only BASIC file and lots of programs start that way. But not this time. I "undeleted" it again and went to the "DEMO" file. Same deal. So I then went to the "COPYRIGHT 1986" file. I noticed in the process that it was five sectors long! Pretty long copyright notice! I deleted it and booted the disk. BINGO! Up came the "FILE NOT FOUND" message. Next I went to the disk map and found that the copyright file was on track \$13 living in sectors \$0F-0B. I then disassembled sector \$0E (sector \$0F simply pointed to \$0E). Sector \$0E was filled with a lot of "question marks" (I hate those!) with the odd CMP. Then I noticed a JMP to \$8A70 of all places! I took a chance and EAed the jump. When I booted the disk, up came the graphic, the Canadian flag started waving, and there in the corner was the copyright notice!

Step-by-step

1. Fast copy the disk.
2. Sector edit.

Trk	Sct	Byte	From	To
\$13	\$0E	\$43-45	6C 70 8A	EA EA EA

Or search for 8D 5E 46 6C 70 8A 30 8A 76.

Softkey for...

Mark Manager v6.6
B.B. Software

Requirements:

A slave disk with HELLO deleted
DEMUFFIN PLUS

1. Boot the Mark Manager Program disk.
2. When the disk drive stops and the main menu is displayed, type "Q" at the prompt. (This tells the program that you wish to "Quit".)
3. Wait for about 2 full minutes until the BASIC prompt (J) and a cursor appears on the screen.
4. Type "FP" to clear all the "flags" in memory. FP
5. Get into the monitor and move the RWTS to a safe place.
CALL -151
6000<B800.BFFFFM
6. Insert the slave disk (with no HELLO) and boot it.
C600G *for slot 6 disk*
7. Load but DO NOT run DeMuffin Plus.
BLOAD DEMUFFIN PLUS

8. Go back into the monitor and move the Mark Manager RWTS to where DeMuffin Plus can find and use it.

CALL -151
B800<6000.67FFM

9. Alter DOS so that it can read the disk.

B925:18 60
B988:18 60
BE48:18

10. Start DeMuffin Plus and choose "Convert Files".

11. When asked for the filename, type the wildcard equals sign "=".

12. When asked if you want to be prompted, answer "N".

13. Copy all the files from the Mark Manager disk to your slave disk.

14. Load each of the files excluding the "SN" file and delete each "CALL 47721" and "CALL 47741". Then SAVE the file back to disk. If the CALL falls within a program line, simply re-type the line and leave the CALL out. Here is some extra help:

File MH4 delete lines 91 and 93
re-type line 10165
File MF4 delete line 100
re-type line 51015
File MM4 delete line 117
re-type line 52035
File MR4 delete line 114
re-type line 52010
File MB4 delete line 100
re-type line 52010

Don't forget to save each of the above files back to disk after the changes.

15. Use Copy II Plus or a similar utility to change the boot file to MH4.

You now have a completely COPYA-able and totally functional grading program!

Extra Help

1. Speed the program up by adding a fast DOS.
2. Once you have learned the program, speed it up even more by deleting lines 20010 to 31020 in file MH4. All of the files and procedures of the program must be accessed through the MH4 file. This file also contains the tutorial for the program - in other words, miles of text! By deleting the above lines, this file is reduced to about one third its original length, which calculates out to a much faster program.
3. The "SN" file is the "registration" text file. When you purchase the program it is registered to the purchaser. Each time you print reports, this registration gets printed at the top of the page. Now we can change this text file to print whatever we want at the top of the page!
4. Since the entire program is written in Apple-soft BASIC, modifications are easy and exciting! Try rewriting the info that pops up with the Main Menu. There are some interesting possibilities here!

Oh, by the way, don't forget to use the Backup module. There is nothing worse than having all your marks go down the tubes because you accidentally set your disk too close to some electro-magnetic source! Nothing is harder to explain than "I've lost my Mark Book"!

Softkey for...

Spelling Mastery

DLM

Requirements:

Fast copier (I used COPY DISK on COPY II PLUS)

Sector editor

This one seemed so easy... after I got it! And I'm still not absolutely sure what I did. There's a great deal of just plain luck that goes with this disk cracking business. But it seems to me that my "luck" is getting better as my experience increases. If the ability to crack protection schemes depended solely on understanding exactly what the program was doing, I would still be working on my first disk!

The protection on this DOS program rests completely on a signature check. If you fast copy the program and then boot the copy, you will hear the program load, then there will be a 2-3 second silence (while the check is taking place), and then a graphic screen comes up that says you have a disk error. This is where the battle actually begins. I proceeded with the following steps (and don't let the simplicity of the explanation delude you into forgetting that it represents several hours of work):

1. I checked the contents of the Applesoft BASIC Hello file as a matter of habit. It was short, loaded one binary file and ran another - both files were listed right after the Hello file in the catalogue.

2. Since the graphic had text in it and since the drive shut off as the graphic came up, I knew the text and C088 must be somewhere on the disk. I searched for the text. I found it at track \$13, sector \$0F. I fired a few shots into the dark (changed a few bytes with my sector editor) and observed the sparse results. It became apparent that I was working with the symptom and not the problem. No matter what I did to try to bypass or disable

this graphic (and its message) so that the program would continue to run, it wouldn't work. It occurred to me that by the time the graphic and message appeared, the signature check must already have taken place somewhere else. This graphic was just the result of the check. I needed to back-track.

3. I went to Copy II Plus' Disk Map utility on their main menu. Here I discovered that the Menu file started at track \$12, sector \$0D (right after the Hello file at track \$12, sector \$0F). Again I fired a few shots into the dark (changed some bytes) and added a few more that I thought were more on target. I got big ZERO results. I was getting frustrated so I went back to the very beginning of the file—sector \$0D. I noticed that the first thing the file did was JMP to \$6000. Out of pure maliciousness I NOP'ed the jump and booted the disk.

After the usual loading of the files, the computer dropped me into the monitor! Well, well, well - at least it was different! I decided to check memory location \$6000 since I was already in the neighborhood and see if there was in fact something special about it. As it turned out, it didn't look that exciting. But I jotted down the first several bytes to check their location on the disk. I then scanned the disk for these bytes and found them at the very beginning of sector \$0F of track \$14—the start of the file named Start—the very same that was BLOADED by the Hello file!

4. I could tell that I was closing in. I began perusing these bytes on the disk more carefully than I had when I checked them out in memory. I did my very very best at pretending I knew what the program was doing. I knew that a 60 (RTS) marked the end of a routine and I found one of those close to the end of the sector. I also checked for BNE's and CMP's to see if the signature check were at all obvious. It wasn't but there were a couple of BNE's. I tried replacing them with EA's - it had worked on some others I cracked. Not this time, however. I edited them back where they belonged. I then went up and down the sector several times, tracing, getting lost, and trying again. Finally I decided that a JMP to \$15C0 was out of character. I replaced it with EA's and booted the disk. God bless us all, it worked!

5. Working backwards now, it seems incredibly obvious - in fact, embarrassingly obvious! After reading Edward Teach's treatise on signature checks more times than I would like to admit, I'm sure he would not be proud of me now! I remember telling my high school math teacher on one occasion that if he would tell me the answer, I would surely be able to figure out the problem. He looked at me rather menacingly over his glasses and sneered, "Young man, if we knew the answers, we wouldn't have the bloody problems now, would we!"

Step-by-step

1. Fast copy the disk (it should copy with no errors).
2. Sector edit.

Trk	Sct	Byte	From	To
\$14	\$0F	\$D3-D5	4C C0 15	EA EA EA

Or search for C9 10 F0 05 A2 FF 4C C0 15 4C 91 62 A2 FF.

Softkey for...

Elementary Genetics

MECC

Requirements:

DOS 3.3 System Master (or other DOS source) initialized disk with "Hello" deleted
Super IOB 1.5
MECC controller from Computist #65, p.19

Softkey & Fix for the IIe

This is an old program but a rather good one for teaching and/or reinforcing the basic concepts of genetics. It came to me via a fellow colleague who complained that it would not run on the Apple IIe machines nor the Laser 128 machines in their school lab. They had a couple of older Apple machines that it would work on but it was often very inconvenient to free up these machines at opportune times. I promised to take a look at the program and what follows is an overview of my notes while I worked with it. I hope it proves useful to other teachers or interested persons.

Details

This program is a hacker's dream! There are two sets of files on this disk - one set that the computer runs, and another set that has all the REM lines in that explain what is going on and how the program does it! What more could you ask for? (A little dumb luck perhaps?! That's exactly what I needed and got.)

Removing the protection from this program was really nothing. All the credit has to go to Ray Darrah and his Super IOB and Jack Nissel with his controller in COMPUTIST #65. Once the protection was gone, it was easy to get into those files. I noticed when I ran the program that it stopped very abruptly at the instruction screen. The opening graphics and credits had operated fine to that point. And since I knew that this program ran okay on the Apple II+ machines, it sounded (looked?) like a memory location error. I catalogued the disk and scanned through the

files. I noticed that most of them were Applesoft BASIC. I groaned a little at the fact that many were fairly long. No one looks forward to scanning through miles of BASIC, especially when you aren't even sure what it is that you are looking for. I began testing some of these other files by simply RUNNING them - more or less to observe the behavior of the computer and program.

When I ran the file called BLOODINSTRUCTIONS I got a surprise. It ran just fine. Up on the screen came the program as though this were the disk HELLO! All the other files had yielded nothing but errors and nasty error messages. I was instantly inquisitive as to why this file ran perfectly and none of the others. So I dropped back into BASIC with a ctrl reset and asked for a LIST. To my surprise, the LIST yielded a new set of credits and credentials for this part of the program than for the first part. In other words, this seemed to be one of those "modular" jobs where different programmers write different parts of the program and then it is all patched together to run.

But the best part was that I could immediately see that this file was having no trouble placing a special graphic style script on the screen that the real HELLO file on the disk was stumbling over. I began scrolling through the first few lines of the file. It was no time at all before I recognized two lines that were almost identical to lines at the beginning of the HIRE CHARACTER PLOT section of the HELLO file. (Those REM lines were absolutely invaluable - Thank you so much MECC!)

After spending a few minutes comparing, I was certain that I could simply replace the lines in the HELLO file with the two similar lines from the BLOODINSTRUCTION file. I tried it, booted the disk, and away it went. I was elated. I didn't even care that the disk died again a few minutes later. I went back to the CATALOG and began checking through the files (LOADING and LISTING them one at a time) for similar routines. It was when I came across a place where one file had combined the two lines into a single line (and I was groaning over the typing job since I don't have a line editor) that it occurred to me that the only real difference was the CALL. I tried changing only the CALL 22016 to CALL 22019 and it worked fine.

I sent the program back to my colleague with an instruction to try it on all his machines with his fingers crossed. He called back with a big smile. Now the genetics students can work on any computer in the lab and they have one less excuse for not having the their Biology homework done!

Step-by-step

1. Boot the program.
2. At the Applesoft prompt (!) reset into monitor.
3. Move the RWTS to a safe place.
1900<B800.BFFFFM
4. Boot the slave disk.
C600G
5. At the "FILE NOT FOUND" message, remove the slave disk, insert your SUPER IOB program and:
BSAVE RWTS.MECC, A\$1900, L\$800
6. RUN your SUPER IOB program.
RUN SUPER IOB
7. Follow the prompts and at the appropriate time type in the controller or EXEC it, whichever method you prefer.
8. Again, at the appropriate time, insert your original in Drive 1 and your initialized disk in Drive 2.
9. Copy the disk and put your original away.
10. Use your System Master to load DOS into your computer.
11. Insert the copy of the program.
LOAD HELLO
12. List line 1010 and change the CALL 22016 to CALL 22019 by retyping the line or using a line editor.
13. Save the changes back to disk.
SAVE HELLO
14. Do exactly the same thing to the following files and in the following lines:
CHROMY BUG INSTRUCTIONS — line 13
CHROMY BUG — line 4
CHROMY READ — line 13

Remember to save the files back to disk each time. (If they are locked, you will have to unlock them, of course before saving them back to disk. Be sure to lock them again afterward.)

Softkey for...

Alligator Alley

DLM

Requirements:

Initialized disk with "HELLO" deleted
Super IOB 1.5
Swap controller
A way into the monitor

This program looked easy so I took several short cuts and ended up regretting it. I could see with a nibble editor that the epilogues had been adjusted so I quickly tried using COPYA (with the B988:18 60, B925:18 60, BE48:18 modifications). All went off quite well - the drive

grew through Track \$03 but I simply assumed it was an empty unformatted track. The resulting copy ran fine - except for two glitches. The second and third logo graphics came up on the screen partially skewed and partially scrambled. The program itself, however, ran fine. I wasn't satisfied. Moreover, the catalogue track (Track \$11) appeared to be written in some Bangkok dialect and that bothered me as well. A good rule of disk cracking is to make as few changes as possible to get the functional COPYA-able disk. I now had that. But being who I am, I set out for the PERFECTLY functional and COPYA-able disk.

I first used my sector editor (Copy II Plus) to quickly peek through the tracks. I was a bit surprised to find Track \$03 had a couple of sectors in use (that was the track that caused the 32 grinding recalibrations). Then I was further surprised to find all the tracks between Track \$03 and Track \$11 empty! Furthermore, Tracks \$20-\$22 were not that full either!

Assuming (incorrectly!) that a byte or two somewhere along the line was being misread in the copy process, I decided to try another angle. I set Copy II Plus to "MANUAL SECTOR COPY", told it to ignore epilogues, and set it in motion. It read the DOS tracks fine but told me it was getting read errors on all the other tracks. I had seen the strange sync configuration under the nibble editor, but since those tracks were all empty anyway, I didn't care. When I still got read errors on Tracks \$11-\$22, I decided to let it go and take my chances. When I booted the resulting copy, it ran without a hitch! Good graphics, fast loading, everything! But this STILL wasn't COPYA-able.

Out of curiosity I booted Bag of Tricks II and checked the epilogues on this new "sector copied" copy. Instantly Bag of Tricks "honked" a warning - but not an epilogue warning. It was a track warning. The track number was not correct. I scanned through the disk. Sure enough, every track was numbered incorrectly. The pieces were now beginning to fall into place. But Track \$11 was still a foreign language. The best way to decode it seemed to be with its own RWTS. I booted the sector copy, interrupted the loading, went into monitor, moved the RWTS to \$6000, Bloaded FID, moved the RWTS back to \$B800, and catalogued the disk. This, I decided would tell me immediately if this process would work. Up came the files - in English! Since I was this far, why not just FID the files to a new disk? I tried. It didn't work. I wasn't surprised.

Next I went to Super IOB. Using the same process as above, I captured the RWTS and saved it to disk. Super IOB and the SWAP controller then "swapped" the files just fine - all in English, all catalogable, all perfectly functional. The embarrassment? It was, not realizing from the onset that Super IOB was the way to go. Just to be sure, I tried using Super IOB and the SWAP controller on the original disk (after capturing the RWTS from the original, of course). It ran disgustingly perfect. Now we have a disk with a proper catalogue (in English!), good graphics (no skews or scrambles), and correct track numbers.

By the way, it was worth it. DLM makes excellent programs for school kids!

Step-by-step

1. Boot the original and reset into the monitor at the "J".
2. Move the RWTS to a safe place.
1900<B800.BFFFFM
3. Boot the slave disk (with no "HELLO").
C600G
4. Remove the slave disk and insert your Super IOB disk.
5. BSAVE the RWTS to be used later with the SWAP controller:
BSAVE RWTS.DLM, A\$1900, L\$800
6. RUN your Super IOB program.
RUN SUPER IOB
7. At the prompt, EXEC the SWAP controller.
EXEC SWAP.CON
8. LIST line 10010 and edit it to say:
RWTS.DLM, A\$1900, L\$800
9. RUN the program and follow the prompts.

You now have a perfectly COPYA-able Alligator Alley.

Softkey for...

Halley Project

Alert & Tom Snyder

Requirements:

COPYA
Sector Editor

Thanks to Jim Bancroft in COMPUTIST #61 in his notes on Mindscape for the initial lead in the cracking of this program (i.e. the 4C 00 C6). I have no idea what a Forth system is that he mentions nor did the 4C 00 C6 occur in track \$00, sector \$03 as his did. But I thought I would search the entire disk anyway just in case. When it turned up in track \$11 I was immediately suspicious. Why would there ever be a boot routine on track \$11 of any disk? I then tried Jim's suggestion of placing 00's in the D0 86 that immediately preceded the JMP. (It looked like D0 86 4C 00 C6 on my disk.) I changed it to D0 00 as Jim suggests. It seemed to make no difference to the

death of my program. I then tried changing the DO 00 to EA EA. Again, there seemed to be no difference at all. I then changed it back to DO 86 and changed the 4C 00 C6 to EA EA EA. This time when I booted the disk, I was bumped into the monitor. Now, at least I knew for sure I was working in the right spot, or at least in the right ball park.

I went back and edited the 4C 00 C6 back where it was and started examining the code just before it. I noticed a very similar read and check routine a few bytes prior to the one I had been altering. Obviously the program was clearing that one okay - and it ended with a 4C 00 1D. I did the unthinkable - I changed the 4C 00 C6 to send the program back through the door it had just come out of, the 4C 00 1D! When I booted the disk, there was a moment's hesitation (while the computer muttered "What fool is at the helm?") and then up came the credits and on went the program. Thanks again to Jim Bancroft and humble pardons to Edward Teach, Jack Nissel, Brian Troha, Bill Jetzer, and all the others who are at this moment clutching their heads in agony!

Step-by-step

1. Copy the program using COPYA and the following modifications:
B988:18 60
B925:18 60
BE48:18

2. Sector edit track \$11, sector \$00 by searching for 4C 00 C6 (if it is not found in this sector, search the entire disk) and then changing it to match the JMP that occurs immediately before it (in my case it was 4C 00 1D)

Softkey for...

Magic Slate (20/40/80 column)

Sunburst

Since my Magic Slate disks seem to be different from any of those discussed in previous issues of COMPUTIST, I offer the following "cracks" hoping they may prove useful.

20/40 COLUMN

1. Fast copy the disk using a fast copier that will elicit the message "Unable to Load Magic Slate" when the disk is booted. Not all fast copiers will copy this program properly. (My Copy II Plus failed this time, but my Disk Muncher did the job easily - I was surprised!)

2. Search for 90 03 4C 30 22 A0 00 and edit the 4C 30 22 to EA EA EA. There should be two 4C 30 22's. The second occurs in the sequence D0 F7 4C 30 22 20. Again, substitute EA EA EA for the 4C 30 22. On my program these JMP's were on Track \$00 in Sector S01 - the first coming at bytes 3D 3E 3F and the second at bytes 5E 5F 60. Be sure to write the changes back to disk.

80 COLUMN

1. Again, use a fast copier that copies such that the message "Unable to Load Magic Slate" is screened when the copy is booted. See above.

2. Search for two occurrences of 4C DB 21. On my disk they were on Track \$00 in Sector S01 - the first at bytes 40 41 42 and the second at bytes 61 62 63. The first came in the sequence 90 03 4C DB 21 A0 00 and the second in the sequence D0 F7 4C DB 21 A5 FA. (Notice the similarity to the 20/40 column program.) Once you have located the sequence, replace the 4C DB 21's with EA EA EA. Write it back to disk and you're finished.

Extra Help

The changes required for my program were altogether different from those in Computist #68 but the location was the same. If your bytes don't match, look for two identical jumps (JMP's) about 30 bytes apart. If there aren't any jumps, look for JSR's. Try several combinations. Be patient and persevere!

Jeff Tramel

WA

Playing Tip for...

Bard's Tale III

?

The inquiries about Bard's Tale III have been bugging me, so I'll reveal everything you wished to know.

To get the Nightspear out of the tower in Arboria: You must get some Water of Life in the Crystal palace and put it in a wineskin or something, then obtain an acorn. Go to the top of the tower, place the acorn in the hole and water it with the Water of Life. This opens the barrier to let you find the Nightspear.

To get the Rainbow Rose in Lucencia: You must kill the Rainbow Dragon and collect his blood as you did with the Water of Life, then pour the blood on the empty bush, and answer Arturo V. Magidin, who's questions were pretty general if he knew the answers.

To succeed in Gelidia: Go to the tower in the Northwest corner where the monster is and cast INWO, WIHE, and FOFO — get the lens. Go to the tower in the Northeast corner and cast LEVI, ANMA, and PHDO — get that lens. Go to the

tower in the Southeast corner and MAFL, SHSP, FEAR, SUEL, and SPBI — get the last lens. Place the proper lenses in the proper shrine positions and the shrine opens. Go down, find Lanatir (he will be dead, but it doesn't matter) then go through the door near his coffin. The items are there.

To succeed in Tenebrosia: Get the Shadow Lock in the canyon, then collect some tar from the middle of the tar pit in the same way as the The Water of Life and the blood. Go to the forest. Look around until you can see a hole behind some trees. Use the tar to burn the trees down and get the Shadow door. Now go to the middle of Nowhere place the door down then put the lock on it. This permits entry. Go to the 2nd dungeon level and go to the farthest north wall. In the center square the wall is fake, go north through it and Scaedu is behind the door.

For Tarmitia: (Which was the most difficult for me although it's pretty simple once you know how.) Go to the Death's Head in Troy and say ARES. Rome is MARS. Hiroshima is SUSANO-O. Stalingrad is SVARAZIC. Nottingham is ST. GEORGE. Wasteland is SDIABM. Berlin is TYR then WERRA. Do the first step then you'll know what the others are for. If there are any more questions concerning BT3 let me know through the magazine. I don't know if anyone noticed but there's a gross hi-res picture on my boot disk of BT3 called YUMMY.

As mentioned many times before, new buyers of Apple computers don't get any of the programs mentioned in this magazine. Just a short time back the only computer magazine I was getting was mostly advertising and boring columns. Then I started getting Computist, it was a shock to my system. I didn't understand anything that was being said. I slowly got the hang of it with Copy II plus, but I need some programs that are used here.

I don't know whether this is piracy or not, but I would like to have a copy of the DOS 3.3 System Master disk, ProDOS Users disk, Locksmith or it's equal, and an assembler of some kind. If you could send me these or tell me where to get them. I seriously doubt there's a users group here and no one I know uses an Apple. With 4,000 readers out there I hope there's some who will help me. Send to:

P.O. Box 443
Moxee, WA 98936

If you would like the disks back please tell me.

Bob Igo

PA

I figured out how to edit some of the games I was previously unable to edit by modifying the approach I was using. For example, in the case of double hi-res games, the edit information may even be stored in an auxiliary location, making it rather difficult to find.

Advanced Playing Technique for...

Heavy Barrel

?

I had to make several sector edits just to find the right one for Heavy Barrel. It turned out that the storing location seems to be in ROM, but it's actually in auxiliary RAM.

Extended lives

Trk	Sct	Byte	From	To
\$03	\$05	\$57	03	ANY

Advanced Playing Technique for...

FLOBYNOID

?

Unlimited paddles

Trk	Sct	Byte	From	To
\$0E	\$02	\$D9-DB	CE A0 0B	EA EA EA

In the case of FLOBYNOID, a superior French version of Arkanoid, I had to put my encoding skills to the test. The number of paddles, \$09, was being stored as \$B9 for SOME reason. Of course, the French were never notorious for their logic when it comes to numbers; 99 sounds like 4, 20, 10, 9 in French.

The hex code for a decimal 9 is \$B9 (hi bit set)..... RDEXed

Advanced Playing Technique for...

Dino Eggs

?

To Mr. Tirad: I still can't find a "lives" APT for Dino Eggs, but I came up with the next best thing plus a little extra.

Maximum number of Eggs carried

Note: the number entered as 'any' must be the same in all four edits.

Trk	Sct	Byte	From	To
\$13	\$08	\$9B	03	any
\$14	\$05	\$76	03	any
\$1A	\$06	\$BE	03	any
\$1A	\$06	\$EC	03	any

Contamination immunity

Trk	Sct	Byte	From	To
\$14	\$04	\$93-94	E9 01	EA EA
	\$99	F0	D0	

\$14 \$04 \$14-16 8D 45 08 EA EA EA
\$14 \$04 \$40-42 8D 45 08 EA EA EA

Advanced Playing Technique for...

Bandits

?

On Bandits, yet another method of finding the right edit had to be used. You are given 04 ships at the beginning of the game. However, when the display number goes to 00, the game continues with your last ship. So, I realized that I must look for 05 because after five times getting blown up, the game ends. There are also cases when one must search for one less than the obvious number instead of one more than the obvious number.

Note: enter the same number for both edits.

Number of Ships

Trk	Sct	Byte	From	To
\$0F	\$0D	\$43	05	any
\$21	\$0F	\$4A	05	any

Advanced Playing Technique for...

Prince of Persia

?

On Prince of Persia, a masterpiece of a game which you simply MUST play, I did not desire to poke around in memory if I didn't have to, so I simply decided to edit things on the saved game. I found out where the saved game was being stored by making another copy of the game. I had one game saved on level 3 and then saved one on level 4. I compared the disks with Locksmith 6.0 disk compare. That told me that the copies differed only on track \$17, sector \$00 of disk 2. Next, I used a utility which I wrote that compares individual sectors to tell what bytes differ. Then, I compared the two and made a bunch of edits, and by trial and error (mostly error) I found out a bunch of interesting information.

(side 2): Saved level

Trk	Sct	Byte	From	To
\$17	\$00	\$00	??	03-0D

(side 2): Hits

Trk	Sct	Byte	From	To
\$17	\$00	\$01	??	11 (MAXIMUM)

(side 2): Maximum time (60 minutes)

Trk	Sct	Byte	From	To
\$17	\$00	\$04	??	00

Note: The above information on Prince of Persia with "??" is so marked because the values there will depend on the saved game itself.

Advanced Playing Technique for...

Borg

?

Number of Lives

This information is stored at \$23CB. I can't make a specific edit because of the many ways to crack the game and therefore many places the right edit could reside.

Advanced Playing Technique for...

Battletech

?

The Crescent Hawk's inception

Note: The following edits are for saved game #1.

Money: track \$16, sector \$09, bytes 88-89 will give you 65,535 cash when you replace them with FF's. Don't worry about where to edit for more; just invest in BAKPHAR stock and you'll have credits coming out your ears.

Skills: For Jason, the skills are on Track \$16, Sector \$09.

skill	byte	Skill level	Hex
Bow and Blade	\$10	Unskilled	\$00
Pistol	\$11	Amateur	\$01
Rifle	\$12	Adequate	\$02
Gunnery	\$13	Good	\$03
Piloting	\$14	Excellent	\$04
Tech	\$15		
Medical	\$16		

(ie. A hex value of \$04 at byte location \$10 means that you have excellent skill with Bow and Blade.) Now, if you really, really want to, you can give Jason all "Excellent" skills by editing bytes \$10-\$16 to all \$04's.

For those of you who have had trouble identifying those 'MECH parts, here's some useful information. (Right= your right, not the 'Mech's)

Part	Location
intercoolerwhere the mouth of the 'MECH would be
torso mainframe	...top right of body
elbow actuatorbetween shoulder and forearm
gyro housingnext to the top of the right leg
jump jet intakeThe top bit of the left leg
foot unitthe left foot
leg mainthe thinner part of the right leg
	above the calf
foot actuatorthe part of the right leg just above the right foot
foot castingthe right foot

If there's anyone out there who would like to request an APT, contact me through the maga-

zine or a back issue address. I enjoy a challenge, and I thank J.P. Tirad for providing one.

The Snake

OH

I have a solution to the "tabloid paper is too flimsy" problem. I merely cover each tabloid issue with clear contact paper purchased from my local dime store. The issues are a lot easier to handle that way.

Kind of expensive and you would have to be awful careful putting the contact paper on. RDEXed

A Reader Review of ...

Prince of Persia

?

Apple IIe users rejoice! (Apple II+ users yawn.) Prince of Persia is awesome! Many IIe users nowadays complain about the lack of new IIe-specific games on the market. Prince of Persia is a fabulous double-hires game from Broderbund that was specifically designed for the IIe. The reviews I've seen of P.O.P. in many computer magazines don't do it justice: the graphics, animation and sound are top-notch! In addition, its \$25 pricetag from most mail-order houses is almost a steal compared to other games out there (\$39.95, \$49.95, etc.). If you have an Apple IIe with a color monitor, get this game! (sorry II+ users, you need 128K.) Although P.O.P. is heavily protected (and I don't have a crack for it), I'm sure a crack will be available from someone by the time you read this.

Softkey for...

Milliken Math Series (revisited)

?

Requirements:
DOS 3.3 disk

I was asked to crack the Milliken Math Series by one of my teachers because disks around here are treated like luggage in Samsonite commercials. Upon reviewing the method in issue #57, page 26b, I noticed I had to use the ancient Demuffin (yyecch!). I then turned to #68, page 9a, and used the method there. I booted my copy but subsequently "crashed and burned" into the monitor. I finally copied the disk using my softkey, so I decided to share it with everyone (besides, my version wasn't the one in #57, and the sector edits in #68 weren't explained).

Step-by-step

1. Initialize a DOS 3.3 disk with a hello program of "BOOT".
INIT BOOT

Note: Notice I said "DOS 3.3". The reason my copy kept crashing was that Milliken disks didn't like ProntoDOS. The cracked copy worked fine with DOS 3.3, but ProntoDOS made it choke. If anyone can shed some light on this, let me know.

2. Copy the disk with Super IOB and the controller. Do not choose to format the target disk when Super IOB asks you.

Controller

1000 REM MILLIKEN Q&D
1001 POKE 47426,24: REM *B942:18
1010 TK = 3:LT = 35:ST = 15:LS = 15:CD =
WR:FAST = 1
1020 GOSUB 490: GOSUB 610
1025 RESTORE :T1 = TK:TK = PEEK (TRK):
GOSUB 310:TK = T1
1030 GOSUB 490: GOSUB 610: IF PEEK (TRK) =
LT THEN 1050
1040 TK = PEEK (TRK):ST = PEEK (SCT): GOTO
1020
1050 HOME : PRINT "OK.(SECTOR)EDITED"
"WITH#NO#DOS#ON#DISK"
1051 END
5000 DATA 20CHANGES
5001 DATA 17,0,0,4
5002 DATA 17,0,1,17

Checksums

1000-\$356B 1025-\$86EC 1051-\$C310
1001-\$B631 1030-\$CE34 5000-\$FE07
1010-\$D02A 1040-\$2DAE 5001-\$593E
1020-\$96A0 1050-\$9BCC 5002-\$452A

You are done and can now learn your multiplication tables.

What Milliken did

I looked at the chart on page 165 of Tom Weishaar's "DOSTalk Scrapbook" and noticed that byte \$01 of the VTOC (track 17) of DOS 3.3 disks contains the track containing the VTOC! Milliken simply put a SF1 in this location so that your copied disk would bomb even if you defeated DOS's error checking with a poke or machine-language CLC. Your copied disk would attempt to access track #241 and die. The controller changes bytes \$00 and \$01 of the track 17 so DOS 3.3 gets what it wants. (Quite honestly, I don't know what byte \$00 is supposed to be, but DOS 3.3 disks have a \$04 there, so that's what I put there.)

If you notice on page 8a of issue #64, Leonard Nadel asked for a crack and enhancement to AppleWriter II. I, too, am in need of such an item. No one ever replied. If you have a crack to AppleWriter, send it in! Mr. Nadel, if you ever obtained one, please contact me.

Ⓢ I am also in need of AppleWriter IIe ProDOS. I have the DOS 3.3 version, but Apple no longer markets AppleWriter. If anyone knows where to get a copy, my address is 1005 Greenbrier, Galion, OH 44833.

Ⓢ I would also like to get a copy of the IIGS sales demo. Any help, please?

An appeal for sanity: Please put your table of contents, if possible, on the front cover like you used to. It makes life easier. Also notice that I referred to past issues in my article with an issue number AND A PAGE NUMBER WITH A COLUMN (a,b,c, etc). Please, gentle readers, do the same whenever you write to Computist in the future. Nothing is more maddening than trying to find a past article that is referred to as, "In issue #xx, etc.". Adding a column letter aids finding things quickly. If Computist readers have a uniform method of correspondence, the planet will rotate much faster.

Stingray Canada

Well, I guess it's about time I wrote something again. It's been a long time, but I've been pretty busy with my first year of university. Finally, everything has settled down to routine, and I've got some free time on my hands.

ProDOS Boot Disassembled

While looking through my back issues of Computist, it occurred to me that nobody has taken a really in-depth look at the boot segment for ProDOS, and it's about time because it could be very valuable, not to mention interesting, to know just how ProDOS gets itself up and running. Pay attention, some of this is pretty complex.

First of all, some necessary miscellaneous info. As most of you know, ProDOS stores its data in blocks, instead of sectors. Each block is made up of two DOS 3.3 sectors. Table 1 shows which sectors form which blocks. n is any even-numbered track. x is one-half of n.

Table 1

Block	Track	Sectors
x0	n	0,E
x1	n	D,C
x2	n	B,A
x3	n	9,8
x4	n	7,6
x5	n	5,4
x6	n	3,2
x7	n	1,F
x8	n+1	0,E
x9	n+1	D,C
xA	n+1	B,A
xB	n+1	9,8
xC	n+1	7,6
xD	n+1	5,4
xE	n+1	3,2
xF	n+1	1,F

The next thing we must clarify is the difference between logical and physical sectors. Imagine that sectors are arranged in numerical order as you go around the track. When you read a file, the data is often stored on sectors that are in numerical order. A problem arises; it takes time to decode a sector. When you have finished reading and decoding sector 1, sector 2 has already gone past the read write head, because the disk is spinning constantly. You have to wait one revolution before you can read sector 2, slowing access time to a crawl. Now imagine the sectors are arranged like this: sector 1, another sector, then sector 2. This is much better, because you can read sector 1, decode it while the other sector goes by, and instantly read sector 2. The skew that DOS 3.3 and ProDOS use is called 2-Decending. Table 2 shows the physical and corresponding logical sectors. Please note: the logical sectors are the numbers you have always used to specify sectors. The physical numbers refer to the actual location of that sector on the track.

Table 2

Physical: 0123456789ABCDEF
Logical: 07E6D5C4B3A2918F

The boot segment is located on block 0, that is track 0, sectors 0 and E. When a ProDOS disk is booted, 0/0 loads normally, as in DOS 3.3. This is the only similarity between the two. Let's look at the first bit of the code.

```
800 01
801 SEC
      BCS 807
      JMP A132
807 STX 43
      CMP #03
      PHP
      TXA
      AND #70
      LSR
      LSR
      LSR
      LSR
      ORA #C0
      STA 49
      LDY #FF
      STY 48
```

Okay. The 01 is used by the disk controller. It means only load sector 0, just as in DOS 3.3. I have no idea why they do that branch around the jump. You might as well just go straight to \$0807. When execution is passed to this code from the controller card, the accumulator holds

the next physical sector to be read, and the X register holds the boot slot in its hi nibble. Therefore, \$43 now holds the boot slot times 16. The effect of the next two lines depends on whether we just read sector 0 or sector E. If we read 0, A holds 1, and when we do the compare, the carry is clear. Then the PHP saves this result. The rest of the commands put the value CnFF into \$48 and \$49, where n is your boot slot.

```
81B PLP
      INY
      LDA (48),Y
      BNE 85B
      BCS 831
823 LDA #03
      STA 0800
      INC 3D
      LDA 49
      PHA
      LDA #5B
      PHA
      RTS
```

The PLP restores the result of the CMP instruction. Recall that if we read sector 0, the carry is clear, and if we read sector E, it is set. The Y register is incremented to zero, and since CnFF is always zero (at least on a Disk II card), the first branch is never taken. The rest of the code prepares for reading sector E. \$0800 is set to \$03, so that only sector E will be read, \$3D (the physical sector to be read) is incremented to \$02, and control is passed to the controller card via a planned RTS. When sector E has been read, the above code is re-executed from \$0801, except the branch to \$0831 occurs this time.

```
831 STA 40
      STA 48
      LDY #63
837 LDA (48),Y
      STA 0994,Y
      INY
      CPY #EB
      BNE 837
      LDX #06
843 LDY 091D,X
      LDA 0924,X
      STA 09F2,X
      LDA 092B,X
      STA 0A7F,X
      DEX
      BPL 843
```

This is a nifty idea on Apple's part. Instead of taking up space on the disk with code to read a sector, they copy the code from Cn63-CnEB to \$09F7-\$0A7E, and modify it a bit to suit its new location. \$091D is a table of offsets from \$09F2, and \$0924 is a table of one-byte modifications for those offsets. \$092B is a small piece of code that is tacked on the end, at \$0A7F.

```
855 LDA #09
      STA 49
      LDA #86
85B LDY #00
      CMP #F9
      BCS 890
      STA 48
      STY 60
      STY 4A
      STY 4C
      STY 4E
      STY 47
      INY
      STY 42
      INY
      STY 46
      LDA #0C
      STA 61
      STA 4B
```

This code sets up some new pointers. (\$48) has served its purpose in moving the sector read code, so now it holds \$0986, a subroutine which converts ProDOS block numbers to tracks and sectors. (\$4A) holds \$0C00, which is where the root directory will be loaded. (\$60) is the load buffer address, \$0C00, and (\$46) holds \$0002, the first block to be loaded.

```
879 JSR 0912
      BCS 8E6
      INC 61
      INC 61
      INC 46
      LDA 46
      CMP #06
      BCC 879
```

This code reads blocks 2-5 into memory from \$0C00-\$13FF, using \$0912, the block read subroutine. Notice the data buffer is incremented twice for each block (two-sector) read.

```
88A LDA 0C00
      ORA 0C01
      BNE 8FF
      LDA #04
      BNE 898
896 LDA 4A
898 CLC
      ADC 0C23
      TAY
      BCC 8AC
      INC 4B
      LDA 4B
      LSR
      BCS 8AC
      CMP #0A
      BEQ 8FF
      LDY #04
8AC STY 4A
```

Here we begin searching the root directory for the ProDOS file. The first two bytes must both be zero (I don't know why) or we branch to 8FF (it prints UNABLE TO LOAD PRODOS). We first set \$4A to 4, to skip the first four (unused)

bytes of the root directory. Then we add the value in \$0C23 (\$27, the length of a file entry) to it to get the offset of the first file. If the carry is clear, we haven't crossed a page boundary yet, so goto \$08AC. If it is set, increment \$4B, the high byte of the index. The root directory only goes up to page \$13, so if \$4B is 14, and it gets LSRed, it will become 0A. When this happens, we have reached the end of the root directory without finding PRODOS, causing an error and a branch. If we don't branch, LDY with 04 again, and store it in the index.

```
8AE LDA 0902
      AND #0F
      TAY
8B4 LDA (4A),Y
      CMP 0902,Y
      BNE 896
      DEY
      BPL 8B4
      AND #F0
      CMP #20
      BNE 8FF
      LDY #10
      LDA (4A),Y
      CMP #FF
      BNE 8FF
```

\$0902 is a data table that holds the value 26 and the word PRODOS. The value of 26 is rather important, and I will explain it in detail.

Every file has a byte before its name. The low nibble (6 in this case) is the length of the filename. If we sector-edited this value to 24, only PROD would be recognized as a filename. The high nibble is the storage type. This is different from the filetype. It depends mainly on how long the file is. Some Apple terminology: a seedling file is less than one block long, so it doesn't require a BAM, just one data block. Seedling files are one block long. A sapling file has 2-256 data blocks, plus a BAM to keep track of them. A tree file has more than 256 data blocks, plus a master BAM, which holds pointers to 128 regular BAMS, each of which can point to 256 data blocks. Therefore, a tree file can be an astonishing 16 Meg long. There are several storage type codes. They are as follows.

Code	Filetype
1	seedling
2	sapling
3	tree
D	subdirectory
F	volume header

(there might be others...)

\$08AE puts Y equal to 6, the length of PRODOS. Then the filename of the current file is compared to \$0902. If it doesn't match, goto \$0896 to try the next file. If it does match (ie We found a file called PRODOS), make sure the first byte has a 2 in the hi nibble (ProDOS is a sapling file). Last, make sure the filetype is SYS(FF).

```
8CC INY
      LDA (4A),Y
      STA 46
      INY
      LDA (4A),Y
      STA 47
8D6 LDA #00
      STA 4A
      LDY #1E
      STY 4B
      STY 61
      INY
      STY 4D
```

Now, get the first block in the file from the file description. This will be the BAM, or block allocation map, for the file. Set the address of the low bytes into (\$4A), and the high bytes into (\$4C). These are \$1E00 and \$1F00, respectively. Page 1E will hold the low bytes of the block numbers, and page 1F will hold the high bytes. On a floppy, these will be either zero or one.

```
8E3 JSR 0912
      BCS 8FF
      INC 61
      INC 61
      LDY 4E
      INC 4E
      LDA (4A),Y
      STA 46
      LDA (4C),Y
      STA 47
      ORA (4A),Y
      BNE 8E3
      JMP 2000
8FF JMP 093F
```

This routine actually loads PRODOS into memory. \$4E is the index into the BAM. As long as there is a block to load, the ORA will produce a non-zero result, and we will branch back to the read subroutine. As soon as we run out of blocks to read, it will be zero, and we will jump to \$2000, to begin executing the PRODOS file itself. \$08FF just jumps to \$093F to print the error and hang. We are now half-finished disassembling the loader. Whew!!!!

```
902 26 PRODOS
912 LDA 60
      STA 44
      LDA 61
      STA 45
      JMP (0048)
91D 08 1E 24 3F 45 47 76
924 F4 D7 D1 B6 4B B4 AC
92B LDX 2B
      CLC
      RTS
      JMP 09BC
932 LDA #9F
```

```
PHA
LDA #FF
PHA
LDA #01
LDX #00
JMP F479
```

\$0902 holds the name of the file the loader looks for. You can change it, just make sure you adjust the filename length in the first byte. \$0912 is the main entry to the block read routine. It sets (\$44) to the data buffer and jumps to the block number translate routine. \$091d is a table of offsets, \$0924 is a table of modifications, and \$092B is a short piece of code, all used to modify the segment copied from the disk controller card. I don't think \$0932 ever gets executed.

```
93F JSR FC58
      LDY #1C
944 LDA 0950,Y
      STA 05AE,Y
      DEY
      BPL 0944
94D JMP 094D
950 *** UNABLE TO LOAD PRODOS ***
96D LDA 53
      AND #03
      ROL
      ORA 2B
      TAX
      LDA C080,X
      LDA #2C
      LDX #11
97A DEX
97C BNE 097C
      SBC #01
      BNE 097A
      LDX 2B
      RTS
```

\$093F is the general failure message. \$096D looks like part of a routine to move the disk arm. If there is anybody out there with the knowledge to write a highly detailed explanation of just how the disk arm is controlled, please do so. I am working on it, but progress is slow.

```
986 LDA 46
      AND #07
      CMP #04
      AND #03
      PHP
      ASL
      PLP
      ROL
      STA 3D
994 LDA 47
      LSR
      LDA 46
      ROR
      LSR
      LSR
      STA 41
      ASL
      STA 51
      LDA 45
      STA 27
      LDX 2B
      LDA C089,X
      JSR 09BC
      INC 27
      INC 3D
      INC 3D
      BCS 09B8
      JSR 09BC
9B8 LDY C088,X
      RTS
```

This routine converts a block number into a track and physical sector number, then calls the readsector routine. From \$0986, the block number is read, converted to a sector number, and stored at \$3D. From \$0994, the track is found and stored at \$41, doubled and stored at \$51. The data buffer is stored at \$27, the drive motor is switched on, and \$09BC, the read routine, is called. The buffer is incremented, the sector is incremented twice, and we read the second sector. I believe the BCS represents an error in reading a sector. \$09B8 turns the drive off and exits.

The rest of the code, from \$09BC to \$0A86, which includes the part from the disk card, reads a sector into memory, moving the arm if needed. I haven't totally analyzed the code, but I know that is what it does.

So that is how ProDOS gets itself into memory. The first part of the ProDOS file itself is even neater. It looks around your system, identifying such things as what type of Apple it is running on, how much memory there is available, what kind of drives and clocks you have, etc., and saves all this info in something called the Global Page. This is basically ProDOS's own personal zero page, and BASIC.SYSTEM also has one.

Notes on Tetris

I was trying to crack Tetris for the //e, having noticed it on the most wanted list. I can honestly say the RWTS for this game, which by the way is identical to that of a game called Prince of Persia, is one of the most awesome pieces of code I have ever analyzed.

A brief overview: There are eight basic commands for this disk driver. They are as follows.

0	drive on
1	drive off
2	seek track
3	linear read
4	custom read
5	linear write
6	custom write
7	modify sector data header

The syntax for a call to the RWTS is like that for MLI. You call the main entry, with a parmlist right after the call, the length depending on the

command. 0 has the syntax JSR RWTS x0 x# dd. The parm list is 3 bytes long. x is any number, 0 is the command code, # is the drive number, dd is the delay for the drive to come up to speed. 1 has only one parm, x1, or just the command. 2 goes like this: x2 rr ##. If rr is zero, don't recalibrate the arm, if it is not zero, do so. ## is the track number to seek.

Now for the really neat part. The way this program encodes the data to store it, you get not 16, not 17, but 18 pages per track. That's right, 18 sectors per track. There are, of course, strings attached. You have to read and write an entire track at a time. This is because the 18 pages are all jumbled together into 5 large sectors. One other particularly devious piece of programming: the encoding routine uses part of the boot as a key, meaning if you change ANYTHING on that one page, you change the way the data is encoded and decoded. There are two ways to read and write, which I call linear and custom. You either call x3 pp, where pp is the first page of a linear block of 18 pages to read, or you call x4 pp pp pp ... , with a list of 18 assorted pages to read. Write works the same way. Routine 7 changes the byte written between sectors.

To sum up, I don't think it is possible to crack these games, as there are write routines in the game that use these custom formats. The only solution I see is a program to copy this custom format as is.

Steve Lawrence CA

Help! I have "Hacker II" for the IIGs but it doesn't work with the version 01 ROMs. It errors out and says, "Unclaimed Sound Interrupt". Mediagenic had a fix but it is no longer available. Does anyone know what the bytes to change are and the softkey?

Norman Hogarth

Does anyone have information on how to reach "Alpha Logic Business Systems"? Contact me on the Computist BBS (user #992). Thanks.

Lee Lovinger FL

I'm really interested in interrupts on the IIGs. Can anyone write an article on this subject?

Melvin Long Canada

I purchased "Alien Mind" by PBI and I've got a problem. The boot disk works fine except for the odd glitch in the joystick control. But when I play up to the point where the program asks for the second disk, and I insert the second disk, the program won't recognize it. It keeps asking for the second disk. I tried to contact PBI but my letter was returned and there is no answer at their number. Does anyone know how to make the program recognize the second disk?

IBM RDEX IBM RDEX IBM RDEX

Jim Bello

IBM Softkey for...

Paladin

Omnitrends

This patch will remove the jump to the documentation check in Paladin.

Use PCtools or Norton to search for 3B 46 FC 75 0B and change the 75 0B to 90 90.

The Documentation check window will still appear, but just hit return and the program will run.

Damien Norris

IBM Playing Tip for...

Pool of Radiance

?

I found a nifty way to cheat on Pool of Radiance, (well, it's not REALLY cheating, I think.) If there are hordes of really tough monsters (like the hobgoblins, orcs and trolls in Sokol keep), then you go to the training hall, say yes to training so you get that first party creation menu. Now (R)emove all the players except your fastest guy. Now, go to the hall and rent two fighters (not good guys) and put them ahead of your fast man. Go to the fight and let the fighters block the monsters and get slaughtered as your one character runs away. When the battle is over, you will get all the items the monsters had, plus the encounter will no longer happen... it's just the same as winning, but easier!

Les B. Minaker Canada

IBM Playing Tip for...

Curse of the Azure Bonds

Strategic Simulations Inc.

How to increase your magical stores (without attending college)

In the game, some really neat items only occur once. This can be a pain if you would like to equip all your fighters with +5 long swords and Girdles of Storm Giant Strength or maybe your

magic-user really needs an extra necklace of missiles. The below listed process gives detailed instructions to duplicate important items found in the game.

1. Trade all important items to one character (ie. Benny).
2. Remove Benny from the party.
3. Add Benny back into the party. This writes a file for Benny.
4. Remove him again, responding "N" to the overwrite option and make up a new name for the character (ie BennyA). This writes a file for BennyA that is the same as Benny. Now we have two characters with the same magic items, gold, attributes, et cetera.
5. Choose "Add a Character" and pick BennyA.
6. Trade all items to other party members.
7. Remove BennyA from the party. Respond "N" to overwrite option. Again make up a name (BennyB).
8. Repeat from step 5 as needed.

Notes: Remember to drop all made up characters after you're done. Multiple occurrences of a name can confuse, be careful! This can also be used to increase money or copy good characters.

Magic Items can Be Found Where?

This list is not complete, but it's all I can remember!

Item:	Location:
Wand of Lighting	Dead Cleric in Yulash
+3 Plate Mail	Dark Elf in Wizard's Tower
Dust of Disappearance	Fire Knives armoury
Girdle of Storm Giant Strength	Dead man's treasure in Myth Drannor
+3 Mace	Salamander's caves
Ring of Protection (+2)	Elven Queen in Myth Drannor

Combat Tips

1. Cast invisibility on your thief and have him try and backstab the monsters.
2. Area affect spells are wonderful. Be careful not to damage your party!
3. Have the magic-user cast Hold Monster on really strong monsters. If they are held, have another character attack with missile weapons - one hit and they're history!
4. Rings of protection increase saving throws.
5. Some monsters resist magic (Drow - 50%, Beholder - 100%). Attack these at hand-to-hand range as quickly as possible. Beware, Drow weapons will decay when you exit an underground location.

IBM Playing Tip for...

Champions of Krynn

Strategic Simulations Inc.

How to Increase Your Magical Stores (Without Working Up a Sweat!)

In the game, some really valuable items only occur once. This can be a pain if you would like to equip all your fighters with +2 long swords, Girdles of Giant Strength and Footman's Dragonlances, or maybe your magic-user really needs an extra Wand of Fireballs. The below listed process gives detailed instructions to duplicate important items found in the game. This method works for the IBM version and has not been tested on other versions. I have no reason to suspect that SSI handles the files all that differently on different operating systems.

1. Trade all important items to one character (ie. Frostflower).
2. Remove Frostflower from the party. This writes a file to disk for Frostflower.
3. Add Frostflower back into the party. The file written above is not deleted.
4. Remove her again, responding "N" to the overwrite option and make up a new name for the character (ie Catlin). This writes a file for Catlin that is a copy of Frostflower (and the file written above is still on the disk). Now we have two characters with the same magic items, gold, attributes, et cetera.
5. Choose "Add a Character" and select Catlin. Catlin then joins your party.
6. Trade all items to other party members.
7. Remove Catlin from the party. Respond "N" to overwrite and make up another name such as BeerBarrel.
8. You can repeat from step 5 as needed. I must stress that as long as you do not overwrite Frostflower, you should have no problems. To be safe, try it with an unimportant character first!

Notes: BeerBarrel is a dummy character. As stated above, this was only tested on an IBM PC.

You Say Your Party Was Devastated by Those Pesky Dragons?

When your party has been nearly killed in a particularly nasty fight, but you don't want to reload from your last save position, the following can help save your bacon in the middle of a dungeon (or whatever). This method allows you to keep the experience earned by the still living characters and continue on with your quest without having to fight your way out of a hostile dungeon with a seriously weakened party.

1. As an initial step (before you get in trouble) remove each member from your party and then add them back into it. Next, remove each member again, but do not overwrite. Make up a new name - I suggest the original name plus one character or

number. After each member has been removed, add them back in again. That's it for preparation.

Note: Whenever you exit to begin the game, all characters that are with your party will have any files that were written above deleted; this is the purpose behind creating a different name.

2. After the fatal (for at least some members) combat immediately save the game and exit to DOS. This of course assumes that one or more player characters survived!

3. Restart the game.
4. Remove any of the dead characters from your party. You should drop the dead characters. Repeat for each character. Then add in the duplicate characters written above.
5. When you finally get out of the dungeon, repeat step 1.

IBM Softkey for...

Pool of Radiance

Strategic Simulations Inc.

Requirements:

PC-Tools or Norton Utilities

I was getting really annoyed at the copy protection with this game, so I got out my sector editor and started poking around. Eventually I found the answer.

First install the program normally by unarcing it onto your hard drive or 7 floppies.

Note: I had absolutely no luck unarcing it onto floppies. It took me an hour and didn't even run! (But, it did install to the hard drive O.K.) Part of the install is configuring the program for your system.

Once you have the program installed:

1. Find the file named START.EXE and rename it to something else like STARTBAK.EXE.
2. Copy the file STARTBAK.EXE to START.EXE. This renames the original and makes the copy the executable program.
3. Using PC-Tools VIEW-EDIT mode or Norton Utilities Hex Editor, call up the file START.EXE.
4. Find the 13 following words with the Hex-Editor and change each one to HAAAAA (or any 6 Capital letters - not lowercase!) and save the changes to disk in the file START.EXE:
BEWARE ZOMBIE
NOTNOW COPPER
DRAGON EFREET
FRIEND JUNGLE
KNIGHT SAVIOR
TEMPLE VULCAN
WYVERN
5. When you enter the program and are asked for the code from the Translation Wheel, type HAAAAA and you're in!

That's all there is to it. It is understood, of course, that this unprotect is only to be used by legitimate owners of the game - who have tired of spinning that &%@# code wheel!

Bart Montgomery

IBM Softkey for...

Zany Golf

?

As a programmer, I hate to see such a cute little gem of a game contain any eyesore or flaw. In the case of "Zany Golf", the eyesore is the request to enter a code from a code-wheel before proceeding on to the second hole. Accordingly, I have developed a patch so that this "enter code" request is not made and the game proceeds as normal.

For those people familiar with the sector editors found in PC-Tools and Norton's Utilities, you may perform the patch as follows:

To patch ZANY.COM

Search for 84 C0 E8 15 61 and replace the 84 with C3.

To patch TZANY.COM

Search for 84 C0 E8 10 61 and replace the 84 with C3.

The Company of Wolves

IBM Softkey for...

Paperboy

Mindscape

Requirements:

Norton Utilities (or similar program)

A copy of the file's papercga.exe, papercgt.exe, and papercg2.exe from your original disk.

1. First load one of the above files (whichever applies to your graphics, papercga for CGA graphics, papercgt for tandy graphics, or papercg2 for EGA graphics) into Norton.
2. Search for 3D 33 00 75 FE and change the 74 FE to 90 90. Save the changes.

The program will still look for the copy protection files DEMAA.COM and DEMAB.COM but will skip the instruction that locks up the system (74 FE (jump back two bytes if comparison is not zero)).

If you have any problems with any of the patches above check the date of the file PAPERxxx.EXE on your original disk A for the

date 06/17/88. If your file has a different date then they probably changed the copy protection method and your out of luck with this patch. If you have any questions leave The Company of Wolves a message, I can be reached on EXCEL BBS (414)789-4210. Also included is another patch for a different version of Paperboy in case you have a different version from the one I have.

UNK

IBM Softkey for...

Silpheed v1.0

?

Just use PCtools or equivalent and search SIERRA.EXE for EB BB and change to 90 90. Now all you have to do is hit ENTER at ship question and it will bypass it. This will only work if you choose harddrive from the INSTALL program!

Brian H. Lawler

IBM Softkey for...

Pete rose Pennant Fever

Gamestar

This utility will patch Pete rose Pennant Fever by Gamestar to run without going blind reading black print on dark red paper. After the patch is in place, the program will quit asking for a code number.

Do not do this to your original disk.

ren baseball.exe baseball.bin
debug baseball.bin
E 0840 90 90 90

W

Q

ren baseball.bin baseball.exe

Notice: Lawler Microsystems provides this patch to relieve LEGAL OWNERS of Pennant Fever the hassle of searching the code sheet before playing a game of baseball. I feel that this form of copy protection is as much a pain in the rear as any other.

Brian H. Lawler
Lawler Microsystems
#3 Evergreen Drive
Saint Joseph, MO 64505-9661

Howard A

IBM Playing Tip for...

Test Drive II

?

Recently I posted the following to get you to the next gas station in Test Drive II:
aerf ,bruce boutran bgasst

Upon further practice I have determined the following: By just typing "aerf", without the quotes, it gives your car super acceleration and quick braking. For a comparison select the Corvette and the track that came with the disk. Use the easiest level. I had previously been unable to get the 'vette into 6th gear. But after typing aerf, it is no problem. The same test is good when trying to stop between the white lines at the gas station. By just typing "bgasst", without the quotes, the program will take you to a position just before the first white line at the gas station. If you accelerate and stop between the white lines you will have a super average MPH. Race against the computer and type the above and notice how the computer's car (the blue dot at the top) is at the location when you typed the above. I averaged something like 5,600 MPH and got a score of -561,000.

Please note this showed up on the high score as a negative number. If you just want to skip a particular segment, I recommend that you type the sequence below. BY just typing "bgasst", without the quotes. This has the same effect as the first mondo sequence I posted. Actually, type bgasst and you will see the gas station follow that with a "t", no quotes, and that round will be over. Your average speed will be based on your actual average speed. Sorry I didn't determine all of this earlier. I guess I was in a rush to get it posted. By the way if anyone finds out what the ,bruce and boutran do, please let me know.

UNK

IBM Hardkey for...

Redstorm Rising

?

Put Redstorm Rising on Harddrive

This softkey will allow Redstorm Rising to be run from Harddrive without a key disk. There can not be any disk in drive A: When the Program Reads drive A:.

You will still need to ID the correct ship to run the game right, I can't find a way to get around that. Using PCtools (or some such) edit Redstorm.com. Go to sector 6, offset 221 and change the BD to an 8D. Then go to sector 6, offset 344 and change the C3 to 00. That's it!

unClassifieds

How to place an UnClassified Ad

Send a typed sample copy with appropriate instructions. (If possible, send text on a 5.25" Apple format disk.) Use up to 40 characters per line, we will adjust word wrap.

Special Graphics Instructions: The first three words of the first line are printed in bold for free. If you want other words bolded, use 5 characters less per line. Use 10 characters less per line if you have a lot of uppercase bold letters. Bold letters are wider than normal. If the typed copy does not show bold, circle the words you want bolded and, on the side, write BOLD. If you want a line centered, write CENTER next to that line. There is no charge for centering any line.

You must check your ad for errors, the first time it runs. Errors on our part will be corrected, then, for free. Errors or changes on your part will be charged a \$5 processing fee.

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All others35¢

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XXXXXXXX	10
Zorro	14

Most Wanted

72 50 Mission Crush	SSI
65 Airheart	Broderbund
63 Alcon	Taito
74 Algebra Shop	Scholastic
63 Alien Mind	PBI Software
73 American History Explorer Series	Mindscape
74 Animal Kingdom	Unicorn
74 Animals of the Past	Focus Media
72 Ankh	Datamost
73 Ant Farm	Sunburst
67 Apple Panic	Broderbund
67 Aquatron	Sierra
69 Axis Assassin	?
63 Bad Street Brawler	Mindscape
73 Bank Street Beginner's Filer	Sunburst
73 Bank Street School Filer	Sunburst
63 Beyond Zork	Infocom
65 Bilestoad	Datamost
69 Blue Powder - Grey Smoke	Grade
74 Birds Trees & Flowers	Focus Media
63 Border Zone	Infocom
65 Borg	Sirius
67 Bouncing Kamungas	Penguin
66 Boxing	?
65 Bureaucracy	Infocom
69 Caverns of Callisto	Origin
68 Centauri Alliance	Broderbund
69 Checker	Odesta
69 Chess 7.0	Odesta
69 Chuck Yeager's Adv Fit Trainer	Electronic Arts
67 C'est La Vie	Adventure International
68 Comics	Accolade
63 Cosmic Relief	Datasoft
65 Crime & Punishment	Imagic
74 Crosscountry USA	Diatech
69 Crossword Magic v4.0	?
69 Cybernation	Nexa Corp.
72 Cytron Masters	SSI
66 Deathlord	Electronic Arts
74 Decimal Dungeon	Unicorn
74 Decisions: Colonization v1.0	Tom Snyder Productions
69 Delta Squadron	Nexa Corp.
67 Desecration	Mind Games
73 Designer Prints	MECC
66 Disk Optimizer System	Nibble Notch
65 Dondra	Spectrum Holobyte
69 Dragon Eye	Epyx
69 Dueling Digits	Broderbund
68 D&D-Master Assistant vol2	SSI
62 DROL	Broderbund
72 Epidemic	SSI
67 Epoch	Sirius
63 Explore-Australia	Dataflow Computer Service
74 Exploring Tables & Graphs Level 2 (SU)	Weekly Reader
67 Evolution	Sydney

67 Falcons	Piccadilly
68 Factastics Trivia	Daystar
73 Fisher's Cove	Tom Snyder Productions
69 Fit Wars	Sirius
74 Fraction Action	Unicorn
69 Gemstone Healer	SSI
73 Geometric Supposer (the)	Sunburst
66 GEOS	Berkley Softworks
71 Gertrudes Puzzles	?
72 Galactic Gladiators	SSI
63 Gladiator	Taito
66 Goldrush	Sierra On Line
73 Goodell Diamond Caper	Tom Snyder Productions
67 Gorgon	Sirius
66 GradeBuster 1 2 3	Grade Buster
61 Gutenberg Sr.	Micromation LTD.
65 Halls of Montezuma	Electronic Arts
69 Hard Hat Mack	?
67 High Orbit	Softsmith
67 Horizon V	Softsmith
69 Impossible Mission	Epyx
62 Indoor Sports	Mindscape
68 Infocomics	Infocom
66 Jane	?
63 Joker Poker	Mindscape
72 Kabul Spy	Sirius
71 Keyboarding Klass	Mastery Development
68 Kingdom of Facts	Santa Barbara/Thunder Mountain
72 Lane Mastodon	Infocom
67 Lancaster	SVS
72 Laser Force (Iigs)	Britannica
66 Legacy of the Ancients	Electronic Arts
65 Lost Tomb	Datasoft
74 Mammals Reptiles & Amphibians	Focus Media
65 Manhunter New York Iigs	Sierra On Line
65 Mavis Beacon Teaches Typing (gs)	Software Toolworks
73 McGraw-Hill Problem-Solving Lvl 5 & 6	Tom Snyder
74 Micro-Typewriter v1.3/4.0	S.E. Warner
67 Microwave	Cavalier
66 Might and Magic II	Activision
73 Mind Castle I	MCE Inc.
69 Minotaur	Sirius
63 Modem MGR	MGR Software
68 Mr. Pixel's Cartoon Kit	Mindscape/Thunder Mountain
73 Mystery of Hotel Victoria	Tom Snyder Productions
63 National Inspirer	Tom Snyder Productions
66 Observatory (The)	Mindscape/Lightspeed Software
74 Ocean Life	Focus Media
66 Odin	Odessta
63 Operation Wolf	Taito
68 Pensate	Datasoft/Softdisk
69 Phantasie II	SSI
67 Phantoms 5	Sirius
67 Pig Pen	Datamost
74 Plants & Animals of the Desert	Focus Media
67 Project: Space Station	Avantage
67 Pulsar II	Sirius
68 Pure Stat Basketball	?
62 Quadratic Equations II	Olympus Educational Software
63 Questron II	Electronic Arts
68 Rails West	SSI
63 Rastan	Taito
67 Rear Guard	Adventure International
63 Renegade	Taito
67 Rescue Raiders	Sir Tech
67 Rings of Saturn	Level 10?
63 Rocket Ranger (Iigs)	Cinemaware
69 Roundabout	Datamost
63 S.D.I. (Iigs)	Cinemaware
72 S.E.U.I.S.	SSI
62 Sea Stalker	Broderbund
67 Serpentine	Broderbund
74 Seven Cities of Gold	Electronic Arts
68 Skeletal System	Brainbank
63 Sky Shark	Taito
63 Sound Song & Vision	Advanced Software
67 Space Ark	Datamost
62 Spare Change	Broderbund
67 Spectre	Datamost
62 Speedy Spides	Readers Digest
67 Star Cruiser	Sirius
67 Star Maze	Sir Tech
63 StickyBear Math: Add & Subtract	Optimum Resources
68 Stickybear GS Versions 3.5	Xerox
63 Strike Fleet	Electronic Arts
67 Succession	Piccadilly
65 Superstar Ice Hockey	Mindscape
61 Superstar Indoor Sports	Mindscape
74 Surveys Unlimited	Mindscape
68 Talking Text Writer GS	Scholastic
68 Tangled Tales	Origin Systems
69 Tetris (Ile)	Spectrum Holobyte
72 Theatre Europe	PBI
74 The Other Side v2.0	Tom Snyder Productions
65 Thunder Chopper	?
63 Ticket to Washington D.C.	Blue Lion Software
74 Time Explorers	Gameco
74 Time Liner v1.1	Tom Snyder Productions
63 Tomahawk	Electronic Arts
68 Tomahawk (Iigs)	Datasoft
69 Track Attack	Broderbund
68 Triad	Thunder Mountain
72 Triango (Iigs)	California Dreams
68 Trinity	Infocom
73 Unicorn 5.25" software	Unicorn
73 Vincent's Museum	Tom Snyder Productions
68 Volcanoes v1.8	Earthware Comp. Services
66 War in the Middle Earth	Melbourne
61 Wasteland	Electronic Arts
67 Wayout	Sirius
63 Wings of Fury	Broderbund
63 Wizardry:Return of Werda	Sir-Tech.
65 Works (the)	Davidson
67 Zenith	Softsmith
63 ZorkQuest	Infocom

IBM Most Wanted

72 GBA Championship Football	Electronic Arts
68 Graphitti	George Best Phillips Academy
61 Gunship	Microprose
63 Heros of the Lance	SSI
72 Kings Quest III	Sierra
72 Operation Wolf	Taito
72 Radio Baseball	Electronic Arts
72 Ultima V	Origin

We finally completed the move to Eatonville. Everything is gone from the Tacoma location. But there's a problem. I don't have enough space to store all the boxes. So here's a deal for you:

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(volume 1-3) for only \$1* each

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Book of Softkeys I (Compiled from issues 1-5)

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•Three disks (supplied in DOS 3.3). Each disk contains at least 60 Super IOB Controllers including the standard, swap, newswap and fast controllers. Also included is version 1.5 of Super IOB, the Csave program from COMPUTIST No. 13, and a Menu Hello Program that lists the available controllers and, when you select one, automatically installs it in Super IOB and RUNs the resulting program.*

•A reprint of Disk Inspection and the Use of Super IOB, from COMPUTIST No. 17. This article explains how to write your own Super IOB controllers.

•COMPUTIST No. 32, which contains an extensive article detailing the hows and whys of Super IOB v1.5 and at least 5 articles using the new Super IOB program.

Several of the controllers deprotect the software completely with no further steps. This means that some programs are only minutes away from deprotection (with virtually no typing).

The issue of COMPUTIST in which each controller appeared is indicated in case further steps are required to deprotect a particular program.**

*Requires at least 64K of memory.

**Although some controllers will completely deprotect the program they were designed for, some will not, and therefore require their corresponding issue of COMPUTIST to complete the deprotection procedure.

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Volume 3 of the Super IOB collection covers all the controllers from COMPUTIST No. 39 through No. 53. The following controllers are on volume 3:

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